

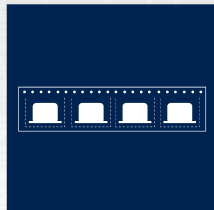


# ALUMINUM ELECTROLYTIC CAPACITORS

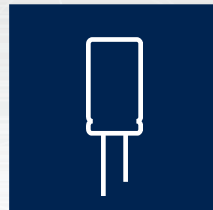
2025/2026



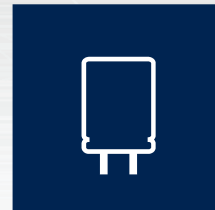
SMT



RADIAL



SNAP-IN



SCREW



ENGINEERED SOLUTIONS

**JIANGHAI EUROPE**

Electronic Components GmbH

# Capacitors from Jianghai

JIANGHAI EUROPE ELECTRONIC COMPONENTS GMBH IS THE EUROPEAN SALES ORGANIZATION OF NANTONG JIANGHAI CAPACITOR CO., LTD., NANTONG (CHINA). SINCE 2003, SALES, MARKETING, TECHNICAL SUPPORT, CUSTOMER SERVICE TEAM AND WAREHOUSE OF JIANGHAI EUROPE ELECTRONIC COMPONENTS GMBH ARE LOCATED IN KREFELD AND KEMPEN (GERMANY).

## » ELECTROLYTIC CAPACITORS

Jianghai has grown since its foundation in 1958 to become the largest Chinese manufacturer of aluminum capacitors generating revenues of 1,2 billion USD in 2023. While Jianghai started in the beginning with the production of specialty chemicals (e.g., electrolyte solutions), it entered the production of aluminum electrolytic capacitors already in 1970. Since 2023 Jianghai offers SMT Electrolytic Capacitors again.



## » INTEGRATION OF PREMATERIAL

More recently, Jianghai extended its production range by integrating high and low voltage anode foil etching and forming facilities. All factories are located in mainland China and Japan: the most important ones are in Nantong (north to Shanghai), in Inner Mongolia, and in Xi'an area. Jianghai is well prepared for further expansion due to its successful entrance to the stock market in summer 2010.

## » FILM CAPACITORS

In 2012, the product portfolio was complemented by a range of power film capacitors. For this new business unit, Jianghai also follows the strategy of vertical integration and thus the production comprises the metallization and slitting of the plastic film as well as the assembly of the finished goods. Highly automated production facilities ensure the efficient mass production of film capacitor modules. Driven by the thriving electric vehicle market in China, Jianghai has attained a leading position for the supply of these customer specific components.



## » POLYMER CAPACITORS

The year 2013 was marked by a major breakthrough in R&D for polymer aluminum electrolytic capacitors: the voltage proof for these ultra-low ESR products was pushed out to as much as 200V, enabling the utilization of these advanced capacitors in more applications, e.g. in white goods, industrial automation, telecom infrastructure, power supplies, and LED ballasts. Hybrid and Stacked (Chip) Polymer Capacitors were added into the product portfolio in the year 2019.



## » ENERGY CAPACITORS

For energy storage applications, Jianghai has developed a range of Lithium Ion-Capacitors (Li-C) based on the well-known EDLC technology. Li-C combine the advantage of many hundred thousand charge and discharge cycles and high energy density, allowing for a wide range of applications in energy storage and recuperation. Jianghai offers EDLC as well as Li-C in various form factors, e.g. in radial, snap-in, pouch or module shape.



## » CAPACITOR COMPETENCE CENTER

Global presence of experienced sales and technical marketing experts at offices in Europe, Asia and the Americas ensure the local support of our customers based on sound know-how in all project phases. In 2014 Jianghai Europe has established an additional service for its customers in Europe: Experts for capacitors are awaiting telephone calls or emails at the CCcenter as a kind of hotline for all kind of technical requests.

## » CUSTOMIZED PRODUCTS

Jianghai's particular strength as a volume manufacturer is to offer customized products. Jianghai focuses on the demanding professional industrial segment with many power electronics applications. Research and development in collaboration with several specialized university institutes as well as the access to all vital pre-materials enable Jianghai to create engineered, customized solutions to fit smoothly into a specific application. Jianghai is continuously improving processes, thereby enhancing the quality of its products and services. The list of certificates awarded to Jianghai reflects its level of achievement. In the year 2013, the Jianghai Europe sales office has become certified according to ISO9001 and ISO14001.

## » CONTACT

Jianghai Europe Electronic Components GmbH  
Uerdinger Str. 95 · 47799 Krefeld, Germany  
T: +49 (21 51) 65 20 88-0 | F: +49 (21 51) 65 20 88-88  
info@jianghai-europe.com | www.jianghai-europe.com

## ALUMINUM ELECTROLYTIC CAPACITORS

|                                                                                      |    |
|--------------------------------------------------------------------------------------|----|
| Portfolio: All Aluminum Electrolytic Capacitors at a glance (Radial, Snap-In, Screw) | 6  |
| Lifetime Estimation of Aluminum Electrolytic Capacitors                              | 9  |
| Handling Precautions for Aluminum Electrolytic Capacitors                            | 10 |


**SMT**

13

|                                     |    |
|-------------------------------------|----|
| Portfolio: All SMT Type at a glance | 14 |
| Order Code                          | 15 |
| Technical Specifications            | 16 |

| SERIES SMT | CODE | TYPE | TEMPERATURE | VOLTAGE | LIFETIME | INFO   |              |    |
|------------|------|------|-------------|---------|----------|--------|--------------|----|
| CD VT1     | NEW  | VT1  | SMT         | 105°C   | 6,3-50V  | 1 000h | Low ESR      | 18 |
| CD VTD     | NEW  | VTD  | SMT         | 105°C   | 6,3-100V | 2 000h | Low ESR      | 20 |
| CD VZ2     | NEW  | VZ2  | SMT         | 105°C   | 6,3-100V | 2 000h | High Current | 22 |
| CD VZL     | NEW  | VZL  | SMT         | 105°C   | 6,3-100V | 5 000h | Long Life    | 25 |
| CD VZS     | NEW  | VZS  | SMT         | 105°C   | 6,3-50V  | 2 000h | Miniaturized | 28 |


**RADIAL**

31

|                                        |    |
|----------------------------------------|----|
| Portfolio: All Radial Type at a glance | 32 |
| Order Code                             | 33 |
| Technical Specifications               | 34 |

| SERIES RADIAL | CODE    | TYPE   | TEMPERATURE | VOLTAGE  | LIFETIME | INFO                           |                                     |    |
|---------------|---------|--------|-------------|----------|----------|--------------------------------|-------------------------------------|----|
| CD 110        | PT      | Radial | 85°C        | 6,3~500V | 4 000h   | Standard                       | 36                                  |    |
| CD 11GL       | GL      | Radial | 125°C       | 160~450V | 6 000h   | High Temperature, High Voltage | 39                                  |    |
| CD 261L       | UPDATED | DE     | Radial      | 105°C    | 160~450V | 14 000h                        | Miniaturized, Longest Life          | 41 |
| CD 261X       | UPDATED | QX     | Radial      | 105°C    | 160~550V | 12 000h                        | High Voltage, Highest Currents      | 44 |
| CD 263        | UPDATED | BK     | Radial      | 105°C    | 6,3~500V | 3 000h                         | Standard                            | 46 |
| CD 264        | NEW     | KH     | Radial      | 105°C    | 160~500V | 6 000h                         | Oversize Dimension                  | 50 |
| CD 266        | NEW     | FK     | Radial      | 105°C    | 160~500V | 10 000h                        | Oversize Dimension, Longer Life     | 52 |
| CD 26H        | NEW     | XH     | Radial      | 105°C    | 200~500V | 10 000h                        | Slim line                           | 54 |
| CD 26 HS      | NEW     | XS     | Radial      | 105°C    | 400~450V | 10 000h                        | Slim line, Miniaturized             | 56 |
| CD 269L       |         | HL     | Radial      | 125°C    | 10~100V  | 10 000h                        | High Temperature, Long Life         | 58 |
| CD 281        | UPDATED | LL     | Radial      | 105°C    | 6,3~100V | 12 000h                        | Low ESR, Long Life                  | 60 |
| CD 281L       | UPDATED | LH     | Radial      | 105°C    | 6,3~100V | 12 000h                        | Low ESR, Long Life                  | 66 |
| CD 282L       | UPDATED | YL     | Radial      | 105°C    | 6,3~100V | 12 000h                        | High Current, Ultra Low ESR         | 72 |
| CD 282X       | UPDATED | EQ     | Radial      | 105°C    | 6,3~100V | 12 000h                        | High Current, Miniaturized          | 77 |
| CD 284        | UPDATED | XY     | Radial      | 105°C    | 6,3~100V | 10 000h                        | High Current, Ultra Low ESR         | 81 |
| CD 284L       | UPDATED | LY     | Radial      | 105°C    | 6,3~100V | 12 000h                        | Miniaturized                        | 85 |
| CD 285        | UPDATED | HY     | Radial      | 105°C    | 6,3~100V | 12 000h                        | Highest Current                     | 89 |
| CD 287        |         | GC     | Radial      | 105°C    | 6,3~100V | 10 000h                        | Low ESR                             | 93 |
| CD 28L        | UPDATED | QL     | Radial      | 105°C    | 6,3~63V  | 14 000h                        | Low ESR, Miniaturized, Longest Life | 98 |

## ■ SNAP-IN

**103**

|                                         |            |
|-----------------------------------------|------------|
| Portfolio: All Snap-In Type at a glance | <b>104</b> |
| Order Code                              | <b>105</b> |
| Technical Specifications                | <b>106</b> |

| SERIES  | SNAP-IN | CODE | TYPE    | TEMPERATURE  | VOLTAGE   | LIFETIME | INFO                          |     |
|---------|---------|------|---------|--------------|-----------|----------|-------------------------------|-----|
| CD 293  | UPDATED | BZ   | Snap-In | 85°C         | 10~500V   | 4 000h   | Standard                      | 108 |
| CD 294  | UPDATED | BW   | Snap-In | 105°C        | 16~550V   | 4 000h   | Standard                      | 111 |
| CD 295  | UPDATED | BC   | Snap-In | 85°C         | 10~500V   | 6 000h   | Long Life                     | 115 |
| CD 295S |         | BS   | Snap-In | 85°C (105°C) | 160~500V  | 12 000h  | 12 000h, Enlarged Temperature | 118 |
| CD 296  | UPDATED | KC   | Snap-In | 105°C        | 16~550V   | 5 000h   | Long Life                     | 120 |
| CD 296L |         | FL   | Snap-In | 105°C        | 350~500V  | 6 000h   | Large Size 105°C              | 122 |
| CD 297  | UPDATED | BB   | Snap-In | 105°C        | 10~500V   | 7000h    | Longer Life, High Current     | 124 |
| CD 299  | UPDATED | PG   | Snap-In | 105°C        | 160~500V  | 9 000h   | High Current                  | 127 |
| CD 29C  |         | QC   | Snap-In | 105°C        | 200~450V  | 4 000h   | Miniaturized 105°C            | 129 |
| CD 29CS | NEW     | DS   | Snap-In | 105°C        | 400~450V  | 4 000h   | Ultra Mini                    | 131 |
| CD 29H  | UPDATED | QH   | Snap-In | 105°C        | 160~450V  | 5 000h   | Long Life, Highest Currents   | 133 |
| CD 29HD |         | QF   | Snap-In | 105°C        | 200~450V  | 8 000h   | Outstanding Ripple Current    | 135 |
| CD 29L  |         | QL   | Snap-In | 85°C         | 16~500V   | 7 000h   | Long Life, Large Size         | 137 |
| CD 29UH |         | UT   | Snap-In | 105°C        | 575V,600V | 6 000h   | 575V,600V at 105°C            | 139 |
| CD 840  |         | ZQ   | Snap-In | 85°C         | 200~450V  | 10 000h  | 10 000h High Current          | 141 |
| CD 892  |         | ZL   | Snap-In | 105°C        | 400~500V  | 5 000h   | Miniaturized, Long Life       | 143 |
| CD 895  |         | ZK   | Snap-In | 85°C         | 16~500V   | 14 000h  | Ultra Long Life               | 145 |

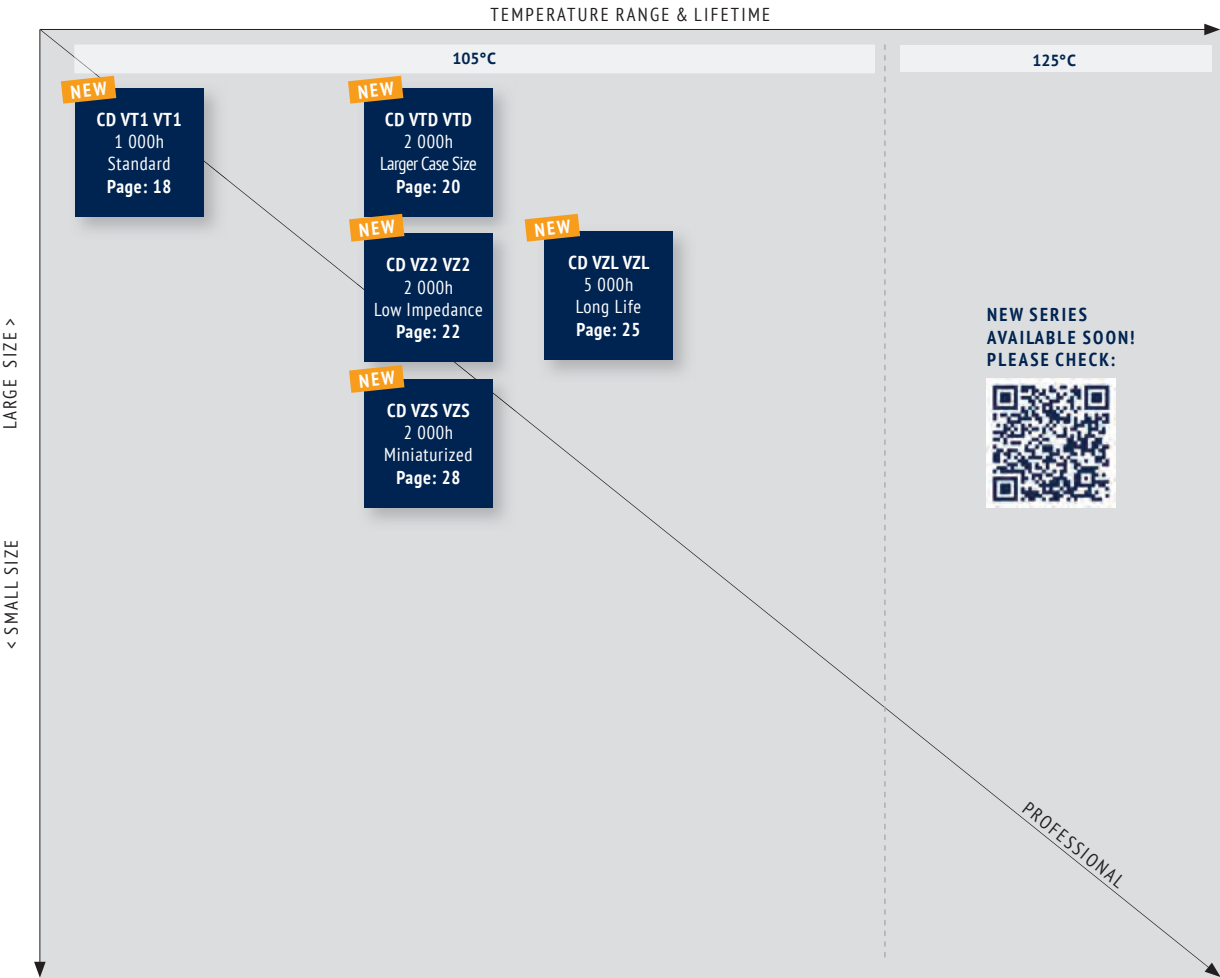
## ■ SCREW

**149**

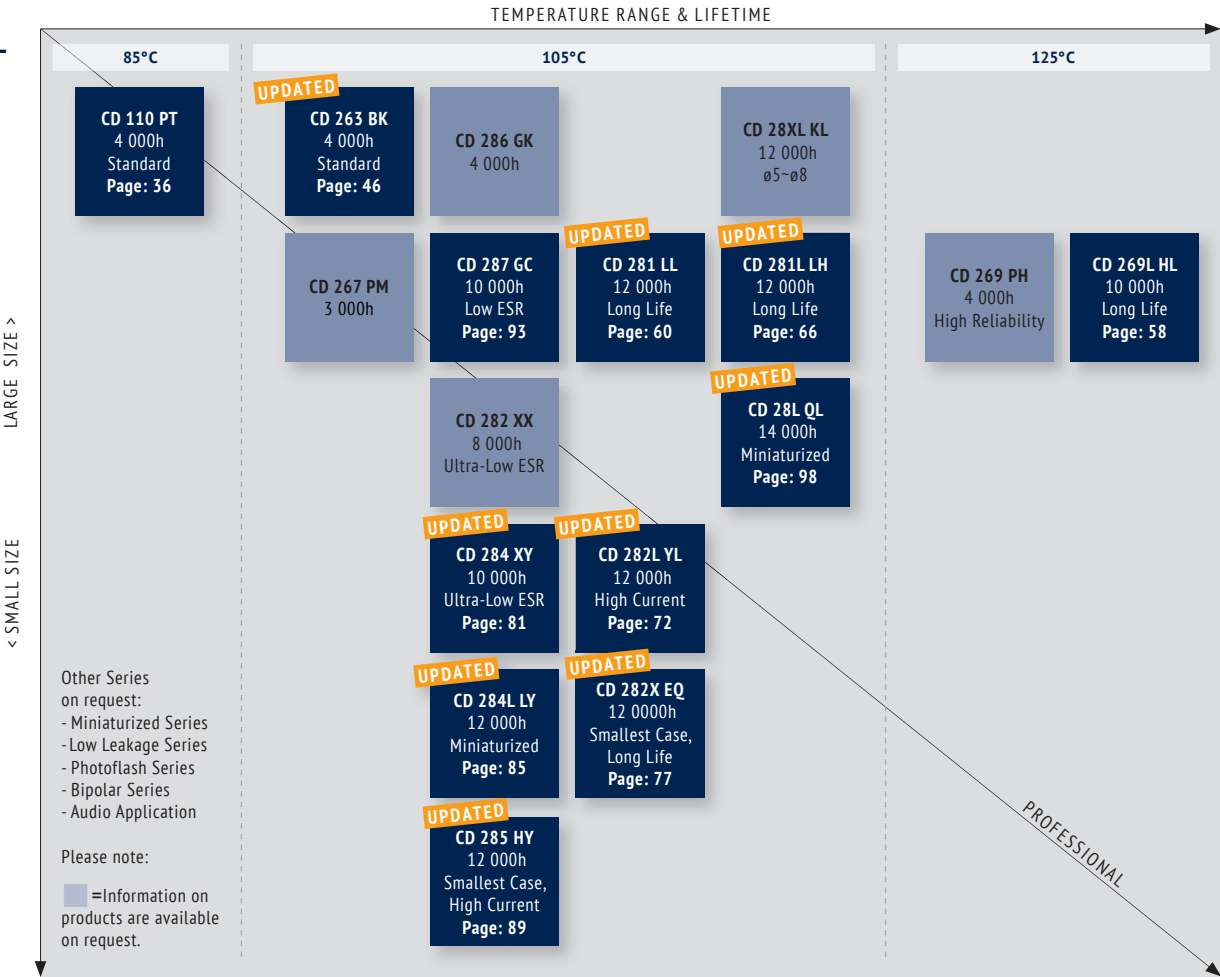
|                                                    |            |
|----------------------------------------------------|------------|
| Portfolio: All Screw Type at a glance & Order Code | <b>150</b> |
| Technical Specifications                           | <b>151</b> |

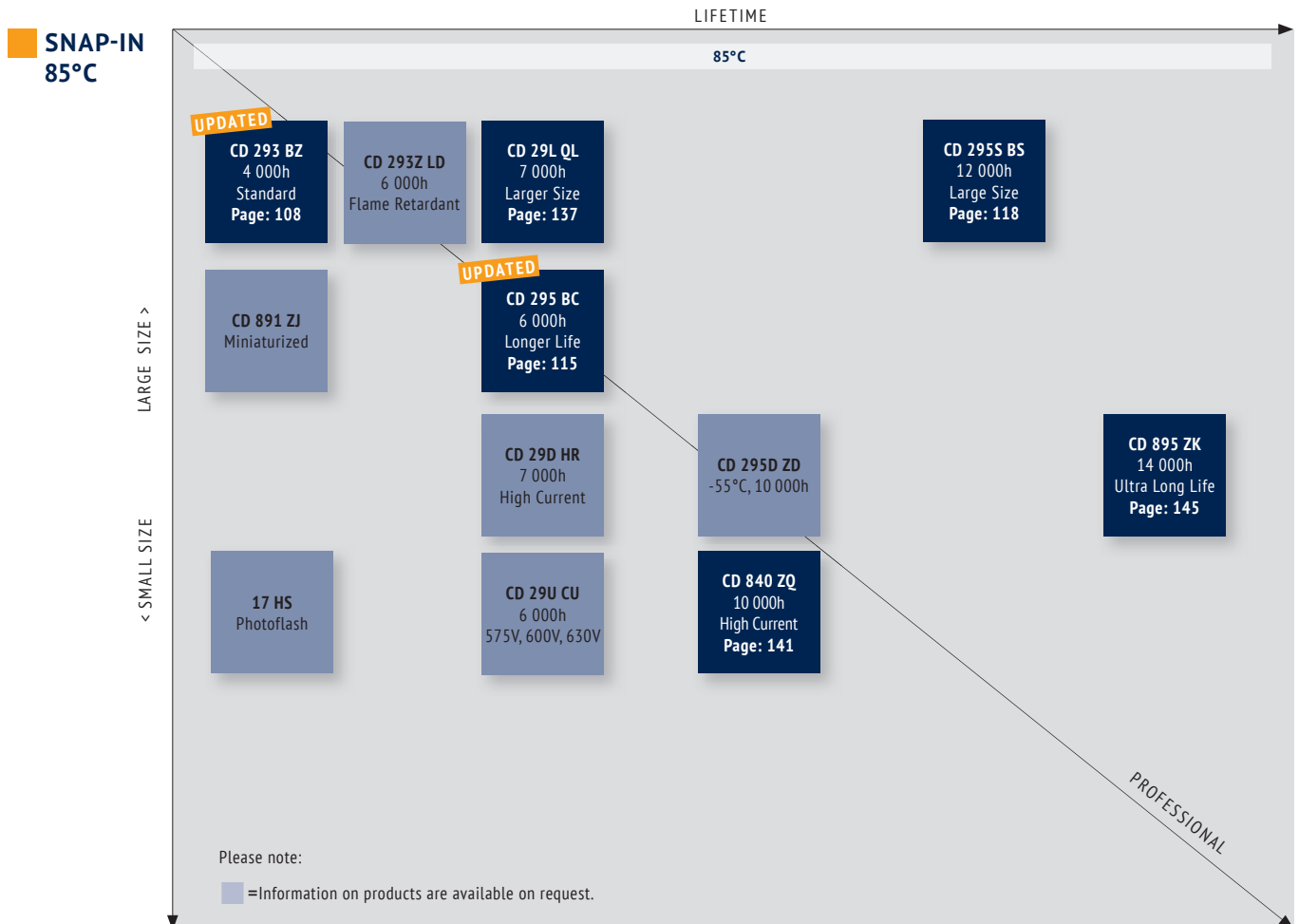
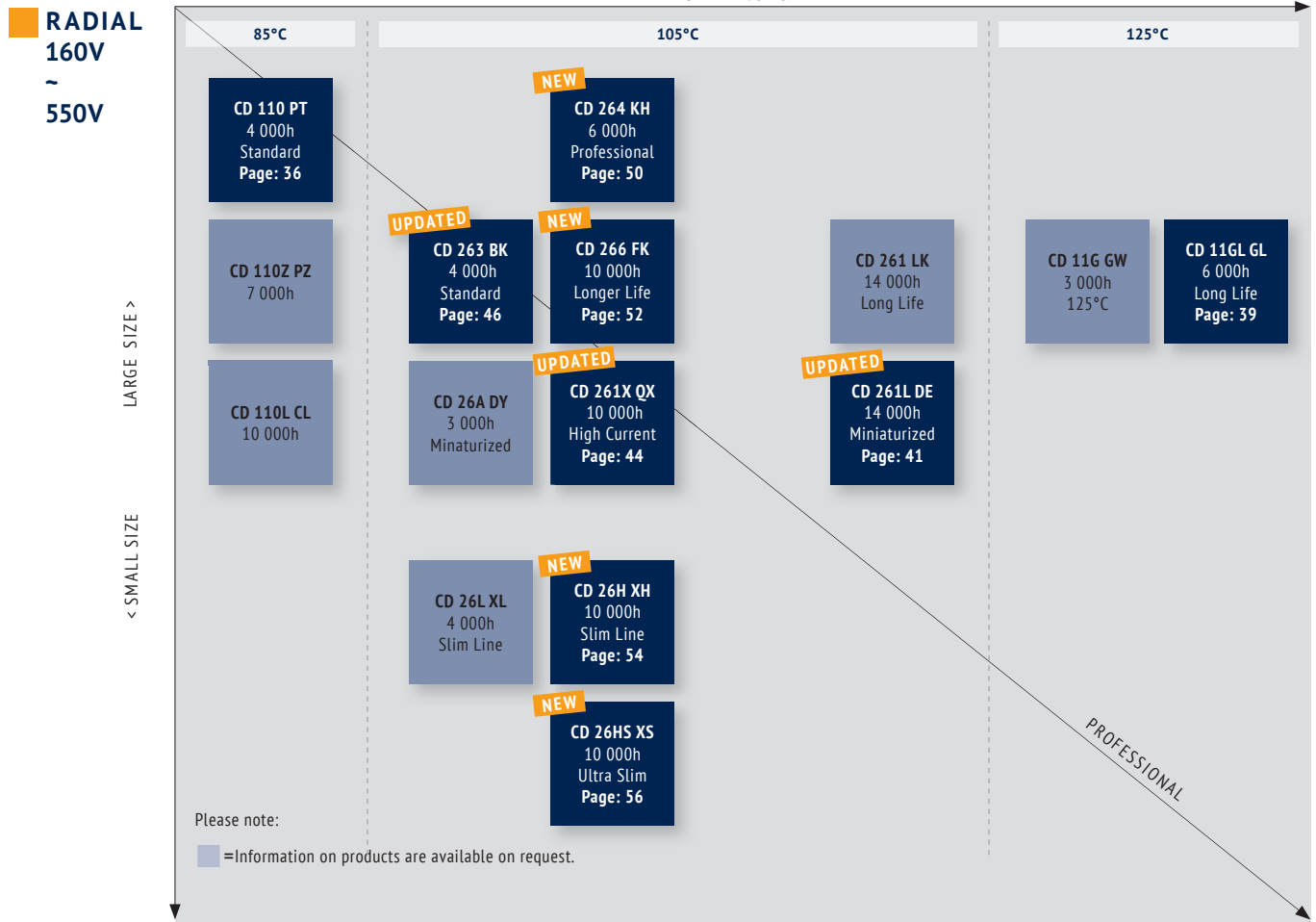
| SERIES SCREW | CODE    | TYPE | TEMPERATURE | VOLTAGE | LIFETIME | INFO    |                                   |     |
|--------------|---------|------|-------------|---------|----------|---------|-----------------------------------|-----|
| CD 135       |         | BP   | Screw       | 85°C    | 10~500V  | 4 000h  | Standard                          | 153 |
| CD 136       | UPDATED | PK   | Screw       | 105°C   | 25~450V  | 4 000h  | Standard                          | 156 |
| CD 137       |         | PX   | Screw       | 85°C    | 400~550V | 10 000h | Long Life, High Voltage           | 158 |
| CD 137S      |         | PR   | Screw       | 85°C    | 350~500V | 12 000h | Miniaturized, Prolongued Lifetime | 160 |
| CD 137U      | NEW     | UP   | Screw       | 85°C    | 400~450V | 10 000h | Ultra Small                       | 162 |
| CD 138       |         | PC   | Screw       | 85°C    | 350~450V | 10 000h | Long Life, High Current           | 164 |
| CD 138S      |         | WP   | Screw       | 85°C    | 350~500V | 15 000h | Longest Life, Highest Currents    | 166 |
| CD 139       |         | BL   | Screw       | 105°C   | 350~450V | 9 000h  | Long Life 105°C                   | 168 |
| CD 139S      |         | HC   | Screw       | 105°C   | 350~450V | 9 000h  | Long Life 105°C, High Current     | 170 |
| CD 13H       |         | BH   | Screw       | 85°C    | 600~650V | 4 000h  | 600V, 650V                        | 172 |
| CD 838       |         | ZT   | Screw       | 85°C    | 350~450V | 10 000h | Miniaturized, Long Life           | 174 |

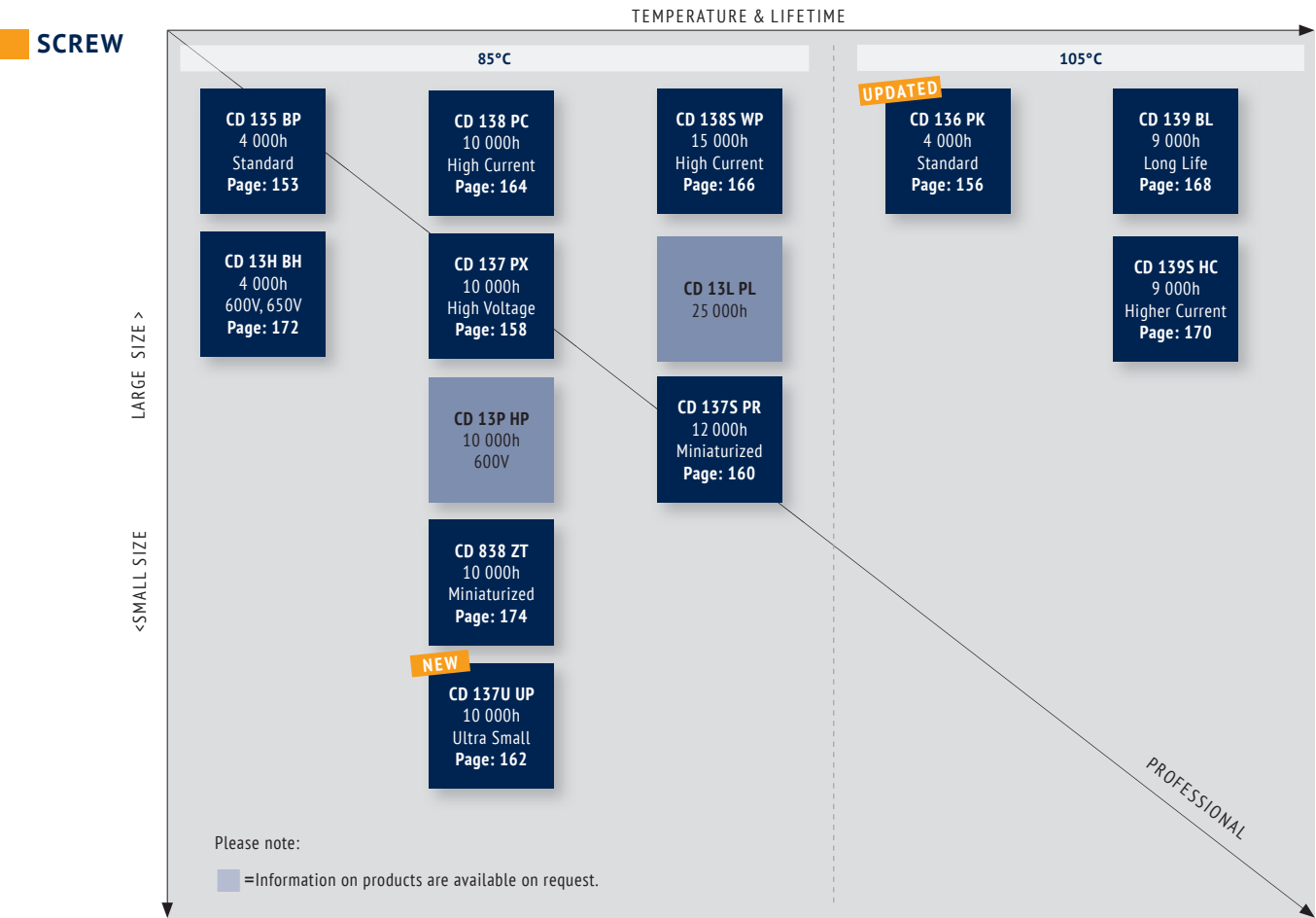
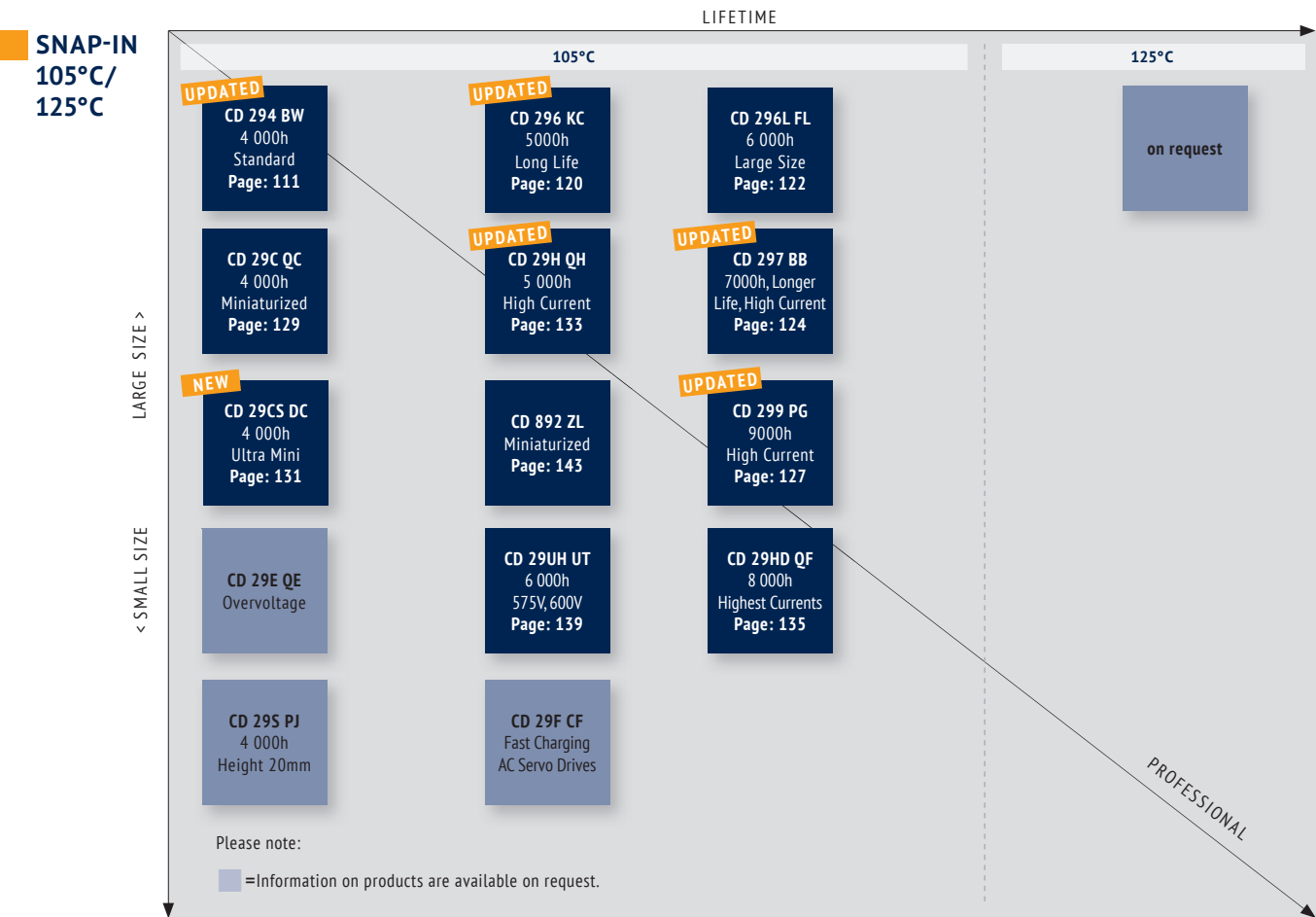
SMT



RADIAL  
6,3V  
~  
100V







## LIFETIME ESTIMATION OF ALUMINUM ELECTROLYTIC CAPACITORS FROM JIANGHAI

To estimate the Lifetime of a non-solid Aluminum Electrolytic Capacitor from Jianghai, the following formulas can be utilized. The Lifetime depends mainly on the ambient temperature, the ripple current and, within certain limits, the operating voltage applied. Other parameters may also affect the Lifetime. Moreover,  $L_0$  can be interpreted in many different ways, which has a fundamental influence on the numerical result. Jianghai offers a high transparency by publishing the different typical definitions of Lifetimes in each datasheet. Lifetime estimations are approximations by nature. Please let JIANGHAI EUROPE confirm any result before using it. The formulas given here do not constitute part of a contract nor of a specification. The formulas do not cover additional aging effects of certain electrolytic systems or other chemical effects. Also the dimensions of the components may have an effect. Forced cooling or other additional cooling-methods have a strong impact on the Lifetime and are not covered by the formulas as defined. For the estimation and interpretation of Lifetime, a close collaboration with JIANGHAI EUROPE is strongly advised.

### STRUCTURAL FORMULA

$$L = L_0 \cdot K_T \cdot K_R \cdot K_V$$

WHERE:

- L Total Lifetime
- $L_0$  Lifetime under Nominal Load at Upper Category Temperature (see catalogue)
- $K_T$  Temperature Factor
- $K_R$  Ripple Current Factor
- $K_V$  Voltage Factor

### $K_T$ TEMPERATURE FACTOR

Aluminum Electrolytic Capacitors follow roughly the 10 K rule of Arrhenius. It is possible to estimate the Lifetime by rule of thumb: When the operational temperature is reduced by 10 K, the Lifetime will double. The formula for  $K_T$  in detail is:

$$K_T = 2^{\frac{T_0 - T_A}{10K}}$$

WHERE:

- $T_0$  Rated Temperature
- $T_A$  Ambient Temperature

### $K_R$ RIPPLE CURRENT FACTOR

To estimate the influence of ripple current on lifetime, Jianghai uses a safety factor  $K_i$ . Under certain conditions this value can be set to  $K_i=2$ , which is prolonging the lifetime. Please contact Jianghai Europe for details and approval.

$$K_R = K_i^A \frac{\Delta T_0}{10K}$$

WITH:

$$A = 1 - \left( \frac{I_A}{I_R} \right)^2$$

WHERE:

- $I_A$  Actual Rated Ripple Current
- $I_R$  Ripple Current at Upper Category Temperature (databook value)
- $\Delta T_0$  Core Temperature Rise of the capacitor  
(typically 3,5 ~ 5 K for  $T_0 = 105^\circ\text{C}$   
and 3,5 ~ 10K for  $T_0 = 85^\circ\text{C}$ , see databook value)
- $K_i$  Basis, typically defined as
 

|                           |                  |           |
|---------------------------|------------------|-----------|
| $T_0 = 105^\circ\text{C}$ | $I_A > I_R$ :    | $K_i = 4$ |
|                           | $I_A \leq I_R$ : | $K_i = 2$ |
| $T_0 = 85^\circ\text{C}$  |                  | $K_i = 2$ |



*Remark: Safety Factor  $K_i$  may be set as  $K_i=2$  under certain defined conditions. Please contact Jianghai Europe for approval.*

### $K_V$ VOLTAGE FACTOR

For Radial and SMT Electrolytic Capacitors, this part of the formula has no impact ( $K_V = 1$ ). But for some bigger capacitors like Snap-In and Screw-Terminal types with rated voltages above 160V, the operating voltage will affect their Lifetime. It is expressed as follows:

FOR:

$$0,6 \leq \frac{U_A}{U_R} \leq 1$$

$$K_V = \left( \frac{U_A}{U_R} \right)^{-2,5}$$

WHERE:

- $U_A$  Actual Operating Voltage
- $U_R$  Rated Voltage

FOR:

$$0 < \frac{U_A}{U_R} < 0,6$$

$$K_V = 3,59$$

FOR:

$$\frac{U_A}{U_R} > 1 \text{ not allowed}$$

$$K_V = 1$$

FOR: Radial and SMT Capacitors or  $U_R \leq 160V$ 

$$K_V = 1$$

**FREQUENCY CORRECTION FACTORS:**

If the actual Ripple Currents are not given at the same frequency like  $I_0$ , correction factors need to be applied.

$$I_A = \sqrt{\left(\frac{I_{f1}}{F_{f1}}\right)^2 + \left(\frac{I_{f2}}{F_{f2}}\right)^2 + \dots + \left(\frac{I_{fn}}{F_{fn}}\right)^2}$$

**JIANGHAI ELECTROLYTIC CAPACITOR LIFETIME****ESTIMATION FORMULA (incl. Safety Factors):**

$$L = L_0 \cdot 2^{\frac{T_0 - T_A}{10K}} \cdot K_i \left[ 1 - \left( \frac{I_A}{I_R} \right)^2 \right]^{\frac{\Delta T_0}{10K}} \cdot \underbrace{\left( \frac{U_A}{U_R} \right)^{-n}}_{K_V}$$

WITH TYPICAL VALUES:

$$T_0 = 105^\circ\text{C} \quad I_A > I_R : K_i = 4$$

$$I_A \leq I_R : K_i = 2$$

$$T_0 = 85^\circ\text{C} \quad K_i = 2$$

$\Delta T_0$  = depending on the series: 3,5~10K,  
see databook value

$$0,6 \leq \frac{U_A}{U_R} \leq 1 \rightarrow n = 2,5$$

$$0 < \frac{U_A}{U_R} < 0,6 \rightarrow K_V = \left( \frac{U_A}{U_R} \right)^{-n} = 3,59$$

For  $U_R \leq 160V$ , Radial and SMT

$$\frac{U_A}{U_R} > 1 \rightarrow K_V = 1$$

**HANDLING PRECAUTIONS FOR ALUMINUM  
ELECTROLYTIC CAPACITORS FROM JIANGHAI****WARNING**

JIANGHAI is not liable for any extent of possible injuries or damages to persons or things, of any kind, caused by the improper application of and/or operating conditions harmful to electrolytic capacitors. Misapplications which may cause failures include, but are not limited to: ripple current or peak current or voltage above specification, operating voltage above surge voltage specified, temperature exposure outside the specified operating temperature range. Examples of harmful operating conditions comprise, but are not limited to: unusual storage or transport temperatures, excessive and/or rapid changes of ambient temperature or humidity, heavy mechanical shock or vibration, corrosive and abrasive particles in the ambient (cooling) air, conducting dust in the ambient (cooling) air, oil or water vapor or corrosive substances, explosive gas or dust, operation under extremely high or low ambient pressure conditions (below or above sea level), superimposed radio frequency voltages, radioactivity. In case of doubt about the impact of operating conditions on capacitor performance, please contact JIANGHAI.

**PERSONAL SAFETY**

Electrical or mechanical misapplication of electrolytic capacitors may be hazardous. Personal injury or property damage may result from explosion of a capacitor or from the expulsion of electrolyte due to mechanical disruption or the release of a safety vent of a capacitor. In case of injury or skin or eye exposure to electrolyte, immediately seek professional medical advice. Before using electrolytic capacitors in any application, please read these Handling Precautions, familiarizing thoroughly with the information contained herein. Please check before using any of our electrolytic capacitors if these components fulfill the requirements of your application and that warnings and instructions for use are followed.

**WARRANTY**

The information contained in this catalogue does not form part of any quotation or contract, is believed to be accurate, reliable and up to date. Quality data are based on the statistical evaluations of a large quantity of parts and do not constitute a guarantee in a legal sense. However, agreement on these specifications does mean that the customer may claim for replacement of individual defective capacitors within the terms of delivery. We will not assume any liability beyond the replacement of defective components. This applies in particular to any consequential damage caused by component failure. Furthermore it must be taken into consideration that the figures stated for lifetime, failure rates and outlier percentages refer to the average production status and are therefore to be understood as mean values (statistic expectations) for a large number of delivery lots of identical capacitors. These figures are based on application experience and data obtained from preceding tests under normal conditions, or – for purpose of accelerated aging – more severe conditions. JIANGHAI reserves the right to change these specifications without prior notice. Any application information given is advisory and does not form part of any specification. The products are not primarily designed for use in life support applications, devices or systems where malfunction of these products can reasonably be expected to result in personal injury. JIANGHAI customers using or selling these products for use in such applications without prior written consent of JIANGHAI do so at their own risk and agree fully to indemnify JIANGHAI for any damage resulting from such improper use or sale. This version of the catalogue supersedes all previous versions. Latest versions of datasheets can be found on our homepage: [www.jianghai-europe.com](http://www.jianghai-europe.com). For more details on precautions and guidelines for aluminum electrolytic capacitors, please refer to CENELEC Technical Report CLC/TR 50454:2008 E, "Guide for the application of aluminum electrolytic capacitors".

**POLARITY**

Electrolytic capacitors are polar and shall never be used with incorrect polarity, as there is a possible danger of shorting or destruction.

**RATED VOLTAGE  $U_R$** 

The rated voltage is marked on the capacitor and defined in the datasheets as  $U_R$ . This voltage should never be exceeded and is the maximum peak voltage including any ripple voltages allowed to avoid a shortening of the lifetime or damage of the capacitor. When a ripple current is applied to the capacitor, the sum of the peak ripple voltage and bias DC voltage shall never exceed the rated voltage. It might be necessary to lower the maximum allowed bias DC voltage, when certain ripple currents are applied to the capacitor.

**SURGE VOLTAGE**

Maximum voltage, which may be applied to the capacitor for short periods of time: max. 1000 cycles of 30 sec. per 6 min., max. 5 pulses per hour. Capacitance drift +/- 15% max.

## REVERSE VOLTAGE

Reverse voltages or voltages < 0V are not allowed.

## RECOVERY VOLTAGE

Electric potential between the positive and negative terminal may exist as a result of dielectric absorption. Please take action that this load does not damage other devices or scare workers during the production process (sparks possible). If needed please discharge the capacitor through a 1kΩ resistor.

## TEMPERATURE RANGE

Use electrolytic capacitors only within the specified operating temperature range.

## OVER-CURRENT

Currents exceeding the rated ripple currents should be avoided.

## RIPPLE CURRENT/VOLTAGE

The combined value of DC voltage and peak AC voltage (due to ripple current) shall not exceed the rated voltage and shall never be < 0V. Use of aluminum electrolytic capacitors under ripple current with wide amplitudes is equivalent to rapid charge-discharge operation. Never exceed a ripple voltage of  $70V_{\text{peak-peak}}$  without additional approval of Jianghai.

## RAPID CHARGING/DISCHARGING

Rapid charging/discharging generates severe heat and gas may be emitted which may lead to explosion. Consult JIANGHAI about specially designed capacitors suitable for such kind of applications. Example: Servo Drive Application

## BALANCING RESISTORS

Balancing resistors should be utilized if capacitors are used in serial connection. Please choose low-tolerance resistors to limit voltage drift.

## CHARGE-DISCHARGE PROOF

JIANGHAI capacitors are charge-discharge proof, which means that  $10^6$  switching cycles will cause capacitance reduction of less than 10%.

## LIFETIME

There are many different lifetime definitions known without any true standard definition. Take special care when capacitors are compared that the capacitors fulfill the needed requirements. JIANGHAI publishes all conditions to be as transparent as possible. In the case of lifetime tests with additional ripple currents, the bias DC voltage must be reduced, so that the sum of bias DC voltage and the peak of the ripple voltage does not exceed the Rated Voltage  $U_R$ .

**Load life:** Period of time, during which the technical parameters of all capacitors stay within the given limits. JIANGHAI defines this without allowing for outliers.

**Shelf Life:** Definition of time with acceptable drift of capacitor parameters after storage at upper category temperature without load.

## VIBRATION AND MECHANICAL STRESS

Capacitors are sensitive to vibration and mechanical forces applied on the leads. Do not use capacitors, which have been dropped onto a rigid surface.

## INSULATION

If any defect of the sleeve is visible, the component should not be used – the same holds for any kind of visible damage. A capacitor should be electrically isolated from the following parts: aluminum case, cathode lead wire, anode lead wire and circuit pattern, and auxiliary terminal of snap-in type. The sleeve is not recognized as an isolator and therefore the standard capacitor should not be used in a place where insulation function is needed. Please contact JIANGHAI if a higher grade of insulation is required.

## ENVIRONMENTAL CONDITIONS

Avoid direct contact with water, salt solution, oil, dewing conditions. Halogens generally, especially fumigation treatment with bromides and flame retardant agents containing halogens must be avoided. Avoid exposing to direct sunshine, ozone, ultraviolet rays and x-ray radiation. Air Pressure: Max. 150kPa, min. 8kPa. For usage >2000m altitude above sea level current deratings might be necessary. No heavy air pressure changes are allowed. Do not use or store in an environment containing any hazardous gas (e.g., hydrogen sulphide, sulphurous acid, nitrous acid, chlorine, ammonia, bromine, methyl bromide, other halogens) or acidic or alkaline solutions.

## STORAGE

Temperature 5 to 35°C, relative humidity below 75%. Electrolytic capacitors may accumulate charge naturally during storage. In this case discharge through a 1kΩ resistor before use (Recovery voltage). Leakage current may be increased after long storage time. In this case the capacitor should be subjected to the rated voltage treatment through a 1kΩ resistor before use for 1 hour, then it should be discharged through a resistor of about 1 Ω/Volt. Storage times above 1 year should be avoided or rated voltage treatment may be necessary. In accordance to IEC 60384-4 electrolytic capacitors

are subject to a reforming process before acceptance testing. Rated voltage is applied via a series resistance ( $100\Omega: U_R \leq 100VDC$ ,  $1k\Omega: U_R > 100VDC$ ).

## SOLDERING

Soldering conditions (temperature, times) should be within specified conditions, especially for SMT components. Avoid high soldering temperatures as this may reduce lifetime or damage the capacitor. Do never dip the capacitor body into molten solder. Flux should not be adhered to the capacitor's body but only to its terminals. For details and different methods please contact us.

## GLUEING, CLEANING AND COATING

Do not use fixing agents or cleaning substances containing halogens. Do not use coating and moulding components that completely seal the capacitor from the environment. Also, never use solvents containing: halogenated hydrocarbons, alkali, petroleum, trichloroethylene/-ethane, xylene, acetones, trichlorotrifluoroethane, tetrachloroethylene, methylenechloride, chloroform, acetates, ketones, esters, chlorides and bromides.

## MOUNTING

Other devices, which are mounted near the capacitor, should not touch the capacitor. Additional heat coming from other components near the capacitor may reduce the lifetime of the capacitor. Do never bend or twist the capacitor after soldering to avoid stress on the leads. Capacitors are not protected against mechanical forces on the leads. Forces on the pins might damage the capacitor. No printed circuit board tracks are allowed between the lead pads of the capacitor.

## TRANSPORT

Avoid fumigation and spraying insecticides (especially with bromides) in the import or export procedures which can cause corrosion. This applies also to the finished devices.

## MAINTENANCE

Periodical inspection should be carried out for the capacitor: visual inspection to check pressure relief open or leakage of electrolyte, electrical characteristics as leakage current, capacitance, and dissipation factor.

## ELECTROLYTE AND SEPARATOR PAPER

Electrolyte and separator paper used in aluminum capacitors may be flammable. Also, electrolyte is electrically conductive. Therefore, in case electrolyte gets in contact with PC board it may cause corrosion of circuit pattern or cause short circuit between patterns, and may lead to smoke generation or ignition in worst case.

## CAUTION DURING USE OF CAPACITORS

Do not touch the terminals of capacitors. Keep the capacitor free from conductive solution, such as acids, alkali and so on. Ensure that the operating environment of the equipment into which the capacitor has been built is within the specified conditions mentioned in the catalogue or specification sheets.

## SAFETY VENT

The safety vent needs some free space to open properly. Allow for free headroom of at least 2mm for diameter  $\leq 16\text{mm}$ , more than 3mm for diameter 18-35mm, more than 5mm for case diameter 40mm and larger.

## EMERGENCY ACTIONS

When the pressure relief vent is open and some gas blows out from the capacitor, please turn the main switch of the equipment off or pull out the plug from the power outlet immediately. During safety vent operation, extremely hot gas ( $>100^\circ\text{C}$ ) may blow out of the capacitors. Do not stand close to the capacitors. In case of eye contact, rinse the open eye(s) with clean water immediately. In case of ingestion, gargle with water immediately, do not swallow. Do not touch electrolyte but wash skin with soap and water in case of skin contact.

## DEFINITION OF ELECTRICAL PARAMETERS

Separate documents as application notes, equivalent circuit diagrams and so on are available on request.

## PACKAGING

Please refer to the data book for details. Further information is available on request.

## DISPOSAL

Scrapped capacitors are classified as scrapped metal. For disposal they are handled as controllable industrial waste because of the nature of the contents (electrolyte). Most of the material is aluminum and cannot be completely burned.

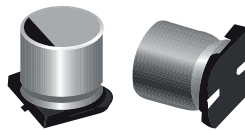
# GOOD TO KNOW:

Not in the mood for paper?

In that case, feel free to use the  
product search on our website!



<https://jianghai-europe.com/productsearch>



# ELECTROLYTIC CAPACITORS

*SMT Type*

SMT

## ■ OVERVIEW SMT 13

Portfolio: All SMT Type at a glance 14

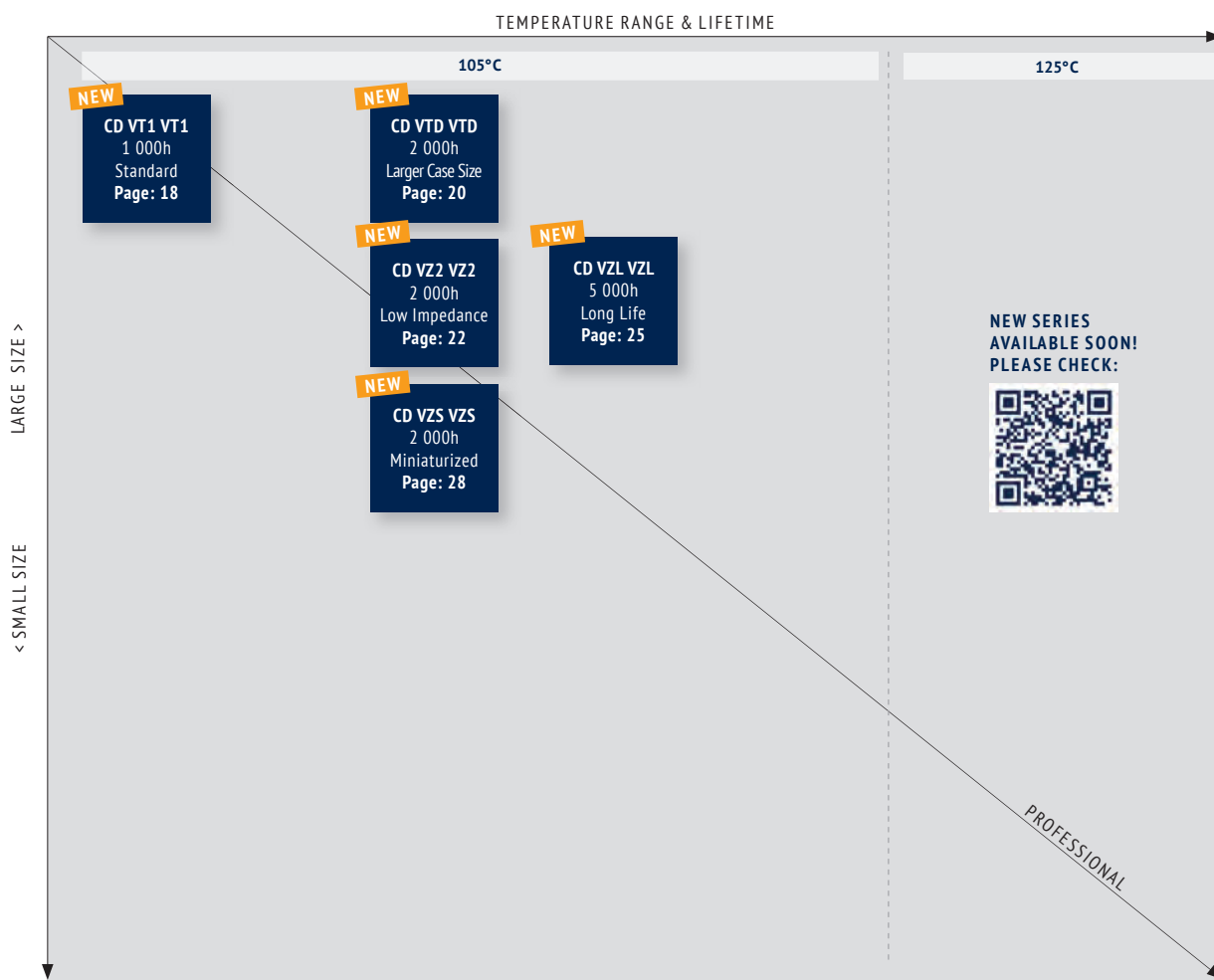
Order Code 15

Technical Specifications 16

| SERIES SMT        | CODE | TYPE | TEMPERATURE | VOLTAGE  | LIFETIME | INFO         |    |
|-------------------|------|------|-------------|----------|----------|--------------|----|
| CD VT1 <i>NEW</i> | VT1  | SMT  | 105°C       | 6,3-50V  | 1 000h   | Low ESR      | 18 |
| CD VTD <i>NEW</i> | VTD  | SMT  | 105°C       | 6,3-100V | 2 000h   | Low ESR      | 20 |
| CD VZ2 <i>NEW</i> | VZ2  | SMT  | 105°C       | 6,3-100V | 2 000h   | High Current | 22 |
| CD VZL <i>NEW</i> | VZL  | SMT  | 105°C       | 6,3-100V | 5 000h   | Long Life    | 25 |
| CD VZS <i>NEW</i> | VZS  | SMT  | 105°C       | 6,3-50V  | 2 000h   | Miniaturized | 28 |



**SMT**



SMT

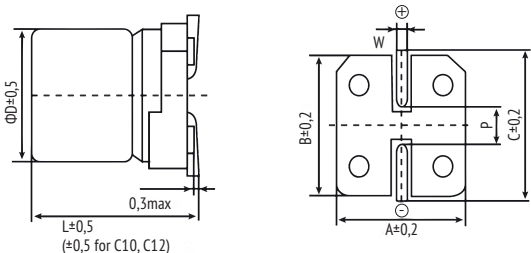


## ORDER CODE FOR SMT CAPACITORS

| EC                                   | V                |   | 1V                       |    | VT1            |     | 101                         |     | M                        |             | 0607                |           | V1        |    | X         |   | E3                     | JExxxxx                 |
|--------------------------------------|------------------|---|--------------------------|----|----------------|-----|-----------------------------|-----|--------------------------|-------------|---------------------|-----------|-----------|----|-----------|---|------------------------|-------------------------|
| Techno-<br>logy                      | Terminal<br>Type |   | Rated<br>Voltage<br>Code |    | Series<br>Code |     | Capa-<br>cittance Code (µF) |     | Capacitance<br>Tolerance |             | Size Code<br>(ΦDxL) |           | Lead Form |    | Pitch     |   | for<br>internal<br>use | for<br>Specials<br>only |
| EC<br>=<br>Electrolytic<br>Capacitor | SMT              | V | 6,3                      | 0J | CD VT1         | VT1 | 0,1                         | OR1 | ±20%                     | M           | 0405                | 4,0 x 5,4 | Standard  | V1 | Standard  | X |                        |                         |
|                                      |                  |   | 10                       | 1A | CD VZ2         | VZ2 | 0,22                        | R22 | ±10%                     | K           | 0506                | 5,0 x 6,0 |           |    | Vibration | G |                        |                         |
|                                      |                  |   | 16                       | 1C | CD VTD         | VTD | 0,47                        | R47 | +30/-10%                 | Q           | 0605                | 6,3 x 5,4 |           |    |           |   |                        |                         |
|                                      |                  |   | 25                       | 1E | CD VZL         | VZL | 1                           | 010 | preferred                | 0606        | 6,3 x 6,0           |           |           |    |           |   |                        |                         |
|                                      |                  |   | 35                       | 1V | CD VZS         | VZS | 2,2                         | 2R2 |                          | 0607        | 6,3 x 7,7           |           |           |    |           |   |                        |                         |
|                                      |                  |   | 50                       | 1H |                |     | 3,3                         | 3R3 |                          | 0806        | 8,0 x 6,2           |           |           |    |           |   |                        |                         |
|                                      |                  |   | 63                       | 1J |                |     | 4,7                         | 4R7 | 0810                     | 8,0 x 10,2  |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   | 80                       | 1K |                |     | 10                          | 100 | 1010                     | 10 x 10,2   |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   | 100                      | 2A |                |     | 22                          | 220 | 1012                     | 10 x 12,5   |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 33                          | 330 | 1213                     | 12,5 x 13,5 |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 47                          | 470 | 1216                     | 12,5 x 16,0 |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 68                          | 680 | 1616                     | 16,0 x 16,5 |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 82                          | 820 | 1621                     | 16,0 x 21,5 |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 100                         | 101 | 1816                     | 18,0 x 16,5 |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 120                         | 121 | 1821                     | 18,0 x 21,5 |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 150                         | 151 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 180                         | 181 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 220                         | 221 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 330                         | 331 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 470                         | 471 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 560                         | 561 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 680                         | 681 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 820                         | 821 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 1 000                       | 102 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 1 500                       | 152 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 2 200                       | 222 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 4 700                       | 472 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 5 600                       | 562 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 6 800                       | 682 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 10 000                      | 103 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 22 000                      | 223 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 33 000                      | 333 |                          |             |                     |           |           |    |           |   |                        |                         |
|                                      |                  |   |                          |    |                |     | 68 000                      | 683 |                          |             |                     |           |           |    |           |   |                        |                         |

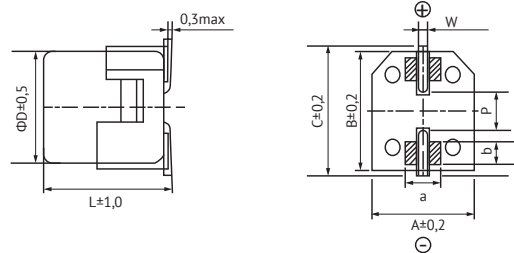
SMT

## DIMENSIONS FOR SMT TYPE STANDARD



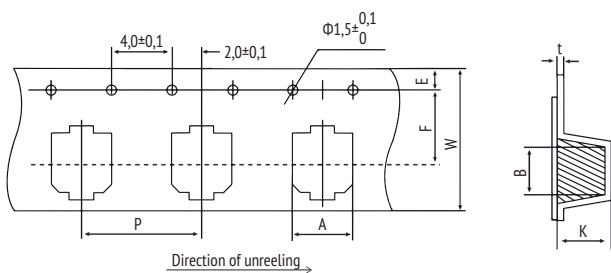
| Size Code | øD   | L    | A    | B    | C    | W       | P ± 0,2 |
|-----------|------|------|------|------|------|---------|---------|
| 0405      | 4,0  | 5,4  | 4,3  | 4,3  | 5,0  | 0,5-0,9 | 1,0     |
| 0505      | 5,0  | 5,4  | 5,3  | 5,3  | 6,0  | 0,5-0,9 | 1,3     |
| 0506      | 5,0  | 6,0  | 5,3  | 5,3  | 6,0  | 0,5-0,9 | 1,3     |
| 0605      | 6,3  | 5,4  | 6,6  | 6,6  | 7,2  | 0,5-0,9 | 2,2     |
| 0606      | 6,3  | 6,0  | 6,6  | 6,6  | 7,2  | 0,5-0,9 | 2,2     |
| 0607      | 6,3  | 7,7  | 6,6  | 6,6  | 7,2  | 0,5-0,9 | 2,2     |
| 0806      | 8,0  | 6,2  | 8,3  | 8,3  | 9,0  | 0,8-1,1 | 3,1     |
| 0810      | 8,0  | 10,2 | 8,3  | 8,3  | 9,0  | 0,8-1,1 | 3,1     |
| 1010      | 10,0 | 10,2 | 10,3 | 10,3 | 11,0 | 0,8-1,1 | 4,5     |
| 1012      | 10,0 | 12,5 | 10,3 | 10,3 | 11,0 | 0,8-1,1 | 4,5     |
| 1213      | 12,5 | 13,5 | 13,0 | 13,0 | 13,8 | 1,1-1,4 | 5,2     |
| 1216      | 12,5 | 16,5 | 13,0 | 13,0 | 13,8 | 1,1-1,4 | 5,2     |
| 1616      | 16,0 | 16,5 | 17,0 | 17,0 | 18,0 | 1,1-1,4 | 6,5     |
| 1621      | 16,0 | 21,5 | 17,0 | 17,0 | 18,0 | 1,1-1,4 | 6,5     |
| 1816      | 18,0 | 16,5 | 19,0 | 19,0 | 20,0 | 1,1-1,4 | 6,5     |
| 1821      | 18,0 | 21,5 | 19,0 | 19,0 | 20,0 | 1,1-1,4 | 6,5     |

## VIBRATION IMPROVED DESIGN



| Size Code | øD   | L    | A    | B    | C    | W       | P ± 0,2 | a   | b   |
|-----------|------|------|------|------|------|---------|---------|-----|-----|
| 0810      | 8,0  | 10,2 | 8,3  | 8,3  | 9,0  | 0,9-1,1 | 3,1     | 4,0 | 3,0 |
| 1010      | 10,0 | 10,2 | 10,3 | 10,3 | 11,0 | 0,9-1,1 | 4,5     | 4,4 | 3,2 |
| 1012      | 10,0 | 12,5 | 10,3 | 10,3 | 11,0 | 0,9-1,1 | 4,5     | 4,4 | 3,2 |
| 1213      | 12,5 | 13,5 | 13,0 | 13,0 | 14,3 | 1,1-1,4 | 5,2     | 4,4 | 3,2 |
| 1216      | 12,5 | 16,0 | 13,0 | 13,0 | 14,3 | 1,1-1,4 | 5,2     | 4,4 | 3,2 |
| 1616      | 16,0 | 16,5 | 17,0 | 17,0 | 18,0 | 1,1-1,4 | 6,5     | 4,4 | 3,2 |
| 1620      | 16,0 | 20,0 | 17,0 | 17,0 | 18,0 | 1,1-1,4 | 6,5     | 4,4 | 3,2 |
| 1621      | 16,0 | 21,5 | 17,0 | 17,0 | 18,0 | 1,1-1,4 | 6,5     | 4,4 | 3,2 |
| 1821      | 18,0 | 21,5 | 19,0 | 19,0 | 20,0 | 1,1-1,4 | 6,5     | 4,4 | 3,2 |

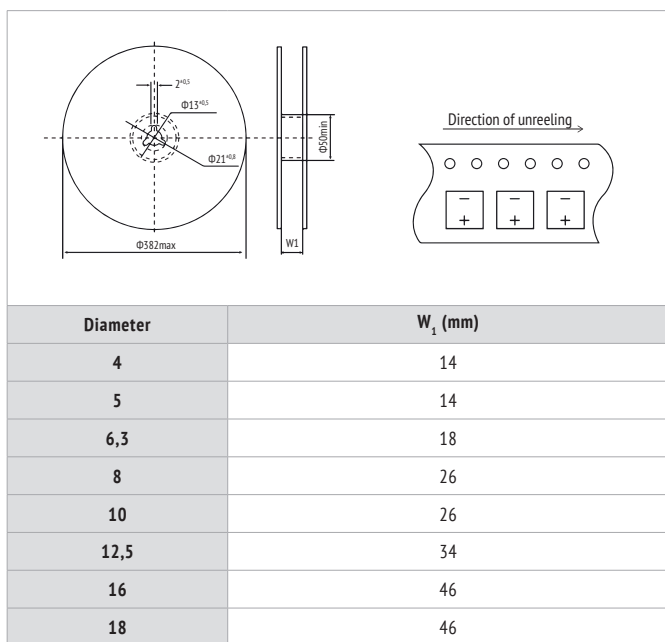
## DIMENSIONS FOR TAPING



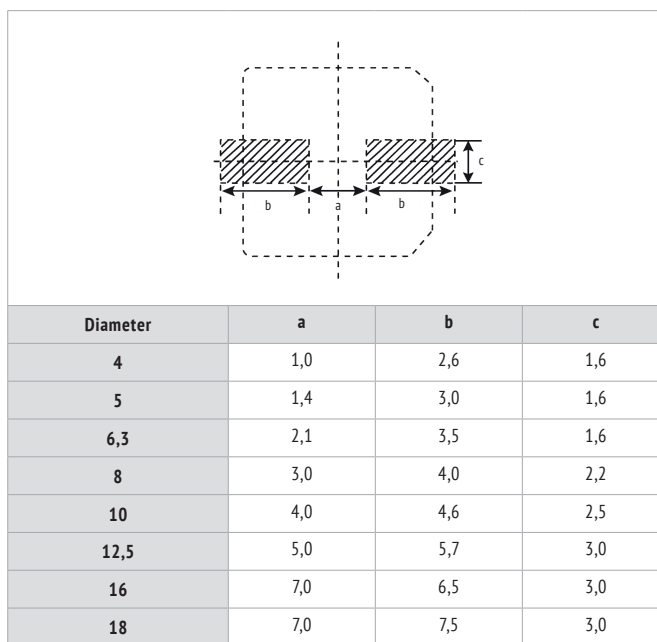
E = 1,75 ± 0,1 mm; t = 0,4 ± 0,1 mm

| Size Code | A<br>±0,2 | B<br>±0,2 | W<br>±0,3 | F<br>±0,1 | P<br>±0,1 | K<br>±0,2 |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 0405      | 4,7       | 4,7       | 12,0      | 5,5       | 8         | 5,8       |
| 0505      | 6,0       | 6,0       | 12,0      | 5,5       | 12,0      | 5,8       |
| 0506      | 6,0       | 6,0       | 12,0      | 5,5       | 12,0      | 5,8       |
| 0605      | 7,0       | 7,0       | 16,0      | 7,5       | 12,0      | 5,8       |
| 0606      | 7,0       | 7,0       | 16,0      | 7,5       | 12,0      | 8,0       |
| 0607      | 7,0       | 7,0       | 16,0      | 7,5       | 12,0      | 8,0       |
| 0806      | 8,7       | 8,7       | 16,0      | 7,5       | 12,0      | 8,8       |
| 0810      | 8,7       | 8,7       | 24,0      | 11,5      | 16,0      | 11,0      |
| 1010      | 10,7      | 10,7      | 24,0      | 11,5      | 16,0      | 11,0      |
| 1012      | 10,7      | 10,7      | 24,0      | 11,5      | 16,0      | 13,0      |
| 1213      | 13,4      | 13,4      | 32,0      | 14,2      | 24,0      | 14,5      |
| 1216      | 13,4      | 13,4      | 32,0      | 14,2      | 24,0      | 17,0      |
| 1616      | 14,5      | 14,5      | 44,0      | 20,2      | 28,0      | 17,0      |
| 1621      | 17,5      | 17,5      | 44,0      | 20,2      | 28,0      | 22,4      |
| 1816      | 19,5      | 19,5      | 44,0      | 20,2      | 32,0      | 17,0      |
| 1821      | 19,5      | 19,5      | 44,0      | 20,2      | 32,0      | 22,4      |

## REEL DIMENSIONS

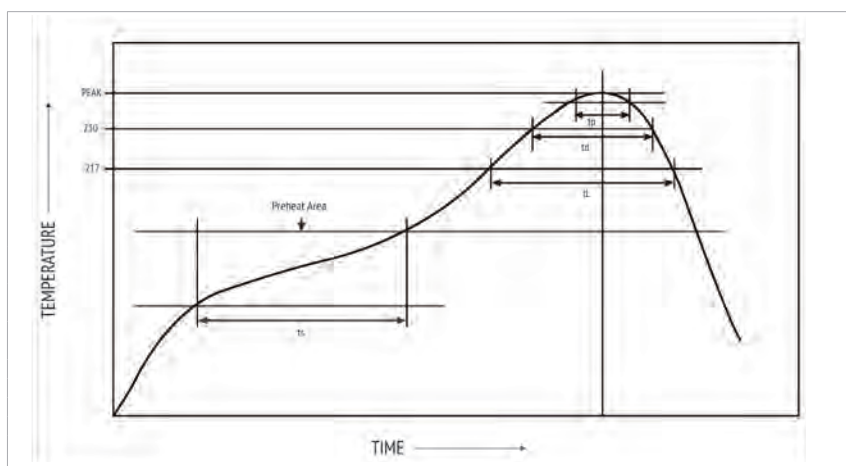


## RECOMMENDED SOLDERING PAD DIMENSIONS



in mm

## RECOMMENDED SOLDERING PROFILE SMT



Only 1 reflow soldering cycle allowed. All temperatures are measured on the topside of the Al-can.

| Product Diameter (mm) | Preheat (t <sub>s</sub> )             | Time maintained above 217°C (t <sub>d</sub> ) | Time maintained above 230°C (t <sub>d</sub> ) | Peak (t <sub>p</sub> )             | Number Soldering |
|-----------------------|---------------------------------------|-----------------------------------------------|-----------------------------------------------|------------------------------------|------------------|
| ≤6,3                  | 150~180°C<br>t <sub>s</sub> = 60~120s | t <sub>d</sub> < 90s                          | t <sub>d</sub> < 40s                          | 260°C max.<br>t <sub>p</sub> < 10s | max. 1x          |
| ≥8                    | 150~180°C<br>t <sub>s</sub> = 60~120s | t <sub>d</sub> < 90s                          | t <sub>d</sub> < 40s                          | 260°C max.<br>t <sub>p</sub> < 10s | max. 1x          |
|                       | 150~180°C<br>t <sub>s</sub> = 60~120s | t <sub>d</sub> < 90s                          | t <sub>d</sub> < 40s                          | 245°C max.<br>t <sub>p</sub> < 10s | max. 2x          |

**1 000h  
at 105°C**

- SMT
- Low ESR
- High Vibration (optional)

**NEW****CD VT1 VT1**  
1 000h, 105°C  
StandardLonger Life  
Larger Case**CD VZS VZS**  
2 000h, 105°C  
Miniaturized

↑ smaller

**CD VTD VTD**  
2 000h, 105°C  
Larger Case Sizes

Higher Current

**CD VZ2 VZ2**  
2 000h, 105°C  
Low Impedance

↓ Longer Life

**CD VZL VZL**  
5 000h, 105°C  
Long Life**ITEM CHARACTERISTICS STABILITY AT LOW TEMPERATURE (IMPEDANCE RATIO AT 120HZ)**

|                                     |                           |
|-------------------------------------|---------------------------|
| Operating Temperature Range (°C)    | -55 ~ +105                |
| Voltage Range (V)                   | 6,3 ~ 50                  |
| Capacitance Range (μF)              | 1 ~ 47                    |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%                     |
| Dissipation Factor                  | at 20°C, 120Hz, see table |
| Leakage Current (μA)                | at 20°C after 2 minutes   |

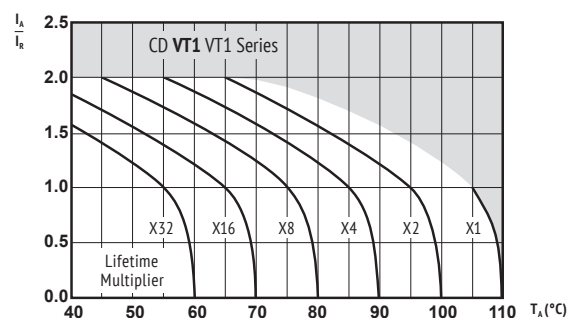
| Rated Voltage            | 6,3 | 10 | 16 | 25 | 35 | 50 | 63 |
|--------------------------|-----|----|----|----|----|----|----|
| Z <sub>-25°C/+20°C</sub> | 4   | 3  | 2  | 2  | 2  | 2  | 2  |
| Z <sub>-40°C/+20°C</sub> | 8   | 6  | 4  | 4  | 3  | 3  | 3  |
| Z <sub>-55°C/+20°C</sub> | 12  | 8  | 6  | 4  | 3  | 3  | 3  |

| ITEM               | LOAD LIFETIME<br>L <sub>0</sub>                                                   | SHELF LIFE                                                                            | RESISTANCE<br>TO SOLDERING HEAT<br>SMT       |
|--------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------|
| Lifetime           | 1 000h                                                                            | 1 000h                                                                                | 30sec, Hot Plate                             |
| Leakage Current    | ≤ the specified value                                                             | ≤200% the specified value                                                             | ≤ the specified value                        |
| Capacitance Change | Within ± 25% of initial value                                                     | Within ± 20% of initial value                                                         | Within ± 10% of initial value                |
| Dissipation Factor | ≤ 200% of specified value                                                         | ≤ 200% of specified value                                                             | ≤ specified value                            |
| Condition          | 105°C<br>U <sub>R</sub><br>I <sub>R</sub> = 0<br>Before measurement: 16h resuming | 105°C<br>U <sub>R</sub> = 0<br>I <sub>R</sub> = 0<br>Before measurement: 16h resuming | 250°C<br>Before measurement: Restore to 25°C |

**MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)**

| Frequency<br>Rated Voltage | 50Hz | 120Hz | 1kHz | ≥10kHz |
|----------------------------|------|-------|------|--------|
| 6,3~16V                    | 0,8  | 1     | 1,15 | 1,25   |
| 25~35V                     | 0,8  | 1     | 1,25 | 1,40   |
| 50~63V                     | 0,8  | 1     | 1,35 | 1,50   |

Multipliers for typical operating conditions.

**ENVIRONMENTAL**The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)**MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)** $I_A$  = actual ripple current at 120Hz, $I_R$  = rated ripple current at 120Hz, 105°C

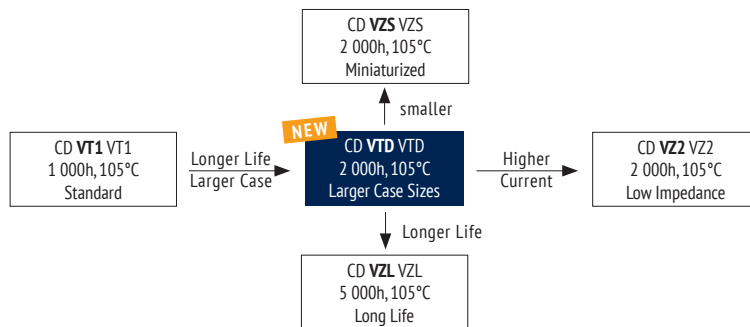
Multiplier of Useful Life as a function of ambient temperature &amp; ripple current load



| U <sub>RDC</sub><br>Rated Voltage<br>(Surge Voltage)<br>Code<br><br>(V) | C <sub>R</sub><br>Rated Capacitance<br><br>20°C<br><br>(µF) | ESR <sub>max</sub><br>Equivalent Series Resistance<br><br>20°C<br>120Hz<br><br>(Ω) | tanδ<br>Dissipation Factor<br><br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current<br><br>20°C<br>2min<br><br>(µA) | I <sub>max, 105°C</sub><br>Rated Ripple Current<br><br>105°C<br>120Hz<br><br>(mA <sub>RMS</sub> ) | Size<br><br>øD x L<br><br>(mm) | ORDER CODE<br><br><br>Details: Page 15 |                       |
|-------------------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------------|-----------------------|
| 6,3<br>(7,3)<br>0J                                                      | 22                                                          | 15,7                                                                               | 0,26                                            | 3,0                                                                  | 20                                                                                                | 4 x 5,4                        | ECV0JVT1220M0405V1XE3                  |                       |
|                                                                         | 33                                                          | 10,5                                                                               | 0,26                                            | 3,0                                                                  | 27                                                                                                | 5 x 5,4                        | ECV0JVT1330M0505V1XE3                  |                       |
|                                                                         |                                                             | 10,5                                                                               | 0,26                                            | 3,0                                                                  | 22                                                                                                | 4 x 5,4                        | ECV0JVT1330M0405V1XE3                  |                       |
|                                                                         |                                                             | 7,4                                                                                | 0,26                                            | 3,0                                                                  | 37                                                                                                | 5 x 5,4                        | ECV0JVT1470M0505V1XE3                  |                       |
|                                                                         | 47                                                          | 7,4                                                                                | 0,26                                            | 3,0                                                                  | 25                                                                                                | 4 x 5,4                        | ECV0JVT1470M0405V1XE3                  |                       |
| 10<br>(11,5)<br>1A                                                      | 22                                                          | 12,1                                                                               | 0,20                                            | 3,0                                                                  | 27                                                                                                | 5 x 5,4                        | ECV1AVT1220M0505V1XE3                  |                       |
|                                                                         |                                                             | 12,1                                                                               | 0,20                                            | 3,0                                                                  | 21                                                                                                | 4 x 5,4                        | ECV1AVT1220M0405V1XE3                  |                       |
|                                                                         | 33                                                          | 8,1                                                                                | 0,20                                            | 3,3                                                                  | 34                                                                                                | 5 x 5,4                        | ECV1AVT1330M0505V1XE3                  |                       |
|                                                                         |                                                             | 8,1                                                                                | 0,20                                            | 3,3                                                                  | 23                                                                                                | 4 x 5,4                        | ECV1AVT1330M0405V1XE3                  |                       |
|                                                                         | 47                                                          | 5,7                                                                                | 0,20                                            | 4,7                                                                  | 41                                                                                                | 6,3 x 5,4                      | ECV1AVT1470M0605V1XE3                  |                       |
|                                                                         |                                                             | 5,7                                                                                | 0,20                                            | 4,7                                                                  | 30                                                                                                | 5 x 5,4                        | ECV1AVT1470M0505V1XE3                  |                       |
|                                                                         | 16<br>(18,4)<br>1C                                          | 4,7                                                                                | 45,2                                            | 0,16                                                                 | 3,0                                                                                               | 12                             | 4 x 5,4                                | ECV1CVT14R7M0405V1XE3 |
| 10                                                                      |                                                             | 21,3                                                                               | 0,16                                            | 3,0                                                                  | 20                                                                                                | 4 x 5,4                        | ECV1CVT1100M0405V1XE3                  |                       |
| 22                                                                      |                                                             | 9,7                                                                                | 0,16                                            | 3,6                                                                  | 31                                                                                                | 5 x 5,4                        | ECV1CVT1220M0505V1XE3                  |                       |
|                                                                         |                                                             | 9,7                                                                                | 0,16                                            | 3,6                                                                  | 22                                                                                                | 4 x 5,4                        | ECV1CVT1220M0405V1XE3                  |                       |
| 33                                                                      |                                                             | 6,5                                                                                | 0,16                                            | 5,3                                                                  | 40                                                                                                | 6,3 x 5,4                      | ECV1CVT1330M0605V1XE3                  |                       |
|                                                                         |                                                             | 6,5                                                                                | 0,16                                            | 5,3                                                                  | 28                                                                                                | 5 x 5,4                        | ECV1CVT1330M0505V1XE3                  |                       |
| 47                                                                      |                                                             | 4,6                                                                                | 0,16                                            | 7,6                                                                  | 56                                                                                                | 6,3 x 5,4                      | ECV1CVT1470M0605V1XE3                  |                       |
|                                                                         |                                                             | 4,6                                                                                | 0,16                                            | 7,6                                                                  | 31                                                                                                | 5 x 5,4                        | ECV1CVT1470M0505V1XE3                  |                       |
| 25<br>(29)<br>1E                                                        |                                                             | 4,7                                                                                | 39,6                                            | 0,14                                                                 | 3,0                                                                                               | 13                             | 4 x 5,4                                | ECV1EVT14R7M0405V1XE3 |
|                                                                         |                                                             | 10                                                                                 | 18,6                                            | 0,14                                                                 | 3,0                                                                                               | 20                             | 5 x 5,4                                | ECV1EVT1100M0505V1XE3 |
|                                                                         | 18,6                                                        |                                                                                    | 0,14                                            | 3,0                                                                  | 14                                                                                                | 4 x 5,4                        | ECV1EVT1100M0405V1XE3                  |                       |
|                                                                         | 22                                                          | 8,5                                                                                | 0,14                                            | 5,5                                                                  | 36                                                                                                | 6,3 x 5,4                      | ECV1EVT1220M0605V1XE3                  |                       |
|                                                                         |                                                             | 8,5                                                                                | 0,14                                            | 5,5                                                                  | 25                                                                                                | 5 x 5,4                        | ECV1EVT1220M0505V1XE3                  |                       |
|                                                                         | 33                                                          | 5,7                                                                                | 0,14                                            | 8,3                                                                  | 44                                                                                                | 6,3 x 5,4                      | ECV1EVT1330M0605V1XE3                  |                       |
|                                                                         |                                                             | 5,7                                                                                | 0,14                                            | 8,3                                                                  | 29                                                                                                | 5 x 5,4                        | ECV1EVT1330M0505V1XE3                  |                       |
|                                                                         | 47                                                          | 4,0                                                                                | 0,14                                            | 11,8                                                                 | 48                                                                                                | 6,3 x 5,4                      | ECV1EVT1470M0605V1XE3                  |                       |
|                                                                         | 68                                                          | 2,8                                                                                | 0,14                                            | 17,0                                                                 | 58                                                                                                | 6,3 x 5,4                      | ECV1EVT1680M0605V1XE3                  |                       |
|                                                                         | 35<br>(40)<br>1V                                            | 3,3                                                                                | 48,3                                            | 0,12                                                                 | 3,0                                                                                               | 13                             | 4 x 5,4                                | ECV1VVT13R3M0405V1XE3 |
| 4,7                                                                     |                                                             | 33,9                                                                               | 0,12                                            | 3,0                                                                  | 14                                                                                                | 4 x 5,4                        | ECV1VVT14R7M0405V1XE3                  |                       |
| 10                                                                      |                                                             | 16,0                                                                               | 0,12                                            | 3,5                                                                  | 24                                                                                                | 5 x 5,4                        | ECV1VVT1100M0505V1XE3                  |                       |
| 22                                                                      |                                                             | 7,3                                                                                | 0,12                                            | 7,7                                                                  | 40                                                                                                | 6,3 x 5,4                      | ECV1VVT1220M0605V1XE3                  |                       |
|                                                                         |                                                             | 7,3                                                                                | 0,12                                            | 7,7                                                                  | 27                                                                                                | 5 x 5,4                        | ECV1VVT1220M0505V1XE3                  |                       |
| 33                                                                      |                                                             | 4,9                                                                                | 0,12                                            | 11,6                                                                 | 50                                                                                                | 6,3 x 5,4                      | ECV1VVT1330M0605V1XE3                  |                       |
| 47                                                                      |                                                             | 3,4                                                                                | 0,12                                            | 16,5                                                                 | 65                                                                                                | 6,3 x 5,4                      | ECV1VVT1470M0605V1XE3                  |                       |
| 50<br>(58)<br>1H                                                        | 1,0                                                         | 159,2                                                                              | 0,12                                            | 3,0                                                                  | 8                                                                                                 | 4 x 5,4                        | ECV1HVT1010M0405V1XE3                  |                       |
|                                                                         | 2,2                                                         | 72,4                                                                               | 0,12                                            | 3,0                                                                  | 11                                                                                                | 4 x 5,4                        | ECV1HVT12R2M0405V1XE3                  |                       |
|                                                                         | 3,3                                                         | 48,3                                                                               | 0,12                                            | 3,0                                                                  | 13                                                                                                | 4 x 5,4                        | ECV1HVT13R3M0405V1XE3                  |                       |
|                                                                         | 4,7                                                         | 33,9                                                                               | 0,12                                            | 3,0                                                                  | 18                                                                                                | 5 x 5,4                        | ECV1HVT14R7M0505V1XE3                  |                       |
|                                                                         |                                                             | 33,9                                                                               | 0,12                                            | 3,0                                                                  | 16                                                                                                | 4 x 5,4                        | ECV1HVT14R7M0405V1XE3                  |                       |
|                                                                         | 10                                                          | 16,0                                                                               | 0,12                                            | 5,0                                                                  | 28                                                                                                | 6,3 x 5,4                      | ECV1HVT1100M0605V1XE3                  |                       |
|                                                                         | 22                                                          | 7,3                                                                                | 0,12                                            | 11,0                                                                 | 42                                                                                                | 6,3 x 5,4                      | ECV1HVT1220M0605V1XE3                  |                       |

**2 000h  
at 105°C**

- SMT
- Low ESR
- High Vibration (optional)



## ITEM CHARACTERISTICS STABILITY AT LOW TEMPERATURE (IMPEDANCE RATIO AT 120HZ)

|                                     |                           |
|-------------------------------------|---------------------------|
| Operating Temperature Range (°C)    | -55 ~ +105                |
| Voltage Range (V)                   | 6,3 ~ 100                 |
| Capacitance Range (μF)              | 4,7 ~ 1 500               |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%                     |
| Dissipation Factor                  | at 20°C, 120Hz, see table |
| Leakage Current (μA)                | at 20°C after 2 minutes   |

| Rated Voltage            | 6,3 | 10 | 16 | 25 | 35 | 50 | 63 |
|--------------------------|-----|----|----|----|----|----|----|
| Z <sub>-25°C/+20°C</sub> | 4   | 3  | 2  | 2  | 2  | 2  | 2  |
| Z <sub>-40°C/+20°C</sub> | 8   | 6  | 4  | 4  | 3  | 3  | 3  |
| Z <sub>-55°C/+20°C</sub> | 12  | 8  | 6  | 4  | 3  | 3  | 3  |

| ITEM               | LOAD LIFETIME<br>L <sub>0</sub>                                                       | SHELF LIFE                                                                            | RESISTANCE<br>TO SOLDERING HEAT<br>SMT       |
|--------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------|
| Lifetime           | 2 000h                                                                                | 1 000h                                                                                | 30sec, Hot Plate                             |
| Leakage Current    | ≤ the specified value                                                                 | ≤200% the specified value                                                             | ≤ the specified value                        |
| Capacitance Change | Within ± 25% of initial value                                                         | Within ± 20% of initial value                                                         | Within ± 10% of initial value                |
| Dissipation Factor | ≤ 200% of specified value                                                             | ≤ 200% of specified value                                                             | ≤ specified value                            |
| Condition          | 105°C<br>U <sub>R</sub> = 0<br>I <sub>R</sub> = 0<br>Before measurement: 16h resuming | 105°C<br>U <sub>R</sub> = 0<br>I <sub>R</sub> = 0<br>Before measurement: 16h resuming | 250°C<br>Before measurement: Restore to 25°C |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

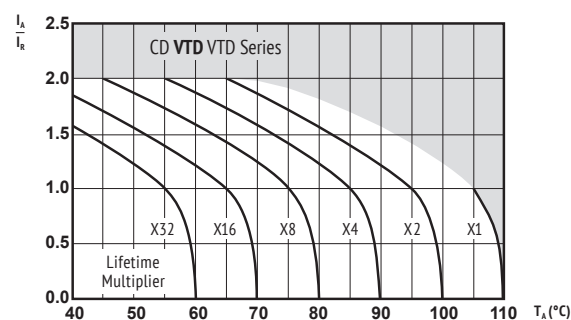
| Frequency<br>Rated Voltage | 50Hz | 120Hz | 1kHz | ≥10kHz |
|----------------------------|------|-------|------|--------|
| 6,3~16V                    | 0,8  | 1     | 1,15 | 1,25   |
| 25~35V                     | 0,8  | 1     | 1,25 | 1,40   |
| 50~63V                     | 0,8  | 1     | 1,35 | 1,50   |
| 100                        | 0,7  | 1     | 1,35 | 1,50   |

Multipliers for typical operating conditions.

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



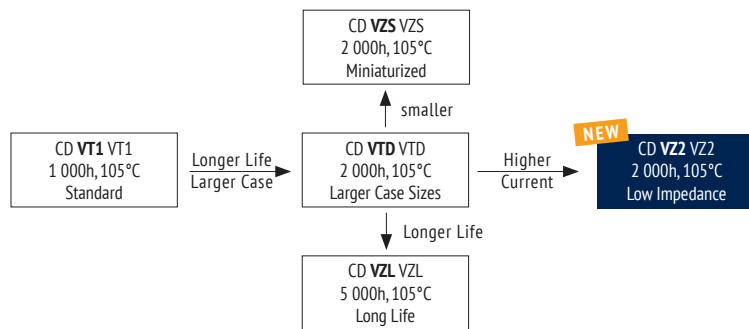
$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 105°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load



| U <sub>RDC</sub><br>Rated Voltage<br>(Surge Voltage)<br>Code<br><br>(V) | C <sub>R</sub><br>Rated Capacitance<br>20°C<br><br>(µF) | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz<br><br>(Ω) | tanδ<br>Dissipation Factor<br>20°C<br>120Hz<br><br>(µA) | I <sub>leak</sub><br>Leakage Current<br>20°C<br>2min<br><br>(µA) | I <sub>R</sub><br>Max. Allowed Ripple Current<br>105°C<br>120Hz<br><br>(mA) | Size<br><br>øD x L<br><br>(mm) | ORDER CODE<br><br>▲ = Vibration Type<br><br><br>Details: Page 15 |
|-------------------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------|------------------------------------------------------------------|
| 6,3<br>(7,3)<br>0J                                                      | 220                                                     | 2,2                                                                            | 0,35                                                    | 14                                                               | 135                                                                         | 6,3 x 7,7                      | ECV0JVTD221M0607V1XE3                                            |
|                                                                         |                                                         | 1,5                                                                            | 0,35                                                    | 21                                                               | 163                                                                         | 6,3 x 7,7                      | ECV0JVTD331M0607V1XE3                                            |
|                                                                         |                                                         | 1,5                                                                            | 0,35                                                    | 21                                                               | 181                                                                         | 8 x 6,2                        | ECV0JVTD331M0806V1▲E3                                            |
|                                                                         | 470                                                     | 1,0                                                                            | 0,35                                                    | 30                                                               | 320                                                                         | 8 x 10,2                       | ECV0JVTD471M0810V1▲E3                                            |
|                                                                         |                                                         | 0,5                                                                            | 0,35                                                    | 63                                                               | 495                                                                         | 10 x 10,2                      | ECV0JVTD102M1010V1▲E3                                            |
|                                                                         |                                                         | 0,5                                                                            | 0,35                                                    | 63                                                               | 370                                                                         | 8 x 10,2                       | ECV0JVTD102M0810V1▲E3                                            |
|                                                                         |                                                         | 0,4                                                                            | 0,37                                                    | 95                                                               | 550                                                                         | 10 x 10,2                      | ECV0JVTD152M1010V1▲E3                                            |
| 10<br>(11,5)<br>1A                                                      | 220                                                     | 1,7                                                                            | 0,28                                                    | 22                                                               | 156                                                                         | 6,3 x 7,7                      | ECV1AVTD221M0607V1XE3                                            |
|                                                                         |                                                         | 1,7                                                                            | 0,28                                                    | 22                                                               | 173                                                                         | 8 x 6,2                        | ECV1AVTD221M0806V1▲E3                                            |
|                                                                         | 330                                                     | 1,2                                                                            | 0,28                                                    | 33                                                               | 296                                                                         | 8 x 10,2                       | ECV1AVTD331M0810V1▲E3                                            |
|                                                                         |                                                         | 0,8                                                                            | 0,28                                                    | 47                                                               | 326                                                                         | 8 x 10,2                       | ECV1AVTD471M0810V1▲E3                                            |
|                                                                         | 1 000                                                   | 0,4                                                                            | 0,28                                                    | 100                                                              | 500                                                                         | 10 x 10,2                      | ECV1AVTD102M1010V1▲E3                                            |
|                                                                         |                                                         |                                                                                |                                                         |                                                                  |                                                                             |                                |                                                                  |
| 16<br>(18,4)<br>1C                                                      | 220                                                     | 1,1                                                                            | 0,18                                                    | 36                                                               | 157                                                                         | 6,3 x 7,7                      | ECV1CVTD221M0607V1XE3                                            |
|                                                                         |                                                         | 1,1                                                                            | 0,18                                                    | 36                                                               | 183                                                                         | 8 x 6,2                        | ECV1CVTD221M0806V1▲E3                                            |
|                                                                         | 330                                                     | 0,8                                                                            | 0,18                                                    | 53                                                               | 291                                                                         | 8 x 10,2                       | ECV1CVTD331M0810V1▲E3                                            |
|                                                                         |                                                         | 0,6                                                                            | 0,18                                                    | 76                                                               | 348                                                                         | 8 x 10,2                       | ECV1CVTD471M0810V1▲E3                                            |
|                                                                         | 1 000                                                   | 0,3                                                                            | 0,18                                                    | 160                                                              | 540                                                                         | 10 x 10,2                      | ECV1CVTD102M1010V1▲E3                                            |
| 25<br>(29)<br>1E                                                        | 100                                                     | 2,2                                                                            | 0,16                                                    | 25                                                               | 132                                                                         | 6,3 x 7,7                      | ECV1EVTD101M0607V1XE3                                            |
|                                                                         |                                                         | 2,2                                                                            | 0,16                                                    | 25                                                               | 146                                                                         | 8 x 6,2                        | ECV1EVTD101M0806V1▲E3                                            |
|                                                                         | 220                                                     | 1,0                                                                            | 0,16                                                    | 55                                                               | 320                                                                         | 8 x 10,2                       | ECV1EVTD221M0810V1▲E3                                            |
|                                                                         |                                                         | 0,7                                                                            | 0,16                                                    | 83                                                               | 320                                                                         | 8 x 10,2                       | ECV1EVTD331M0810V1▲E3                                            |
|                                                                         | 470                                                     | 0,5                                                                            | 0,16                                                    | 118                                                              | 490                                                                         | 10 x 10,2                      | ECV1EVTD471M1010V1▲E3                                            |
| 35<br>(40)<br>1V                                                        | 47                                                      | 4,0                                                                            | 0,14                                                    | 17                                                               | 85                                                                          | 6,3 x 7,7                      | ECV1VVTD470M0607V1XE3                                            |
|                                                                         |                                                         | 1,9                                                                            | 0,14                                                    | 35                                                               | 142                                                                         | 6,3 x 7,7                      | ECV1VVTD101M0607V1XE3                                            |
|                                                                         | 100                                                     | 1,9                                                                            | 0,14                                                    | 35                                                               | 283                                                                         | 8 x 10,2                       | ECV1VVTD101M0810V1▲E3                                            |
|                                                                         |                                                         | 1,3                                                                            | 0,14                                                    | 53                                                               | 293                                                                         | 8 x 10,2                       | ECV1VVTD151M0810V1▲E3                                            |
|                                                                         | 220                                                     | 0,9                                                                            | 0,14                                                    | 77                                                               | 450                                                                         | 10 x 10,2                      | ECV1VVTD221M1010V1▲E3                                            |
|                                                                         |                                                         | 0,9                                                                            | 0,14                                                    | 77                                                               | 302                                                                         | 8 x 10,2                       | ECV1VVTD221M0810V1▲E3                                            |
|                                                                         | 330                                                     | 0,6                                                                            | 0,14                                                    | 116                                                              | 450                                                                         | 10 x 10,2                      | ECV1VVTD331M1010V1▲E3                                            |
|                                                                         |                                                         | 0,4                                                                            | 0,14                                                    | 165                                                              | 460                                                                         | 10 x 10,2                      | ECV1VVTD471M1010V1▲E3                                            |
|                                                                         | 470                                                     | 0,4                                                                            | 0,14                                                    | 165                                                              | 500                                                                         | 10 x 12,5                      | ECV1VVTD471M1012V1▲E3                                            |
|                                                                         |                                                         |                                                                                |                                                         |                                                                  |                                                                             |                                |                                                                  |
| 50<br>(58)<br>1H                                                        | 33                                                      | 4,9                                                                            | 0,12                                                    | 17                                                               | 82                                                                          | 6,3 x 7,7                      | ECV1HVTD330M0607V1XE3                                            |
|                                                                         |                                                         | 3,4                                                                            | 0,12                                                    | 24                                                               | 108                                                                         | 8 x 6,2                        | ECV1HVTD470M0806V1▲E3                                            |
|                                                                         | 47                                                      | 3,4                                                                            | 0,12                                                    | 24                                                               | 97                                                                          | 6,3 x 7,7                      | ECV1HVTD470M0607V1XE3                                            |
|                                                                         |                                                         | 1,6                                                                            | 0,12                                                    | 50                                                               | 262                                                                         | 10 x 10,2                      | ECV1HVTD101M1010V1▲E3                                            |
|                                                                         | 100                                                     | 1,6                                                                            | 0,12                                                    | 50                                                               | 230                                                                         | 8 x 10,2                       | ECV1HVTD101M0810V1▲E3                                            |
|                                                                         |                                                         | 0,8                                                                            | 0,12                                                    | 110                                                              | 375                                                                         | 10 x 10,2                      | ECV1HVTD221M1010V1▲E3                                            |
| 63<br>(73)<br>1J                                                        | 10                                                      | 16,0                                                                           | 0,12                                                    | 7                                                                | 49                                                                          | 6,3 x 7,7                      | ECV1JVTD100M0607V1XE3                                            |
|                                                                         | 22                                                      | 7,3                                                                            | 0,12                                                    | 14                                                               | 58                                                                          | 6,3 x 7,7                      | ECV1JVTD220M0607V1XE3                                            |
|                                                                         | 33                                                      | 4,9                                                                            | 0,12                                                    | 21                                                               | 140                                                                         | 8 x 10,2                       | ECV1JVTD330M0810V1▲E3                                            |
|                                                                         | 47                                                      | 3,4                                                                            | 0,12                                                    | 30                                                               | 170                                                                         | 8 x 10,2                       | ECV1JVTD470M0810V1▲E3                                            |
|                                                                         | 100                                                     | 1,6                                                                            | 0,12                                                    | 63                                                               | 310                                                                         | 10 x 10,2                      | ECV1JVTD101M1010V1▲E3                                            |
| 100<br>(115)<br>2A                                                      | 4,7                                                     | 28,3                                                                           | 0,10                                                    | 5                                                                | 35                                                                          | 6,3 x 7,7                      | ECV2AVTD47M0607V1XE3                                             |
|                                                                         |                                                         | 13,3                                                                           | 0,10                                                    | 10                                                               | 77                                                                          | 8 x 10,2                       | ECV2AVTD100M0810V1▲E3                                            |
|                                                                         | 10                                                      | 13,3                                                                           | 0,10                                                    | 10                                                               | 35                                                                          | 6,3 x 7,7                      | ECV2AVTD100M0607V1XE3                                            |
|                                                                         |                                                         | 6,1                                                                            | 0,10                                                    | 22                                                               | 100                                                                         | 8 x 10,2                       | ECV2AVTD220M0810V1▲E3                                            |
|                                                                         | 33                                                      | 4,1                                                                            | 0,10                                                    | 33                                                               | 150                                                                         | 10 x 10,2                      | ECV2AVTD330M1010V1▲E3                                            |
|                                                                         | 47                                                      | 2,9                                                                            | 0,10                                                    | 47                                                               | 150                                                                         | 10 x 10,2                      | ECV2AVTD470M1010V1▲E3                                            |

**2 000h  
at 105°C**

- SMT
- Low ESR
- High Vibration (optional)
- High Current

**ITEM CHARACTERISTICS STABILITY AT LOW TEMPERATURE (IMPEDANCE RATIO AT 120HZ)**

|                                     |                           |
|-------------------------------------|---------------------------|
| Operating Temperature Range (°C)    | -55 ~ +105                |
| Voltage Range (V)                   | 6,3 ~ 100                 |
| Capacitance Range (μF)              | 1 ~ 1 000                 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%                     |
| Dissipation Factor                  | at 20°C, 120Hz, see table |
| Leakage Current (μA)                | at 20°C after 2 minutes   |

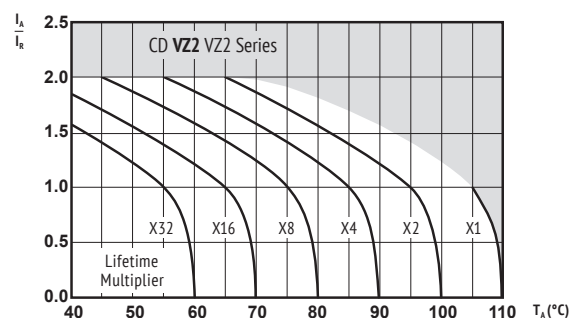
| Rated Voltage            | 6,3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |
|--------------------------|-----|----|----|----|----|----|----|----|-----|
| Z <sub>-25°C/+20°C</sub> | 4   | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2   |
| Z <sub>-40°C/+20°C</sub> | 6   | 4  | 3  | 3  | 3  | 3  | 3  | 3  | 3   |
| Z <sub>-55°C/+20°C</sub> | 8   | 5  | 4  | 3  | 3  | 3  | 3  | 3  | 3   |

| ITEM               | LOAD LIFETIME<br>L <sub>0</sub>                                                   | SHELF LIFE                                                                            | RESISTANCE<br>TO SOLDERING HEAT<br>SMT       |
|--------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------|
| Lifetime           | 2 000h                                                                            | 1 000h                                                                                | 30sec, Hot Plate                             |
| Leakage Current    | ≤ the specified value                                                             | ≤200% the specified value                                                             | ≤ the specified value                        |
| Capacitance Change | Within ± 25% of initial value                                                     | Within ± 20% of initial value                                                         | Within ± 10% of initial value                |
| Dissipation Factor | ≤ 200% of specified value                                                         | ≤ 200% of specified value                                                             | ≤ specified value                            |
| Condition          | 105°C<br>U <sub>R</sub><br>I <sub>R</sub> = 0<br>Before measurement: 16h resuming | 105°C<br>U <sub>R</sub> = 0<br>I <sub>R</sub> = 0<br>Before measurement: 16h resuming | 250°C<br>Before measurement: Restore to 25°C |

**MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)**

| μF \ Frequency | 120Hz | 1kHz | 10kHz | ≥100kHz |
|----------------|-------|------|-------|---------|
| 1~180          | 0,4   | 0,75 | 0,90  | 1,0     |
| 220~560        | 0,5   | 0,85 | 0,94  | 1,0     |
| ≥680           | 0,6   | 0,87 | 0,95  | 1,0     |

Multipliers for typical operating conditions.

**ENVIRONMENTAL**The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)**MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)**

$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

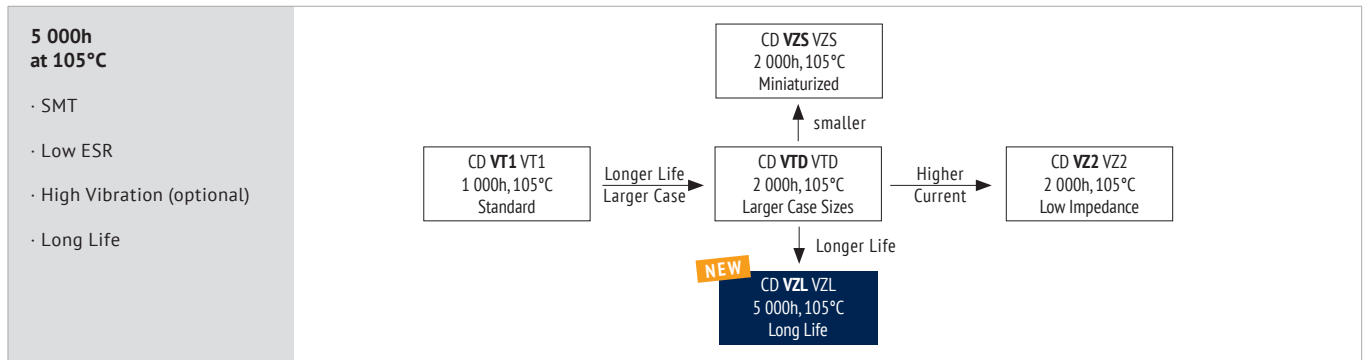


| U <sub>RDC</sub><br>Rated Voltage<br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance<br>20°C | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | Z <sub>max</sub><br>Max. Impedance<br>20°C<br>100kHz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current<br>20°C<br>2min | I <sub>R</sub><br>Rated Ripple Current<br>105°C<br>100kHz | Size<br>øD x L<br>(mm) | ORDER CODE<br><br>Δ = Vibration Type<br><br>Details: Page 15 |
|--------------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------|------------------------------------------------------|-----------------------------------------------------------|------------------------|--------------------------------------------------------------|
| (V)                                                          | (μF)                                        | (Ω)                                                                 | (Ω)                                                  |                                             | (μA)                                                 | (mA)                                                      |                        |                                                              |
| 6,3<br>(7,3)<br>0J                                           | 22                                          | 13,3                                                                | 3,20                                                 | 0,22                                        | 3                                                    | 80                                                        | 4 x 5,4                | ECV0JVZ2220M0405V1XE3                                        |
|                                                              | 33                                          | 8,85                                                                | 1,80                                                 | 0,22                                        | 3                                                    | 150                                                       | 5 x 5,4                | ECV0JVZ2330M0505V1XE3                                        |
|                                                              | 47                                          | 6,21                                                                | 1,80                                                 | 0,22                                        | 3                                                    | 150                                                       | 5 x 5,4                | ECV0JVZ2470M0505V1XE3                                        |
|                                                              | 100                                         | 2,92                                                                | 0,58                                                 | 0,22                                        | 7                                                    | 230                                                       | 6,3 x 5,4              | ECV0JVZ2101M0605V1XE3                                        |
|                                                              | 150                                         | 1,95                                                                | 0,58                                                 | 0,22                                        | 10                                                   | 230                                                       | 6,3 x 5,4              | ECV0JVZ2151M0605V1XE3                                        |
|                                                              | 220                                         | 1,33                                                                | 0,58                                                 | 0,22                                        | 14                                                   | 243                                                       | 6,3 x 5,4              | ECV0JVZ2221M0605V1XE3                                        |
|                                                              |                                             | 1,33                                                                | 0,34                                                 | 0,22                                        | 14                                                   | 280                                                       | 6,3 x 7,7              | ECV0JVZ2221M0607V1XE3                                        |
|                                                              | 330                                         | 0,89                                                                | 0,34                                                 | 0,22                                        | 21                                                   | 280                                                       | 6,3 x 7,7              | ECV0JVZ2331M0607V1XE3                                        |
|                                                              | 470                                         | 0,63                                                                | 0,17                                                 | 0,22                                        | 30                                                   | 450                                                       | 8 x 10,2               | ECV0JVZ2471M0810V1ΔE3                                        |
|                                                              | 1 000                                       | 0,30                                                                | 0,17                                                 | 0,22                                        | 63                                                   | 450                                                       | 8 x 10,2               | ECV0JVZ2102M0810V1ΔE3                                        |
|                                                              |                                             | 0,30                                                                | 0,10                                                 | 0,22                                        | 63                                                   | 670                                                       | 10 x 10,2              | ECV0JVZ2102M1010V1ΔE3                                        |
| 10<br>(11,5)<br>1A                                           | 22                                          | 11,5                                                                | 3,20                                                 | 0,19                                        | 3                                                    | 80                                                        | 4 x 5,4                | ECV1AVZ2220M0405V1XE3                                        |
|                                                              | 33                                          | 7,64                                                                | 1,80                                                 | 0,19                                        | 4                                                    | 150                                                       | 5 x 5,4                | ECV1AVZ2330M0505V1XE3                                        |
|                                                              | 47                                          | 5,37                                                                | 0,58                                                 | 0,19                                        | 5                                                    | 230                                                       | 6,3 x 5,4              | ECV1AVZ2470M0605V1XE3                                        |
|                                                              | 100                                         | 2,53                                                                | 0,34                                                 | 0,19                                        | 10                                                   | 280                                                       | 6,3 x 7,7              | ECV1AVZ2101M0607V1XE3                                        |
|                                                              | 150                                         | 1,69                                                                | 0,34                                                 | 0,19                                        | 15                                                   | 280                                                       | 6,3 x 7,7              | ECV1AVZ2151M0607V1XE3                                        |
|                                                              | 220                                         | 1,15                                                                | 0,34                                                 | 0,19                                        | 22                                                   | 280                                                       | 6,3 x 7,7              | ECV1AVZ2221M0607V1XE3                                        |
|                                                              | 330                                         | 0,77                                                                | 0,17                                                 | 0,19                                        | 33                                                   | 450                                                       | 8 x 10,2               | ECV1AVZ2331M0810V1ΔE3                                        |
|                                                              | 470                                         | 0,54                                                                | 0,17                                                 | 0,19                                        | 47                                                   | 450                                                       | 8 x 10,2               | ECV1AVZ2471M0810V1ΔE3                                        |
|                                                              | 1 000                                       | 0,26                                                                | 0,10                                                 | 0,19                                        | 100                                                  | 670                                                       | 10 x 10,2              | ECV1AVZ2102M1010V1ΔE3                                        |
|                                                              |                                             |                                                                     |                                                      |                                             |                                                      |                                                           |                        |                                                              |
| 16<br>(18,4)<br>1C                                           | 10                                          | 21,3                                                                | 3,20                                                 | 0,16                                        | 3                                                    | 80                                                        | 4 x 5,4                | ECV1CVZ2100M0405V1XE3                                        |
|                                                              | 22                                          | 9,65                                                                | 1,80                                                 | 0,16                                        | 4                                                    | 150                                                       | 5 x 5,4                | ECV1CVZ2220M0505V1XE3                                        |
|                                                              | 33                                          | 6,44                                                                | 0,58                                                 | 0,16                                        | 6                                                    | 230                                                       | 6,3 x 5,4              | ECV1CVZ2330M0605V1XE3                                        |
|                                                              | 47                                          | 4,52                                                                | 0,58                                                 | 0,16                                        | 8                                                    | 230                                                       | 6,3 x 5,4              | ECV1CVZ2470M0605V1XE3                                        |
|                                                              | 100                                         | 2,13                                                                | 0,58                                                 | 0,16                                        | 16                                                   | 230                                                       | 6,3 x 5,4              | ECV1CVZ2101M0605V1XE3                                        |
|                                                              |                                             | 2,13                                                                | 0,34                                                 | 0,16                                        | 16                                                   | 280                                                       | 6,3 x 7,7              | ECV1CVZ2110M0607V1XE3                                        |
|                                                              | 150                                         | 1,42                                                                | 0,34                                                 | 0,16                                        | 24                                                   | 280                                                       | 6,3 x 7,7              | ECV1CVZ2151M0607V1XE3                                        |
|                                                              |                                             | 0,97                                                                | 0,34                                                 | 0,16                                        | 36                                                   | 384                                                       | 6,3 x 7,7              | ECV1CVZ2221M0607V1XE3                                        |
|                                                              | 220                                         | 0,97                                                                | 0,17                                                 | 0,16                                        | 36                                                   | 450                                                       | 8 x 10,2               | ECV1CVZ2221M0810V1ΔE3                                        |
|                                                              |                                             | 0,97                                                                | 0,17                                                 | 0,16                                        | 36                                                   | 450                                                       | 8 x 10,2               | ECV1CVZ2331M0810V1ΔE3                                        |
|                                                              | 330                                         | 0,65                                                                | 0,17                                                 | 0,16                                        | 53                                                   | 450                                                       | 8 x 10,2               | ECV1CVZ2331M0810V1ΔE3                                        |
|                                                              | 470                                         | 0,46                                                                | 0,17                                                 | 0,16                                        | 76                                                   | 450                                                       | 8 x 10,2               | ECV1CVZ2471M0810V1ΔE3                                        |
|                                                              |                                             | 0,46                                                                | 0,10                                                 | 0,16                                        | 76                                                   | 670                                                       | 10 x 10,2              | ECV1CVZ2471M1010V1ΔE3                                        |
|                                                              | 1 000                                       | 0,22                                                                | 0,10                                                 | 0,16                                        | 160                                                  | 670                                                       | 10 x 10,2              | ECV1CVZ2102M1010V1ΔE3                                        |
|                                                              |                                             |                                                                     |                                                      |                                             |                                                      |                                                           |                        |                                                              |
| 25<br>(29)<br>1E                                             | 4,7                                         | 39,5                                                                | 3,20                                                 | 0,14                                        | 3                                                    | 80                                                        | 4 x 5,4                | ECV1EVZ247R7M0405V1XE3                                       |
|                                                              | 10                                          | 18,6                                                                | 1,80                                                 | 0,14                                        | 3                                                    | 80                                                        | 4 x 5,4                | ECV1EVZ2100M0405V1XE3                                        |
|                                                              | 22                                          | 8,45                                                                | 0,58                                                 | 0,14                                        | 6                                                    | 230                                                       | 6,3 x 5,4              | ECV1EVZ2220M0605V1XE3                                        |
|                                                              | 33                                          | 5,63                                                                | 0,58                                                 | 0,14                                        | 9                                                    | 230                                                       | 6,3 x 5,4              | ECV1EVZ2330M0605V1XE3                                        |
|                                                              | 47                                          | 3,96                                                                | 0,59                                                 | 0,14                                        | 12                                                   | 230                                                       | 6,3 x 5,4              | ECV1EVZ2470M0605V1XE3                                        |
|                                                              | 100                                         | 1,86                                                                | 0,34                                                 | 0,14                                        | 25                                                   | 280                                                       | 6,3 x 7,7              | ECV1EVZ2101M0607V1XE3                                        |
|                                                              |                                             | 1,86                                                                | 0,34                                                 | 0,14                                        | 25                                                   | 280                                                       | 8 x 6,2                | ECV1EVZ2101M0806V1ΔE3                                        |
|                                                              | 150                                         | 1,24                                                                | 0,42                                                 | 0,14                                        | 38                                                   | 450                                                       | 8 x 10,2               | ECV1EVZ2151M0810V1ΔE3                                        |
|                                                              | 220                                         | 0,85                                                                | 0,47                                                 | 0,14                                        | 55                                                   | 450                                                       | 8 x 10,2               | ECV1EVZ2221M0810V1ΔE3                                        |
|                                                              | 330                                         | 0,57                                                                | 0,10                                                 | 0,14                                        | 83                                                   | 670                                                       | 10 x 10,2              | ECV1EVZ2331M1010V1ΔE3                                        |
|                                                              | 470                                         | 0,40                                                                | 0,10                                                 | 0,14                                        | 118                                                  | 670                                                       | 10 x 10,2              | ECV1EVZ2471M1010V1ΔE3                                        |
| 35<br>(40)<br>1V                                             | 4,7                                         | 33,9                                                                | 3,20                                                 | 0,12                                        | 3                                                    | 80                                                        | 4 x 5,4                | ECV1VVZ247R7M0405V1XE3                                       |
|                                                              | 10                                          | 16,0                                                                | 1,80                                                 | 0,12                                        | 4                                                    | 150                                                       | 5 x 5,4                | ECV1VVZ2100M0505V1XE3                                        |
|                                                              | 22                                          | 7,24                                                                | 0,58                                                 | 0,12                                        | 8                                                    | 230                                                       | 6,3 x 5,4              | ECV1VVZ2220M0605V1XE3                                        |
|                                                              | 33                                          | 4,83                                                                | 0,58                                                 | 0,12                                        | 12                                                   | 230                                                       | 6,3 x 5,4              | ECV1VVZ2330M0605V1XE3                                        |
|                                                              | 47                                          | 3,39                                                                | 0,58                                                 | 0,12                                        | 17                                                   | 230                                                       | 6,3 x 5,4              | ECV1VVZ2470M0605V1XE3                                        |
|                                                              | 100                                         | 1,60                                                                | 0,34                                                 | 0,12                                        | 35                                                   | 348                                                       | 6,3 x 7,7              | ECV1VVZ2101M0607V1XE3                                        |
|                                                              |                                             | 1,60                                                                | 0,17                                                 | 0,12                                        | 35                                                   | 450                                                       | 8 x 10,2               | ECV1VVZ2101M0810V1ΔE3                                        |
|                                                              | 150                                         | 1,07                                                                | 0,17                                                 | 0,12                                        | 53                                                   | 450                                                       | 8 x 10,2               | ECV1VVZ2151M0810V1ΔE3                                        |
|                                                              | 220                                         | 0,73                                                                | 0,47                                                 | 0,12                                        | 77                                                   | 587                                                       | 8 x 10,2               | ECV1VVZ2221M0810V1ΔE3                                        |
|                                                              | 330                                         | 0,49                                                                | 0,12                                                 | 0,12                                        | 116                                                  | 670                                                       | 10 x 10,2              | ECV1VVZ2331M1010V1ΔE3                                        |
|                                                              | 470                                         | 0,34                                                                | 0,10                                                 | 0,12                                        | 165                                                  | 935                                                       | 10 x 12,5              | ECV1VVZ2471M1012V1ΔE3                                        |
| 50<br>(58)<br>1H                                             | 1                                           | 132                                                                 | 6,50                                                 | 0,10                                        | 3                                                    | 60                                                        | 4 x 5,4                | ECV1HVZ2010M0405V1XE3                                        |
|                                                              | 2,2                                         | 60,3                                                                | 6,50                                                 | 0,10                                        | 3                                                    | 60                                                        | 4 x 5,4                | ECV1HVZ2220M0405V1XE3                                        |
|                                                              | 3,3                                         | 40,2                                                                | 6,50                                                 | 0,10                                        | 3                                                    | 60                                                        | 4 x 5,4                | ECV1HVZ2330M0405V1XE3                                        |
|                                                              | 4,7                                         | 28,3                                                                | 3,50                                                 | 0,10                                        | 3                                                    | 85                                                        | 5 x 5,4                | ECV1HVZ247R7M0505V1XE3                                       |
|                                                              | 10                                          | 13,3                                                                | 2,00                                                 | 0,10                                        | 5                                                    | 165                                                       | 6,3 x 5,4              | ECV1HVZ2100M0605V1XE3                                        |
|                                                              | 22                                          | 6,03                                                                | 2,00                                                 | 0,10                                        | 11                                                   | 165                                                       | 6,3 x 5,4              | ECV1HVZ2220M0605V1XE3                                        |
|                                                              |                                             | 6,03                                                                | 0,68                                                 | 0,10                                        | 11                                                   | 185                                                       | 6,3 x 7,7              | ECV1HVZ2220M0607V1XE3                                        |
|                                                              | 33                                          | 4,02                                                                | 0,68                                                 | 0,10                                        | 17                                                   | 185                                                       | 6,3 x 7,7              | ECV1HVZ2330M0607V1XE3                                        |



| $U_{RDC}$<br>Rated<br>Voltage<br>(Surge Voltage)<br>Code | $C_R$<br>Rated<br>Capacitance<br><br>20°C | $ESR_{max}$<br>Equivalent<br>Series Resistance<br><br>20°C<br>120Hz | $Z_{max}$<br>Max.<br>Impedance<br><br>20°C<br>100kHz | $\tan\delta$<br>Dissipation<br>Factor<br><br>20°C<br>120Hz | $I_{leak}$<br>Leakage<br>Current<br><br>20°C<br>2min | $I_R$<br>Rated<br>Ripple Current<br><br>105°C<br>100kHz | Size<br><br>øD x L | ORDER CODE<br><br>Δ = Vibration Type |
|----------------------------------------------------------|-------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------------|--------------------|--------------------------------------|
| (V)                                                      | (μF)                                      | (Ω)                                                                 | (Ω)                                                  |                                                            | (μA)                                                 | (mA)                                                    | (mm)               | Details: Page 15                     |
| 50<br>(58)<br>1H                                         | 47                                        | 2,83                                                                | 0,68                                                 | 0,10                                                       | 24                                                   | 185                                                     | 6,3 x 7,7          | ECV1HVZ2470M0607V1XE3                |
|                                                          | 47                                        | 2,83                                                                | 0,34                                                 | 0,10                                                       | 24                                                   | 300                                                     | 8 x 10,2           | ECV1HVZ2470M0810V1ΔE3                |
|                                                          | 100                                       | 1,33                                                                | 0,34                                                 | 0,10                                                       | 50                                                   | 300                                                     | 8 x 10,2           | ECV1HVZ2101M0810V1ΔE3                |
|                                                          | 150                                       | 0,89                                                                | 0,20                                                 | 0,10                                                       | 75                                                   | 670                                                     | 10 x 10,2          | ECV1HVZ2151M1010V1ΔE3                |
|                                                          | 220                                       | 0,61                                                                | 0,20                                                 | 0,10                                                       | 110                                                  | 670                                                     | 10 x 10,2          | ECV1HVZ221M1010V1ΔE3                 |
| 63<br>(73)<br>1J                                         | 4,7                                       | 22,6                                                                | 3,00                                                 | 0,08                                                       | 3                                                    | 50                                                      | 5 x 5,4            | ECV1JVZ24R7M0505V1XE3                |
|                                                          | 10                                        | 10,7                                                                | 1,50                                                 | 0,08                                                       | 7                                                    | 80                                                      | 6,3 x 5,4          | ECV1JVZ2100M0605V1XE3                |
|                                                          | 10                                        | 10,7                                                                | 1,20                                                 | 0,08                                                       | 7                                                    | 120                                                     | 6,3 x 7,7          | ECV1JVZ2100M0607V1XE3                |
|                                                          | 22                                        | 4,83                                                                | 1,20                                                 | 0,08                                                       | 14                                                   | 120                                                     | 6,3 x 7,7          | ECV1JVZ2220M0607V1XE3                |
|                                                          | 33                                        | 3,22                                                                | 0,65                                                 | 0,08                                                       | 21                                                   | 250                                                     | 8 x 10,2           | ECV1JVZ2330M0810V1ΔE3                |
|                                                          | 47                                        | 2,26                                                                | 0,65                                                 | 0,08                                                       | 30                                                   | 250                                                     | 8 x 10,2           | ECV1JVZ2470M0810V1ΔE3                |
|                                                          | 68                                        | 1,57                                                                | 0,65                                                 | 0,08                                                       | 43                                                   | 250                                                     | 8 x 10,2           | ECV1JVZ2680M0810V1ΔE3                |
| 80<br>(92)<br>1K                                         | 3,3                                       | 32,2                                                                | 5,00                                                 | 0,08                                                       | 3                                                    | 25                                                      | 5 x 5,4            | ECV1KVZ23R3M0505V1XE3                |
|                                                          | 4,7                                       | 22,6                                                                | 3,00                                                 | 0,08                                                       | 4                                                    | 40                                                      | 6,3 x 5,4          | ECV1KVZ24R7M0605V1XE3                |
|                                                          | 10                                        | 10,7                                                                | 2,40                                                 | 0,08                                                       | 8                                                    | 60                                                      | 6,3 x 7,7          | ECV1KVZ2100M0607V1XE3                |
|                                                          | 22                                        | 4,83                                                                | 1,30                                                 | 0,08                                                       | 18                                                   | 130                                                     | 8 x 10,2           | ECV1KVZ2220M0810V1ΔE3                |
|                                                          | 33                                        | 3,22                                                                | 1,30                                                 | 0,08                                                       | 27                                                   | 130                                                     | 8 x 10,2           | ECV1KVZ2330M0810V1ΔE3                |
|                                                          | 47                                        | 2,26                                                                | 0,70                                                 | 0,08                                                       | 38                                                   | 200                                                     | 10 x 10,2          | ECV1KVZ2470M1010V1ΔE3                |
| 100<br>(115)<br>2A                                       | 22                                        | 4,83                                                                | 1,00                                                 | 0,08                                                       | 22                                                   | 150                                                     | 8 x 10,2           | ECV2AVZ2220M0810V1ΔE3                |
|                                                          | 33                                        | 3,22                                                                | 0,70                                                 | 0,08                                                       | 33                                                   | 200                                                     | 10 x 10,2          | ECV2AVZ2330M1010V1ΔE3                |
|                                                          | 47                                        | 2,26                                                                | 0,70                                                 | 0,08                                                       | 47                                                   | 200                                                     | 10 x 10,2          | ECV2AVZ2470M1010V1ΔE3                |
|                                                          |                                           | 2,26                                                                | 0,70                                                 | 0,08                                                       | 47                                                   | 220                                                     | 10 x 12,5          | ECV2AVZ2470M1010V1ΔE3                |





ITEM

CHARACTERISTICS

STABILITY AT LOW TEMPERATURE (IMPEDANCE RATIO AT 120HZ)

|                                     |                           |
|-------------------------------------|---------------------------|
| Operating Temperature Range (°C)    | -55 ~ +105                |
| Voltage Range (V)                   | 6,3 ~ 100                 |
| Capacitance Range (μF)              | 22 ~ 2 200                |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%                     |
| Dissipation Factor                  | at 20°C, 120Hz, see table |
| Leakage Current (μA)                | at 20°C after 2 minutes   |

| Rated Voltage                                 | 6,3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |
|-----------------------------------------------|-----|----|----|----|----|----|----|----|-----|
| $Z_{-25^{\circ}\text{C}/+20^{\circ}\text{C}}$ | 4   | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2   |
| $Z_{+40^{\circ}\text{C}/+20^{\circ}\text{C}}$ | 6   | 4  | 3  | 3  | 3  | 3  | 3  | 3  | 3   |
| $Z_{-55^{\circ}\text{C}/+20^{\circ}\text{C}}$ | 8   | 5  | 4  | 3  | 3  | 3  | 3  | 3  | 3   |

| ITEM               | LOAD LIFETIME<br>$L_0$                                              | SHELF LIFE                                                          | RESISTANCE<br>TO SOLDERING HEAT<br>SMT       |
|--------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|----------------------------------------------|
| Lifetime           | 5 000h                                                              | 1 000h                                                              | 30sec, Hot Plate                             |
| Leakage Current    | ≤ the specified value                                               | ≤200% the specified value                                           | ≤ the specified value                        |
| Capacitance Change | Within ± 30% of initial value                                       | Within ± 20% of initial value                                       | Within ± 10% of initial value                |
| Dissipation Factor | ≤ 300% of specified value                                           | ≤ 200% of specified value                                           | ≤ specified value                            |
| Condition          | 105°C<br>$U_R = 0$<br>$I_R = 0$<br>Before measurement: 16h resuming | 105°C<br>$U_R = 0$<br>$I_R = 0$<br>Before measurement: 16h resuming | 250°C<br>Before measurement: Restore to 25°C |

MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

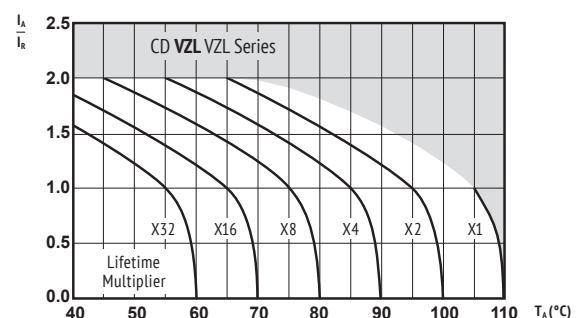
| μF \ Frequency | 120Hz | 1kHz | 10kHz | ≥100kHz |
|----------------|-------|------|-------|---------|
| 22~180         | 0,40  | 0,75 | 0,90  | 1,0     |
| 220~560        | 0,50  | 0,85 | 0,94  | 1,0     |
| ≥680           | 0,60  | 0,87 | 0,95  | 1,0     |

Multipliers for typical operating conditions.

ENVIRONMENTAL

MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)



$I_a$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load



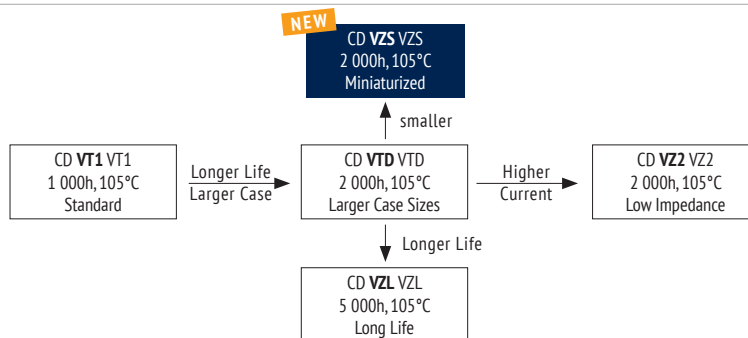
| $U_{RDC}$<br>Rated Voltage<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance<br>20°C | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $Z_{max}$<br>Max. Impedance<br>20°C<br>100kHz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current<br>20°C<br>2min | $I_R$<br>Rated Ripple Current<br>105°C<br>100kHz | Size<br><br>øD x L | ORDER CODE<br><br>Δ = Vibration Type |
|-------------------------------------------------------|------------------------------------|--------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------|-----------------------------------------------|--------------------------------------------------|--------------------|--------------------------------------|
| (V)                                                   | (μF)                               | (mΩ)                                                         | (mΩ)                                          |                                                     | (μA)                                          | (mA)                                             | (mm)               | Details: Page 15                     |
| 6,3<br>(7,3)<br>0J                                    | 220                                | 1 689                                                        | 360                                           | 0,28                                                | 14                                            | 280                                              | 6,3 x 7,7          | ECV0JVZL221M0607V1XE3                |
|                                                       |                                    | 1 126                                                        | 360                                           | 0,28                                                | 21                                            | 280                                              | 8 x 6,2            | ECV0JVZL331M0806V1ΔE3                |
|                                                       |                                    | 1 126                                                        | 170                                           | 0,28                                                | 21                                            | 450                                              | 8 x 10,2           | ECV0JVZL331M0810V1ΔE3                |
|                                                       | 470                                | 791                                                          | 170                                           | 0,28                                                | 30                                            | 450                                              | 8 x 10,2           | ECV0JVZL471M0810V1ΔE3                |
|                                                       |                                    | 372                                                          | 170                                           | 0,28                                                | 63                                            | 450                                              | 8 x 10,2           | ECV0JVZL102M0810V1ΔE3                |
|                                                       |                                    | 248                                                          | 170                                           | 0,28                                                | 95                                            | 450                                              | 8 x 10,2           | ECV0JVZL152M0810V1ΔE3                |
|                                                       |                                    | 181                                                          | 70                                            | 0,30                                                | 139                                           | 820                                              | 12,5 x 13,5        | ECV0JVZL222M1213V1ΔE3                |
| 10<br>(11,5)<br>1A                                    | 220                                | 1 448                                                        | 360                                           | 0,24                                                | 22                                            | 280                                              | 6,3 x 7,7          | ECV1AVZL221M0607V1XE3                |
|                                                       |                                    | 1 448                                                        | 360                                           | 0,24                                                | 22                                            | 280                                              | 8 x 6,2            | ECV1AVZL221M0806V1ΔE3                |
|                                                       |                                    | 965                                                          | 170                                           | 0,24                                                | 33                                            | 450                                              | 8 x 10,2           | ECV1AVZL331M0810V1ΔE3                |
|                                                       | 470                                | 678                                                          | 170                                           | 0,24                                                | 47                                            | 450                                              | 8 x 10,2           | ECV1AVZL471M0810V1ΔE3                |
|                                                       |                                    | 319                                                          | 100                                           | 0,24                                                | 100                                           | 670                                              | 10 x 10,2          | ECV1AVZL102M1010V1ΔE3                |
|                                                       |                                    | 213                                                          | 90                                            | 0,24                                                | 150                                           | 750                                              | 10 x 12,5          | ECV1AVZL152M1012V1ΔE3                |
|                                                       |                                    | 157                                                          | 60                                            | 0,26                                                | 220                                           | 950                                              | 12,5 x 16,0        | ECV1AVZL222M1216V1ΔE3                |
| 16<br>(18,4)<br>1C                                    | 150                                | 1 769                                                        | 360                                           | 0,20                                                | 24                                            | 280                                              | 6,3 x 7,7          | ECV1CVZL151M0607V1XE3                |
|                                                       |                                    | 1 769                                                        | 360                                           | 0,20                                                | 24                                            | 280                                              | 8 x 6,2            | ECV1CVZL151M0806V1ΔE3                |
|                                                       |                                    | 1 206                                                        | 360                                           | 0,20                                                | 36                                            | 280                                              | 6,3 x 7,7          | ECV1CVZL221M0607V1XE3                |
|                                                       | 330                                | 804                                                          | 170                                           | 0,20                                                | 53                                            | 450                                              | 8 x 10,2           | ECV1CVZL331M0810V1ΔE3                |
|                                                       |                                    | 565                                                          | 170                                           | 0,20                                                | 76                                            | 450                                              | 8 x 10,2           | ECV1CVZL471M0810V1ΔE3                |
|                                                       |                                    | 565                                                          | 100                                           | 0,20                                                | 76                                            | 670                                              | 10 x 10,2          | ECV1CVZL471M1010V1ΔE3                |
|                                                       | 1 000                              | 266                                                          | 100                                           | 0,20                                                | 160                                           | 670                                              | 10 x 10,2          | ECV1CVZL102M1010V1ΔE3                |
|                                                       |                                    | 177                                                          | 70                                            | 0,20                                                | 240                                           | 820                                              | 12,5 x 13,5        | ECV1CVZL152M1213V1ΔE3                |
|                                                       |                                    | 133                                                          | 54                                            | 0,22                                                | 352                                           | 1 260                                            | 16 x 16,5          | ECV1CVZL222M1616V1ΔE3                |
| 25<br>(29)<br>1E                                      | 100                                | 2 123                                                        | 360                                           | 0,16                                                | 25                                            | 280                                              | 6,3 x 7,7          | ECV1EVZL101M0607V1XE3                |
|                                                       |                                    | 2 123                                                        | 360                                           | 0,16                                                | 25                                            | 280                                              | 8 x 6,2            | ECV1EVZL101M0806V1ΔE3                |
|                                                       |                                    | 1 415                                                        | 170                                           | 0,16                                                | 38                                            | 450                                              | 8 x 10,2           | ECV1EVZL151M0810V1ΔE3                |
|                                                       | 220                                | 965                                                          | 170                                           | 0,16                                                | 55                                            | 450                                              | 8 x 10,2           | ECV1EVZL221M0810V1ΔE3                |
|                                                       |                                    | 644                                                          | 170                                           | 0,16                                                | 83                                            | 450                                              | 8 x 10,2           | ECV1EVZL331M0810V1ΔE3                |
|                                                       |                                    | 452                                                          | 100                                           | 0,16                                                | 118                                           | 670                                              | 10 x 10,2          | ECV1EVZL471M1010V1ΔE3                |
|                                                       | 1 000                              | 213                                                          | 70                                            | 0,16                                                | 250                                           | 820                                              | 12,5 x 13,5        | ECV1EVZL102M1213V1ΔE3                |
|                                                       |                                    | 142                                                          | 60                                            | 0,16                                                | 375                                           | 950                                              | 12,5 x 16,0        | ECV1EVZL152M1216V1ΔE3                |
|                                                       |                                    | 109                                                          | 54                                            | 0,18                                                | 550                                           | 1 260                                            | 16 x 16,5          | ECV1EVZL222M1616V1ΔE3                |
| 35<br>(40)<br>1V                                      | 47                                 | 3 670                                                        | 360                                           | 0,13                                                | 17                                            | 280                                              | 6,3 x 7,7          | ECV1VVZL470M0607V1XE3                |
|                                                       |                                    | 1 725                                                        | 170                                           | 0,13                                                | 35                                            | 450                                              | 8 x 10,2           | ECV1VVZL101M0810V1ΔE3                |
|                                                       |                                    | 1 150                                                        | 170                                           | 0,13                                                | 53                                            | 450                                              | 8 x 10,2           | ECV1VVZL151M0810V1ΔE3                |
|                                                       | 220                                | 784                                                          | 170                                           | 0,13                                                | 77                                            | 600                                              | 8 x 10,2           | ECV1VVZL221M0810V1ΔE3                |
|                                                       |                                    | 784                                                          | 120                                           | 0,13                                                | 77                                            | 670                                              | 10 x 10,2          | ECV1VVZL221M1010V1ΔE3                |
|                                                       |                                    | 523                                                          | 120                                           | 0,13                                                | 116                                           | 670                                              | 10 x 10,2          | ECV1VVZL331M1010V1ΔE3                |
|                                                       | 330                                | 367                                                          | 90                                            | 0,13                                                | 165                                           | 700                                              | 10 x 12,5          | ECV1VVZL471M1012V1ΔE3                |
|                                                       |                                    | 367                                                          | 70                                            | 0,13                                                | 165                                           | 820                                              | 12,5 x 13,5        | ECV1VVZL471M1213V1ΔE3                |
|                                                       |                                    | 173                                                          | 60                                            | 0,13                                                | 350                                           | 950                                              | 12,5 x 16,0        | ECV1VVZL102M1216V1ΔE3                |
|                                                       | 1 500                              | 115                                                          | 54                                            | 0,13                                                | 525                                           | 1 260                                            | 16 x 16,5          | ECV1VVZL152M1616V1ΔE3                |
|                                                       |                                    | 91                                                           | 38                                            | 0,15                                                | 770                                           | 1 750                                            | 18 x 21,5          | ECV1VVZL222M1821V1ΔE3                |
|                                                       |                                    |                                                              |                                               |                                                     |                                               |                                                  |                    |                                      |
| 50<br>(58)<br>1H                                      | 33                                 | 4 020                                                        | 1000                                          | 0,10                                                | 17                                            | 185                                              | 6,3 x 7,7          | ECV1HVZL330M0607V1XE3                |
|                                                       |                                    | 2 823                                                        | 680                                           | 0,10                                                | 24                                            | 185                                              | 6,3 x 7,7          | ECV1HVZL470M0607V1XE3                |
|                                                       |                                    | 2 823                                                        | 680                                           | 0,10                                                | 24                                            | 185                                              | 8 x 6,2            | ECV1HVZL470M0806V1ΔE3                |
|                                                       | 68                                 | 1 951                                                        | 340                                           | 0,10                                                | 34                                            | 369                                              | 8 x 10,2           | ECV1HVZL680M0810V1ΔE3                |
|                                                       |                                    | 1 327                                                        | 180                                           | 0,10                                                | 50                                            | 553                                              | 10 x 10,2          | ECV1HVZL101M1010V1ΔE3                |
|                                                       |                                    | 603                                                          | 120                                           | 0,10                                                | 110                                           | 650                                              | 12,5 x 13,5        | ECV1HVZL221M1213V1ΔE3                |
|                                                       | 330                                | 402                                                          | 120                                           | 0,10                                                | 165                                           | 650                                              | 12,5 x 13,5        | ECV1HVZL331M1213V1ΔE3                |
|                                                       |                                    | 283                                                          | 100                                           | 0,10                                                | 235                                           | 850                                              | 12,5 x 16,0        | ECV1HVZL471M1216V1ΔE3                |
|                                                       |                                    | 283                                                          | 73                                            | 0,10                                                | 235                                           | 1 000                                            | 16 x 16,5          | ECV1HVZL471M1616V1ΔE3                |
|                                                       | 1 000                              | 133                                                          | 73                                            | 0,10                                                | 500                                           | 1 000                                            | 16 x 16,5          | ECV1HVZL102M1616V1ΔE3                |
|                                                       |                                    | 111                                                          | 50                                            | 0,10                                                | 600                                           | 1 910                                            | 16 x 21,5          | ECV1HVZL122M1621V1ΔE3                |
|                                                       |                                    |                                                              |                                               |                                                     |                                               |                                                  |                    |                                      |
| 63<br>(73)<br>1J                                      | 22                                 | 4 824                                                        | 900                                           | 0,08                                                | 14                                            | 150                                              | 6,3 x 7,7          | ECV1JVZL220M0607V1XE3                |
|                                                       |                                    | 3 216                                                        | 500                                           | 0,08                                                | 21                                            | 280                                              | 8 x 10,2           | ECV1JVZL330M0810V1ΔE3                |
|                                                       |                                    | 2 258                                                        | 500                                           | 0,08                                                | 30                                            | 280                                              | 8 x 10,2           | ECV1JVZL470M0810V1ΔE3                |
|                                                       | 68                                 | 1 561                                                        | 250                                           | 0,08                                                | 43                                            | 450                                              | 10 x 10,2          | ECV1JVZL680M1010V1ΔE3                |
|                                                       |                                    | 1 062                                                        | 250                                           | 0,08                                                | 63                                            | 450                                              | 10 x 10,2          | ECV1JVZL101M1010V1ΔE3                |
|                                                       |                                    | 483                                                          | 150                                           | 0,08                                                | 139                                           | 700                                              | 12,5 x 13,5        | ECV1JVZL221M1213V1ΔE3                |



| $U_{RDC}$<br>Rated Voltage<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance<br>20°C | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C 120Hz | $Z_{max}$<br>Max. Impedance<br>20°C 100kHz | $\tan\delta$<br>Dissipation Factor<br>20°C 120Hz | $I_{leak}$<br>Leakage Current<br>20°C 2min | $I_R$<br>Rated Ripple Current<br>105°C 100kHz | Size<br>øD x L<br><br>(mm) | ORDER CODE<br><br>Δ = Vibration Type<br><br>Details: Page 15 |
|-------------------------------------------------------|------------------------------------|-----------------------------------------------------------|--------------------------------------------|--------------------------------------------------|--------------------------------------------|-----------------------------------------------|----------------------------|--------------------------------------------------------------|
| (V)                                                   | (μF)                               | (mΩ)                                                      | (mΩ)                                       |                                                  | (μA)                                       | (mA)                                          |                            |                                                              |
| <b>63</b><br>(73)<br>1J                               | 330                                | 322                                                       | 82                                         | 0,08                                             | 208                                        | 900                                           | 16 x 16,5                  | ECV1JVZL331M1616V1ΔE3                                        |
|                                                       | 470                                | 226                                                       | 82                                         | 0,08                                             | 297                                        | 900                                           | 16 x 16,5                  | ECV1JVZL471M1616V1ΔE3                                        |
|                                                       | 1 000                              | 107                                                       | 60                                         | 0,08                                             | 630                                        | 1 250                                         | 18 x 21,5                  | ECV1JVZL102M1821V1ΔE3                                        |
|                                                       | 1 200                              | 89                                                        | 60                                         | 0,08                                             | 756                                        | 1 350                                         | 18 x 21,5                  | ECV1JVZL122M1821V1ΔE3                                        |
| <b>80</b><br>(92)<br>1K                               | 22                                 | 4 824                                                     | 1 300                                      | 0,08                                             | 18                                         | 130                                           | 8 x 10,2                   | ECV1KVZL220M0810V1ΔE3                                        |
|                                                       | 33                                 | 3 216                                                     | 1 300                                      | 0,08                                             | 27                                         | 130                                           | 8 x 10,2                   | ECV1KVZL330M0810V1ΔE3                                        |
|                                                       | 47                                 | 2 258                                                     | 700                                        | 0,08                                             | 38                                         | 200                                           | 10 x 10,2                  | ECV1KVZL470M1010V1ΔE3                                        |
|                                                       | 68                                 | 1 561                                                     | 700                                        | 0,08                                             | 55                                         | 200                                           | 10 x 10,2                  | ECV1KVZL680M1010V1ΔE3                                        |
|                                                       | 100                                | 1 062                                                     | 700                                        | 0,08                                             | 80                                         | 200                                           | 10 x 10,2                  | ECV1KVZL101M1010V1ΔE3                                        |
|                                                       | 220                                | 483                                                       | 260                                        | 0,08                                             | 176                                        | 550                                           | 12,5 x 16,0                | ECV1KVZL221M1216V1ΔE3                                        |
|                                                       | 330                                | 322                                                       | 170                                        | 0,08                                             | 264                                        | 650                                           | 16 x 16,5                  | ECV1KVZL331M1616V1ΔE3                                        |
|                                                       | 470                                | 226                                                       | 150                                        | 0,08                                             | 376                                        | 900                                           | 16 x 21,5                  | ECV1KVZL471M1621V1ΔE3                                        |
| <b>100</b><br>(115)<br>2A                             | 22                                 | 4824                                                      | 1 300                                      | 0,08                                             | 22                                         | 130                                           | 8 x 10,2                   | ECV2AVZL220M0810V1ΔE3                                        |
|                                                       | 33                                 | 3216                                                      | 700                                        | 0,08                                             | 33                                         | 200                                           | 10 x 10,2                  | ECV2AVZL330M1010V1ΔE3                                        |
|                                                       | 47                                 | 2 258                                                     | 700                                        | 0,08                                             | 47                                         | 200                                           | 10 x 10,2                  | ECV2AVZL470M1010V1ΔE3                                        |
|                                                       | 68                                 | 1 561                                                     | 320                                        | 0,08                                             | 68                                         | 450                                           | 12,5 x 13,5                | ECV2AVZL680M1213V1ΔE3                                        |
|                                                       | 100                                | 1 062                                                     | 320                                        | 0,08                                             | 100                                        | 450                                           | 12,5 x 13,5                | ECV2AVZL101M1213V1ΔE3                                        |
|                                                       | 220                                | 483                                                       | 170                                        | 0,08                                             | 220                                        | 650                                           | 16 x 16,5                  | ECV2AVZL221M1616V1ΔE3                                        |
|                                                       | 330                                | 322                                                       | 150                                        | 0,08                                             | 330                                        | 900                                           | 16 x 21,5                  | ECV2AVZL331M1621V1ΔE3                                        |
|                                                       | 470                                | 226                                                       | 150                                        | 0,08                                             | 470                                        | 950                                           | 18 x 21,5                  | ECV2AVZL471M1821V1ΔE3                                        |

**2 000h  
at 105°C**

- SMT
- Low ESR
- High Vibration (optional)
- Miniaturized



## ITEM

## CHARACTERISTICS

## STABILITY AT LOW TEMPERATURE (IMPEDANCE RATIO AT 120HZ)

|                                     |                           |
|-------------------------------------|---------------------------|
| Operating Temperature Range (°C)    | -55 ~ +105                |
| Voltage Range (V)                   | 6,3 ~ 50                  |
| Capacitance Range (μF)              | 10 ~ 2 200                |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%                     |
| Dissipation Factor                  | at 20°C, 120Hz, see table |
| Leakage Current (μA)                | at 20°C after 2 minutes   |

| Rated Voltage            | 6,3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |
|--------------------------|-----|----|----|----|----|----|----|----|-----|
| Z <sub>-25°C/+20°C</sub> | 4   | 3  | 2  | 2  | 2  | 2  | 2  | 2  | 2   |
| Z <sub>-40°C/+20°C</sub> | 6   | 4  | 3  | 3  | 3  | 3  | 3  | 3  | 3   |
| Z <sub>-55°C/+20°C</sub> | 8   | 5  | 4  | 3  | 3  | 3  | 3  | 3  | 3   |

## ITEM

LOAD LIFETIME  
L<sub>0</sub>

## SHELF LIFE

RESISTANCE  
TO SOLDERING HEAT  
SMT

|                    |                                                                                   |                                                                                       |                                              |
|--------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------|
| Lifetime           | 2 000h                                                                            | 1 000h                                                                                | 30sec, Hot Plate                             |
| Leakage Current    | ≤ the specified value                                                             | ≤200% the specified value                                                             | ≤ the specified value                        |
| Capacitance Change | Within ± 30% of initial value                                                     | Within ± 30% of initial value                                                         | Within ± 10% of initial value                |
| Dissipation Factor | ≤ 300% of specified value                                                         | ≤ 200% of specified value                                                             | ≤ specified value                            |
| Condition          | 105°C<br>U <sub>R</sub><br>I <sub>R</sub> = 0<br>Before measurement: 16h resuming | 105°C<br>U <sub>R</sub> = 0<br>I <sub>R</sub> = 0<br>Before measurement: 16h resuming | 250°C<br>Before measurement: Restore to 25°C |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

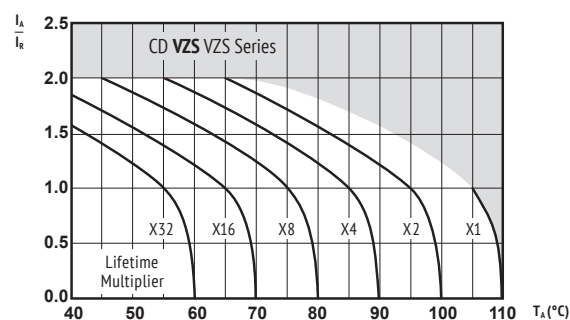
| μF \ Frequency | 120Hz | 1kHz | 10kHz | ≥100kHz |
|----------------|-------|------|-------|---------|
| 10~180         | 0,40  | 0,75 | 0,90  | 1,00    |
| 220~560        | 0,50  | 0,85 | 0,94  | 1,00    |
| ≥680           | 0,60  | 0,87 | 0,95  | 1,00    |

Multipliers for typical operating conditions.

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



I<sub>A</sub> = actual ripple current at 100kHz,  
I<sub>R</sub> = rated ripple current at 100kHz, 105°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

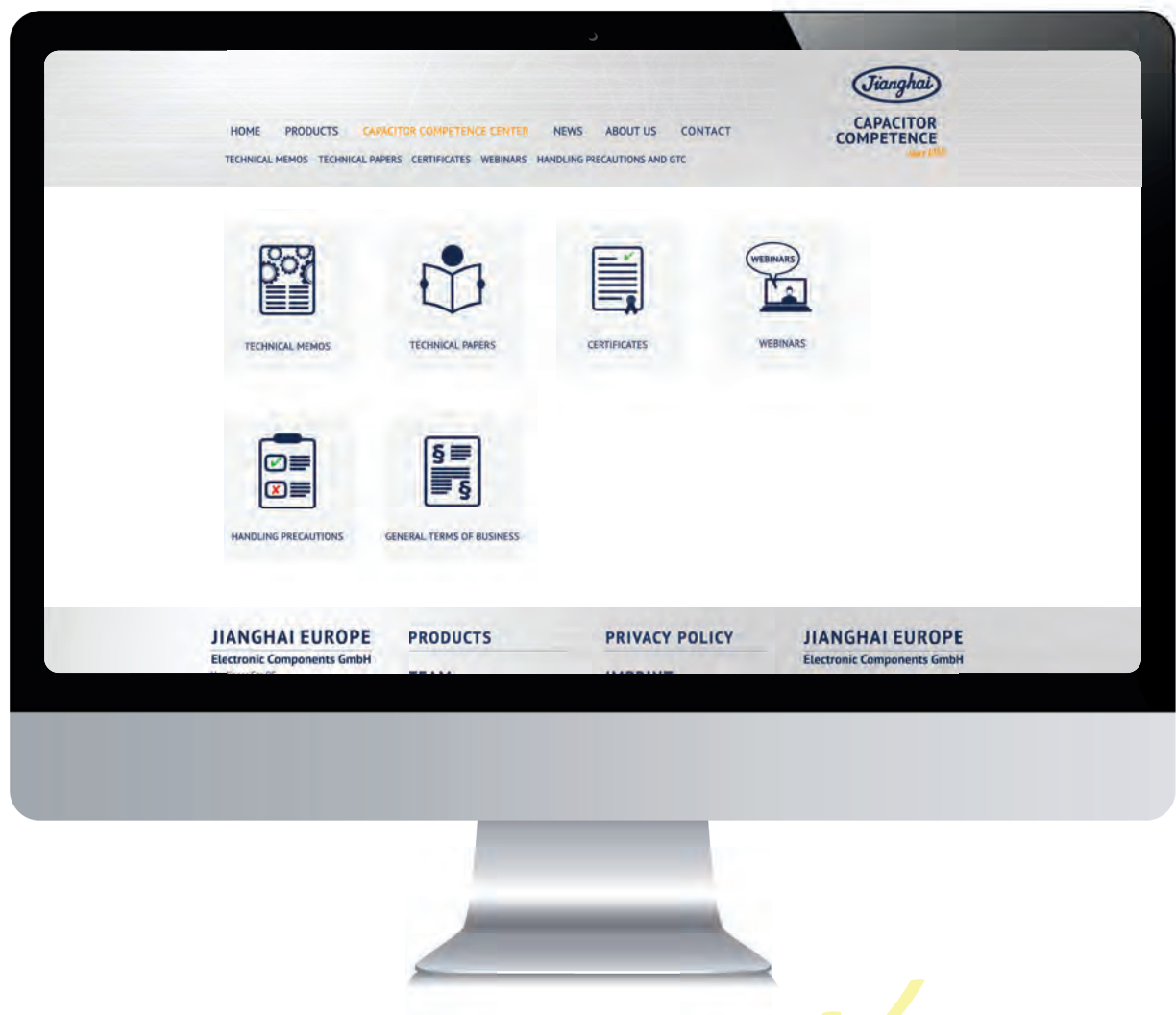


| $U_{RDC}$<br>Rated Voltage<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance<br>20°C | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C 120Hz | $Z_{max}$<br>Max. Impedance<br>20°C 100kHz | $\tan\delta$<br>Dissipation Factor<br>20°C 120Hz | $I_{leak}$<br>Leakage Current<br>20°C 2min | $I_R$<br>Rated Ripple Current<br>105°C 100kHz | Size<br>$\varnothing D \times L$<br><br>(mm) | ORDER CODE<br><br>$\Delta$ = Vibration Type<br><br>Details: Page 15 |
|-------------------------------------------------------|------------------------------------|-----------------------------------------------------------|--------------------------------------------|--------------------------------------------------|--------------------------------------------|-----------------------------------------------|----------------------------------------------|---------------------------------------------------------------------|
| (V)                                                   | ( $\mu F$ )                        | (m $\Omega$ )                                             | (m $\Omega$ )                              |                                                  | ( $\mu A$ )                                | (mA)                                          |                                              |                                                                     |
| <b>6,3</b><br><b>(7,3)</b><br><b>0J</b>               | 220                                | 1 568                                                     | 520                                        | 0,26                                             | 14                                         | 240                                           | 5,0 x 6,0                                    | ECV0JVZS221M0506V1XE3                                               |
|                                                       | 330                                | 1 045                                                     | 280                                        | 0,26                                             | 21                                         | 300                                           | 6,3 x 6,0                                    | ECV0JVZS331M0606V1XE3                                               |
|                                                       | 470                                | 734                                                       | 180                                        | 0,26                                             | 30                                         | 600                                           | 6,3 x 7,7                                    | ECV0JVZS471M0607V1XE3                                               |
|                                                       | 680                                | 507                                                       | 180                                        | 0,26                                             | 43                                         | 600                                           | 6,3 x 7,7                                    | ECV0JVZS681M0607V1XE3                                               |
|                                                       | 1 500                              | 230                                                       | 100                                        | 0,26                                             | 95                                         | 850                                           | 8,0 x 10,2                                   | ECV0JVZS152M0810V1 $\Delta$ E3                                      |
|                                                       | 2 200                              | 169                                                       | 90                                         | 0,28                                             | 139                                        | 1 190                                         | 10,0 x 10,2                                  | ECV0JVZS222M1010V1 $\Delta$ E3                                      |
| <b>10</b><br><b>(11,5)</b><br><b>1A</b>               | 150                                | 1 680                                                     | 520                                        | 0,19                                             | 15                                         | 240                                           | 5,0 x 6,0                                    | ECV1AVZS151M0506V1XE3                                               |
|                                                       | 220                                | 1 146                                                     | 280                                        | 0,19                                             | 22                                         | 300                                           | 6,3 x 6,0                                    | ECV1AVZS221M0606V1XE3                                               |
|                                                       | 330                                | 764                                                       | 180                                        | 0,19                                             | 33                                         | 600                                           | 6,3 x 7,7                                    | ECV1AVZS331M0607V1XE3                                               |
|                                                       | 470                                | 536                                                       | 200                                        | 0,19                                             | 47                                         | 600                                           | 6,3 x 7,7                                    | ECV1AVZS471M0607V1XE3                                               |
|                                                       | 1 000                              | 252                                                       | 100                                        | 0,19                                             | 100                                        | 850                                           | 8,0 x 10,2                                   | ECV1AVZS102M0810V1 $\Delta$ E3                                      |
|                                                       | 1 500                              | 168                                                       | 90                                         | 0,19                                             | 150                                        | 1 190                                         | 10,0 x 10,2                                  | ECV1AVZS152M1010V1 $\Delta$ E3                                      |
| <b>16</b><br><b>(18,4)</b><br><b>1C</b>               | 68                                 | 3 121                                                     | 520                                        | 0,16                                             | 11                                         | 240                                           | 5,0 x 6,0                                    | ECV1CVZS680M0506V1XE3                                               |
|                                                       | 100                                | 2 122                                                     | 520                                        | 0,16                                             | 16                                         | 240                                           | 5,0 x 6,0                                    | ECV1CVZS101M0506V1XE3                                               |
|                                                       | 150                                | 1 415                                                     | 280                                        | 0,16                                             | 24                                         | 300                                           | 6,3 x 6,0                                    | ECV1CVZS151M0606V1XE3                                               |
|                                                       | 330                                | 643                                                       | 180                                        | 0,16                                             | 53                                         | 600                                           | 6,3 x 7,7                                    | ECV1CVZS331M0607V1XE3                                               |
|                                                       | 680                                | 312                                                       | 100                                        | 0,16                                             | 109                                        | 850                                           | 8,0 x 10,2                                   | ECV1CVZS681M0810V1 $\Delta$ E3                                      |
|                                                       | 820                                | 259                                                       | 100                                        | 0,16                                             | 131                                        | 850                                           | 8,0 x 10,2                                   | ECV1CVZS821M0810V1 $\Delta$ E3                                      |
|                                                       | 1 000                              | 212                                                       | 100                                        | 0,16                                             | 160                                        | 1 190                                         | 10,0 x 10,2                                  | ECV1CVZS102M1010V1 $\Delta$ E3                                      |
|                                                       |                                    |                                                           |                                            |                                                  |                                            |                                               |                                              |                                                                     |
| <b>25</b><br><b>(29)</b><br><b>1E</b>                 | 47                                 | 3 951                                                     | 520                                        | 0,14                                             | 12                                         | 240                                           | 5,0 x 6,0                                    | ECV1EVZS470M0506V1XE3                                               |
|                                                       | 68                                 | 2 731                                                     | 520                                        | 0,14                                             | 17                                         | 240                                           | 5,0 x 6,0                                    | ECV1EVZS680M0506V1XE3                                               |
|                                                       | 100                                | 1 857                                                     | 280                                        | 0,14                                             | 25                                         | 300                                           | 6,3 x 6,0                                    | ECV1EVZS101M0606V1XE3                                               |
|                                                       | 150                                | 1 238                                                     | 180                                        | 0,14                                             | 38                                         | 600                                           | 6,3 x 7,7                                    | ECV1EVZS151M0607V1XE3                                               |
|                                                       | 220                                | 844                                                       | 180                                        | 0,14                                             | 55                                         | 600                                           | 6,3 x 7,7                                    | ECV1EVZS221M0607V1XE3                                               |
|                                                       | 470                                | 395                                                       | 100                                        | 0,14                                             | 118                                        | 850                                           | 8,0 x 10,2                                   | ECV1EVZS471M0810V1 $\Delta$ E3                                      |
|                                                       | 560                                | 332                                                       | 100                                        | 0,14                                             | 140                                        | 850                                           | 8,0 x 10,2                                   | ECV1EVZS561M0810V1 $\Delta$ E3                                      |
|                                                       | 680                                | 273                                                       | 90                                         | 0,14                                             | 170                                        | 1 190                                         | 10,0 x 10,2                                  | ECV1EVZS681M1010V1 $\Delta$ E3                                      |
| <b>35</b><br><b>(40)</b><br><b>1V</b>                 | 33                                 | 4 824                                                     | 520                                        | 0,12                                             | 12                                         | 240                                           | 5,0 x 6,0                                    | ECV1VVZS330M0506V1XE3                                               |
|                                                       | 47                                 | 3 387                                                     | 520                                        | 0,12                                             | 16                                         | 240                                           | 5,0 x 6,0                                    | ECV1VVZS470M0506V1XE3                                               |
|                                                       | 68                                 | 2 341                                                     | 280                                        | 0,12                                             | 24                                         | 300                                           | 6,3 x 6,0                                    | ECV1VVZS680M0606V1XE3                                               |
|                                                       | 100                                | 1 592                                                     | 280                                        | 0,12                                             | 35                                         | 300                                           | 5,0 x 6,0                                    | ECV1VVZS101M0506V1XE3                                               |
|                                                       | 150                                | 1 061                                                     | 180                                        | 0,12                                             | 53                                         | 600                                           | 6,3 x 7,7                                    | ECV1VVZS151M0607V1XE3                                               |
|                                                       | 330                                | 482                                                       | 100                                        | 0,12                                             | 116                                        | 850                                           | 8,0 x 10,2                                   | ECV1VVZS331M0810V1 $\Delta$ E3                                      |
|                                                       | 390                                | 408                                                       | 100                                        | 0,12                                             | 137                                        | 850                                           | 8,0 x 10,2                                   | ECV1VVZS391M0810V1 $\Delta$ E3                                      |
|                                                       | 560                                | 284                                                       | 90                                         | 0,12                                             | 196                                        | 1 190                                         | 10,0 x 10,2                                  | ECV1VVZS561M1010V1 $\Delta$ E3                                      |
| <b>50</b><br><b>(58)</b><br><b>1H</b>                 | 10                                 | 13 265                                                    | 880                                        | 0,10                                             | 5                                          | 165                                           | 5,0 x 6,0                                    | ECV1HVZS100M0506V1XE3                                               |
|                                                       | 22                                 | 6 030                                                     | 880                                        | 0,10                                             | 11                                         | 165                                           | 5,0 x 6,0                                    | ECV1HVZS220M0506V1XE3                                               |
|                                                       | 47                                 | 2 822                                                     | 680                                        | 0,10                                             | 24                                         | 195                                           | 6,3 x 6,0                                    | ECV1HVZS470M0606V1XE3                                               |
|                                                       | 68                                 | 1 951                                                     | 340                                        | 0,10                                             | 34                                         | 350                                           | 6,3 x 7,7                                    | ECV1HVZS680M0607V1XE3                                               |
|                                                       | 220                                | 603                                                       | 180                                        | 0,10                                             | 110                                        | 670                                           | 8,0 x 10,2                                   | ECV1HVZS221M0810V1 $\Delta$ E3                                      |
|                                                       | 330                                | 402                                                       | 120                                        | 0,10                                             | 165                                        | 900                                           | 10,0 x 10,2                                  | ECV1HVZS331M1010V1 $\Delta$ E3                                      |

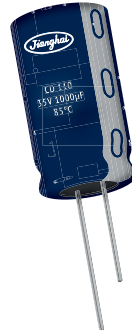
# GOOD TO KNOW:

Next to the possibility to subscribe to our newsletter, our website offers a lot of interesting technical information for you.

Just have a look!



<https://jianghai-europe.com>



# ELECTROLYTIC CAPACITORS

*Radial Type*

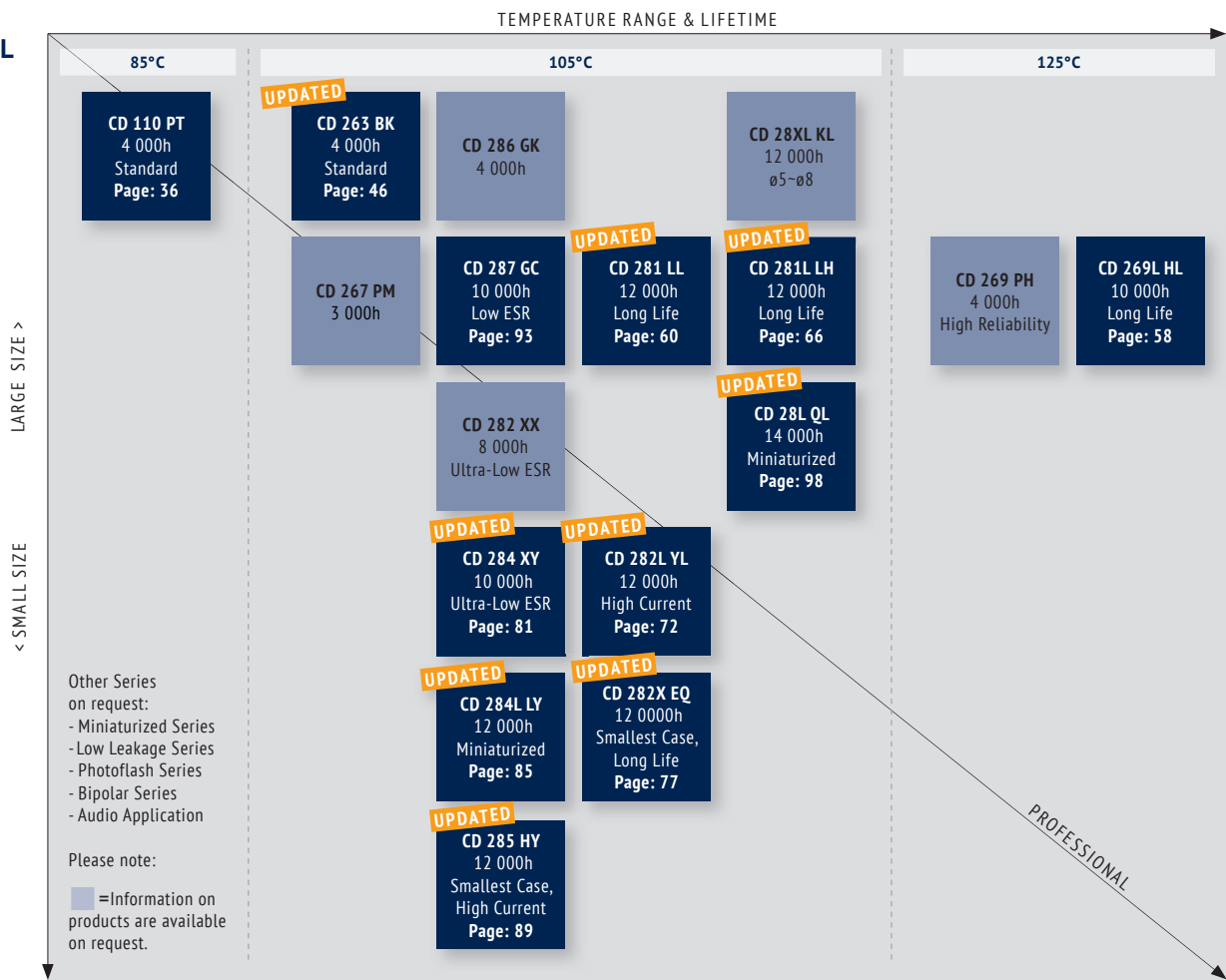
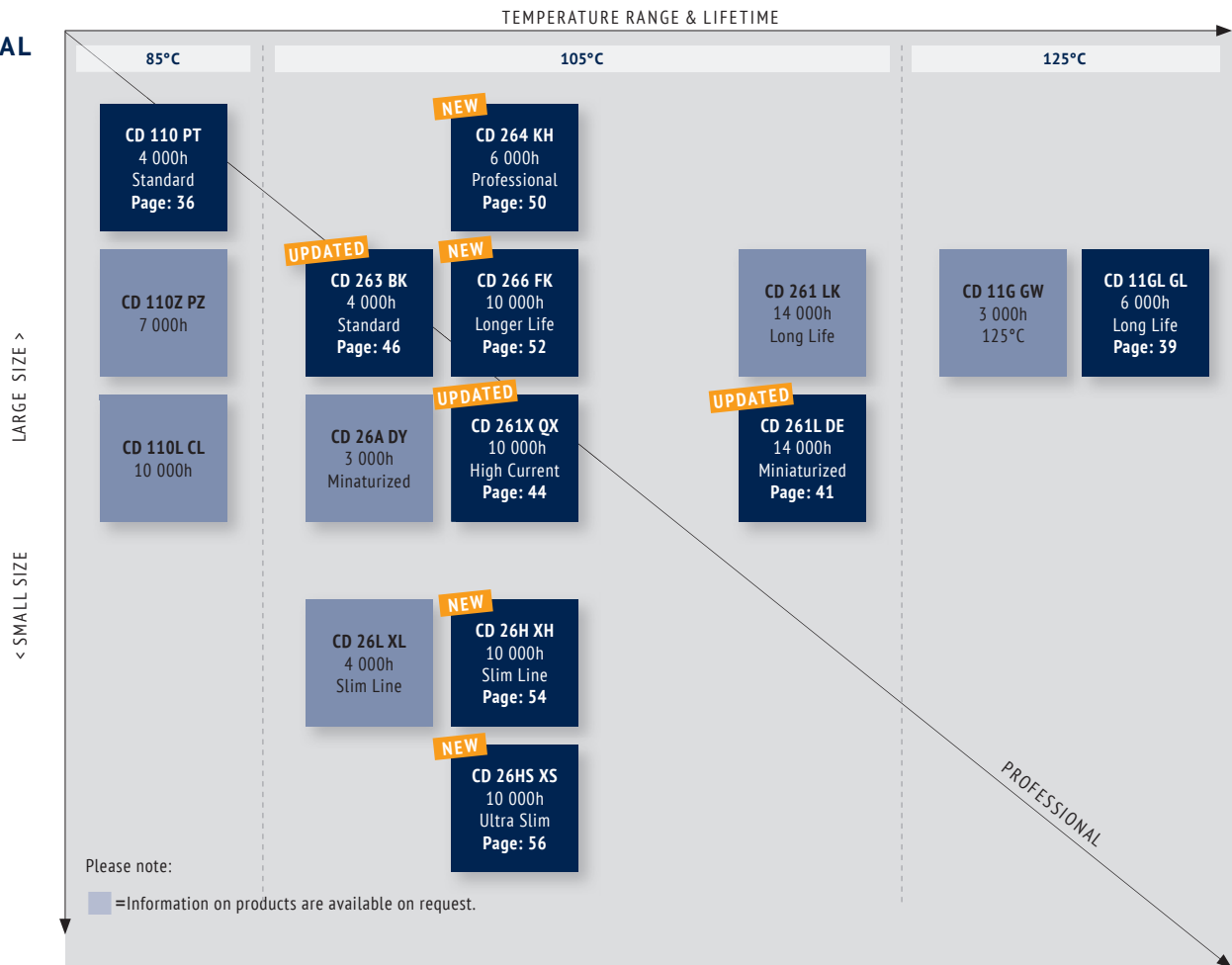
RADIAL

## OVERVIEW RADIAL

31

|                                        |    |
|----------------------------------------|----|
| Portfolio: All Radial Type at a glance | 32 |
| Order Code                             | 33 |
| Technical Specifications               | 34 |

| SERIES RADIAL | CODE       | TYPE   | TEMPERATURE | VOLTAGE  | LIFETIME | INFO                                |    |
|---------------|------------|--------|-------------|----------|----------|-------------------------------------|----|
| CD 110        | PT         | Radial | 85°C        | 6,3-500V | 4 000h   | Standard                            | 36 |
| CD 11GL       | GL         | Radial | 125°C       | 160-450V | 6 000h   | High Temperature, High Voltage      | 39 |
| CD 261L       | UPDATED DE | Radial | 105°C       | 160-450V | 14 000h  | Miniaturized, Longest Life          | 41 |
| CD 261X       | UPDATED QX | Radial | 105°C       | 160-550V | 12 000h  | High Voltage, Highest Currents      | 44 |
| CD 263        | UPDATED BK | Radial | 105°C       | 6,3-500V | 3 000h   | Standard                            | 46 |
| CD 264        | NEW KH     | Radial | 105°C       | 160-500V | 6 000h   | Oversize Dimension                  | 50 |
| CD 266        | NEW FK     | Radial | 105°C       | 160-500V | 10 000h  | Oversize Dimension, Longer Life     | 52 |
| CD 26H        | NEW XH     | Radial | 105°C       | 200-500V | 10 000h  | Slim line                           | 54 |
| CD 26 HS      | NEW XS     | Radial | 105°C       | 400-450V | 10 000h  | Slim line, Miniaturized             | 56 |
| CD 269L       | HL         | Radial | 125°C       | 10-100V  | 10 000h  | High Temperature, Long Life         | 58 |
| CD 281        | UPDATED LL | Radial | 105°C       | 6,3-100V | 12 000h  | Low ESR, Long Life                  | 60 |
| CD 281L       | UPDATED LH | Radial | 105°C       | 6,3-100V | 12 000h  | Low ESR, Long Life                  | 66 |
| CD 282L       | UPDATED YL | Radial | 105°C       | 6,3-100V | 12 000h  | High Current, Ultra Low ESR         | 72 |
| CD 282X       | UPDATED EQ | Radial | 105°C       | 6,3-100V | 12 000h  | High Current, Miniaturized          | 77 |
| CD 284        | UPDATED XY | Radial | 105°C       | 6,3-100V | 10 000h  | High Current, Ultra Low ESR         | 81 |
| CD 284L       | UPDATED LY | Radial | 105°C       | 6,3-100V | 12 000h  | Miniaturized                        | 85 |
| CD 285        | UPDATED HY | Radial | 105°C       | 6,3-100V | 12 000h  | Highest Current                     | 89 |
| CD 287        | GC         | Radial | 105°C       | 6,3-100V | 10 000h  | Low ESR                             | 93 |
| CD 28L        | UPDATED QL | Radial | 105°C       | 6,3-63V  | 14 000h  | Low ESR, Miniaturized, Longest Life | 98 |

**RADIAL  
6,3V  
~  
100V****RADIAL  
160V  
~  
550V**



## ORDER CODE FOR RADIAL CAPACITORS

| EC                        | R               | 2G                 | QX                | 221               | M                     | LL                  | 50               | 1012                | -                 | -                    | JExxxxx           |
|---------------------------|-----------------|--------------------|-------------------|-------------------|-----------------------|---------------------|------------------|---------------------|-------------------|----------------------|-------------------|
| Techno-logy               | Terminal Type   | Rated Voltage Code | Series Code       | Capacitance Code  | Capacitance Tolerance | Terminal Style      | Terminal / Pitch | Dimension (mm)      | Material Code     | Rubber Type          | for Specials only |
| EC Electrolytic Capacitor | Radial <b>R</b> | 6,3V <b>0J</b>     | CD 110 <b>PT</b>  | 0,1 <b>0R1</b>    | <b>±20%</b> <b>M</b>  | Taped <b>FF</b>     | 2,0mm <b>20</b>  | 4x7 <b>0407</b>     | Standard <b>-</b> | Standard <b>-</b>    |                   |
|                           |                 | 10V <b>1A</b>      | CD 11GL <b>GL</b> | 0,47 <b>R47</b>   | ±10% <b>K</b>         | Long Lead <b>LL</b> | 2,5mm <b>25</b>  | 5x11,5 <b>0511</b>  | PVC <b>V</b>      | Flat Rubber <b>F</b> |                   |
|                           |                 | 16V <b>1C</b>      | CD 261L <b>DE</b> | 1,0 <b>010</b>    | +30 / -10% <b>Q</b>   | Cut 5,0mm <b>CB</b> | 3,5mm <b>35</b>  | 10x20 <b>1020</b>   | PET <b>E</b>      | Stand-Off <b>S</b>   |                   |
|                           |                 | 20V <b>1D</b>      | CD 261X <b>QX</b> | 2,2 <b>2R2</b>    | +20 / -0% <b>R</b>    | Cut 4,5mm <b>CC</b> | 5,0mm <b>50</b>  | 12,5x25 <b>1225</b> |                   |                      |                   |
|                           |                 | 25V <b>1E</b>      | CD 263 <b>BK</b>  | 100 <b>101</b>    | ±15% <b>L</b>         | Cut 4,0mm <b>CD</b> | 7,5mm <b>75</b>  |                     |                   |                      |                   |
|                           |                 | 35V <b>1V</b>      | CD 264 <b>KH</b>  | 1 000 <b>102</b>  | +20 / -10% <b>V</b>   | Cut 3,5mm <b>CE</b> | 10,0mm <b>10</b> |                     |                   |                      |                   |
|                           |                 | 40V <b>1G</b>      | CD 266 <b>FK</b>  | 10 000 <b>103</b> | <b> = preferred</b>   | Cut 3,0mm <b>CF</b> | 12,5mm <b>12</b> |                     |                   |                      |                   |
|                           |                 | 50V <b>1H</b>      | CD 26H <b>XH</b>  |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 63V <b>1J</b>      | CD 26HS <b>XS</b> |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 80V <b>1K</b>      | CD 269L <b>HL</b> |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 100V <b>2A</b>     | CD 281 <b>LL</b>  |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 125V <b>2B</b>     | CD 281L <b>LH</b> |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 160V <b>2C</b>     | CD 282L <b>YL</b> |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 180V <b>2K</b>     | CD 282X <b>EQ</b> |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 200V <b>2D</b>     | CD 284 <b>XY</b>  |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 250V <b>2E</b>     | CD 284L <b>LY</b> |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 350V <b>2V</b>     | CD 285 <b>HY</b>  |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 385V <b>2J</b>     | CD 287 <b>GC</b>  |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 400V <b>2G</b>     | CD 28L <b>QL</b>  |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 415V <b>2P</b>     |                   |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 420V <b>2X</b>     |                   |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 450V <b>2W</b>     |                   |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 500V <b>2H</b>     |                   |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 550V <b>2Y</b>     |                   |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 575V <b>2Z</b>     |                   |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 600V <b>2S</b>     |                   |                   |                       |                     |                  |                     |                   |                      |                   |
|                           |                 | 630V <b>J2</b>     |                   |                   |                       |                     |                  |                     |                   |                      |                   |

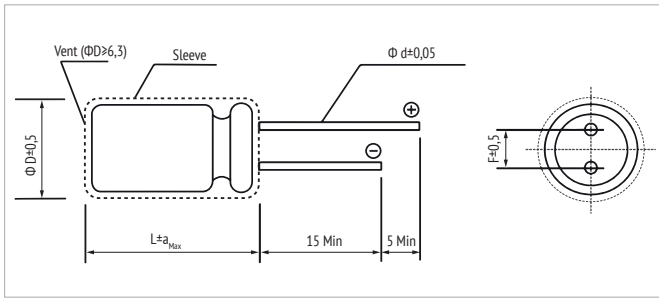
On request:  
Alternative lead forms  
(keyed polarity, 90° bended, others)

Packaging:  
Taped: ammopack  
Long lead & cut: bulk



## DIMENSIONS FOR LOOSE, LONG-LEAD TYPE (BULK)

· ORDER CODE: LL



| L                | L ≤ 7 |     |      |     |     | L ≥ 11 |     |     |     |      |     |    |      |      |    |
|------------------|-------|-----|------|-----|-----|--------|-----|-----|-----|------|-----|----|------|------|----|
| Ø D              | 3     | 4   | 5    | 6,3 | 8   | 5      | 6,3 | 8   | 10  | 12,5 | 16  | 18 | 20   | 22   | 25 |
| F                | 1,0   | 1,5 | 2,0  | 2,5 | 3,5 | 2,0    | 2,5 | 3,5 | 5,0 |      | 7,5 |    | 10,0 | 12,5 |    |
| Ø d              | 0,4   |     | 0,45 |     |     | 0,5    |     | 0,6 |     | 0,8  |     |    | 1,0  |      |    |
| a <sub>Max</sub> |       | 1,0 |      |     |     |        | 2,0 |     |     |      |     |    | 2,5  |      |    |

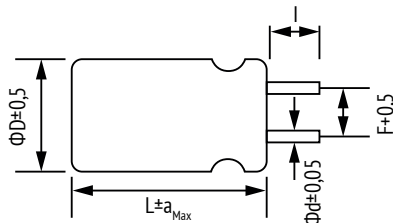
For diameter 20 pitch 7,5 or 10.

in mm

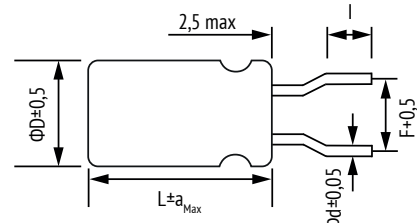
## DIMENSIONS FOR LOOSE, SHORT CUT LEADS (BULK)

· ORDER CODE: CC (CB, CD, CE, CF)

### STRAIGHT LEAD



### BENDED LEAD



| Code | CB        | CC        | CD        | CE        | CF        |
|------|-----------|-----------|-----------|-----------|-----------|
| I    | 5,0 ± 0,5 | 4,5 ± 0,5 | 4,0 ± 0,5 | 3,5 ± 0,5 | 3,0 ± 0,5 |

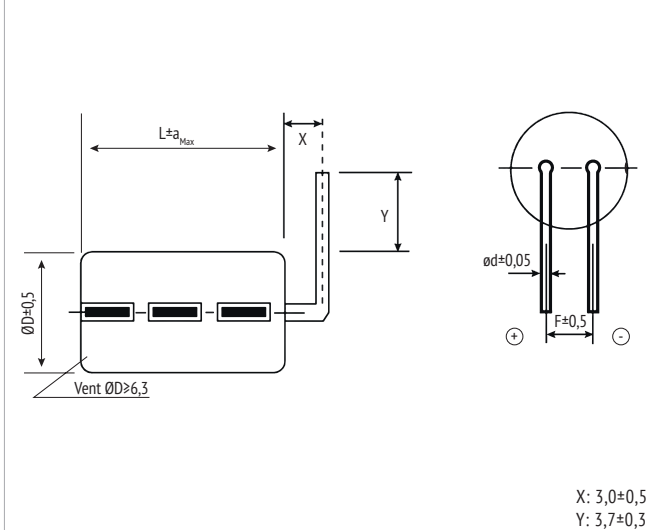
■ = preferred

in mm

## EXAMPLE OF ALTERNATIVE BENDINGS

· ORDER CODE: WS

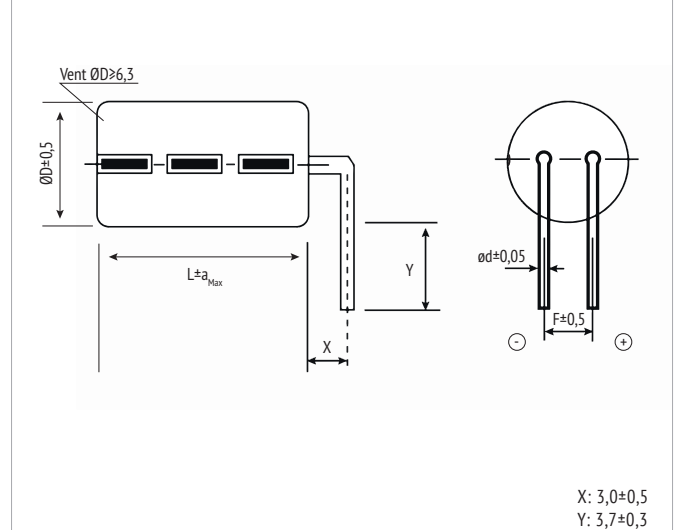
90° LEADS UP  
Diameter ≥ 10mm



X: 3,0±0,5  
Y: 3,7±0,3

· ORDER CODE: WX

90° LEADS DOWN  
Diameter ≥ 10mm



X: 3,0±0,5  
Y: 3,7±0,3

## DIMENSIONS FOR AMMOPACK TAPING FOR ELECTROLYTIC CAPACITORS

· ORDER CODE: FF (FD)

Fig 1

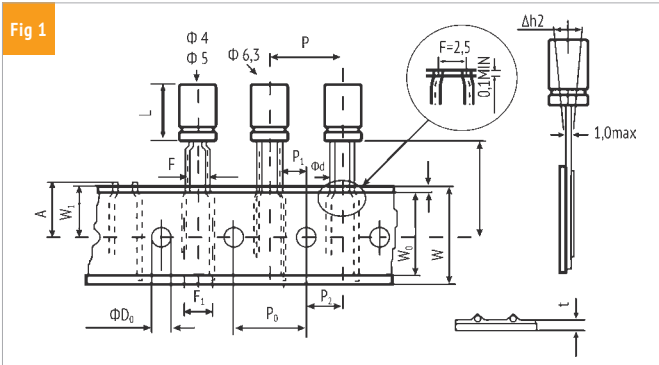


Fig 2

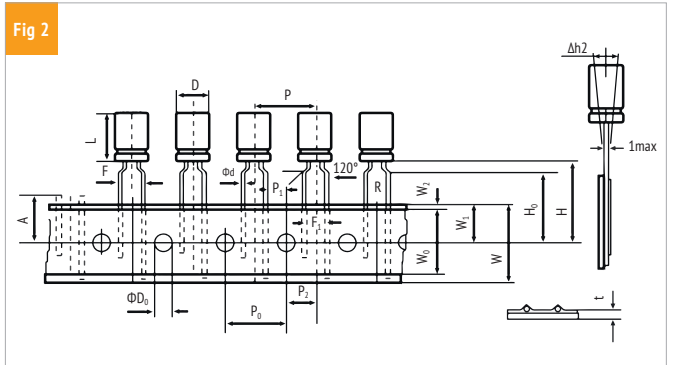


Fig 3a

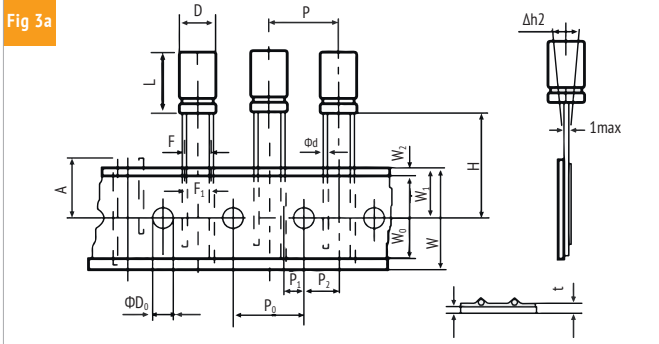


Fig 3b

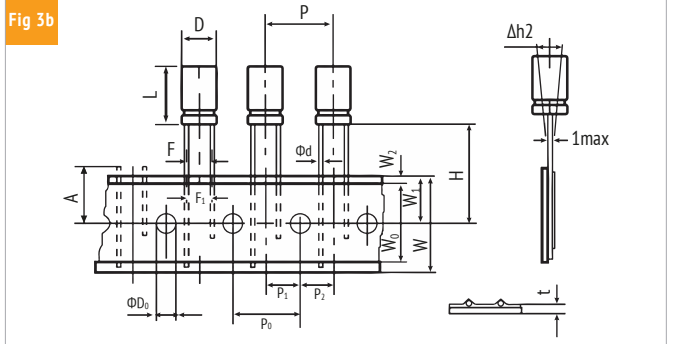
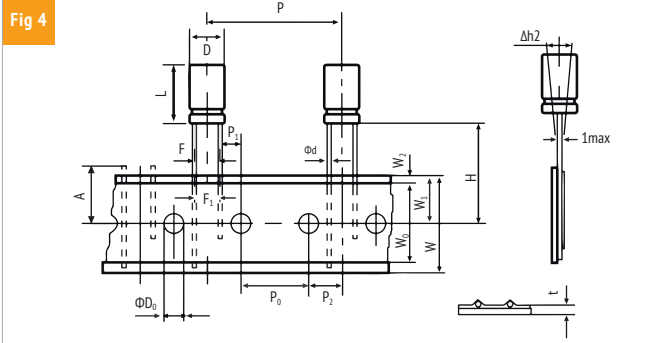


Fig 4



OTHER TAPING STYLES AVAILABLE ON REQUEST.

| ITEM    | D     | L       | Ød     | P          | P <sub>0</sub> | P <sub>1</sub> | P <sub>2</sub> | F              | F <sub>1</sub> | W     | W <sub>0</sub> | W <sub>1</sub> | W <sub>2</sub> | H               | H <sub>0</sub> | A    | ØD <sub>0</sub> | Δh <sub>2</sub> | t     | Fig.    | Taping Code |
|---------|-------|---------|--------|------------|----------------|----------------|----------------|----------------|----------------|-------|----------------|----------------|----------------|-----------------|----------------|------|-----------------|-----------------|-------|---------|-------------|
| ToL.    | ± 0,5 | ± 2,0   | ± 0,05 | ± 1,0      | ± 0,2          | ± 0,5          | ± 1,0          | + 0,8<br>- 0,2 | ± 1,0          | ± 0,5 | min            | ± 0,5          | max            | + 0,75<br>- 0,5 | ± 0,5          | max  | ± 0,5           | max             | ± 0,2 |         |             |
| Nominal | 4     | 7       | 0,45   | 12,7       | 12,7           | 5,1<br>3,85    | 6,35           | 2,5<br>5       | 3,5<br>5       | 18,0  | 10,0           | 9,0            | 1,5            | 18,5<br>17,5    | -<br>16,0      | 11,0 | 4,0             | 1,0             | 0,7   | 1       | FF          |
|         |       | 7       | 0,45   | 12,7       | 12,7           | 5,1<br>3,85    | 6,35           | 2,5<br>5       | 3,5<br>5       | 18,0  | 10,0           | 9,0            | 1,5            | 18,5<br>17,5    | -<br>16,0      | 11,0 | 4,0             | 1,0             | 0,7   | 1       | FF          |
|         |       | 11,5~15 | 0,5    | 12,7       | 12,7           | 5,1<br>3,85    | 6,35           | 2,5<br>5       | 3,5<br>5       | 18,0  | 10,0           | 9,0            | 1,5            | 18,5<br>17,5    | -<br>16,0      | 11,0 | 4,0             | 1,0             | 0,7   | 1       | FF          |
|         |       |         |        |            |                |                |                |                |                |       |                |                |                |                 |                |      |                 |                 |       | 2       | FF          |
|         |       |         |        |            |                |                |                |                |                |       |                |                |                |                 |                |      |                 |                 |       | 1       | FF          |
|         |       |         |        |            |                |                |                |                |                |       |                |                |                |                 |                |      |                 |                 |       | 2       | FF          |
|         | 6,3   | 7       | 0,45   | 12,7       | 12,7           | 5,1<br>3,85    | 6,35           | 2,5<br>5       | 3,5<br>5       | 18,0  | 10,0           | 9,0            | 1,5            | 18,5<br>17,5    | -<br>16,0      | 11,0 | 4,0             | 1,0             | 0,7   | 1       | FF          |
|         |       | 11,5~15 | 0,5    | 12,7       | 12,7           | 5,1<br>3,85    | 6,35           | 2,5<br>5       | 3,5<br>5       | 18,0  | 10,0           | 9,0            | 1,5            | 18,5<br>17,5    | -<br>16,0      | 11,0 | 4,0             | 1,0             | 0,7   | 1       | FF          |
|         |       |         |        |            |                |                |                |                |                |       |                |                |                |                 |                |      |                 |                 |       | 2       | FF          |
|         | 8     | 11,5~20 | 0,6    | 12,7       | 12,7           | 4,6<br>3,85    | 6,35           | 3,5<br>5       | 3,5<br>5       | 18,0  | 10,0           | 9,0            | 1,5            | 18,5<br>20,0    | -<br>16,0      | 11,0 | 4,0             | 1,0             | 0,7   | 3a      | FF          |
|         |       |         |        |            |                |                |                |                |                |       |                |                |                |                 |                |      |                 |                 |       | 2       | FF          |
|         | 10    | 12,5~36 | 0,6    | 12,7       | 12,7           | 3,85           | 6,35           | 5              | 5              | 18,0  | 10,0           | 9,0            | 1,5            | 18,5            | -              | 11,0 | 4,0             | 1,0             | 0,7   | 3b      | FF          |
|         | 12,5  | 15~36   | 0,6    | 15<br>25,4 | 15<br>12,7     | 5,0<br>3,85    | 7,5<br>6,35    | 5              | 5              | 18,0  | 12,0           | 9,0            | 1,5            | 18,5            | -              | 11,0 | 4,0             | 1,0             | 0,7   | 3b<br>4 | FF<br>FD    |
|         | 16    | 15~31,5 | 0,8    | 30         | 15             | 3,75           | 7,5            | 7,5            | 7,5            | 18,0  | 12,0           | 9,0            | 1,5            | 18,5            | -              | 11,0 | 4,0             | 1,0             | 0,7   | 4       | FD          |
|         | 18    | 15~25,5 | 0,8    | 30         | 15             | 3,75           | 7,5            | 7,5            | 7,5            | 18,0  | 12,0           | 9,0            | 1,5            | 18,5            | -              | 11,0 | 4,0             | 1,0             | 0,7   | 4       | FD          |

Other taping styles available on request

in mm

3 000-4 000h at 85°C

· Standard 85°C

CD 263 BK  
3 000h 105°C  
Standard

105°C

CD 110 PT  
4 000h 85°C  
Standard

Longer life

CD 287 GC  
10 000h 105°C  
Low ESR  
Low Voltage

CD 264 KH  
6 000h 105°C  
High Voltage

## ITEM CHARACTERISTICS

|                                     |              |           |
|-------------------------------------|--------------|-----------|
| Operating Temperature Range (°C)    | -40 ~ +85    | -25 ~ +85 |
| Voltage Range (V)                   | 6,3 ~ 250    | 350 ~ 500 |
| Capacitance Range (µF)              | 0,1 ~ 22 000 |           |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%        |           |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

| Leakage Current | Rated Voltage (V) | 6,3 ~ 100                                                                                                 | 160 ~ 500                                                                                                  |
|-----------------|-------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
|                 | $I_{Leakage}$     | After 1 minute at 20°C application of rated voltage, leakage current is not more than specified in table. | After 2 minutes at 20°C application of rated voltage, leakage current is not more than specified in table. |

| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)       | 6,3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | 500 |
|---------------------------------------------------------|-------------------------|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
|                                                         | $Z_{-25°C} / Z_{+20°C}$ | 4   | 3  | 2  |    |    | 3  |    |     | 6   |     |     |     |     |     |     |
|                                                         | $Z_{-40°C} / Z_{+20°C}$ | 8   | 6  | 4  | 3  |    |    | 8  |     |     |     |     |     |     |     |     |

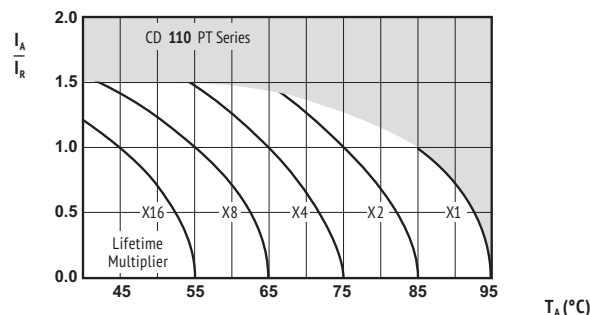
| ITEM                                                                    | USEFUL LIFE                                                   |                                                                 | LOAD LIFE                             | ENDURANCE TEST                          | SHELF LIFE                            |                                                                        |
|-------------------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|------------------------------------------------------------------------|
| Lifetime                                                                | $\emptyset \leq 8 : 3\,000h$<br>$\emptyset \geq 10 : 4\,000h$ | $\emptyset \leq 8 : 35\,000h$<br>$\emptyset \geq 10 : 50\,000h$ | 2 000h                                | 2 000h                                  | 1 000h                                |                                                                        |
| Leakage Current                                                         | Not more than specified value                                 |                                                                 | Not more than specified value         | Not more than specified value           | Not more than specified value         |                                                                        |
| Capacitance Change                                                      | Within ± 50% of initial value                                 |                                                                 | Within ± 20% of initial value         | Within ± 20% of initial value           | Within ± 20% of initial value         |                                                                        |
| Dissipation Factor                                                      | Not more than 300% of specified value                         |                                                                 | Not more than 200% of specified value | Not more than 150% of specified value   | Not more than 200% of specified value |                                                                        |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>85°C                                        | $U_R$<br>$1,4 \times I_R$<br>40°C                               | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$I_R = 0$<br>85°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>85°C        | After test:<br>$U_R$ to be applied for 30 min > 24h before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Rated Voltage (V) | Frequency<br>CV (µFV) | 50Hz | 120Hz | 1kHz | 10kHz | 100kHz |
|-------------------|-----------------------|------|-------|------|-------|--------|
| 6,3 ~ 16          | -                     | 0,80 | 1,00  | 1,10 | 1,20  | 1,20   |
| 25 ~ 35           | ≤ 1 000               | 0,80 | 1,00  | 1,50 | 1,70  | 1,70   |
|                   | > 1 000               | 0,80 | 1,00  | 1,20 | 1,30  | 1,30   |
| 50 ~ 100          | ≤ 1 000               | 0,80 | 1,00  | 1,60 | 1,90  | 1,90   |
|                   | > 1 000               | 0,80 | 1,00  | 1,20 | 1,30  | 1,30   |
| 160 ~ 500         | -                     | 0,80 | 1,00  | 1,30 | 1,50  | 1,60   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 85°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code<br>Details: Page 33 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------------------------|----------------|------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (Ω)                                                              |                                          | (μA)                                 | (mA <sub>rms</sub> )                                   | (mm)           |                                                                              |
| <b>6,3<br/>(7,2)<br/>0J</b>                 | 33                                  | 8,9                                                              | 0,22                                     | 3                                    | 60                                                     | 5 x 11,5       | ECR0JPT330M◇◇△△0511                                                          |
|                                             | 47                                  | 6,3                                                              | 0,22                                     | 3                                    | 70                                                     | 5 x 11,5       | ECR0JPT470M◇◇△△0511                                                          |
|                                             | 100                                 | 3,0                                                              | 0,22                                     | 7                                    | 100                                                    | 5 x 11,5       | ECR0JPT101M◇◇△△0511                                                          |
|                                             | 220                                 | 1,4                                                              | 0,22                                     | 14                                   | 200                                                    | 5 x 11,5       | ECR0JPT221M◇◇△△0511                                                          |
|                                             | 330                                 | 0,88                                                             | 0,22                                     | 21                                   | 270                                                    | 6,3 x 11,5     | ECR0JPT331M◇◇△△0611                                                          |
|                                             | 470                                 | 0,62                                                             | 0,22                                     | 30                                   | 322                                                    | 6,3 x 11,5     | ECR0JPT471M◇◇△△0611                                                          |
|                                             |                                     | 0,62                                                             | 0,22                                     | 30                                   | 300                                                    | 8 x 11,5       | ECR0JPT471M◇◇△△0811                                                          |
|                                             | 1 000                               | 0,29                                                             | 0,22                                     | 63                                   | 546                                                    | 8 x 11,5       | ECR0JPT102M◇◇△△0811                                                          |
|                                             |                                     | 0,29                                                             | 0,22                                     | 63                                   | 530                                                    | 10 x 12,5      | ECR0JPT102M◇◇△△1012                                                          |
|                                             | 2 200                               | 0,14                                                             | 0,24                                     | 139                                  | 1010                                                   | 10 x 20        | ECR0JPT222M◇◇△△1020                                                          |
|                                             | 3 300                               | 0,10                                                             | 0,26                                     | 208                                  | 1230                                                   | 10 x 20        | ECR0JPT332M◇◇△△1020                                                          |
|                                             | 4 700                               | 0,080                                                            | 0,28                                     | 297                                  | 1710                                                   | 12,5 x 20      | ECR0JPT472M◇◇△△1220                                                          |
|                                             |                                     | 0,080                                                            | 0,28                                     | 297                                  | 1700                                                   | 16 x 25        | ECR0JPT472M◇◇△△1625                                                          |
|                                             | 6 800                               | 0,063                                                            | 0,32                                     | 429                                  | 1930                                                   | 12,5 x 25      | ECR0JPT682M◇◇△△1225                                                          |
|                                             |                                     | 0,063                                                            | 0,32                                     | 429                                  | 1900                                                   | 16 x 25        | ECR0JPT682M◇◇△△1625                                                          |
|                                             | 10 000                              | 0,054                                                            | 0,40                                     | 630                                  | 2450                                                   | 16 x 25        | ECR0JPT103M◇◇△△1625                                                          |
|                                             | 15 000                              | 0,045                                                            | 0,50                                     | 945                                  | 2860                                                   | 16 x 35,5      | ECR0JPT153M◇◇△△1635                                                          |
|                                             |                                     | 0,045                                                            | 0,50                                     | 945                                  | 2900                                                   | 18 x 35,5      | ECR0JPT153M◇◇△△1835                                                          |
|                                             | 22 000                              | 0,040                                                            | 0,64                                     | 1386                                 | 3340                                                   | 18 x 40        | ECR0JPT223M◇◇△△1840                                                          |

|                           |        |       |      |      |      |            |                     |
|---------------------------|--------|-------|------|------|------|------------|---------------------|
| <b>10<br/>(13)<br/>1A</b> | 33     | 7,7   | 0,19 | 4    | 65   | 5 x 11,5   | ECR1APT330M◇◇△△0511 |
|                           | 47     | 5,4   | 0,19 | 5    | 99   | 5 x 11,5   | ECR1APT470M◇◇△△0511 |
|                           | 100    | 2,6   | 0,19 | 10   | 146  | 5 x 11,5   | ECR1APT101M◇◇△△0511 |
|                           | 220    | 1,2   | 0,19 | 22   | 240  | 6,3 x 11,5 | ECR1APT221M◇◇△△0611 |
|                           | 330    | 0,77  | 0,19 | 33   | 290  | 6,3 x 11,5 | ECR1APT331M◇◇△△0611 |
|                           | 330    | 0,77  | 0,19 | 33   | 270  | 8 x 11,5   | ECR1APT331M◇◇△△0811 |
|                           | 470    | 0,54  | 0,19 | 47   | 417  | 8 x 11,5   | ECR1APT471M◇◇△△0811 |
|                           | 1 000  | 0,25  | 0,19 | 100  | 650  | 10 x 12,5  | ECR1APT102M◇◇△△1012 |
|                           | 2 200  | 0,13  | 0,21 | 220  | 1080 | 10 x 20    | ECR1APT222M◇◇△△1020 |
|                           | 3 300  | 0,10  | 0,23 | 330  | 1430 | 12,5 x 20  | ECR1APT332M◇◇△△1220 |
|                           | 4 700  | 0,071 | 0,25 | 470  | 1780 | 12,5 x 25  | ECR1APT472M◇◇△△1225 |
|                           |        | 0,071 | 0,25 | 470  | 1800 | 16 x 25    | ECR1APT472M◇◇△△1625 |
|                           | 6 800  | 0,060 | 0,29 | 680  | 2220 | 16 x 25    | ECR1APT682M◇◇△△1625 |
|                           | 10 000 | 0,050 | 0,37 | 1000 | 2700 | 16 x 35,5  | ECR1APT103M◇◇△△1635 |
|                           |        | 0,050 | 0,37 | 1000 | 2750 | 18 x 35,5  | ECR1APT103M◇◇△△1835 |
|                           | 15 000 | 0,042 | 0,47 | 1500 | 3100 | 18 x 35,5  | ECR1APT153M◇◇△△1835 |

|                           |        |       |      |      |      |            |                     |
|---------------------------|--------|-------|------|------|------|------------|---------------------|
| <b>16<br/>(20)<br/>1C</b> | 10     | 21,2  | 0,16 | 3    | 50   | 5 x 11,5   | ECR1CPT100M◇◇△△0511 |
|                           | 22     | 9,7   | 0,16 | 4    | 75   | 5 x 11,5   | ECR1CPT220M◇◇△△0511 |
|                           | 33     | 6,5   | 0,16 | 6    | 92   | 5 x 11,5   | ECR1CPT330M◇◇△△0511 |
|                           | 47     | 4,6   | 0,16 | 8    | 110  | 5 x 11,5   | ECR1CPT470M◇◇△△0511 |
|                           | 100    | 2,2   | 0,16 | 16   | 160  | 5 x 11,5   | ECR1CPT101M◇◇△△0511 |
|                           | 220    | 0,97  | 0,16 | 36   | 264  | 6,3 x 11,5 | ECR1CPT221M◇◇△△0611 |
|                           |        | 0,97  | 0,16 | 36   | 240  | 8 x 11,5   | ECR1CPT221M◇◇△△0811 |
|                           | 330    | 0,64  | 0,16 | 53   | 383  | 8 x 11,5   | ECR1CPT331M◇◇△△0811 |
|                           | 470    | 0,45  | 0,16 | 76   | 457  | 8 x 11,5   | ECR1CPT471M◇◇△△0811 |
|                           | 470    | 0,46  | 0,16 | 76   | 420  | 10 x 12,5  | ECR1CPT471M◇◇△△1012 |
|                           | 1 000  | 0,21  | 0,16 | 160  | 791  | 10 x 16    | ECR1CPT102M◇◇△△1016 |
|                           | 2 200  | 0,11  | 0,18 | 352  | 1350 | 12,5 x 20  | ECR1CPT222M◇◇△△1220 |
|                           | 3 300  | 0,081 | 0,20 | 528  | 1690 | 12,5 x 25  | ECR1CPT332M◇◇△△1225 |
|                           |        | 0,081 | 0,20 | 528  | 1650 | 16 x 25    | ECR1CPT332M◇◇△△1625 |
|                           | 4 700  | 0,063 | 0,22 | 752  | 2100 | 16 x 25    | ECR1CPT472M◇◇△△1625 |
|                           | 6 800  | 0,051 | 0,26 | 1088 | 2580 | 16 x 35,5  | ECR1CPT682M◇◇△△1635 |
|                           |        | 0,051 | 0,26 | 1088 | 2600 | 18 x 35,5  | ECR1CPT682M◇◇△△1835 |
|                           | 10 000 | 0,050 | 0,34 | 1600 | 3130 | 18 x 35,5  | ECR1CPT103M◇◇△△1835 |

|                           |       |      |      |     |      |            |                     |
|---------------------------|-------|------|------|-----|------|------------|---------------------|
| <b>25<br/>(32)<br/>1E</b> | 4,7   | 39,5 | 0,14 | 3   | 38   | 5 x 11,5   | ECR1EPT4R7M◇◇△△0511 |
|                           | 10    | 18,6 | 0,14 | 3   | 55   | 5 x 11,5   | ECR1EPT100M◇◇△△0511 |
|                           | 22    | 8,5  | 0,14 | 6   | 82   | 5 x 11,5   | ECR1EPT220M◇◇△△0511 |
|                           | 33    | 5,7  | 0,14 | 9   | 100  | 5 x 11,5   | ECR1EPT330M◇◇△△0511 |
|                           | 47    | 4,0  | 0,14 | 12  | 118  | 5 x 11,5   | ECR1EPT470M◇◇△△0511 |
|                           | 100   | 1,9  | 0,14 | 25  | 199  | 6,3 x 11,5 | ECR1EPT101M◇◇△△0611 |
|                           | 220   | 0,84 | 0,14 | 55  | 349  | 8 x 11,5   | ECR1EPT221M◇◇△△0811 |
|                           | 330   | 0,56 | 0,14 | 83  | 510  | 10 x 12,5  | ECR1EPT331M◇◇△△1012 |
|                           | 470   | 0,40 | 0,14 | 118 | 545  | 10 x 12,5  | ECR1EPT471M◇◇△△1012 |
|                           | 1 000 | 0,19 | 0,14 | 250 | 996  | 10 x 20    | ECR1EPT102M◇◇△△1020 |
|                           | 2 200 | 0,10 | 0,16 | 550 | 1660 | 12,5 x 25  | ECR1EPT222M◇◇△△1225 |
|                           |       | 0,10 | 0,16 | 550 | 1500 | 16 x 25    | ECR1EPT222M◇◇△△1625 |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code<br>Details: Page 33 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------------------------|----------------|------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (Ω)                                                              |                                          | (μA)                                 | (mA <sub>rms</sub> )                                   | (mm)           |                                                                              |
| <b>25<br/>(32)<br/>1E</b>                   | 3 300                               | 0,070                                                            | 0,18                                     | 825                                  | 2030                                                   | 16 x 25        | ECR1EPT332M◇◇△△1625                                                          |
|                                             | 4 700                               | 0,060                                                            | 0,20                                     | 1175                                 | 2650                                                   | 16 x 31,5      | ECR1EPT472M◇◇△△1631                                                          |
|                                             | 6 800                               | 0,050                                                            | 0,24                                     | 1700                                 | 3290                                                   | 18 x 35,5      | ECR1EPT682M◇◇△△1835                                                          |

|                           |       |       |      |      |      |            |                     |
|---------------------------|-------|-------|------|------|------|------------|---------------------|
| <b>35<br/>(44)<br/>1V</b> | 4,7   | 33,9  | 0,12 | 3    | 40   | 5 x 11,5   | ECR1VPT4R7M◇◇△△0511 |
|                           | 10    | 15,9  | 0,12 | 4    | 59   | 5 x 11,5   | ECR1VPT100M◇◇△△0511 |
|                           | 22    | 7,3   | 0,12 | 8    | 87   | 5 x 11,5   | ECR1VPT220M◇◇△△0511 |
|                           | 33    | 4,9   | 0,12 | 12   | 107  | 5 x 11,5   | ECR1VPT330M◇◇△△0511 |
|                           | 47    | 3,4   | 0,12 | 17   | 130  | 5 x 11,5   | ECR1VPT470M◇◇△△0511 |
|                           | 100   | 1,6   | 0,12 | 35   | 214  | 6,3 x 11,5 | ECR1VPT101M◇◇△△0601 |
|                           |       | 1,6   | 0,12 | 35   | 190  | 8 x 11,5   | ECR1VPT101M◇◇△△0811 |
|                           | 220   | 0,72  | 0,12 | 77   | 443  | 8 x 11,5   | ECR1VPT221M◇◇△△0811 |
|                           |       | 0,72  | 0,12 | 77   | 440  | 10 x 12,5  | ECR1VPT221M◇◇△△1012 |
|                           | 330   | 0,48  | 0,12 | 116  | 542  | 10 x 12,5  | ECR1VPT331M◇◇△△1012 |
|                           | 470   | 0,34  | 0,12 | 165  | 664  | 10 x 16    | ECR1VPT471M◇◇△△1016 |
|                           | 1 000 | 0,16  | 0,12 | 350  | 1210 | 12,5 x 20  | ECR1VPT102M◇◇△△1220 |
|                           | 2 200 | 0,080 | 0,14 | 770  | 1950 | 16 x 25    | ECR1VPT222M◇◇△△1625 |
|                           | 3 300 | 0,060 | 0,16 | 1155 | 2510 | 16 x 35,5  | ECR1VPT332M◇◇△△1635 |
|                           | 4 700 | 0,050 | 0,18 | 1645 | 2990 | 18 x 35,5  | ECR1VPT472M◇◇△△1835 |

|                           |       |       |      |      |      |            |                     |
|---------------------------|-------|-------|------|------|------|------------|---------------------|
| <b>50<br/>(63)<br/>1H</b> | 0,10  | 1327  | 0,10 | 3    | 3    | 5 x 11,5   | ECR1HPT0R1M◇◇△△0511 |
|                           | 0,22  | 603   | 0,10 | 3    | 6    | 5 x 11,5   | ECR1HPTR22M◇◇△△0511 |
|                           | 0,33  | 402   | 0,10 | 3    | 9    | 5 x 11,5   | ECR1HPTR33M◇◇△△0511 |
|                           | 0,47  | 282   | 0,10 | 3    | 13   | 5 x 11,5   | ECR1HPTR47M◇◇△△0511 |
|                           | 1,0   | 133   | 0,10 | 3    | 21   | 5 x 11,5   | ECR1HPT010M◇◇△△0511 |
|                           | 2,2   | 60,3  | 0,10 | 3    | 31   | 5 x 11,5   | ECR1HPT2R2M◇◇△△0511 |
|                           | 3,3   | 40,2  | 0,10 | 3    | 38   | 5 x 11,5   | ECR1HPT3R3M◇◇△△0511 |
|                           | 4,7   | 28,2  | 0,10 | 3    | 45   | 5 x 11,5   | ECR1HPT4R7M◇◇△△0511 |
|                           | 10    | 13,3  | 0,10 | 5    | 66   | 5 x 11,5   | ECR1HPT100M◇◇△△0511 |
|                           | 22    | 6,1   | 0,10 | 11   | 98   | 5 x 11,5   | ECR1HPT220M◇◇△△0511 |
|                           | 33    | 4,1   | 0,10 | 17   | 126  | 5 x 11,5   | ECR1HPT330M◇◇△△0511 |
|                           | 47    | 2,9   | 0,10 | 24   | 155  | 6,3 x 11,5 | ECR1HPT470M◇◇△△0611 |
|                           | 100   | 1,4   | 0,10 | 50   | 260  | 8 x 11,5   | ECR1HPT101M◇◇△△0811 |
|                           | 220   | 0,60  | 0,10 | 110  | 443  | 10 x 12,5  | ECR1HPT221M◇◇△△1012 |
|                           | 330   | 0,40  | 0,10 | 165  | 595  | 10 x 16    | ECR1HPT331M◇◇△△1016 |
|                           | 470   | 0,28  | 0,10 | 235  | 887  | 12,5 x 20  | ECR1HPT471M◇◇△△1220 |
|                           | 1 000 | 0,13  | 0,10 | 500  | 1400 | 16 x 25    | ECR1HPT102M◇◇△△1625 |
|                           | 2 200 | 0,070 | 0,12 | 1100 | 2340 | 16 x 35,5  | ECR1HPT222M◇◇△△1635 |
|                           | 3 300 | 0,060 | 0,14 | 1650 | 2810 | 18 x 35,5  | ECR1HPT332M◇◇△△1835 |

|                           |       |      |      |     |      |            |                     |
|---------------------------|-------|------|------|-----|------|------------|---------------------|
| <b>63<br/>(79)<br/>1J</b> | 4,7   | 25,4 | 0,09 | 3   | 45   | 5 x 11,5   | ECR1JPT4R7M◇◇△△0511 |
|                           | 10    | 11,9 | 0,09 | 7   | 66   | 5 x 11,5   | ECR1JPT100M◇◇△△0511 |
|                           | 22    | 5,5  | 0,09 | 14  | 100  | 5 x 11,5   | ECR1JPT220M◇◇△△0511 |
|                           | 33    | 3,7  | 0,09 | 21  | 140  | 6,3 x 11,5 | ECR1JPT330M◇◇△△0611 |
|                           | 47    | 2,6  | 0,09 | 30  | 170  | 6,3 x 11,5 | ECR1JPT470M◇◇△△0611 |
|                           |       | 2,6  | 0,09 | 30  | 150  | 8 x 11,5   | ECR1JPT470M◇◇△△0811 |
|                           | 100   | 1,2  | 0,09 | 63  | 300  | 10 x 12,5  | ECR1JPT101M◇◇△△1012 |
|                           | 220   | 0,54 | 0,09 | 139 | 470  | 10 x 16    | ECR1JPT221M◇◇△△1016 |
|                           | 330   | 0,36 | 0,09 | 208 | 710  | 10 x 20    | ECR1JPT331M◇◇△△1020 |
|                           | 470   | 0,25 | 0,09 | 297 | 900  | 12,5 x 20  | ECR1JPT471M◇◇△△1220 |
|                           |       | 0,12 | 0,09 | 630 | 1300 | 16 x 25    | ECR1JPT102M◇◇△△1625 |
|                           | 1 000 | 0,12 | 0,09 | 630 | 1550 | 16 x 31,5  | ECR1JPT102M◇◇△△1631 |

|                    |      |       |      |     |           |                     |                     |
|--------------------|------|-------|------|-----|-----------|---------------------|---------------------|
| 100<br>(125)<br>2A | 0,10 | 1 062 | 0,08 | 3   | 2,1       | 5 x 11,5            | ECR2APT0R1M◇◇△△0511 |
|                    | 0,22 | 483   | 0,08 | 3   | 4,7       | 5 x 11,5            | ECR2APTR22M◇◇△△0511 |
|                    | 0,33 | 322   | 0,08 | 3   | 7         | 5 x 11,5            | ECR2APTR33M◇◇△△0511 |
|                    | 0,47 | 226   | 0,08 | 3   | 10        | 5 x 11,5            | ECR2APTR47M◇◇△△0511 |
|                    | 1,0  | 106   | 0,08 | 3   | 21        | 5 x 11,5            | ECR2APT010M◇◇△△0511 |
|                    | 2,2  | 48,3  | 0,08 | 3   | 30        | 5 x 11,5            | ECR2APT2R2M◇◇△△0511 |
|                    | 3,3  | 32,2  | 0,08 | 4   | 40        | 5 x 11,5            | ECR2APT3R3M◇◇△△0511 |
|                    | 4,7  | 22,6  | 0,08 | 5   | 45        | 5 x 11,5            | ECR2APT4R7M◇◇△△0511 |
|                    | 10   | 10,6  | 0,08 | 10  | 75        | 6,3 x 11,5          | ECR2APT100M◇◇△△0611 |
|                    | 22   | 4,83  | 0,08 | 22  | 130       | 6,3 x 11,5          | ECR2APT220M◇◇△△0611 |
| 33                 | 4,83 | 0,08  | 22   | 110 | 8 x 11,5  | ECR2APT220M◇◇△△0811 |                     |
|                    | 3,22 | 0,08  | 33   | 180 | 8 x 11,5  | ECR2APT330M◇◇△△0811 |                     |
| 47                 | 3,22 | 0,08  | 33   | 160 | 10 x 12,5 | ECR2APT330M◇◇△△1011 |                     |
|                    | 2,26 | 0,08  | 47   | 230 | 10 x 12,5 | ECR2APT470M◇◇△△1012 |                     |



| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C 120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C 120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>85°C 120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pitch code<br><br>Details: Page 33 |
|--------------------------------------|----------------------------|-----------------------------------------------------------|--------------------------------------------------|-------------------------------|-------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (Ω)                                                       |                                                  | (μA)                          | (mA <sub>RMS</sub> )                            | (mm)                             |                                                                                      |
| 100<br>(125)<br>2A                   | 100                        | 1,06                                                      | 0,08                                             | 100                           | 370                                             | 10 x 20                          | ECR2APT101M◇◇△△1020                                                                  |
|                                      |                            | 1,06                                                      | 0,08                                             | 100                           | 380                                             | 12,5 x 20                        | ECR2APT101M◇◇△△1220                                                                  |
|                                      | 220                        | 0,48                                                      | 0,08                                             | 220                           | 620                                             | 12,5 x 25                        | ECR2APT221M◇◇△△1225                                                                  |
|                                      |                            | 0,48                                                      | 0,08                                             | 220                           | 720                                             | 16 x 25                          | ECR2APT221M◇◇△△1625                                                                  |
|                                      | 330                        | 0,32                                                      | 0,08                                             | 330                           | 760                                             | 16 x 25                          | ECR2APT331M◇◇△△1625                                                                  |
|                                      |                            | 0,23                                                      | 0,08                                             | 470                           | 1000                                            | 16 x 25                          | ECR2APT471M◇◇△△1625                                                                  |
|                                      | 470                        | 0,23                                                      | 0,08                                             | 470                           | 1150                                            | 16 x 31,5                        | ECR2APT471M◇◇△△1631                                                                  |
|                                      |                            | 0,23                                                      | 0,08                                             | 470                           | 1150                                            | 16 x 31,5                        | ECR2APT471M◇◇△△1631                                                                  |
|                                      | 1 000                      | 0,11                                                      | 0,08                                             | 1000                          | 1380                                            | 18 x 40                          | ECR2APT102M◇◇△△1840                                                                  |
|                                      |                            | 0,11                                                      | 0,08                                             | 1000                          | 1380                                            | 18 x 40                          | ECR2APT102M◇◇△△1840                                                                  |

|                    |      |      |      |      |      |            |                     |
|--------------------|------|------|------|------|------|------------|---------------------|
| 160<br>(200)<br>2C | 0,47 | 339  | 0,12 | 13   | 15   | 6,3 x 11,5 | ECR2CPT47M◇◇△△0611  |
|                    | 1,0  | 159  | 0,12 | 15   | 22   | 6,3 x 11,5 | ECR2CPT010M◇◇△△0611 |
|                    | 2,2  | 72,4 | 0,12 | 21   | 32   | 6,3 x 11,5 | ECR2CPT2R2M◇◇△△0611 |
|                    | 3,3  | 48,3 | 0,12 | 26   | 40   | 6,3 x 11,5 | ECR2CPT3R3M◇◇△△0611 |
|                    |      | 48,3 | 0,12 | 26   | 35   | 8 x 11,5   | ECR2CPT3R3M◇◇△△0811 |
|                    | 4,7  | 33,9 | 0,12 | 33   | 48   | 6,3 x 11,5 | ECR2CPT4R7M◇◇△△0611 |
|                    |      | 33,9 | 0,12 | 33   | 40   | 8 x 11,5   | ECR2CPT4R7M◇◇△△0811 |
|                    | 10   | 15,9 | 0,12 | 58   | 81   | 8 x 11,5   | ECR2CPT100M◇◇△△0811 |
|                    |      | 15,9 | 0,12 | 58   | 70   | 10 x 12,5  | ECR2CPT100M◇◇△△1012 |
|                    | 22   | 7,24 | 0,12 | 116  | 151  | 10 x 16    | ECR2CPT220M◇◇△△1016 |
|                    | 33   | 4,83 | 0,12 | 169  | 202  | 10 x 20    | ECR2CPT330M◇◇△△1020 |
|                    | 47   | 3,39 | 0,12 | 236  | 266  | 12,5 x 20  | ECR2CPT470M◇◇△△1220 |
|                    | 100  | 1,59 | 0,12 | 490  | 422  | 12,5 x 25  | ECR2CPT101M◇◇△△1225 |
|                    |      | 1,59 | 0,12 | 490  | 400  | 16 x 25    | ECR2CPT101M◇◇△△1625 |
|                    | 220  | 0,72 | 0,12 | 1066 | 783  | 16 x 31,5  | ECR2CPT221M◇◇△△1631 |
|                    | 330  | 0,48 | 0,12 | 1594 | 1080 | 18 x 31,5  | ECR2CPT331M◇◇△△1831 |

|                    |      |      |      |     |           |                     |                     |
|--------------------|------|------|------|-----|-----------|---------------------|---------------------|
| 200<br>(250)<br>2D | 0,47 | 339  | 0,12 | 13  | 15        | 6,3 x 11,5          | ECR2DPT47M◇◇△△0611  |
|                    | 1,0  | 159  | 0,12 | 16  | 22        | 6,3 x 11,5          | ECR2DPT010M◇◇△△0611 |
|                    | 2,2  | 72,4 | 0,12 | 24  | 32        | 6,3 x 11,5          | ECR2DPT2R2M◇◇△△0611 |
|                    | 3,3  | 48,3 | 0,12 | 30  | 40        | 6,3 x 11,5          | ECR2DPT3R3M◇◇△△0611 |
|                    |      | 48,3 | 0,12 | 30  | 35        | 8 x 11,5            | ECR2DPT3R3M◇◇△△0811 |
|                    | 4,7  | 33,9 | 0,12 | 39  | 56        | 8 x 11,5            | ECR2DPT4R7M◇◇△△0811 |
|                    |      | 33,9 | 0,12 | 39  | 50        | 10 x 12,5           | ECR2DPT4R7M◇◇△△1012 |
|                    | 10   | 15,9 | 0,12 | 70  | 94        | 8 x 11,5            | ECR2DPT100M◇◇△△0811 |
|                    |      | 15,9 | 0,12 | 70  | 94        | 10 x 12,5           | ECR2DPT100M◇◇△△1012 |
|                    | 22   | 7,24 | 0,12 | 142 | 170       | 10 x 20             | ECR2DPT220M◇◇△△1020 |
| 33                 | 4,83 | 0,12 | 208  | 223 | 12,5 x 20 | ECR2DPT330M◇◇△△1220 |                     |
| 47                 | 3,39 | 0,12 | 292  | 265 | 12,5 x 20 | ECR2DPT470M◇◇△△1220 |                     |
| 100                | 1,59 | 0,12 | 610  | 483 | 16 x 25,5 | ECR2DPT101M◇◇△△1625 |                     |
| 220                | 0,72 | 0,12 | 1330 | 882 | 18 x 36   | ECR2DPT221M◇◇△△1836 |                     |

## 6 000 at 125°C

· Suited for ballast and energy-saved lamp application of which high temperature and high reliability are required

CD 261L DE  
14 000h 105°C  
Long Life

125°C

CD 11GL GL  
6 000h 125°C  
High Temperature  
High Voltage

higher voltage

CD 269L HL  
10 000h 125°C  
High Temperature  
Low Voltage

## ITEM

## CHARACTERISTICS

|                                     |            |            |
|-------------------------------------|------------|------------|
| Operating Temperature Range (°C)    | -40 ~ +125 | -25 ~ +125 |
| Voltage Range (V)                   | 160 ~ 250  | 350 ~ 450  |
| Capacitance Range (µF)              | 2,2 ~ 330  |            |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%      |            |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

|                 |                                                                                                           |
|-----------------|-----------------------------------------------------------------------------------------------------------|
| Leakage Current | After 1 minute at 20°C application of rated voltage, leakage current is not more than specified in table. |
|-----------------|-----------------------------------------------------------------------------------------------------------|

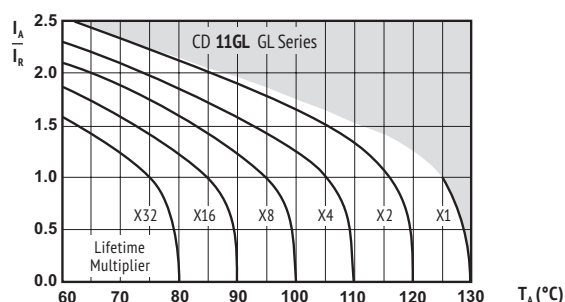
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                     |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|---------------------------------------------------------------------|
| Lifetime                                                                | 6 000h                                | 80 000h                           | Ø 10 : 4 000h<br>Ø 12,5 ~18: 5 000h   | 6 000h                                   | 500h                                  |                                                                     |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                     |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 25% of initial value         | Within ± 25% of initial value            | Within ± 20% of initial value         |                                                                     |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 300% of specified value | Not more than 300% of specified value    | Not more than 200% of specified value |                                                                     |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>125°C               | $U_R$<br>$1,5 \times I_R$<br>75°C | $U_R$<br>$I_R$<br>125°C               | $U_R$<br>$I_R = 0$<br>125°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>125°C       | After test: $U_R$ to be applied for 30 min > 24h before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency   | 50Hz | 120Hz | 500Hz | 1kHz | >10kHz |
|-------------|------|-------|-------|------|--------|
| Coefficient | 0,80 | 1,0   | 1,2   | 1,3  | 1,5    |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 125°C

Multiplier of Useful Life as a function of ambient temperature & ripple current load

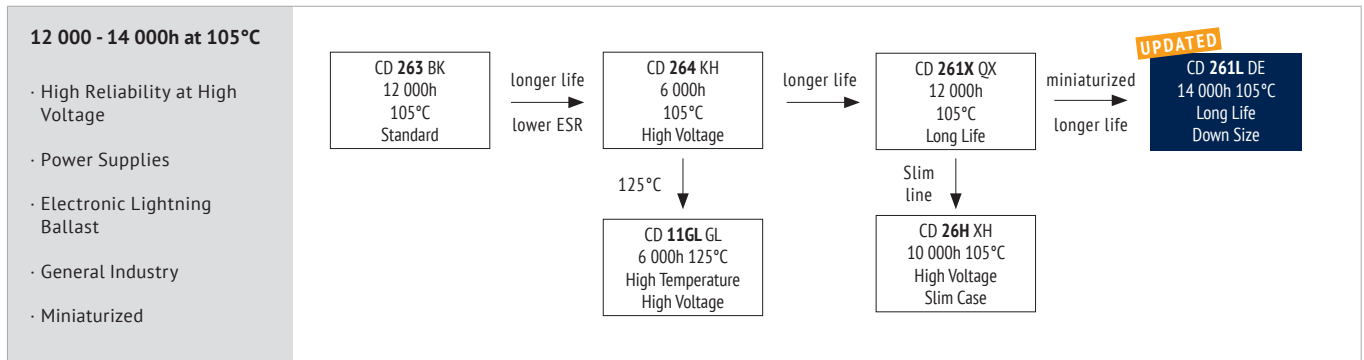
## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current 125°C<br>120Hz | Size<br>$\phi D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pitch code<br><br>Details: Page 33 |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|--------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (Ω)                                                          | (Ω)                                                          |                                                     | (μA)                          | (mA <sub>RMS</sub> )                             | (mm)                      |                                                                                      |
| <b>160<br/>(200)<br/>2C</b>          | 10                         | 15,9                                                         | 8,0                                                          | 0,12                                                | 118                           | 62                                               | 10 x 16                   | ECR2CGL100M◇◇△△1016                                                                  |
|                                      | 22                         | 7,2                                                          | 3,6                                                          | 0,12                                                | 176                           | 101                                              | 10 x 20                   | ECR2CGL220M◇◇△△1020                                                                  |
|                                      | 33                         | 4,8                                                          | 2,4                                                          | 0,12                                                | 228                           | 139                                              | 12,5 x 20                 | ECR2CGL330M◇◇△△1220                                                                  |
|                                      | 47                         | 3,4                                                          | 1,7                                                          | 0,12                                                | 296                           | 165                                              | 12,5 x 20                 | ECR2CGL470M◇◇△△1220                                                                  |
|                                      | 100                        | 1,6                                                          | 0,80                                                         | 0,12                                                | 550                           | 302                                              | 16 x 25                   | ECR2CGL101M◇◇△△1625                                                                  |
|                                      | 220                        | 0,70                                                         | 0,40                                                         | 0,12                                                | 1126                          | 514                                              | 18 x 31,5                 | ECR2CGL221M◇◇△△1831                                                                  |
|                                      | 330                        | 0,50                                                         | 0,20                                                         | 0,12                                                | 1654                          | 673                                              | 18 x 36                   | ECR2CGL331M◇◇△△1836                                                                  |
| <b>200<br/>(250)<br/>2D</b>          | 10                         | 15,9                                                         | 8,0                                                          | 0,12                                                | 130                           | 62                                               | 10 x 16                   | ECR2DGL100M◇◇△△1016                                                                  |
|                                      | 22                         | 7,2                                                          | 3,6                                                          | 0,12                                                | 202                           | 101                                              | 10 x 20                   | ECR2DGL220M◇◇△△1020                                                                  |
|                                      | 33                         | 4,8                                                          | 2,4                                                          | 0,12                                                | 268                           | 139                                              | 12,5 x 20                 | ECR2DGL330M◇◇△△1220                                                                  |
|                                      | 47                         | 3,4                                                          | 1,7                                                          | 0,12                                                | 352                           | 165                                              | 12,5 x 20                 | ECR2DGL470M◇◇△△1220                                                                  |
|                                      | 100                        | 1,6                                                          | 0,80                                                         | 0,12                                                | 670                           | 302                                              | 16 x 25                   | ECR2DGL101M◇◇△△1625                                                                  |
|                                      | 220                        | 0,70                                                         | 0,40                                                         | 0,12                                                | 1390                          | 514                                              | 18 x 31,5                 | ECR2DGL221M◇◇△△1831                                                                  |
|                                      | 330                        | 0,50                                                         | 0,20                                                         | 0,12                                                | 2050                          | 673                                              | 18 x 36                   | ECR2DGL331M◇◇△△1836                                                                  |
| <b>250<br/>(300)<br/>2E</b>          | 4,7                        | 33,9                                                         | 16,9                                                         | 0,12                                                | 105                           | 42                                               | 10 x 16                   | ECR2EGL4R7M◇◇△△1016                                                                  |
|                                      | 6,8                        | 23,4                                                         | 11,7                                                         | 0,12                                                | 121                           | 51                                               | 10 x 16                   | ECR2EGL6R8M◇◇△△1016                                                                  |
|                                      | 10                         | 15,9                                                         | 8,0                                                          | 0,12                                                | 145                           | 68                                               | 10 x 20                   | ECR2EGL100M◇◇△△1020                                                                  |
|                                      | 22                         | 7,2                                                          | 3,6                                                          | 0,12                                                | 235                           | 113                                              | 12,5 x 20                 | ECR2EGL220M◇◇△△1220                                                                  |
|                                      | 33                         | 4,8                                                          | 2,4                                                          | 0,12                                                | 318                           | 153                                              | 12,5 x 25                 | ECR2EGL330M◇◇△△1225                                                                  |
|                                      | 47                         | 3,4                                                          | 1,7                                                          | 0,12                                                | 423                           | 207                                              | 16 x 25                   | ECR2EGL470M◇◇△△1625                                                                  |
|                                      | 100                        | 1,6                                                          | 0,80                                                         | 0,12                                                | 820                           | 346                                              | 18 x 31,5                 | ECR2EGL101M◇◇△△1831                                                                  |
|                                      | 220                        | 0,70                                                         | 0,40                                                         | 0,12                                                | 1720                          | 550                                              | 18 x 36                   | ECR2EGL221M◇◇△△1836                                                                  |
| <b>350<br/>(400)<br/>2V</b>          | 2,2                        | 90,5                                                         | 36,2                                                         | 0,15                                                | 93                            | 26                                               | 10 x 16                   | ECR2VGL2R2M◇◇△△1016                                                                  |
|                                      | 3,3                        | 60,3                                                         | 24,1                                                         | 0,15                                                | 105                           | 32                                               | 10 x 16                   | ECR2VGL3R3M◇◇△△1016                                                                  |
|                                      | 4,7                        | 42,3                                                         | 16,9                                                         | 0,15                                                | 119                           | 42                                               | 10 x 20                   | ECR2VGL4R7M◇◇△△1020                                                                  |
|                                      | 5,6                        | 35,5                                                         | 14,2                                                         | 0,15                                                | 129                           | 46                                               | 10 x 20                   | ECR2VGL5R6M◇◇△△1020                                                                  |
|                                      | 6,8                        | 29,3                                                         | 11,7                                                         | 0,15                                                | 141                           | 56                                               | 12,5 x 20                 | ECR2VGL6R8M◇◇△△1220                                                                  |
|                                      | 10                         | 19,9                                                         | 8,0                                                          | 0,15                                                | 175                           | 68                                               | 12,5 x 20                 | ECR2VGL100M◇◇△△1220                                                                  |
|                                      | 22                         | 9,0                                                          | 3,6                                                          | 0,15                                                | 301                           | 112                                              | 12,5 x 25                 | ECR2VGL220M◇◇△△1225                                                                  |
|                                      | 33                         | 6,0                                                          | 2,4                                                          | 0,15                                                | 417                           | 155                                              | 16 x 25                   | ECR2VGL330M◇◇△△1625                                                                  |
|                                      | 47                         | 4,2                                                          | 1,7                                                          | 0,15                                                | 564                           | 201                                              | 16 x 31,5                 | ECR2VGL470M◇◇△△1631                                                                  |
| <b>400<br/>(450)<br/>2G</b>          | 2,2                        | 90,5                                                         | 36,2                                                         | 0,15                                                | 96                            | 26                                               | 10 x 16                   | ECR2GGL2R2M◇◇△△1016                                                                  |
|                                      | 3,3                        | 60,3                                                         | 24,1                                                         | 0,15                                                | 110                           | 32                                               | 10 x 16                   | ECR2GGL3R3M◇◇△△1016                                                                  |
|                                      | 4,7                        | 42,3                                                         | 16,9                                                         | 0,15                                                | 126                           | 42                                               | 10 x 20                   | ECR2GGL4R7M◇◇△△1020                                                                  |
|                                      | 5,6                        | 35,5                                                         | 14,2                                                         | 0,15                                                | 137                           | 46                                               | 10 x 20                   | ECR2GGL5R6M◇◇△△1020                                                                  |
|                                      | 6,8                        | 29,3                                                         | 11,7                                                         | 0,15                                                | 152                           | 56                                               | 12,5 x 20                 | ECR2GGL6R8M◇◇△△1220                                                                  |
|                                      | 10                         | 19,9                                                         | 8,0                                                          | 0,15                                                | 190                           | 68                                               | 12,5 x 20                 | ECR2GGL100M◇◇△△1220                                                                  |
|                                      | 22                         | 9,0                                                          | 3,6                                                          | 0,15                                                | 334                           | 112                                              | 12,5 x 25                 | ECR2GGL220M◇◇△△1225                                                                  |
|                                      | 33                         | 6,0                                                          | 2,4                                                          | 0,15                                                | 466                           | 155                                              | 16 x 25                   | ECR2GGL330M◇◇△△1625                                                                  |
|                                      | 47                         | 4,2                                                          | 1,7                                                          | 0,15                                                | 634                           | 201                                              | 16 x 31,5                 | ECR2GGL470M◇◇△△1631                                                                  |
| <b>450<br/>(500)<br/>2W</b>          | 2,2                        | 90,5                                                         | 36,2                                                         | 0,15                                                | 100                           | 26                                               | 10 x 16                   | ECR2WGL2R2M◇◇△△1016                                                                  |
|                                      | 3,3                        | 60,3                                                         | 24,1                                                         | 0,15                                                | 115                           | 32                                               | 10 x 16                   | ECR2WGL3R3M◇◇△△1016                                                                  |
|                                      | 4,7                        | 42,3                                                         | 16,9                                                         | 0,15                                                | 133                           | 42                                               | 10 x 20                   | ECR2WGL4R7M◇◇△△1020                                                                  |
|                                      | 5,6                        | 35,5                                                         | 14,2                                                         | 0,15                                                | 146                           | 51                                               | 12,5 x 20                 | ECR2WGL5R6M◇◇△△1220                                                                  |
|                                      | 6,8                        | 29,3                                                         | 11,7                                                         | 0,15                                                | 162                           | 56                                               | 12,5 x 20                 | ECR2WGL6R8M◇◇△△1220                                                                  |
|                                      | 10                         | 19,9                                                         | 8,0                                                          | 0,15                                                | 205                           | 75                                               | 12,5 x 25                 | ECR2WGL100M◇◇△△1225                                                                  |
|                                      | 22                         | 9,0                                                          | 3,6                                                          | 0,15                                                | 367                           | 127                                              | 16 x 25                   | ECR2WGL220M◇◇△△1625                                                                  |
|                                      | 33                         | 6,0                                                          | 2,4                                                          | 0,15                                                | 516                           | 168                                              | 16 x 31,5                 | ECR2WGL330M◇◇△△1631                                                                  |
|                                      | 47                         | 4,2                                                          | 1,7                                                          | 0,15                                                | 705                           | 212                                              | 18 x 31,5                 | ECR2WGL470M◇◇△△1831                                                                  |



## ITEM CHARACTERISTICS

|                                     |            |
|-------------------------------------|------------|
| Operating Temperature Range (°C)    | -40 ~ +105 |
| Voltage Range (V)                   | 160 ~ 450  |
| Capacitance Range (µF)              | 10 ~ 820   |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%      |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

|                      |                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------|
| Leakage Current (µA) | After 1 minute at 20°C application of rated voltage, leakage current is not more than specified in table. |
|----------------------|-----------------------------------------------------------------------------------------------------------|

| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V) | 160 | 200 | 250 | 350 | 400 | 420 | 450 |
|---------------------------------------------------------|-------------------|-----|-----|-----|-----|-----|-----|-----|
| $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 3   |     | 4   |     | 6   |     |     |
| $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 6   |     |     |     | 8   |     |     |

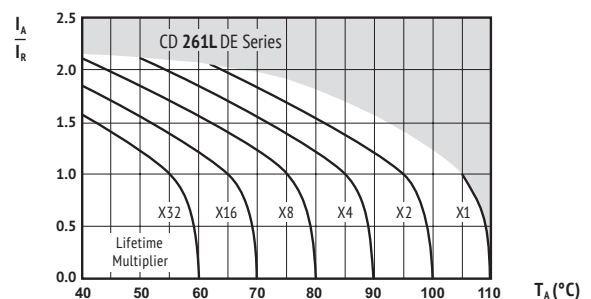
| ITEM                                                                    | USEFUL LIFE                            | LOAD LIFE                             | ENDURANCE TEST                         | SHELF LIFE                                                          |
|-------------------------------------------------------------------------|----------------------------------------|---------------------------------------|----------------------------------------|---------------------------------------------------------------------|
| Lifetime                                                                | L ≤ 20,5 : 12 000h<br>L ≥ 25 : 14 000h | > 100 000h                            | L ≤ 20,5 : 10 000h<br>L ≥ 25 : 12 000h | 1 000h                                                              |
| Leakage Current                                                         | Not more than specified value          | Not more than specified value         | Not more than specified value          | Not more than specified value                                       |
| Capacitance Change                                                      | Within ± 30% of initial value          | Within ± 20% of initial value         | Within ± 20% of initial value          | Within ± 20% of initial value                                       |
| Dissipation Factor                                                      | Not more than 300% of specified value  | Not more than 200% of specified value | Not more than 200% of specified value  | Not more than 200% of specified value                               |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C                | $U_R$<br>$1,4 \times I_R$<br>60°C     | $U_R$<br>$I_R$<br>105°C                | $U_R = 0$<br>$I_R = 0$<br>105°C<br>IEC 60384                        |
|                                                                         |                                        |                                       |                                        | After test: $U_R$ to be applied for 30 min > 24h before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Capacitance (µF) \ Frequency | 50/60Hz | 120Hz | 500Hz | 1kHz | 10kHz | 100kHz |
|------------------------------|---------|-------|-------|------|-------|--------|
| 10 ~ 82                      | 0,32    | 0,40  | 0,52  | 0,60 | 0,84  | 1,00   |
| 100 ~ 220                    | 0,36    | 0,44  | 0,58  | 0,67 | 0,93  | 1,00   |
| 270 ~ 820                    | 0,40    | 0,50  | 0,65  | 0,75 | 0,95  | 1,00   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current 105°C<br>100kHz | Size<br><br>øD x L | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pitch code |
|--------------------------------------|----------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|---------------------------------------------------|--------------------|--------------------------------------------------------------|
| (V)                                  | (μF)                       | (Ω)                                                          |                                                     | (μA)                          | (mA <sub>RMS</sub> )                              | (mm)               | Details: Page 33                                             |
| <b>160<br/>(200)<br/>2C</b>          | 47                         | 1,69                                                         | 0,15                                                | 401                           | 650                                               | 10 x 16            | ECR2CDE470M◇◇△△1016                                          |
|                                      | 68                         | 1,17                                                         | 0,15                                                | 536                           | 800                                               | 10 x 20            | ECR2CDE680M◇◇△△1020                                          |
|                                      | 82                         | 0,970                                                        | 0,15                                                | 625                           | 1038                                              | 10 x 25            | ECR2CDE820M◇◇△△1025                                          |
|                                      | 100                        | 0,800                                                        | 0,15                                                | 740                           | 1193                                              | 10 x 30            | ECR2CDE101M◇◇△△1030                                          |
|                                      |                            | 0,800                                                        | 0,15                                                | 740                           | 1350                                              | 12,5 x 20          | ECR2CDE101M◇◇△△1220                                          |
|                                      | 120                        | 0,660                                                        | 0,15                                                | 868                           | 1395                                              | 10 x 35            | ECR2CDE121M◇◇△△1035                                          |
|                                      |                            | 0,530                                                        | 0,15                                                | 1060                          | 1575                                              | 10 x 40            | ECR2CDE151M◇◇△△1040                                          |
|                                      | 150                        | 0,530                                                        | 0,15                                                | 1060                          | 1643                                              | 12,5 x 25          | ECR2CDE151M◇◇△△1225                                          |
|                                      |                            | 0,440                                                        | 0,15                                                | 1252                          | 1800                                              | 10 x 50            | ECR2CDE181M◇◇△△1050                                          |
|                                      | 180                        | 0,440                                                        | 0,15                                                | 1252                          | 1958                                              | 12,5 x 30          | ECR2CDE181M◇◇△△1230                                          |
|                                      |                            | 0,440                                                        | 0,15                                                | 1252                          | 1800                                              | 16 x 20            | ECR2CDE181M◇◇△△1620                                          |
|                                      | 220                        | 0,360                                                        | 0,15                                                | 1508                          | 2250                                              | 12,5 x 35          | ECR2CDE221M◇◇△△1235                                          |
|                                      |                            | 0,360                                                        | 0,15                                                | 1508                          | 2250                                              | 16 x 25,5          | ECR2CDE221M◇◇△△1625                                          |
|                                      |                            | 0,360                                                        | 0,15                                                | 1508                          | 2228                                              | 18 x 20,5          | ECR2CDE221M◇◇△△1820                                          |
|                                      | 270                        | 0,290                                                        | 0,15                                                | 1828                          | 2240                                              | 12,5 x 40          | ECR2CDE271M◇◇△△1240                                          |
|                                      |                            | 0,290                                                        | 0,15                                                | 1828                          | 2420                                              | 16 x 31,5          | ECR2CDE271M◇◇△△1631                                          |
|                                      |                            | 0,240                                                        | 0,15                                                | 2212                          | 2800                                              | 12,5 x 50          | ECR2CDE331M◇◇△△1250                                          |
|                                      | 330                        | 0,240                                                        | 0,15                                                | 2212                          | 2700                                              | 16 x 31,5          | ECR2CDE331M◇◇△△1631                                          |
|                                      |                            | 0,240                                                        | 0,15                                                | 2212                          | 2360                                              | 18 x 25,5          | ECR2CDE331M◇◇△△1825                                          |
|                                      | 390                        | 0,200                                                        | 0,15                                                | 2596                          | 2760                                              | 16 x 36            | ECR2CDE391M◇◇△△1636                                          |
|                                      | 470                        | 0,170                                                        | 0,15                                                | 3108                          | 3100                                              | 16 x 40            | ECR2CDE471M◇◇△△1640                                          |
|                                      |                            | 0,170                                                        | 0,15                                                | 3108                          | 3100                                              | 18 x 31,5          | ECR2CDE471M◇◇△△1831                                          |
|                                      | 560                        | 0,140                                                        | 0,15                                                | 3684                          | 3720                                              | 16 x 50            | ECR2CDE561M◇◇△△1650                                          |
|                                      |                            | 0,140                                                        | 0,15                                                | 3684                          | 3680                                              | 18 x 40            | ECR2CDE561M◇◇△△1840                                          |
|                                      | 680                        | 0,120                                                        | 0,15                                                | 4452                          | 4260                                              | 18 x 45            | ECR2CDE681M◇◇△△1845                                          |
|                                      | 820                        | 0,100                                                        | 0,15                                                | 5348                          | 4460                                              | 18 x 50            | ECR2CDE821M◇◇△△1850                                          |

|                             |     |       |      |      |      |           |                     |
|-----------------------------|-----|-------|------|------|------|-----------|---------------------|
| <b>200<br/>(250)<br/>2D</b> | 33  | 2,41  | 0,15 | 364  | 650  | 10 x 16   | ECR2DDE330M◇◇△△1016 |
|                             | 47  | 1,69  | 0,15 | 476  | 800  | 10 x 20   | ECR2DDE470M◇◇△△1020 |
|                             | 56  | 1,42  | 0,15 | 548  | 1038 | 10 x 25   | ECR2DDE560M◇◇△△1025 |
|                             | 68  | 1,17  | 0,15 | 644  | 1075 | 10 x 25   | ECR2DDE680M◇◇△△1025 |
|                             |     | 1,17  | 0,15 | 644  | 1350 | 12,5 x 20 | ECR2DDE680M◇◇△△1220 |
|                             | 82  | 0,970 | 0,15 | 756  | 1250 | 10 x 30   | ECR2DDE820M◇◇△△1030 |
|                             | 100 | 0,800 | 0,15 | 900  | 1440 | 10 x 35   | ECR2DDE101M◇◇△△1035 |
|                             | 120 | 0,664 | 0,15 | 1060 | 1665 | 10 x 40   | ECR2DDE121M◇◇△△1040 |
|                             |     | 0,664 | 0,15 | 1060 | 1631 | 12,5 x 30 | ECR2DDE121M◇◇△△1230 |
|                             |     | 0,664 | 0,15 | 1060 | 1560 | 16 x 20   | ECR2DDE121M◇◇△△1620 |
|                             | 150 | 0,532 | 0,15 | 1300 | 1755 | 10 x 45   | ECR2DDE151M◇◇△△1045 |
|                             |     | 0,532 | 0,15 | 1300 | 1800 | 12,5 x 35 | ECR2DDE151M◇◇△△1235 |
|                             |     | 0,444 | 0,15 | 1540 | 2070 | 12,5 x 35 | ECR2DDE181M◇◇△△1235 |
|                             | 180 | 0,444 | 0,15 | 1540 | 2025 | 16 x 25,5 | ECR2DDE181M◇◇△△1625 |
|                             |     | 0,444 | 0,15 | 1540 | 2000 | 18 x 20,5 | ECR2DDE181M◇◇△△1820 |
|                             |     | 0,360 | 0,15 | 1860 | 2263 | 12,5 x 45 | ECR2DDE221M◇◇△△1245 |
|                             | 220 | 0,360 | 0,15 | 1860 | 2430 | 16 x 31,5 | ECR2DDE221M◇◇△△1631 |
|                             |     | 0,290 | 0,15 | 2260 | 2520 | 12,5 x 50 | ECR2DDE271M◇◇△△1250 |
|                             |     | 0,290 | 0,15 | 2260 | 2360 | 16 x 31,5 | ECR2DDE271M◇◇△△1631 |
|                             | 270 | 0,290 | 0,15 | 2260 | 2200 | 18 x 25,5 | ECR2DDE271M◇◇△△1825 |
|                             |     | 0,240 | 0,15 | 2740 | 2860 | 16 x 40   | ECR2DDE331M◇◇△△1640 |
|                             |     | 0,240 | 0,15 | 2740 | 2600 | 18 x 31,5 | ECR2DDE331M◇◇△△1831 |
|                             | 390 | 0,204 | 0,15 | 3220 | 3100 | 16 x 45   | ECR2DDE391M◇◇△△1645 |
|                             |     | 0,204 | 0,15 | 3220 | 2860 | 18 x 36   | ECR2DDE391M◇◇△△1836 |
|                             | 470 | 0,168 | 0,15 | 3860 | 3360 | 16 x 50   | ECR2DDE471M◇◇△△1650 |
|                             |     | 0,168 | 0,15 | 3860 | 3240 | 18 x 40   | ECR2DDE471M◇◇△△1840 |
|                             | 560 | 0,144 | 0,15 | 4580 | 3540 | 18 x 45   | ECR2DDE561M◇◇△△1845 |

|                             |     |       |      |      |      |           |                     |
|-----------------------------|-----|-------|------|------|------|-----------|---------------------|
| <b>250<br/>(300)<br/>2E</b> | 33  | 2,41  | 0,15 | 430  | 800  | 10 x 20   | ECR2EDE330M◇◇△△1020 |
|                             | 47  | 1,70  | 0,15 | 570  | 975  | 10 x 25   | ECR2EDE470M◇◇△△1025 |
|                             |     | 1,70  | 0,15 | 570  | 1100 | 10 x 30   | ECR2EDE470M◇◇△△1030 |
|                             | 56  | 1,42  | 0,15 | 660  | 1350 | 12,5 x 20 | ECR2EDE560M◇◇△△1220 |
|                             | 68  | 1,18  | 0,15 | 780  | 1250 | 10 x 35   | ECR2EDE680M◇◇△△1035 |
|                             | 82  | 0,972 | 0,15 | 920  | 1425 | 10 x 40   | ECR2EDE820M◇◇△△1040 |
|                             |     | 0,972 | 0,15 | 920  | 1425 | 12,5 x 25 | ECR2EDE820M◇◇△△1225 |
|                             | 100 | 0,796 | 0,15 | 1100 | 1620 | 10 x 45   | ECR2EDE101M◇◇△△1045 |
|                             |     | 0,796 | 0,15 | 1100 | 1553 | 12,5 x 30 | ECR2EDE101M◇◇△△1230 |
|                             |     | 0,796 | 0,15 | 1100 | 1428 | 16 x 20   | ECR2EDE101M◇◇△△1620 |
|                             | 120 | 0,664 | 0,15 | 1300 | 1755 | 10 x 50   | ECR2EDE121M◇◇△△1050 |
|                             |     | 0,664 | 0,15 | 1300 | 1778 | 12,5 x 35 | ECR2EDE121M◇◇△△1235 |
|                             |     | 0,664 | 0,15 | 1300 | 1640 | 18 x 20,5 | ECR2EDE121M◇◇△△1820 |

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current 105°C<br>100kHz | Size<br><br>øD x L | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pitch code |
|--------------------------------------|----------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|---------------------------------------------------|--------------------|--------------------------------------------------------------|
| (V)                                  | (μF)                       | (Ω)                                                          |                                                     | (μA)                          | (mA <sub>RMS</sub> )                              | (mm)               | Details: Page 33                                             |
| <b>250<br/>(300)<br/>2E</b>          | 150                        | 0,532                                                        | 0,15                                                | 1600                          | 2070                                              | 12,5 x 40          | ECR2EDE151M◇◇△△1240                                          |
|                                      |                            | 0,532                                                        | 0,15                                                | 1600                          | 1958                                              | 16 x 31,5          | ECR2EDE151M◇◇△△1631                                          |
|                                      |                            | 0,444                                                        | 0,15                                                | 1900                          | 2183                                              | 12,5 x 50          | ECR2EDE181M◇◇△△1250                                          |
|                                      | 180                        | 0,444                                                        | 0,15                                                | 1900                          | 2138                                              | 16 x 31,5          | ECR2EDE181M◇◇△△1631                                          |
|                                      |                            | 0,444                                                        | 0,15                                                | 1900                          | 2070                                              | 18 x 25,5          | ECR2EDE181M◇◇△△1825                                          |
|                                      |                            | 0,360                                                        | 0,15                                                | 2300                          | 2475                                              | 16 x 36            | ECR2EDE221M◇◇△△1636                                          |
|                                      | 220                        | 0,360                                                        | 0,15                                                | 2300                          | 2475                                              | 18 x 31,5          | ECR2EDE221M◇◇△△1831                                          |
|                                      |                            | 0,290                                                        | 0,15                                                | 2800                          | 2540                                              | 16 x 40            | ECR2EDE271M◇◇△△1640                                          |
|                                      |                            | 0,290                                                        | 0,15                                                | 2800                          | 2520                                              | 18 x 36            | ECR2EDE271M◇◇△△1836                                          |
|                                      | 330                        | 0,240                                                        | 0,15                                                | 3400                          | 2960                                              | 16 x 50            | ECR2EDE331M◇◇△△1650                                          |
|                                      |                            | 0,240                                                        | 0,15                                                | 3400                          | 2900                                              | 18 x 40            | ECR2EDE331M◇◇△△1840                                          |
|                                      | 390                        | 0,204                                                        | 0,15                                                | 4000                          | 3180                                              | 18 x 45            | ECR2EDE391M◇◇△△1845                                          |
|                                      | 470                        | 0,168                                                        | 0,15                                                | 4800                          | 3660                                              | 18 x 50            | ECR2EDE471M◇◇△△1850                                          |

|                             |     |       |      |      |      |           |                     |
|-----------------------------|-----|-------|------|------|------|-----------|---------------------|
| <b>350<br/>(400)<br/>2V</b> | 12  | 6,63  | 0,20 | 268  | 338  | 10 x 16   | ECR2VDE120M◇◇△△1016 |
|                             | 22  | 3,62  | 0,20 | 308  | 500  | 10 x 20   | ECR2VDE220M◇◇△△1020 |
|                             | 27  | 2,95  | 0,20 | 478  | 775  | 10 x 25   | ECR2VDE270M◇◇△△1025 |
|                             | 33  | 2,42  | 0,20 | 562  | 825  | 10 x 30   | ECR2VDE330M◇◇△△1030 |
|                             |     | 2,42  | 0,20 | 562  | 850  | 12,5 x 20 | ECR2VDE330M◇◇△△1220 |
|                             | 39  | 2,04  | 0,20 | 646  | 975  | 10 x 35   | ECR2VDE390M◇◇△△1035 |
|                             | 47  | 1,70  | 0,20 | 758  | 1125 | 10 x 40   | ECR2VDE470M◇◇△△1040 |
|                             |     | 1,70  | 0,20 | 758  | 1125 | 12,5 x 25 | ECR2VDE470M◇◇△△1225 |
|                             | 56  | 1,43  | 0,20 | 884  | 1300 | 10 x 45   | ECR2VDE560M◇◇△△1045 |
|                             |     | 1,43  | 0,20 | 884  | 1375 | 12,5 x 30 | ECR2VDE560M◇◇△△1230 |
|                             |     | 1,43  | 0,20 | 884  | 1200 | 16 x 20   | ECR2VDE560M◇◇△△1620 |
|                             | 68  | 1,17  | 0,20 | 1052 | 1500 | 10 x 50   | ECR2VDE680M◇◇△△1050 |
|                             |     | 1,17  | 0,20 | 1052 | 1525 | 12,5 x 35 | ECR2VDE680M◇◇△△1235 |
|                             |     | 0,969 | 0,20 | 1248 | 1775 | 12,5 x 40 | ECR2VDE820M◇◇△△1240 |
|                             | 82  | 0,969 | 0,20 | 1248 | 1625 | 16 x 25,5 | ECR2VDE820M◇◇△△1625 |
|                             |     | 0,795 | 0,20 | 1500 | 1778 | 12,5 x 45 | ECR2VDE101M◇◇△△1245 |
|                             |     | 0,795 | 0,20 | 1500 | 1733 | 16 x 31,5 | ECR2VDE101M◇◇△△1631 |
|                             | 100 | 0,795 | 0,20 | 1500 | 1710 | 18 x 25,5 | ECR2VDE101M◇◇△△1825 |
|                             |     | 0,663 | 0,20 | 1780 | 1913 | 12,5 x 50 | ECR2VDE121M◇◇△△1250 |
|                             |     | 0,663 | 0,20 | 1780 | 2003 | 16 x 36   | ECR2VDE121M◇◇△△1636 |
|                             | 150 | 0,531 | 0,20 | 2200 | 2250 | 16 x 40   | ECR2VDE151M◇◇△△1640 |
|                             |     | 0,531 | 0,20 | 2200 | 2025 | 18 x 31,5 | ECR2VDE151M◇◇△△1831 |
|                             |     | 0,441 | 0,20 | 2620 | 2520 | 16 x 50   | ECR2VDE181M◇◇△△1650 |
|                             | 180 | 0,441 | 0,20 | 2620 | 2340 | 18 x 40   | ECR2VDE181M◇◇△△1840 |
|                             |     | 0,363 | 0,20 | 3180 | 2700 | 18 x 45   | ECR2VDE221M◇◇△△1845 |
|                             | 270 | 0,294 | 0,20 | 3880 | 2800 | 18 x 50   | ECR2VDE271M◇◇△△1850 |

|                    |       |       |      |      |           |                     |                     |
|--------------------|-------|-------|------|------|-----------|---------------------|---------------------|
| 400<br>(450)<br>2G | 10    | 7,96  | 0,20 | 260  | 313       | 10 x 16             | ECR2GDE100M◇◇△△1016 |
|                    | 18    | 4,43  | 0,20 | 388  | 550       | 10 x 20             | ECR2GDE180M◇◇△△1020 |
|                    | 22    | 3,62  | 0,20 | 452  | 600       | 10 25               | ECR2GDE220M◇◇△△1025 |
|                    | 27    | 2,95  | 0,20 | 532  | 850       | 12,5 x 20           | ECR2GDE270M◇◇△△1220 |
|                    | 33    | 2,41  | 0,20 | 628  | 850       | 10 x 30             | ECR2GDE330M◇◇△△1030 |
|                    | 39    | 2,04  | 0,20 | 724  | 975       | 10 x 35             | ECR2GDE390M◇◇△△1035 |
|                    |       | 2,04  | 0,20 | 724  | 975       | 12,5 x 25           | ECR2GDE390M◇◇△△1225 |
|                    | 47    | 1,69  | 0,20 | 852  | 1100      | 10 x 40             | ECR2GDE470M◇◇△△1040 |
|                    |       | 1,70  | 0,20 | 852  | 1138      | 12,5 x 30           | ECR2GDE470M◇◇△△1230 |
|                    |       | 1,70  | 0,20 | 852  | 1090      | 16 x 20             | ECR2GDE470M◇◇△△1620 |
|                    | 56    | 1,43  | 0,20 | 996  | 1313      | 12,5 x 35           | ECR2GDE560M◇◇△△1235 |
|                    |       | 1,43  | 0,20 | 996  | 1250      | 18 x 20,5           | ECR2GDE560M◇◇△△1820 |
|                    | 68    | 1,17  | 0,20 | 1188 | 1500      | 12,5 x 40           | ECR2GDE680M◇◇△△1240 |
|                    |       | 1,17  | 0,20 | 1188 | 1425      | 16 x 25,5           | ECR2GDE680M◇◇△△1625 |
|                    | 82    | 0,969 | 0,20 | 1412 | 1700      | 12,5 x 45           | ECR2GDE820M◇◇△△1245 |
| 0,969              |       | 0,20  | 1412 | 1675 | 16 x 31,5 | ECR2GDE820M◇◇△△1631 |                     |
| 0,969              |       | 0,20  | 1412 | 1600 | 18 x 25,5 | ECR2GDE820M◇◇△△1825 |                     |
| 100                | 0,795 | 0,20  | 1700 | 1710 | 12,5 x 50 | ECR2GDE101M◇◇△△1250 |                     |
|                    | 0,795 | 0,20  | 1700 | 1710 | 16 x 36   | ECR2GDE101M◇◇△△1636 |                     |
|                    | 0,795 | 0,20  | 1700 | 1598 | 18 x 31,5 | ECR2GDE101M◇◇△△1831 |                     |
| 120                | 0,663 | 0,20  | 2020 | 1935 | 16 x 40   | ECR2GDE121M◇◇△△1640 |                     |
|                    | 0,663 | 0,20  | 2020 | 1890 | 18 x 31,5 | ECR2GDE121M◇◇△△1831 |                     |
|                    | 0,663 | 0,20  | 2020 | 1958 | 18 x 36   | ECR2GDE121M◇◇△△1836 |                     |
| 150                | 0,531 | 0,20  | 2500 | 2216 | 18 x 40   | ECR2GDE151M◇◇△△1840 |                     |
| 180                | 0,441 | 0,20  | 2980 | 2464 | 18 x 45   | ECR2GDE181M◇◇△△1845 |                     |
| 220                | 0,363 | 0,20  | 3620 | 2745 | 18 x 50   | ECR2GDE221M◇◇△△1850 |                     |

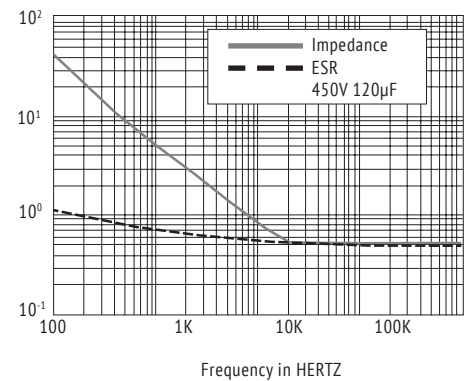
| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C 120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C 120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current 105°C 100kHz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code<br>Details: Page 33 |
|--------------------------------------|----------------------------|-----------------------------------------------------------|--------------------------------------------------|-------------------------------|------------------------------------------------|----------------|------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (Ω)                                                       |                                                  | (μA)                          | (mAmps)                                        | (mm)           |                                                                              |
| <b>420<br/>(470)<br/>2X</b>          | 15                         | 5,31                                                      | 0,20                                             | 352                           | 475                                            | 10 x 20        | ECR2XDE150M◇◇△△1020                                                          |
|                                      | 18                         | 4,43                                                      | 0,20                                             | 403                           | 575                                            | 10 x 25        | ECR2XDE180M◇◇△△1025                                                          |
|                                      | 22                         | 3,62                                                      | 0,20                                             | 470                           | 625                                            | 10 x 25        | ECR2XDE220M◇◇△△1025                                                          |
|                                      |                            | 2,95                                                      | 0,20                                             | 554                           | 725                                            | 10 x 30        | ECR2XDE270M◇◇△△1030                                                          |
|                                      | 27                         | 2,95                                                      | 0,20                                             | 554                           | 750                                            | 12,5 x 20      | ECR2XDE270M◇◇△△1220                                                          |
|                                      |                            | 2,95                                                      | 0,20                                             | 554                           | 850                                            | 12,5 x 25      | ECR2XDE270M◇◇△△1225                                                          |
|                                      |                            | 2,42                                                      | 0,20                                             | 655                           | 850                                            | 10 x 35        | ECR2XDE330M◇◇△△1035                                                          |
|                                      | 33                         | 2,42                                                      | 0,20                                             | 655                           | 875                                            | 12,5 x 25      | ECR2XDE330M◇◇△△1225                                                          |
|                                      |                            | 2,42                                                      | 0,20                                             | 655                           | 1000                                           | 12,5 x 30      | ECR2XDE330M◇◇△△1230                                                          |
|                                      | 39                         | 2,04                                                      | 0,20                                             | 756                           | 975                                            | 10 x 40        | ECR2XDE390M◇◇△△1040                                                          |
|                                      |                            | 2,04                                                      | 0,20                                             | 756                           | 1000                                           | 16 x 20        | ECR2XDE390M◇◇△△1620                                                          |
|                                      |                            | 1,70                                                      | 0,20                                             | 890                           | 1100                                           | 10 x 45        | ECR2XDE470M◇◇△△1045                                                          |
|                                      | 47                         | 1,70                                                      | 0,20                                             | 890                           | 1100                                           | 12,5 x 30      | ECR2XDE470M◇◇△△1230                                                          |
|                                      |                            | 1,70                                                      | 0,20                                             | 890                           | 1263                                           | 12,5 x 35      | ECR2XDE470M◇◇△△1235                                                          |
|                                      |                            | 1,70                                                      | 0,20                                             | 890                           | 1100                                           | 16 x 25,5      | ECR2XDE470M◇◇△△1625                                                          |
|                                      |                            | 1,43                                                      | 0,20                                             | 1041                          | 1275                                           | 12,5 x 35      | ECR2XDE560M◇◇△△1235                                                          |
|                                      | 56                         | 1,43                                                      | 0,20                                             | 1041                          | 1425                                           | 12,5 x 40      | ECR2XDE560M◇◇△△1240                                                          |
|                                      |                            | 1,43                                                      | 0,20                                             | 1041                          | 1275                                           | 16 x 25,5      | ECR2XDE560M◇◇△△1625                                                          |
|                                      |                            | 1,43                                                      | 0,20                                             | 1041                          | 1200                                           | 18 x 20,5      | ECR2XDE560M◇◇△△1820                                                          |
|                                      |                            | 1,17                                                      | 0,20                                             | 1243                          | 1500                                           | 12,5 x 45      | ECR2XDE680M◇◇△△1245                                                          |
|                                      | 68                         | 1,17                                                      | 0,20                                             | 1243                          | 1675                                           | 12,5 x 50      | ECR2XDE680M◇◇△△1250                                                          |
|                                      |                            | 1,17                                                      | 0,20                                             | 1243                          | 1400                                           | 16 x 31,5      | ECR2XDE680M◇◇△△1631                                                          |
|                                      |                            | 1,17                                                      | 0,20                                             | 1243                          | 1538                                           | 18 x 25,5      | ECR2XDE680M◇◇△△1825                                                          |
|                                      |                            | 0,969                                                     | 0,20                                             | 1478                          | 1725                                           | 12,5 x 50      | ECR2XDE820M◇◇△△1250                                                          |
|                                      | 82                         | 0,969                                                     | 0,20                                             | 1478                          | 1600                                           | 16 x 31,5      | ECR2XDE820M◇◇△△1631                                                          |
|                                      |                            | 0,969                                                     | 0,20                                             | 1478                          | 1725                                           | 16 x 36        | ECR2XDE820M◇◇△△1636                                                          |
|                                      |                            | 0,969                                                     | 0,20                                             | 1478                          | 1600                                           | 18 x 25,5      | ECR2XDE820M◇◇△△1825                                                          |
|                                      |                            | 0,969                                                     | 0,20                                             | 1478                          | 1825                                           | 18 x 31,5      | ECR2XDE820M◇◇△△1831                                                          |
|                                      |                            | 0,795                                                     | 0,20                                             | 1780                          | 1800                                           | 16 x 40        | ECR2XDE101M◇◇△△1640                                                          |
|                                      | 100                        | 0,795                                                     | 0,20                                             | 1780                          | 1755                                           | 18 x 31,5      | ECR2XDE101M◇◇△△1831                                                          |
|                                      |                            | 0,795                                                     | 0,20                                             | 1780                          | 1879                                           | 18 x 36        | ECR2XDE101M◇◇△△1836                                                          |
|                                      |                            | 0,663                                                     | 0,20                                             | 2116                          | 2070                                           | 16 x 45        | ECR2XDE121M◇◇△△1645                                                          |
|                                      | 120                        | 0,663                                                     | 0,20                                             | 2116                          | 1913                                           | 18 x 36        | ECR2XDE121M◇◇△△1836                                                          |
|                                      |                            | 0,663                                                     | 0,20                                             | 2116                          | 2093                                           | 18 x 40        | ECR2XDE121M◇◇△△1840                                                          |
|                                      |                            | 0,531                                                     | 0,20                                             | 2620                          | 2115                                           | 16 x 50        | ECR2XDE151M◇◇△△1650                                                          |
|                                      | 150                        | 0,531                                                     | 0,20                                             | 2620                          | 2385                                           | 18 x 45        | ECR2XDE151M◇◇△△1845                                                          |
|                                      | 180                        | 0,441                                                     | 0,20                                             | 3124                          | 2475                                           | 18 x 50        | ECR2XDE181M◇◇△△1850                                                          |

|                             |    |      |      |      |      |           |                     |
|-----------------------------|----|------|------|------|------|-----------|---------------------|
| <b>450<br/>(500)<br/>2W</b> | 10 | 7,96 | 0,20 | 280  | 325  | 10 x 16   | ECR2WDE100M◇◇△△1016 |
|                             | 15 | 5,31 | 0,20 | 370  | 475  | 10 x 20   | ECR2WDE150M◇◇△△1020 |
|                             |    | 5,31 | 0,20 | 370  | 525  | 10 x 25   | ECR2WDE150M◇◇△△1025 |
|                             | 18 | 4,43 | 0,20 | 424  | 575  | 10 x 25   | ECR2WDE180M◇◇△△1025 |
|                             | 22 | 3,62 | 0,20 | 496  | 675  | 10 x 30   | ECR2WDE220M◇◇△△1030 |
|                             |    | 3,62 | 0,20 | 496  | 700  | 12,5 x 20 | ECR2WDE220M◇◇△△1220 |
|                             |    | 2,95 | 0,20 | 586  | 800  | 10 x 35   | ECR2WDE270M◇◇△△1035 |
|                             | 27 | 2,95 | 0,20 | 586  | 725  | 12,5 x 20 | ECR2WDE270M◇◇△△1220 |
|                             |    | 2,95 | 0,20 | 586  | 850  | 12,5 x 25 | ECR2WDE270M◇◇△△1225 |
|                             |    | 2,41 | 0,20 | 694  | 875  | 10 x 35   | ECR2WDE330M◇◇△△1035 |
|                             | 33 | 2,41 | 0,20 | 694  | 900  | 12,5 x 25 | ECR2WDE330M◇◇△△1225 |
|                             |    | 2,42 | 0,20 | 694  | 1000 | 12,5 x 30 | ECR2WDE330M◇◇△△1230 |
|                             |    | 2,42 | 0,20 | 694  | 900  | 16 x 20   | ECR2WDE330M◇◇△△1620 |
|                             |    | 2,04 | 0,20 | 802  | 1000 | 10 x 40   | ECR2WDE390M◇◇△△1040 |
|                             | 39 | 2,04 | 0,20 | 802  | 1075 | 12,5 x 30 | ECR2WDE390M◇◇△△1230 |
|                             |    | 2,04 | 0,20 | 802  | 1150 | 12,5 x 35 | ECR2WDE390M◇◇△△1235 |
|                             |    | 2,04 | 0,20 | 802  | 1000 | 16 x 20   | ECR2WDE390M◇◇△△1620 |
|                             |    | 1,69 | 0,20 | 946  | 1200 | 10 x 50   | ECR2WDE470M◇◇△△1050 |
|                             | 47 | 1,69 | 0,20 | 946  | 1100 | 12,5 x 30 | ECR2WDE470M◇◇△△1230 |
|                             |    | 1,70 | 0,20 | 946  | 1200 | 12,5 x 35 | ECR2WDE470M◇◇△△1235 |
|                             |    | 1,70 | 0,20 | 946  | 1250 | 16 x 25,5 | ECR2WDE470M◇◇△△1625 |
|                             |    | 1,70 | 0,20 | 946  | 1150 | 18 x 20,5 | ECR2WDE470M◇◇△△1820 |
|                             |    | 1,42 | 0,20 | 1108 | 1250 | 12,5 x 35 | ECR2WDE560M◇◇△△1235 |
|                             | 56 | 1,42 | 0,20 | 1108 | 1350 | 12,5 x 40 | ECR2WDE560M◇◇△△1240 |
|                             |    | 1,42 | 0,20 | 1108 | 1463 | 16 x 25,5 | ECR2WDE560M◇◇△△1625 |
|                             |    | 1,42 | 0,20 | 1108 | 1250 | 18 x 20,5 | ECR2WDE560M◇◇△△1820 |
|                             |    | 1,17 | 0,20 | 1324 | 1450 | 12,5 x 40 | ECR2WDE680M◇◇△△1240 |
|                             | 68 | 1,17 | 0,20 | 1324 | 1525 | 16 x 31,5 | ECR2WDE680M◇◇△△1631 |
|                             |    | 1,17 | 0,20 | 1324 | 1650 | 16 x 36   | ECR2WDE680M◇◇△△1636 |
|                             |    | 1,17 | 0,20 | 1324 | 1525 | 18 x 25,5 | ECR2WDE680M◇◇△△1825 |

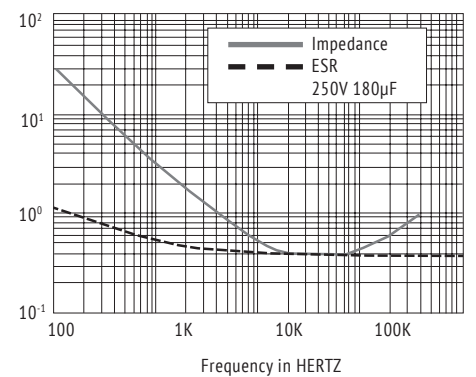
| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C 120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C 120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current 105°C 100kHz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code<br>Details: Page 33 |
|--------------------------------------|----------------------------|-----------------------------------------------------------|--------------------------------------------------|-------------------------------|------------------------------------------------|----------------|------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (Ω)                                                       |                                                  | (μA)                          | (mAmps)                                        | (mm)           |                                                                              |
| <b>450<br/>(500)<br/>2W</b>          | 82                         | 0,969                                                     | 0,20                                             | 1576                          | 1650                                           | 12,5 x 45      | ECR2WDE820M◇◇△△1245                                                          |
|                                      |                            | 0,969                                                     | 0,20                                             | 1576                          | 1750                                           | 12,5 x 50      | ECR2WDE820M◇◇△△1250                                                          |
|                                      |                            | 0,969                                                     | 0,20                                             | 1576                          | 1625                                           | 16 x 31,5      | ECR2WDE820M◇◇△△1631                                                          |
|                                      |                            | 0,969                                                     | 0,20                                             | 1576                          | 1600                                           | 18 x 25,5      | ECR2WDE820M◇◇△△1825                                                          |
|                                      |                            | 0,969                                                     | 0,20                                             | 1576                          | 1825                                           | 18 x 31,5      | ECR2WDE820M◇◇△△1831                                                          |
|                                      | 100                        | 0,795                                                     | 0,20                                             | 1900                          | 1640                                           | 16 x 36        | ECR2WDE101M◇◇△△1636                                                          |
|                                      |                            | 0,795                                                     | 0,20                                             | 1900                          | 1875                                           | 16 x 40        | ECR2WDE101M◇◇△△1640                                                          |
|                                      |                            | 0,795                                                     | 0,20                                             | 1900                          | 1687                                           | 18 x 31,5      | ECR2WDE101M◇◇△△1831                                                          |
|                                      |                            | 0,795                                                     | 0,20                                             | 1900                          | 1879                                           | 18 x 36        | ECR2WDE101M◇◇△△1836                                                          |
|                                      | 120                        | 0,663                                                     | 0,20                                             | 2260                          | 1935                                           | 18 x 36        | ECR2WDE121M◇◇△△1836                                                          |
|                                      |                            | 0,663                                                     | 0,20                                             | 2260                          | 2093                                           | 18 x 40        | ECR2WDE121M◇◇△△1840                                                          |
|                                      | 150                        | 0,531                                                     | 0,20                                             | 2800                          | 2150                                           | 18 x 40        | ECR2WDE151M◇◇△△1840                                                          |
|                                      |                            | 0,531                                                     | 0,20                                             | 2800                          | 2250                                           | 18 x 45        | ECR2WDE151M◇◇△△1845                                                          |
|                                      |                            | 0,531                                                     | 0,20                                             | 2800                          | 2385                                           | 18 x 50        | ECR2WDE151M◇◇△△1850                                                          |
|                                      | 180                        | 0,440                                                     | 0,20                                             | 3340                          | 2450                                           | 18 x 50        | ECR2WDE181M◇◇△△1850                                                          |

## TYPICAL CURVES

Impedance/ESR  
in OHMS



Impedance/ESR  
in OHMS



**7 000 - 12 000h  
at 105°C**

- Extra high Ripple Current
- Down sized
- Electronic Ballast, Lighting

CD 264 KH  
6 000h 105°C  
High Voltage

Longer life

UPDATED

CD 261X QX  
12 000h 105°C  
Long Life

miniaturized  
longer life

CD 261L DE  
14 000h 105°C  
Long Life  
Down Size

125°C

CD 116L GL  
6 000h 125°C  
High Temperature  
High Voltage

Slim  
line

CD 26H XH  
10 000h 105°C  
Slim Case

**ITEM CHARACTERISTICS**

|                                     |            |
|-------------------------------------|------------|
| Operating Temperature Range (°C)    | -40 ~ +105 |
| Voltage Range (V)                   | 160 ~ 500  |
| Capacitance Range (μF)              | 1 ~ 330    |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%      |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current (μA) After 1 minute at 20°C application of rated voltage, leakage current is not more than specified in table.

| Stability at Low Temperature<br>(Impedance Ratio at 120Hz) | Rated Voltage<br>(V) | 160 | 200 | 250 | 350 | 400 | 450 | 500 |
|------------------------------------------------------------|----------------------|-----|-----|-----|-----|-----|-----|-----|
| $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$        |                      | 3   |     |     | 6   |     |     |     |
| $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$        |                      | 6   |     |     | 8   |     | 10  |     |

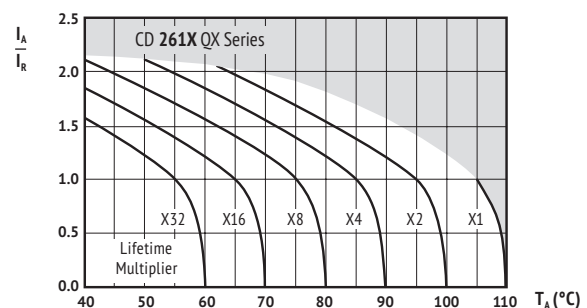
| ITEM                                                                    | USEFUL LIFE                                              |                                   | LOAD LIFE                                               | ENDURANCE TEST                                           | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------------|---------------------------------------------------------|----------------------------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | Ø 6,3 : 7 000h<br>Ø 8~10 : 10 000h<br>Ø ≥ 12,5 : 12 000h | > 100 000h                        | Ø 6,3 : 5 000h<br>Ø 8~10 : 8 000h<br>Ø ≥ 12,5 : 10 000h | Ø 6,3 : 7 000h<br>Ø 8~10 : 10 000h<br>Ø ≥ 12,5 : 12 000h | 1 000h                                |                                                                              |
| Leakage Current                                                         | Not more than specified value                            |                                   | Not more than specified value                           | Not more than specified value                            | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 30% of initial value                            |                                   | Within ± 20% of initial value                           | Within ± 20% of initial value                            | Within ± 20% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value                    |                                   | Not more than 200% of specified value                   | Not more than 200% of specified value                    | Not more than 200% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C                                  | $U_R$<br>$1,6 \times I_R$<br>50°C | $U_R$<br>$I_R$<br>105°C                                 | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384                 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for<br>30 min > 24h before<br>measurement |

**MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)**

| Capacitance (μF) \ Frequency | 120Hz | 1kHz | 10kHz | 100kHz |
|------------------------------|-------|------|-------|--------|
| 1 ~ 5,6                      | 0,20  | 0,40 | 0,80  | 1,00   |
| 6,8 ~ 15                     | 0,30  | 0,60 | 0,90  | 1,00   |
| 22 ~ 82                      | 0,40  | 0,70 | 0,90  | 1,00   |
| 100 ~ 330                    | 0,45  | 0,75 | 0,90  | 1,00   |

Multipliers for typical operating conditions.

**MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)**



$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

**ENVIRONMENTAL**

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)



**SAFETY FACTOR**

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



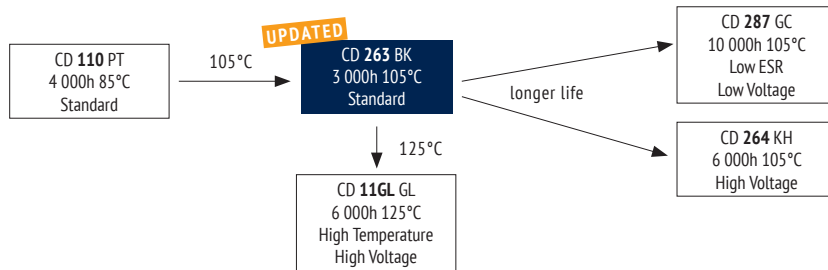
| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 100kHz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code<br>Details: Page 33 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|----------------------------------------------------------|----------------|------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (Ω)                                                              |                                          | (μA)                                 | (mA <sub>RMS</sub> )                                     | (mm)           |                                                                              |
| <b>160<br/>(200)<br/>2C</b>                 | 10                                  | 8,0                                                              | 0,15                                     | 164                                  | 320                                                      | 10 x 16        | ECR2CQX100M◇◇△△1016                                                          |
|                                             | 22                                  | 3,6                                                              | 0,15                                     | 241                                  | 500                                                      | 10 x 20        | ECR2CQX220M◇◇△△1020                                                          |
|                                             | 33                                  | 2,4                                                              | 0,15                                     | 311                                  | 650                                                      | 10 x 20        | ECR2CQX330M◇◇△△1020                                                          |
|                                             | 47                                  | 1,7                                                              | 0,15                                     | 401                                  | 750                                                      | 10 x 20        | ECR2CQX470M◇◇△△1020                                                          |
|                                             | 68                                  | 1,2                                                              | 0,15                                     | 535                                  | 1180                                                     | 12,5 x 20      | ECR2CQX680M◇◇△△1220                                                          |
|                                             |                                     | 1,2                                                              | 0,15                                     | 535                                  | 1180                                                     | 16 x 20        | ECR2CQX680M◇◇△△1620                                                          |
|                                             | 100                                 | 0,80                                                             | 0,15                                     | 740                                  | 1420                                                     | 12,5 x 25      | ECR2CQX101M◇◇△△1225                                                          |
|                                             |                                     | 0,80                                                             | 0,15                                     | 740                                  | 1420                                                     | 16 x 20        | ECR2CQX101M◇◇△△1620                                                          |
|                                             | 150                                 | 0,50                                                             | 0,15                                     | 1060                                 | 1890                                                     | 16 x 25,5      | ECR2CQX151M◇◇△△1625                                                          |
|                                             | 220                                 | 0,40                                                             | 0,15                                     | 1508                                 | 2370                                                     | 18 x 25,5      | ECR2CQX221M◇◇△△1825                                                          |
|                                             | 330                                 | 0,20                                                             | 0,15                                     | 2212                                 | 3220                                                     | 18 x 31,5      | ECR2CQX331M◇◇△△1831                                                          |
| <b>200<br/>(250)<br/>2D</b>                 | 4,7                                 | 16,9                                                             | 0,15                                     | 138                                  | 160                                                      | 8 x 11,5       | ECR2DQX4R7M◇◇△△0811                                                          |
|                                             | 6,8                                 | 11,7                                                             | 0,15                                     | 155                                  | 200                                                      | 10 x 12,5      | ECR2DQX6R8M◇◇△△1012                                                          |
|                                             | 10                                  | 8,0                                                              | 0,15                                     | 180                                  | 220                                                      | 8 x 11,5       | ECR2DQX100M◇◇△△0811                                                          |
|                                             | 22                                  | 3,6                                                              | 0,15                                     | 180                                  | 280                                                      | 10 x 12,5      | ECR2DQX100M◇◇△△1012                                                          |
|                                             |                                     | 3,6                                                              | 0,15                                     | 276                                  | 400                                                      | 10 x 12,5      | ECR2DQX220M◇◇△△1012                                                          |
|                                             | 33                                  | 2,4                                                              | 0,15                                     | 276                                  | 500                                                      | 10 x 20        | ECR2DQX220M◇◇△△1020                                                          |
|                                             | 47                                  | 1,7                                                              | 0,15                                     | 364                                  | 650                                                      | 10 x 20        | ECR2DQX330M◇◇△△1020                                                          |
|                                             | 68                                  | 1,2                                                              | 0,15                                     | 476                                  | 980                                                      | 12,5 x 20      | ECR2DQX470M◇◇△△1220                                                          |
|                                             |                                     | 1,2                                                              | 0,15                                     | 644                                  | 1300                                                     | 12,5 x 25      | ECR2DQX680M◇◇△△1225                                                          |
|                                             | 100                                 | 0,80                                                             | 0,15                                     | 644                                  | 1300                                                     | 16 x 20        | ECR2DQX680M◇◇△△1620                                                          |
|                                             |                                     | 0,80                                                             | 0,15                                     | 900                                  | 1420                                                     | 16 x 20        | ECR2DQX101M◇◇△△1620                                                          |
|                                             | 150                                 | 0,50                                                             | 0,15                                     | 1300                                 | 1890                                                     | 16 x 25,5      | ECR2DQX151M◇◇△△1625                                                          |
|                                             | 220                                 | 0,40                                                             | 0,15                                     | 1860                                 | 2330                                                     | 18 x 25,5      | ECR2DQX221M◇◇△△1825                                                          |
|                                             | 330                                 | 0,20                                                             | 0,15                                     | 1790                                 | 3220                                                     | 18 x 35,5      | ECR2DQX331M◇◇△△1835                                                          |
| <b>250<br/>(300)<br/>2E</b>                 | 4,7                                 | 16,9                                                             | 0,15                                     | 147                                  | 160                                                      | 8 x 11,5       | ECR2EQX4R7M◇◇△△0811                                                          |
|                                             | 6,8                                 | 11,7                                                             | 0,15                                     | 168                                  | 250                                                      | 10 x 12,5      | ECR2EQX6R8M◇◇△△1012                                                          |
|                                             | 10                                  | 8,0                                                              | 0,15                                     | 200                                  | 320                                                      | 10 x 16        | ECR2EQX100M◇◇△△1016                                                          |
|                                             | 22                                  | 3,6                                                              | 0,15                                     | 320                                  | 470                                                      | 10 x 16        | ECR2EQX220M◇◇△△1016                                                          |
|                                             |                                     | 3,6                                                              | 0,15                                     | 320                                  | 500                                                      | 10 x 20        | ECR2EQX220M◇◇△△1020                                                          |
|                                             | 33                                  | 2,4                                                              | 0,15                                     | 430                                  | 760                                                      | 12,5 x 16      | ECR2EQX330M◇◇△△1216                                                          |
|                                             |                                     | 2,4                                                              | 0,15                                     | 430                                  | 800                                                      | 12,5 x 20      | ECR2EQX330M◇◇△△1220                                                          |
|                                             | 47                                  | 1,7                                                              | 0,15                                     | 570                                  | 980                                                      | 12,5 x 20      | ECR2EQX470M◇◇△△1220                                                          |
|                                             | 68                                  | 1,2                                                              | 0,15                                     | 780                                  | 1300                                                     | 12,5 x 25      | ECR2EQX680M◇◇△△1225                                                          |
|                                             |                                     | 1,2                                                              | 0,15                                     | 780                                  | 1300                                                     | 16 x 20        | ECR2EQX680M◇◇△△1620                                                          |
|                                             | 100                                 | 0,80                                                             | 0,15                                     | 1100                                 | 1530                                                     | 16 x 25,5      | ECR2EQX101M◇◇△△1625                                                          |
|                                             |                                     | 0,80                                                             | 0,15                                     | 1100                                 | 1440                                                     | 18 x 20,5      | ECR2EQX101M◇◇△△1820                                                          |
|                                             | 150                                 | 0,50                                                             | 0,15                                     | 1600                                 | 1960                                                     | 18 x 25,5      | ECR2EQX151M◇◇△△1825                                                          |
|                                             | 220                                 | 0,40                                                             | 0,15                                     | 2300                                 | 2545                                                     | 18 x 31,5      | ECR2EQX221M◇◇△△1831                                                          |
| <b>350<br/>(400)<br/>2V</b>                 | 3,3                                 | 24,1                                                             | 0,20                                     | 146                                  | 130                                                      | 8 x 11,5       | ECR2VQX3R3M◇◇△△0811                                                          |
|                                             | 4,7                                 | 16,9                                                             | 0,20                                     | 166                                  | 150                                                      | 10 x 12,5      | ECR2VQX4R7M◇◇△△1012                                                          |
|                                             | 5,6                                 | 14,2                                                             | 0,20                                     | 179                                  | 150                                                      | 8 x 11,5       | ECR2VQX5R6M◇◇△△0811                                                          |
|                                             |                                     | 14,2                                                             | 0,20                                     | 178                                  | 180                                                      | 10 x 12,5      | ECR2VQX5R6M◇◇△△1012                                                          |
|                                             | 6,8                                 | 11,7                                                             | 0,20                                     | 195                                  | 280                                                      | 10 x 16        | ECR2VQX6R8M◇◇△△1016                                                          |
|                                             | 10                                  | 8,0                                                              | 0,20                                     | 240                                  | 280                                                      | 10 x 12,5      | ECR2VQX100M◇◇△△1012                                                          |
|                                             |                                     | 8,0                                                              | 0,20                                     | 240                                  | 350                                                      | 10 x 20        | ECR2VQX100M◇◇△△1020                                                          |
|                                             | 22                                  | 3,6                                                              | 0,20                                     | 408                                  | 650                                                      | 12,5 x 20      | ECR2VQX220M◇◇△△1220                                                          |
|                                             |                                     | 2,4                                                              | 0,15                                     | 562                                  | 850                                                      | 12,5 x 25      | ECR2VQX330M◇◇△△1225                                                          |
|                                             | 33                                  | 2,4                                                              | 0,20                                     | 562                                  | 900                                                      | 16 x 20        | ECR2VQX330M◇◇△△1620                                                          |
|                                             |                                     | 1,7                                                              | 0,20                                     | 758                                  | 1080                                                     | 16 x 20        | ECR2VQX470M◇◇△△1620                                                          |
|                                             | 68                                  | 1,2                                                              | 0,15                                     | 1052                                 | 1350                                                     | 18 x 20,5      | ECR2VQX680M◇◇△△1820                                                          |
|                                             |                                     | 1,2                                                              | 0,20                                     | 1052                                 | 1470                                                     | 18 x 25,5      | ECR2VQX680M◇◇△△1825                                                          |
|                                             | 82                                  | 0,97                                                             | 0,20                                     | 1248                                 | 1530                                                     | 18 x 25,5      | ECR2VQX820M◇◇△△1825                                                          |
| <b>400<br/>(450)<br/>2G</b>                 | 1                                   | 80,0                                                             | 0,20                                     | 116                                  | 50                                                       | 6,3 x 11,5     | ECR2GQX010M◇◇△△0611                                                          |
|                                             | 1,5                                 | 53,1                                                             | 0,20                                     | 124                                  | 70                                                       | 6,3 x 11,5     | ECR2GQX1R5M◇◇△△0611                                                          |
|                                             |                                     | 53,1                                                             | 0,20                                     | 124                                  | 80                                                       | 8 x 11,5       | ECR2GQX1R5M◇◇△△0811                                                          |
|                                             | 2,2                                 | 36,2                                                             | 0,20                                     | 135                                  | 95                                                       | 8 x 11,5       | ECR2GQX2R2M◇◇△△0811                                                          |
|                                             |                                     | 36,2                                                             | 0,20                                     | 135                                  | 140                                                      | 10 x 12,5      | ECR2GQX2R2M◇◇△△1012                                                          |
|                                             | 3,3                                 | 24,1                                                             | 0,20                                     | 153                                  | 150                                                      | 10 x 12,5      | ECR2GQX3R3M◇◇△△1012                                                          |
|                                             |                                     | 24,1                                                             | 0,20                                     | 153                                  | 180                                                      | 10 x 16        | ECR2GQX3R3M◇◇△△1016                                                          |
|                                             | 4,7                                 | 16,9                                                             | 0,20                                     | 176                                  | 160                                                      | 8 x 11,5       | ECR2GQX4R7M◇◇△△0811                                                          |
|                                             |                                     | 16,9                                                             | 0,20                                     | 175                                  | 220                                                      | 10 x 16        | ECR2GQX4R7M◇◇△△1016                                                          |
|                                             | 5,6                                 | 14,2                                                             | 0,20                                     | 190                                  | 200                                                      | 10 x 12,5      | ECR2GQX5R6M◇◇△△1012                                                          |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 100kHz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code<br>Details: Page 33 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|----------------------------------------------------------|----------------|------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (Ω)                                                              |                                          | (μA)                                 | (mA <sub>RMS</sub> )                                     | (mm)           |                                                                              |
| <b>400<br/>(450)<br/>2G</b>                 | 6,8                                 | 11,7                                                             | 0,20                                     | 209                                  | 220                                                      | 10 x 16        | ECR2GQX6R8M◇◇△△1016                                                          |
|                                             |                                     | 11,7                                                             | 0,20                                     | 209                                  | 280                                                      | 10 x 20        | ECR2GQX6R8M◇◇△△1020                                                          |
|                                             | 10                                  | 8,0                                                              | 0,20                                     | 260                                  | 350                                                      | 10 x 20        | ECR2GQX100M◇◇△△1020                                                          |
|                                             | 15                                  | 5,3                                                              | 0,15                                     | 340                                  | 500                                                      | 12,5 x 16      | ECR2GQX150M◇◇△△1216                                                          |
|                                             |                                     | 5,3                                                              | 0,20                                     | 340                                  | 550                                                      | 12,5 x 20      | ECR2GQX150M◇◇△△1220                                                          |
|                                             | 22                                  | 3,6                                                              | 0,20                                     | 452                                  | 650                                                      | 12,5 x 20      | ECR2GQX220M◇◇△△1220                                                          |
|                                             |                                     | 3,6                                                              | 0,20                                     | 452                                  | 760                                                      | 12,5 x 25      | ECR2GQX220M◇◇△△1225                                                          |
|                                             | 33                                  | 3,6                                                              | 0,20                                     | 452                                  | 760                                                      | 16 x 20        | ECR2GQX220M◇◇△△1620                                                          |
|                                             |                                     | 2,4                                                              | 0,20                                     | 628                                  | 900                                                      | 16 x 20        | ECR2GQX330M◇◇△△1620                                                          |
|                                             | 47                                  | 1,7                                                              | 0,20                                     | 852                                  | 1180                                                     | 16 x 25,5      | ECR2GQX470M◇◇△△1625                                                          |
|                                             |                                     | 1,7                                                              | 0,20                                     | 852                                  | 1180                                                     | 18 x 20,5      | ECR2GQX470M◇◇△△1820                                                          |
| <b>450<br/>(500)<br/>2W</b>                 | 68                                  | 1,2                                                              | 0,20                                     | 1188                                 | 1470                                                     | 18 x 25        | ECR2GQX680M◇◇△△1825                                                          |
|                                             | 82                                  | 1,0                                                              | 0,20                                     | 1412                                 | 1600                                                     | 18 x 31,5      | ECR2GQX820M◇◇△△1831                                                          |
|                                             | 100                                 | 0,80                                                             | 0,20                                     | 1700                                 | 1780                                                     | 18 x 36        | ECR2GQX101M◇◇△△1836                                                          |
| <b>500<br/>(550)<br/>2H</b>                 | 2,2                                 | 36,2                                                             | 0,20                                     | 140                                  | 90                                                       | 8 x 11,5       | ECR2WQX2R2M◇◇△△0811                                                          |
|                                             |                                     | 36,2                                                             | 0,20                                     | 140                                  | 90                                                       | 10 x 12,5      | ECR2WQX2R2M◇◇△△1012                                                          |
|                                             | 3,3                                 | 24,1                                                             | 0,20                                     | 159                                  | 180                                                      | 10 x 12,5      | ECR2WQX3R3M◇◇△△1012                                                          |
|                                             |                                     | 24,1                                                             | 0,20                                     | 159                                  | 190                                                      | 10 x 16        | ECR2WQX3R3M◇◇△△1016                                                          |
|                                             | 4,7                                 | 16,9                                                             | 0,20                                     | 185                                  | 212                                                      | 10 x 16        | ECR2WQX4R7M◇◇△△1016                                                          |
|                                             | 5,6                                 | 14,2                                                             | 0,20                                     | 201                                  | 200                                                      | 10 x 16        | ECR2WQX5R6M◇◇△△1016                                                          |
|                                             | 6,8                                 | 11,7                                                             | 0,20                                     | 222                                  | 230                                                      | 10 x 16        | ECR2WQX6R8M◇◇△△1016                                                          |
|                                             |                                     | 11,7                                                             | 0,20                                     | 222                                  | 280                                                      | 10 x 20        | ECR2WQX6R8M◇◇△△1020                                                          |
|                                             | 10                                  | 8,0                                                              | 0,20                                     | 280                                  | 300                                                      | 10 x 20        | ECR2WQX100M◇◇△△1020                                                          |
|                                             | 15                                  | 5,3                                                              | 0,20                                     | 370                                  | 450                                                      | 12,5 x 20      | ECR2WQX150M◇◇△△1220                                                          |
|                                             | 22                                  | 3,6                                                              | 0,20                                     | 496                                  | 600                                                      | 12,5 x 25      | ECR2WQX220M◇◇△△1225                                                          |
|                                             |                                     | 3,6                                                              | 0,20                                     | 496                                  | 730                                                      | 16 x 20        | ECR2WQX220M◇◇△△1620                                                          |
|                                             | 33                                  | 2,4                                                              | 0,20                                     | 694                                  | 980                                                      | 16 x 25,5      | ECR2WQX330M◇◇△△1625                                                          |
|                                             | 47                                  | 1,7                                                              | 0,20                                     | 946                                  | 1090                                                     | 16 x 25,5      | ECR2WQX470M◇◇△△1625                                                          |
|                                             |                                     | 1,7                                                              | 0,20                                     | 946                                  | 1200                                                     | 18 x 25,5      | ECR2WQX470M◇◇△△1825                                                          |
|                                             | 68                                  | 1,2                                                              | 0,20                                     | 1324                                 | 1440                                                     | 18 x 25,5      | ECR2WQX680M◇◇△△1825                                                          |
|                                             |                                     | 1,2                                                              | 0,20                                     | 1324                                 | 1575                                                     | 18 x 31,5      | ECR2WQX680M◇◇△△1831                                                          |
|                                             | 82                                  | 1,0                                                              | 0,20                                     | 1576                                 | 1600                                                     | 18 x 31,5      | ECR2WQX820M◇◇△△1831                                                          |
|                                             |                                     | 1,0                                                              | 0,20                                     | 1576                                 | 1675                                                     | 18 x 36        | ECR2WQX820M◇◇△△1836                                                          |
|                                             | 100                                 | 0,80                                                             | 0,20                                     | 1900                                 | 1700                                                     | 18 x 31,5      | ECR2WQX101M◇◇△△1831                                                          |
|                                             |                                     | 0,80                                                             | 0,20                                     | 1900                                 | 1730                                                     | 18 x 36        | ECR2WQX101M◇◇△△1836                                                          |
|                                             | 120                                 | 0,70                                                             | 0,20                                     | 2260                                 | 1750                                                     | 18 x 36        | ECR2WQX121M◇◇△△1836                                                          |
|                                             |                                     | 0,70                                                             | 0,20                                     | 2260                                 | 1820                                                     | 18 x 40        | ECR2WQX121M◇◇△△1840                                                          |
|                                             | 150                                 | 0,50                                                             | 0,20                                     | 2800                                 | 2020                                                     | 18 x 40        | ECR2WQX151M◇◇△△1840                                                          |
|                                             |                                     | 0,50                                                             | 0,20                                     | 2800                                 | 2140                                                     | 18 x 45        | ECR2WQX151M◇◇△△1845                                                          |
| <b>500<br/>(550)<br/>2H</b>                 | 180                                 | 0,40                                                             | 0,20                                     | 3340                                 | 2380                                                     | 18 x 45        | ECR2WQX181M◇◇△△1845                                                          |
|                                             | 220                                 | 0,40                                                             | 0,20                                     | 3340                                 | 2460                                                     | 18 x 50        | ECR2WQX181M◇◇△△1850                                                          |
| <b>500<br/>(550)<br/>2H</b>                 | 10                                  | 9,3                                                              | 0,20                                     | 300                                  | 360                                                      | 12,5 x 20      | ECR2HQX100M◇◇△△1220                                                          |
|                                             | 15                                  | 6,2                                                              | 0,20                                     | 400                                  | 480                                                      | 12,5 x 25      | ECR2HQX150M◇◇△△1225                                                          |
|                                             | 22                                  | 4,2                                                              | 0,20                                     | 540                                  | 580                                                      | 16 x 25,5      | ECR2HQX220M◇◇△△1625                                                          |
|                                             | 33                                  | 2,8                                                              | 0,20                                     | 760                                  | 720                                                      | 16 x 31,5      | ECR2HQX330M◇◇△△1631                                                          |
|                                             | 47                                  | 2,0                                                              | 0,20                                     | 1040                                 | 900                                                      | 18 x 31,5      | ECR2HQX470M◇◇△△1831                                                          |
|                                             | 56                                  | 1,6                                                              | 0,20                                     | 1220                                 | 980                                                      | 18 x 31,5      | ECR2HQX560M◇◇△△1831                                                          |
|                                             | 68                                  | 1,4                                                              | 0,20                                     | 1460                                 | 1250                                                     | 18 x 36        | ECR2HQX680M◇◇△△1836                                                          |
|                                             | 82                                  | 1,1                                                              | 0,20                                     | 1740                                 | 1330                                                     | 18 x 40        | ECR2HQX820M◇◇△△1840                                                          |
|                                             | 100                                 | 0,90                                                             | 0,20                                     | 2100                                 | 1430                                                     | 18 x 45        | ECR2HQX101M◇◇△△1845                                                          |
|                                             |                                     | 0,90                                                             | 0,20                                     | 2100                                 | 1450                                                     | 20 x 41        | ECR2HQX101M◇◇△△2041                                                          |
| <b>500<br/>(550)<br/>2H</b>                 | 120                                 | 0,80                                                             | 0,20                                     | 2500                                 | 1640                                                     | 18 x 50        | ECR2HQX121M◇◇△△1850                                                          |
|                                             | 150                                 | 0,50                                                             | 0,20                                     | 3100                                 | 1950                                                     | 22 x 45        | ECR2HQX151M◇◇△△2245                                                          |



## 2 000 - 3 000h at 105°C

· Standard 105°C



## ITEM CHARACTERISTICS

|                                     |              |            |
|-------------------------------------|--------------|------------|
| Operating Temperature Range (°C)    | -40 ~ +105   | -25 ~ +105 |
| Voltage Range (V)                   | 6,3 ~ 250    | 350 ~ 500  |
| Capacitance Range (μF)              | 0,1 ~ 15 000 |            |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%        |            |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

|                 |                   |                                                                                                            |                                                                                                           |
|-----------------|-------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Leakage Current | Rated Voltage (V) | 6,3 ~ 100                                                                                                  | 160 ~ 500                                                                                                 |
|                 | $I_{LEAKAGE}$     | After 2 minutes at 20°C application of rated voltage, leakage current is not more than specified in table. | After 1 minute at 20°C application of rated voltage, leakage current is not more than specified in table. |

|                                                         |                         |     |    |    |    |    |    |    |     |     |     |     |     |     |     |     |     |
|---------------------------------------------------------|-------------------------|-----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)       | 6,3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 420 | 450 | 500 |
|                                                         | $Z_{-25°C} / Z_{+20°C}$ | 4   | 3  |    |    | 2  |    |    |     |     |     |     | 3   |     |     |     | 6   |
|                                                         | $Z_{-40°C} / Z_{+20°C}$ | 8   | 6  | 4  |    |    | 3  |    |     | 8   |     |     |     | -   |     |     | -   |

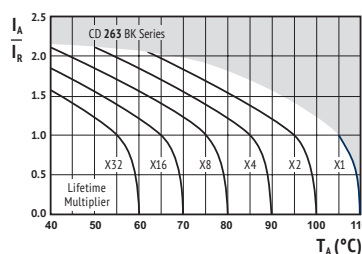
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | 3 000h                                | > 100 000h                        | 2 000h                                | 2 000h                                   | 1 000h                                |                                                                              |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value            | Within ± 20% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 150% of specified value    | Not more than 200% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for<br>30 min > 24h before<br>measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

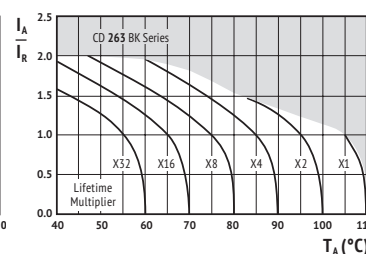
| Rated Voltage (V) | Frequency        | 50Hz | 120Hz | 1kHz | 10kHz | 100kHz |
|-------------------|------------------|------|-------|------|-------|--------|
|                   | Capacitance (μF) |      |       |      |       |        |
| 6,3 ~ 100         | 0,47 ~ 4,7       | 0,32 | 0,40  | 0,70 | 0,80  | 1,00   |
|                   | 10 ~ 47          | 0,40 | 0,50  | 0,80 | 0,90  | 1,00   |
|                   | 100 ~ 220        | 0,56 | 0,70  | 0,90 | 0,90  | 1,00   |
|                   | 330 ~ 1 000      | 0,64 | 0,80  | 0,90 | 1,00  | 1,00   |
|                   | 2 200 ~ 15 000   | 0,72 | 0,90  | 1,00 | 1,00  | 1,00   |
| 160 ~ 500         | 0,47 ~ 10        | 0,80 | 1,00  | 1,75 | 2,00  | 2,50   |
|                   | 22 ~ 56          | 0,80 | 1,00  | 1,60 | 1,80  | 2,00   |
|                   | 68 ~ 220         | 0,80 | 1,00  | 1,30 | 1,40  | 1,65   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)

LIFETIME DIAGRAM  
6,3 ~ 100V

$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
Multiplier of Useful Life as a function of  
ambient temperature & ripple current load

LIFETIME DIAGRAM  
160 ~ 500V

$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 105°C  
Multiplier of Useful Life as a function of  
ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)



## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance<br>(μF) | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz<br>(Ω) | Z <sub>max</sub><br>Max Impedance<br>20°C 100kHz<br>(Ω) | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current<br>(μA) | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 100kHz<br>(mA <sub>rms</sub> ) | Size<br>øD x L<br>(mm) | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code<br>Details: Page 33 |
|---------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------|----------------------------------------------|----------------------------------------------------------------------------------|------------------------|------------------------------------------------------------------------------|
| <b>6,3<br/>(7,2)<br/>0J</b>                 | 33                                          | 8,9                                                                     | 2,5                                                     | 0,22                                     | 3                                            | 105                                                                              | 5x11,5                 | ECR0JBK330M◇◇△△0511                                                          |
|                                             | 47                                          | 6,3                                                                     | 1,5                                                     | 0,22                                     | 3                                            | 120                                                                              | 5x11,5                 | ECR0JBK470M◇◇△△0511                                                          |
|                                             | 100                                         | 3,0                                                                     | 1,2                                                     | 0,22                                     | 7                                            | 130                                                                              | 5x11,5                 | ECR0JBK101M◇◇△△0511                                                          |
|                                             | 220                                         | 1,4                                                                     | 1,2                                                     | 0,22                                     | 14                                           | 180                                                                              | 5x11,5                 | ECR0JBK221M◇◇△△0511                                                          |
|                                             |                                             | 1,4                                                                     | 0,87                                                    | 0,22                                     | 14                                           | 180                                                                              | 6,3x11,5               | ECR0JBK221M◇◇△△0611                                                          |
|                                             | 330                                         | 0,89                                                                    | 0,58                                                    | 0,22                                     | 21                                           | 220                                                                              | 6,3x11,5               | ECR0JBK331M◇◇△△0611                                                          |
|                                             |                                             | 0,63                                                                    | 0,55                                                    | 0,22                                     | 30                                           | 250                                                                              | 6,3x11,5               | ECR0JBK471M◇◇△△0611                                                          |
|                                             | 470                                         | 0,63                                                                    | 0,39                                                    | 0,22                                     | 30                                           | 315                                                                              | 8x11,5                 | ECR0JBK471M◇◇△△0811                                                          |
|                                             |                                             | 0,30                                                                    | 0,37                                                    | 0,22                                     | 63                                           | 435                                                                              | 8x11,5                 | ECR0JBK102M◇◇△△0811                                                          |
|                                             | 1 000                                       | 0,30                                                                    | 0,23                                                    | 0,22                                     | 63                                           | 500                                                                              | 10x12,5                | ECR0JBK102M◇◇△△1012                                                          |
|                                             |                                             | 0,15                                                                    | 0,095                                                   | 0,24                                     | 139                                          | 765                                                                              | 10x20                  | ECR0JBK222M◇◇△△1020                                                          |
|                                             | 2 200                                       | 0,15                                                                    | 0,095                                                   | 0,24                                     | 139                                          | 1000                                                                             | 12,5x20                | ECR0JBK222M◇◇△△1220                                                          |
|                                             |                                             | 0,11                                                                    | 0,12                                                    | 0,26                                     | 208                                          | 882                                                                              | 10x20                  | ECR0JBK332M◇◇△△1020                                                          |
|                                             | 3 300                                       | 0,11                                                                    | 0,090                                                   | 0,26                                     | 208                                          | 1050                                                                             | 12,5x20                | ECR0JBK332M◇◇△△1220                                                          |
|                                             |                                             | 0,080                                                                   | 0,090                                                   | 0,28                                     | 297                                          | 1120                                                                             | 12,5x20                | ECR0JBK472M◇◇△△1220                                                          |
|                                             | 4 700                                       | 0,080                                                                   | 0,061                                                   | 0,28                                     | 297                                          | 1670                                                                             | 16x25                  | ECR0JBK472M◇◇△△1625                                                          |
|                                             |                                             | 0,063                                                                   | 0,090                                                   | 0,32                                     | 429                                          | 1380                                                                             | 12,5x20                | ECR0JBK682M◇◇△△1220                                                          |
|                                             | 6 800                                       | 0,063                                                                   | 0,056                                                   | 0,32                                     | 429                                          | 1740                                                                             | 16x25                  | ECR0JBK682M◇◇△△1625                                                          |
|                                             |                                             | 0,054                                                                   | 0,061                                                   | 0,40                                     | 630                                          | 1750                                                                             | 16x25                  | ECR0JBK103M◇◇△△1625                                                          |
|                                             | 10 000                                      | 0,054                                                                   | 0,045                                                   | 0,40                                     | 630                                          | 2110                                                                             | 16x31,5                | ECR0JBK103M◇◇△△1631                                                          |
|                                             |                                             | 0,045                                                                   | 0,042                                                   | 0,50                                     | 945                                          | 2040                                                                             | 16x35,5                | ECR0JBK153M◇◇△△1635                                                          |
|                                             | 15 000                                      | 0,045                                                                   | 0,036                                                   | 0,50                                     | 945                                          | 2580                                                                             | 18x35,5                | ECR0JBK153M◇◇△△1835                                                          |

|                           |       |       |       |      |      |      |          |                     |
|---------------------------|-------|-------|-------|------|------|------|----------|---------------------|
| <b>10<br/>(13)<br/>1A</b> | 22    | 11,5  | 2,5   | 0,19 | 3    | 92   | 5x11,5   | ECR1ABK220M◇◇△△0511 |
|                           | 33    | 7,7   | 1,9   | 0,19 | 4    | 105  | 5x11,5   | ECR1ABK330M◇◇△△0511 |
|                           | 47    | 5,4   | 1,5   | 0,19 | 5    | 120  | 5x11,5   | ECR1ABK470M◇◇△△0511 |
|                           | 100   | 2,6   | 1,2   | 0,19 | 10   | 130  | 5x11,5   | ECR1ABK101M◇◇△△0511 |
|                           | 220   | 1,2   | 0,58  | 0,19 | 22   | 220  | 6,3x11,5 | ECR1ABK221M◇◇△△0611 |
|                           |       | 0,77  | 0,54  | 0,19 | 33   | 230  | 6,3x11,5 | ECR1ABK331M◇◇△△0611 |
|                           | 330   | 0,77  | 0,47  | 0,19 | 33   | 265  | 8x11,5   | ECR1ABK331M◇◇△△0811 |
|                           |       | 0,54  | 0,39  | 0,19 | 47   | 315  | 8x11,5   | ECR1ABK471M◇◇△△0811 |
|                           | 470   | 0,25  | 0,25  | 0,19 | 100  | 500  | 10x12,5  | ECR1ABK102M◇◇△△1012 |
|                           |       | 0,25  | 0,18  | 0,19 | 100  | 615  | 10x16    | ECR1ABK102M◇◇△△1016 |
|                           | 1 000 | 0,13  | 0,17  | 0,21 | 220  | 761  | 10x20    | ECR1ABK222M◇◇△△1020 |
|                           |       | 0,13  | 0,090 | 0,21 | 220  | 1050 | 12,5x20  | ECR1ABK222M◇◇△△1220 |
|                           | 2 200 | 0,10  | 0,086 | 0,23 | 330  | 1010 | 12,5x20  | ECR1ABK332M◇◇△△1220 |
|                           |       | 0,10  | 0,068 | 0,23 | 330  | 1300 | 12,5x25  | ECR1ABK332M◇◇△△1225 |
|                           | 3 300 | 0,071 | 0,068 | 0,25 | 470  | 1250 | 12,5x25  | ECR1ABK472M◇◇△△1225 |
|                           |       | 0,071 | 0,056 | 0,25 | 470  | 1740 | 16x25    | ECR1ABK472M◇◇△△1625 |
|                           | 4 700 | 0,057 | 0,056 | 0,29 | 680  | 1570 | 16x25    | ECR1ABK682M◇◇△△1625 |
|                           |       | 0,057 | 0,045 | 0,29 | 680  | 2110 | 16x31,5  | ECR1ABK682M◇◇△△1631 |
|                           | 6 800 | 0,050 | 0,042 | 0,37 | 1000 | 1910 | 16x35,5  | ECR1ABK103M◇◇△△1635 |
|                           |       | 0,050 | 0,036 | 0,37 | 1000 | 2580 | 18x35,5  | ECR1ABK103M◇◇△△1835 |

|                           |       |       |       |      |      |      |          |                     |
|---------------------------|-------|-------|-------|------|------|------|----------|---------------------|
| <b>16<br/>(20)<br/>1C</b> | 10    | 21,3  | 2,5   | 0,16 | 3    | 92   | 5x11,5   | ECR1CBK100M◇◇△△0511 |
|                           | 22    | 9,7   | 1,9   | 0,16 | 4    | 105  | 5x11,5   | ECR1CBK220M◇◇△△0511 |
|                           | 33    | 6,5   | 1,5   | 0,16 | 6    | 120  | 5x11,5   | ECR1CBK330M◇◇△△0511 |
|                           | 47    | 4,6   | 1,2   | 0,16 | 8    | 130  | 5x11,5   | ECR1CBK470M◇◇△△0511 |
|                           | 100   | 2,2   | 1,2   | 0,16 | 16   | 150  | 5x11,5   | ECR1CBK101M◇◇△△0511 |
|                           |       | 2,2   | 0,58  | 0,16 | 16   | 220  | 6,3x11,5 | ECR1CBK101M◇◇△△0611 |
|                           | 220   | 1,0   | 0,54  | 0,16 | 36   | 250  | 6,3x11,5 | ECR1CBK221M◇◇△△0611 |
|                           |       | 1,0   | 0,47  | 0,16 | 36   | 290  | 8x11,5   | ECR1CBK221M◇◇△△0811 |
|                           | 330   | 0,65  | 0,39  | 0,16 | 53   | 315  | 8x11,5   | ECR1CBK331M◇◇△△0811 |
|                           |       | 0,46  | 0,66  | 0,16 | 76   | 350  | 8x11,5   | ECR1CBK471M◇◇△△0811 |
|                           | 470   | 0,46  | 0,23  | 0,16 | 76   | 500  | 10x12,5  | ECR1CBK471M◇◇△△1012 |
|                           |       | 0,22  | 0,21  | 0,16 | 160  | 610  | 10x16    | ECR1CBK102M◇◇△△1016 |
|                           | 1 000 | 0,22  | 0,12  | 0,16 | 160  | 825  | 10x20    | ECR1CBK102M◇◇△△1020 |
|                           |       | 0,11  | 0,095 | 0,18 | 352  | 961  | 12,5x20  | ECR1CBK222M◇◇△△1220 |
|                           | 2 200 | 0,11  | 0,068 | 0,18 | 352  | 1300 | 12,5x25  | ECR1CBK222M◇◇△△1225 |
|                           |       | 0,081 | 0,068 | 0,20 | 528  | 1200 | 12,5x25  | ECR1CBK332M◇◇△△1225 |
|                           | 3 300 | 0,081 | 0,056 | 0,20 | 528  | 1740 | 16x25    | ECR1CBK332M◇◇△△1625 |
|                           |       | 0,063 | 0,052 | 0,22 | 752  | 1490 | 16x25    | ECR1CBK472M◇◇△△1625 |
|                           | 4 700 | 0,063 | 0,045 | 0,22 | 752  | 2110 | 16x31,5  | ECR1CBK472M◇◇△△1631 |
|                           |       | 0,051 | 0,042 | 0,26 | 1088 | 1830 | 16x35,5  | ECR1CBK682M◇◇△△1635 |
|                           | 6 800 | 0,051 | 0,036 | 0,26 | 1088 | 2580 | 18x35,5  | ECR1CBK682M◇◇△△1835 |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance<br>(μF) | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz<br>(Ω) | Z <sub>max</sub><br>Max Impedance<br>20°C 100kHz<br>(Ω) | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current<br>(μA) | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 100kHz<br>(mA <sub>rms</sub> ) | Size<br>øD x L<br>(mm) | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code<br>Details: Page 33 |
|---------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------|----------------------------------------------|----------------------------------------------------------------------------------|------------------------|------------------------------------------------------------------------------|
| <b>25<br/>(32)<br/>1E</b>                   | 4,7                                         | 39,6                                                                    | 3,0                                                     | 0,14                                     | 3                                            | 85                                                                               | 5x11,5                 | ECR1EBK47M◇◇△△0511                                                           |
|                                             | 10                                          | 18,6                                                                    | 2,5                                                     | 0,14                                     | 3                                            | 92                                                                               | 5x11,5                 | ECR1EBK100M◇◇△△0511                                                          |
|                                             | 22                                          | 8,5                                                                     | 1,9                                                     | 0,14                                     | 6                                            | 105                                                                              | 5x11,5                 | ECR1EBK220M◇◇△△0511                                                          |
|                                             | 33                                          | 5,7                                                                     | 1,5                                                     | 0,14                                     | 9                                            | 120                                                                              | 5x11,5                 | ECR1EBK330M◇◇△△0511                                                          |
|                                             | 47                                          | 4,0                                                                     | 1,2                                                     | 0,14                                     | 12                                           | 130                                                                              | 5x11,5                 | ECR1EBK470M◇◇△△0511                                                          |
|                                             | 100                                         | 1,9                                                                     | 0,58                                                    | 0,14                                     | 25                                           | 220                                                                              | 6,3x11,5               | ECR1EBK101M◇◇△△0611                                                          |
|                                             | 220                                         | 0,85                                                                    | 0,39                                                    | 0,14                                     | 55                                           | 315                                                                              | 8x11,5                 | ECR1EBK221M◇◇△△0811                                                          |
|                                             | 330                                         | 0,57                                                                    | 0,23                                                    | 0,14                                     | 83                                           | 500                                                                              | 10x12,5                | ECR1EBK331M◇◇△△1012                                                          |
|                                             |                                             | 0,40                                                                    | 0,21                                                    | 0,14                                     | 118                                          | 429                                                                              | 10x12,5                | ECR1EBK471M◇◇△△1012                                                          |
|                                             | 470                                         | 0,40                                                                    | 0,18                                                    | 0,14                                     | 118                                          | 615                                                                              | 10x16                  | ECR1EBK471M◇◇△△1016                                                          |
|                                             |                                             | 0,19                                                                    | 0,12                                                    | 0,14                                     | 250                                          | 705                                                                              | 10x20                  | ECR1EBK102M◇◇△△1020                                                          |
|                                             | 1 000                                       | 0,19                                                                    | 0,090                                                   | 0,14                                     | 250                                          | 1050                                                                             | 12,5x20                | ECR1EBK102M◇◇△△1220                                                          |
|                                             | 2 200                                       | 0,10                                                                    | 0,056                                                   | 0,16                                     | 550                                          | 1740                                                                             | 16x25                  | ECR1EBK222M◇◇△△1625                                                          |
|                                             |                                             | 0,073                                                                   | 0,056                                                   | 0,18                                     | 825                                          | 1440                                                                             | 16x25                  | ECR1EBK332M◇◇△△1625                                                          |
|                                             | 3 300                                       | 0,073                                                                   | 0,045                                                   | 0,18                                     | 825                                          | 2110                                                                             | 16x31,5                | ECR1EBK332M◇◇△△1631                                                          |
|                                             |                                             | 0,057                                                                   | 0,050                                                   | 0,20                                     | 1175                                         | 1880                                                                             | 16x31,5                | ECR1EBK472M◇◇△△1631                                                          |
|                                             | 4 700                                       | 0,057                                                                   | 0,036                                                   | 0,20                                     | 1175                                         | 2580                                                                             | 18x35,5                | ECR1EBK472M◇◇△△1835                                                          |

|                           |       |       |       |      |      |      |          |                     |
|---------------------------|-------|-------|-------|------|------|------|----------|---------------------|
| <b>35<br/>(44)<br/>1V</b> | 4,7   | 33,9  | 2,5   | 0,12 | 3    | 92   | 5x11,5   | ECR1VBK47M◇◇△△0511  |
|                           | 10    | 16,0  | 1,8   | 0,12 | 4    | 105  | 5x11,5   | ECR1VBK100M◇◇△△0511 |
|                           | 22    | 7,3   | 1,5   | 0,12 | 8    | 120  | 5x11,5   | ECR1VBK220M◇◇△△0511 |
|                           | 33    | 4,9   | 1,5   | 0,12 | 12   | 130  | 5x11,5   | ECR1VBK330M◇◇△△0511 |
|                           |       | 3,4   | 1,7   | 0,12 | 17   | 90   | 5x11,5   | ECR1VBK470M◇◇△△0511 |
|                           | 47    | 3,4   | 0,58  | 0,12 | 17   | 220  | 6,3x11,5 | ECR1VBK470M◇◇△△0611 |
|                           |       | 1,6   | 0,80  | 0,12 | 35   | 151  | 6,3x11,5 | ECR1VBK101M◇◇△△0611 |
|                           | 100   | 1,6   | 0,39  | 0,12 | 35   | 315  | 8x11,5   | ECR1VBK101M◇◇△△0811 |
|                           | 220   | 0,73  | 0,23  | 0,12 | 77   | 500  | 10x12,5  | ECR1VBK221M◇◇△△1012 |
|                           |       | 0,49  | 0,25  | 0,12 | 116  | 384  | 10x12,5  | ECR1VBK331M◇◇△△1012 |
|                           | 330   | 0,49  | 0,18  | 0,12 | 116  | 615  | 10x16    | ECR1VBK331M◇◇△△1016 |
|                           |       | 0,34  | 0,21  | 0,12 | 165  | 470  | 10x16    | ECR1VBK471M◇◇△△1016 |
|                           | 470   | 0,34  | 0,12  | 0,12 | 165  | 825  | 10x20    | ECR1VBK471M◇◇△△1020 |
|                           |       | 0,16  | 0,095 | 0,12 | 350  | 857  | 12,5x20  | ECR1VBK102M◇◇△△1220 |
|                           | 1 000 | 0,16  | 0,068 | 0,12 | 350  | 1300 | 12,5x25  | ECR1VBK102M◇◇△△1225 |
|                           |       | 0,085 | 0,056 | 0,14 | 770  | 1380 | 16x25    | ECR1VBK222M◇◇△△1625 |
|                           | 2 200 | 0,085 | 0,045 | 0,14 | 770  | 2110 | 16x31,5  | ECR1VBK222M◇◇△△1631 |
|                           |       | 0,065 | 0,042 | 0,16 | 1155 | 1780 | 16x35,5  | ECR1VBK332M◇◇△△1635 |
|                           | 3 300 | 0,065 | 0,036 | 0,16 | 1155 | 2580 | 18x35,5  | ECR1VBK332M◇◇△△1835 |
|                           |       | 0,051 | 0,036 | 0,18 | 1645 | 2120 | 18x35,5  | ECR1VBK472M◇◇△△1835 |

|                           |       |       |       |      |      |      |          |                       |
|---------------------------|-------|-------|-------|------|------|------|----------|-----------------------|
| <b>50<br/>(63)<br/>1H</b> | 0,10  | 1.327 | 18,0  | 0,10 | 3    | 10   | 5x11,5   | ECR1HBK0R1M◇◇△△0511   |
|                           | 0,22  | 603   | 13,0  | 0,10 | 3    | 15   | 5x11,5   | ECR1HBK0R2M◇◇△△0511   |
|                           | 0,33  | 402   | 10,0  | 0,10 | 3    | 18   | 5x11,5   | ECR1HBK0R3M◇◇△△0511   |
|                           | 0,47  | 283   | 7,0   | 0,10 | 3    | 23   | 5x11,5   | ECR1HBK0R4M◇◇△△0511   |
|                           | 1,0   | 133   | 4,9   | 0,10 | 3    | 35   | 5x11,5   | ECR1HBK0R10M◇◇△△0511  |
|                           | 2,2   | 60,3  | 4,2   | 0,10 | 3    | 53   | 5x11,5   | ECR1HBK0R2M◇◇△△0511   |
|                           | 3,3   | 40,2  | 3,9   | 0,10 | 3    | 65   | 5x11,5   | ECR1HBK0R3M◇◇△△0511   |
|                           | 4,7   | 28,3  | 3,6   | 0,10 | 3    | 82   | 5x11,5   | ECR1HBK0R4M◇◇△△0511   |
|                           | 10    | 13,3  | 2,7   | 0,10 | 5    | 100  | 5x11,5   | ECR1HBK0R100M◇◇△△0511 |
|                           | 22    | 6,1   | 1,9   | 0,10 | 11   | 125  | 5x11,5   | ECR1HBK0R220M◇◇△△0511 |
|                           |       | 4,1   | 1,9   | 0,10 | 17   | 90   | 5x11,5   | ECR1HBK0R330M◇◇△△0511 |
|                           | 33    | 4,1   | 1,1   | 0,10 | 17   | 195  | 6,3x11,5 | ECR1HBK0R330M◇◇△△0611 |
|                           | 47    | 2,9   | 0,90  | 0,10 | 24   | 245  | 6,3x11,5 | ECR1HBK0R470M◇◇△△0611 |
|                           | 100   | 1,4   | 0,50  | 0,10 | 50   | 385  | 8x11,5   | ECR1HBK0R101M◇◇△△0811 |
|                           |       | 0,61  | 0,38  | 0,10 | 110  | 314  | 10x12,5  | ECR1HBK0R221M◇◇△△1012 |
|                           | 220   | 0,61  | 0,27  | 0,10 | 110  | 505  | 10x16    | ECR1HBK0R221M◇◇△△1016 |
|                           |       | 0,41  | 0,27  | 0,10 | 165  | 421  | 10x16    | ECR1HBK0R331M◇◇△△1016 |
|                           | 330   | 0,41  | 0,18  | 0,10 | 165  | 675  | 10x20    | ECR1HBK0R331M◇◇△△1020 |
|                           | 470   | 0,29  | 0,12  | 0,10 | 235  | 895  | 12,5x20  | ECR1HBK0R471M◇◇△△1220 |
|                           | 1 000 | 0,14  | 0,076 | 0,10 | 500  | 1495 | 16x25    | ECR1HBK0R102M◇◇△△1625 |
|                           |       | 0,073 | 0,065 | 0,12 | 1100 | 1660 | 16x35,5  | ECR1HBK0R222M◇◇△△1635 |
|                           | 2 200 | 0,073 | 0,050 | 0,12 | 1100 | 2190 | 18x35,5  | ECR1HBK0R222M◇◇△△1835 |

>>

RADIAL



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | Z <sub>max</sub><br>Max Impedance<br>20°C<br>100kHz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C<br>100kHz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code<br>Details: Page 33 |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------|--------------------------------------|-------------------------------------------------------------|----------------|------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (Ω)                                                                 | (Ω)                                                 |                                             | (μA)                                 | (mA <sub>RMS</sub> )                                        | (mm)           |                                                                              |
| 63<br>(79)<br>1J                            | 4,7                                 | 25,4                                                                | 5,8                                                 | 0,09                                        | 3                                    | 74                                                          | 5x11,5         | ECR1JBK4R7M◇◇△△0511                                                          |
|                                             | 10                                  | 12,0                                                                | 3,6                                                 | 0,09                                        | 7                                    | 95                                                          | 5x11,5         | ECR1JBK100M◇◇△△0511                                                          |
|                                             | 22                                  | 5,5                                                                 | 2,1                                                 | 0,09                                        | 14                                   | 130                                                         | 6,3x11,5       | ECR1JBK220M◇◇△△0611                                                          |
|                                             | 33                                  | 3,7                                                                 | 1,7                                                 | 0,09                                        | 21                                   | 160                                                         | 6,3x11,5       | ECR1JBK330M◇◇△△0611                                                          |
|                                             | 47                                  | 2,6                                                                 | 1,8                                                 | 0,09                                        | 30                                   | 120                                                         | 6,3x11,5       | ECR1JBK470M◇◇△△0611                                                          |
|                                             |                                     | 2,6                                                                 | 1,2                                                 | 0,09                                        | 30                                   | 305                                                         | 8x11,5         | ECR1JBK470M◇◇△△0811                                                          |
|                                             | 100                                 | 1,2                                                                 | 0,65                                                | 0,09                                        | 63                                   | 395                                                         | 10x12,5        | ECR1JBK101M◇◇△△1012                                                          |
|                                             | 220                                 | 0,55                                                                | 0,48                                                | 0,09                                        | 139                                  | 335                                                         | 10x16          | ECR1JBK221M◇◇△△1016                                                          |
|                                             |                                     | 0,55                                                                | 0,32                                                | 0,09                                        | 139                                  | 505                                                         | 10x20          | ECR1JBK221M◇◇△△1020                                                          |
|                                             | 330                                 | 0,37                                                                | 0,32                                                | 0,09                                        | 208                                  | 510                                                         | 10x20          | ECR1JBK331M◇◇△△1020                                                          |
|                                             |                                     | 0,37                                                                | 0,22                                                | 0,09                                        | 208                                  | 660                                                         | 12,5x20        | ECR1JBK331M◇◇△△1220                                                          |
|                                             | 470                                 | 0,26                                                                | 0,16                                                | 0,09                                        | 297                                  | 640                                                         | 12,5x20        | ECR1JBK471M◇◇△△1220                                                          |
|                                             |                                     | 0,26                                                                | 0,16                                                | 0,09                                        | 297                                  | 850                                                         | 12,5x25        | ECR1JBK471M◇◇△△1225                                                          |
|                                             | 1 000                               | 0,12                                                                | 0,13                                                | 0,09                                        | 630                                  | 930                                                         | 16x25          | ECR1JBK102M◇◇△△1625                                                          |
|                                             |                                     | 0,12                                                                | 0,098                                               | 0,09                                        | 630                                  | 1430                                                        | 16x31,5        | ECR1JBK102M◇◇△△1631                                                          |

|                    |      |      |      |      |     |      |          |                     |
|--------------------|------|------|------|------|-----|------|----------|---------------------|
| 100<br>(125)<br>2A | 0,47 | 226  | 13,0 | 0,08 | 3   | 30   | 5x11,5   | ECR2ABKR47M◇◇△△0511 |
|                    | 1,0  | 107  | 11,0 | 0,08 | 3   | 45   | 5x11,5   | ECR2ABK010M◇◇△△0511 |
|                    | 2,2  | 48,3 | 9,2  | 0,08 | 3   | 60   | 5x11,5   | ECR2ABK2R2M◇◇△△0511 |
|                    | 3,3  | 32,2 | 7,2  | 0,08 | 4   | 67   | 5x11,5   | ECR2ABK3R3M◇◇△△0511 |
|                    | 4,7  | 22,6 | 6,3  | 0,08 | 5   | 75   | 5x11,5   | ECR2ABK4R7M◇◇△△0511 |
|                    | 10   | 10,7 | 3,3  | 0,08 | 10  | 110  | 6,3x11,5 | ECR2ABK100M◇◇△△0611 |
|                    | 22   | 4,9  | 3,5  | 0,08 | 22  | 93   | 6,3x11,5 | ECR2ABK220M◇◇△△0611 |
|                    |      | 4,9  | 1,4  | 0,08 | 22  | 165  | 8x11,5   | ECR2ABK220M◇◇△△0811 |
|                    | 33   | 3,3  | 1,5  | 0,08 | 33  | 130  | 8x11,5   | ECR2ABK330M◇◇△△0811 |
|                    |      | 3,3  | 0,94 | 0,08 | 33  | 305  | 10x12,5  | ECR2ABK330M◇◇△△1012 |
|                    | 47   | 2,3  | 1,1  | 0,08 | 47  | 165  | 10x12,5  | ECR2ABK470M◇◇△△1012 |
|                    |      | 2,3  | 0,68 | 0,08 | 47  | 320  | 10x16    | ECR2ABK470M◇◇△△1016 |
|                    | 100  | 1,1  | 0,50 | 0,08 | 100 | 265  | 10x20    | ECR2ABK101M◇◇△△1020 |
|                    |      | 1,1  | 0,28 | 0,08 | 100 | 585  | 12,5x20  | ECR2ABK101M◇◇△△1220 |
|                    | 220  | 0,49 | 0,22 | 0,08 | 220 | 440  | 12,5x25  | ECR2ABK221M◇◇△△1225 |
|                    |      | 0,49 | 0,16 | 0,08 | 220 | 1120 | 16x25    | ECR2ABK221M◇◇△△1625 |
|                    | 330  | 0,33 | 0,13 | 0,08 | 330 | 1290 | 16x25    | ECR2ABK331M◇◇△△1625 |
|                    | 470  | 0,23 | 0,11 | 0,08 | 470 | 1350 | 16x31,5  | ECR2ABK471M◇◇△△1631 |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | Z <sub>max</sub><br>Max Impedance<br>20°C<br>100kHz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code<br>Details: Page 33 |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------|--------------------------------------|------------------------------------------------------------|----------------|------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (Ω)                                                                 | (Ω)                                                 |                                             | (μA)                                 | (mA <sub>RMS</sub> )                                       | (mm)           |                                                                              |
| 160<br>(200)<br>2C                          | 0,47                                | 424                                                                 | -                                                   | 0,15                                        | 48                                   | 12                                                         | 6,3x11,5       | ECR2CBKR47M◇◇△△0611                                                          |
|                                             | 1,0                                 | 199                                                                 | -                                                   | 0,15                                        | 56                                   | 18                                                         | 6,3x11,5       | ECR2CBK010M◇◇△△0611                                                          |
|                                             | 2,2                                 | 90,5                                                                | -                                                   | 0,15                                        | 76                                   | 26                                                         | 6,3x11,5       | ECR2CBK2R2M◇◇△△0611                                                          |
|                                             | 3,3                                 | 60,3                                                                | -                                                   | 0,15                                        | 93                                   | 28                                                         | 6,3x11,5       | ECR2CBK3R3M◇◇△△0611                                                          |
|                                             |                                     | 60,3                                                                | -                                                   | 0,15                                        | 93                                   | 37                                                         | 8x11,5         | ECR2CBK3R3M◇◇△△0811                                                          |
|                                             | 4,7                                 | 42,4                                                                | -                                                   | 0,15                                        | 116                                  | 34                                                         | 6,3x11,5       | ECR2CBK4R7M◇◇△△0611                                                          |
|                                             |                                     | 42,4                                                                | -                                                   | 0,15                                        | 116                                  | 44                                                         | 8x11,5         | ECR2CBK4R7M◇◇△△0811                                                          |
|                                             | 10                                  | 19,9                                                                | -                                                   | 0,15                                        | 164                                  | 58                                                         | 8x11,5         | ECR2CBK100M◇◇△△0811                                                          |
|                                             |                                     | 19,9                                                                | -                                                   | 0,15                                        | 164                                  | 75                                                         | 10x12,5        | ECR2CBK100M◇◇△△1012                                                          |
|                                             | 22                                  | 9,1                                                                 | -                                                   | 0,15                                        | 241                                  | 135                                                        | 10x16          | ECR2CBK220M◇◇△△1016                                                          |
|                                             | 33                                  | 6,1                                                                 | -                                                   | 0,15                                        | 312                                  | 175                                                        | 10x20          | ECR2CBK330M◇◇△△1020                                                          |
|                                             | 47                                  | 4,3                                                                 | -                                                   | 0,15                                        | 401                                  | 230                                                        | 12,5x20        | ECR2CBK470M◇◇△△1220                                                          |
|                                             | 100                                 | 2,0                                                                 | -                                                   | 0,15                                        | 740                                  | 299                                                        | 12,5x25        | ECR2CBK101M◇◇△△1225                                                          |
|                                             |                                     | 2,0                                                                 | -                                                   | 0,15                                        | 740                                  | 330                                                        | 16x25,5        | ECR2CBK101M◇◇△△1625                                                          |
|                                             | 220                                 | 1,0                                                                 | -                                                   | 0,15                                        | 1508                                 | 500                                                        | 16x35,5        | ECR2CBK221M◇◇△△1635                                                          |
|                                             | 330                                 | 0,61                                                                | -                                                   | 0,15                                        | 2212                                 | 764                                                        | 18x36          | ECR2CBK331M◇◇△△1836                                                          |

|                    |      |      |   |      |      |     |          |                     |
|--------------------|------|------|---|------|------|-----|----------|---------------------|
| 200<br>(250)<br>2D | 0,47 | 424  | - | 0,15 | 50   | 12  | 6,3x11,5 | ECR2DBKR47M◇◇△△0611 |
|                    | 1,0  | 199  | - | 0,15 | 60   | 18  | 6,3x11,5 | ECR2DBK010M◇◇△△0611 |
|                    | 2,2  | 90,5 | - | 0,15 | 84   | 26  | 6,3x11,5 | ECR2DBK2R2M◇◇△△0611 |
|                    | 3,3  | 60,3 | - | 0,15 | 106  | 28  | 6,3x11,5 | ECR2DBK3R3M◇◇△△0611 |
|                    |      | 60,3 | - | 0,15 | 106  | 37  | 8x11,5   | ECR2DBK3R3M◇◇△△0811 |
|                    | 4,7  | 42,4 | - | 0,15 | 134  | 40  | 8x11,5   | ECR2DBK4R7M◇◇△△0811 |
|                    |      | 42,4 | - | 0,15 | 134  | 50  | 10x12,5  | ECR2DBK4R7M◇◇△△1012 |
|                    | 10   | 19,9 | - | 0,15 | 180  | 66  | 10x12,5  | ECR2DBK100M◇◇△△1012 |
|                    |      | 19,9 | - | 0,15 | 180  | 80  | 10x16    | ECR2DBK100M◇◇△△1016 |
|                    | 22   | 9,1  | - | 0,15 | 276  | 135 | 10x20    | ECR2DBK220M◇◇△△1020 |
|                    | 33   | 6,1  | - | 0,15 | 364  | 190 | 12,5x20  | ECR2DBK330M◇◇△△1220 |
|                    | 47   | 4,3  | - | 0,15 | 476  | 230 | 12,5x25  | ECR2DBK470M◇◇△△1225 |
|                    | 100  | 2,0  | - | 0,15 | 900  | 360 | 16x25,5  | ECR2DBK101M◇◇△△1625 |
|                    | 220  | 1,0  | - | 0,15 | 1860 | 525 | 18x31,5  | ECR2DBK221M◇◇△△1831 |

|                    |      |      |   |      |      |     |          |                     |
|--------------------|------|------|---|------|------|-----|----------|---------------------|
| 250<br>(300)<br>2E | 0,47 | 424  | - | 0,15 | 52   | 12  | 6,3x11,5 | ECR2EBKR47M◇◇△△0611 |
|                    | 1,0  | 199  | - | 0,15 | 65   | 18  | 6,3x11,5 | ECR2EBK010M◇◇△△0611 |
|                    | 2,2  | 90,5 | - | 0,15 | 95   | 23  | 6,3x11,5 | ECR2EBK2R2M◇◇△△0611 |
|                    | 3,3  | 90,5 | - | 0,15 | 95   | 30  | 8x11,5   | ECR2EBK2R2M◇◇△△0811 |
|                    |      | 60,3 | - | 0,15 | 123  | 43  | 8x11,5   | ECR2EBK3R3M◇◇△△0811 |
|                    | 4,7  | 60,3 | - | 0,15 | 123  | 43  | 10x12,5  | ECR2EBK3R3M◇◇△△1012 |
|                    |      | 42,4 | - | 0,15 | 147  | 40  | 8x11,5   | ECR2EBK4R7M◇◇△△0811 |
|                    | 10   | 42,4 | - | 0,15 | 147  | 50  | 10x12,5  | ECR2EBK4R7M◇◇△△1012 |
|                    |      | 19,9 | - | 0,15 | 200  | 90  | 10x16    | ECR2EBK100M◇◇△△1016 |
|                    | 22   | 9,1  | - | 0,15 | 320  | 155 | 12,5x20  | ECR2EBK220M◇◇△△1220 |
|                    | 33   | 6,1  | - | 0,15 | 430  | 190 | 12,5x25  | ECR2EBK330M◇◇△△1225 |
|                    | 47   | 4,3  | - | 0,15 | 570  | 205 | 12,5x25  | ECR2EBK470M◇◇△△1225 |
|                    |      | 4,3  | - | 0,15 | 570  | 225 | 16x25,5  | ECR2EBK470M◇◇△△1625 |
|                    | 100  | 2,0  | - | 0,15 | 1100 | 340 | 16x31,5  | ECR2EBK101M◇◇△△1631 |
|                    | 150  | 1,3  | - | 0,15 | 1600 | 405 | 18x25,5  | ECR2EBK151M◇◇△△1825 |
|                    | 220  | 0,90 | - | 0,15 | 2300 | 570 | 18x36    | ECR2EBK221M◇◇△△1836 |

|                    |      |      |   |      |      |     |          |                     |
|--------------------|------|------|---|------|------|-----|----------|---------------------|
| 350<br>(400)<br>2V | 0,47 | 565  | - | 0,20 | 57   | 11  | 6,3x11,5 | ECR2VBKR47M◇◇△△0611 |
|                    | 1,0  | 266  | - | 0,20 | 75   | 18  | 8x11,5   | ECR2VBK010M◇◇△△0811 |
|                    | 2,2  | 121  | - | 0,20 | 117  | 30  | 8x11,5   | ECR2VBK2R2M◇◇△△0811 |
|                    | 3,3  | 80,4 | - | 0,20 | 147  | 36  | 10x12,5  | ECR2VBK2R2M◇◇△△1012 |
|                    | 4,7  | 56,5 | - | 0,20 | 166  | 45  | 10x12,5  | ECR2VBK3R3M◇◇△△1012 |
|                    |      | 56,5 | - | 0,20 | 166  | 47  | 10x16    | ECR2VBK4R7M◇◇△△1016 |
|                    | 10   | 26,6 | - | 0,20 | 240  | 95  | 10x20    | ECR2VBK100M◇◇△△1020 |
|                    | 22   | 12,1 | - | 0,20 | 408  | 130 | 12,5x20  | ECR2VBK220M◇◇△△1220 |
|                    | 33   | 8,0  | - | 0,20 | 562  | 180 | 12,5x25  | ECR2VBK330M◇◇△△1225 |
|                    |      | 8,0  | - | 0,20 | 562  | 160 | 16x25,5  | ECR2VBK330M◇◇△△1625 |
|                    | 47   | 5,7  | - | 0,20 | 758  | 330 | 16x25,5  | ECR2VBK470M◇◇△△1625 |
|                    | 100  | 3,0  | - | 0,20 | 1500 | 620 | 18x31,5  | ECR2VBK101M◇◇△△1831 |



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | Z <sub>max</sub><br>Max Impedance<br>20°C<br>100kHz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------|--------------------------------------|------------------------------------------------------------|----------------|----------------------------------------------------------|
| (V)                                         | (μF)                                | (Ω)                                                                 | (Ω)                                                 |                                             | (μA)                                 | (mA <sub>RMS</sub> )                                       | (mm)           | Details: Page 33                                         |
| <b>400<br/>(450)<br/>2G</b>                 | 1,0                                 | 266                                                                 | -                                                   | 0,20                                        | 80                                   | 16                                                         | 6,3x11,5       | ECR2GBK010M◇◇△△0611                                      |
|                                             |                                     | 266                                                                 | -                                                   | 0,20                                        | 80                                   | 18                                                         | 8x11,5         | ECR2GBK010M◇◇△△0811                                      |
|                                             | 2,2                                 | 121                                                                 | -                                                   | 0,20                                        | 128                                  | 25                                                         | 8x11,5         | ECR2GBK2R2M◇◇△△0811                                      |
|                                             |                                     | 121                                                                 | -                                                   | 0,20                                        | 128                                  | 30                                                         | 10x12,5        | ECR2GBK2R2M◇◇△△1012                                      |
|                                             | 3,3                                 | 80,4                                                                | -                                                   | 0,20                                        | 153                                  | 35                                                         | 10x12,5        | ECR2GBK3R3M◇◇△△1012                                      |
|                                             |                                     | 80,4                                                                | -                                                   | 0,20                                        | 153                                  | 40                                                         | 10x16          | ECR2GBK3R3M◇◇△△1016                                      |
|                                             | 4,7                                 | 56,5                                                                | -                                                   | 0,20                                        | 176                                  | 47                                                         | 10x12,5        | ECR2GBK4R7M◇◇△△1012                                      |
|                                             |                                     | 56,5                                                                | -                                                   | 0,20                                        | 176                                  | 52                                                         | 10x16          | ECR2GBK4R7M◇◇△△1016                                      |
|                                             | 10                                  | 26,6                                                                | -                                                   | 0,20                                        | 260                                  | 80                                                         | 10x16          | ECR2GBK100M◇◇△△1016                                      |
|                                             |                                     | 26,6                                                                | -                                                   | 0,20                                        | 260                                  | 95                                                         | 10x20          | ECR2GBK100M◇◇△△1020                                      |
|                                             |                                     | 26,6                                                                | -                                                   | 0,20                                        | 260                                  | 120                                                        | 12,5x20        | ECR2GBK100M◇◇△△1220                                      |
|                                             | 22                                  | 12,1                                                                | -                                                   | 0,20                                        | 452                                  | 150                                                        | 12,5x25,5      | ECR2GBK220M◇◇△△1225                                      |
|                                             |                                     | 12,1                                                                | -                                                   | 0,20                                        | 452                                  | 150                                                        | 16x25,5        | ECR2GBK220M◇◇△△1625                                      |
|                                             | 33                                  | 8,1                                                                 | -                                                   | 0,20                                        | 628                                  | 180                                                        | 12,5x25        | ECR2GBK330M◇◇△△1225                                      |
|                                             |                                     | 8,1                                                                 | -                                                   | 0,20                                        | 628                                  | 180                                                        | 16x20          | ECR2GBK330M◇◇△△1620                                      |
|                                             |                                     | 8,1                                                                 | -                                                   | 0,20                                        | 628                                  | 215                                                        | 16x25,5        | ECR2GBK330M◇◇△△1625                                      |
|                                             | 47                                  | 5,7                                                                 | -                                                   | 0,20                                        | 852                                  | 360                                                        | 16x25,5        | ECR2GBK470M◇◇△△1625                                      |
|                                             | 68                                  | 3,9                                                                 | -                                                   | 0,20                                        | 1188                                 | 470                                                        | 18x25,5        | ECR2GBK680M◇◇△△1825                                      |
|                                             | 82                                  | 3,2                                                                 | -                                                   | 0,20                                        | 1412                                 | 575                                                        | 18x31,5        | ECR2GBK820M◇◇△△1831                                      |
|                                             | 100                                 | 2,7                                                                 | -                                                   | 0,20                                        | 1700                                 | 675                                                        | 18x36          | ECR2GBK101M◇◇△△1836                                      |
|                                             | 120                                 | 2,2                                                                 | -                                                   | 0,20                                        | 2020                                 | 735                                                        | 18x40          | ECR2GBK121M◇◇△△1840                                      |
|                                             | 150                                 | 1,8                                                                 | -                                                   | 0,20                                        | 2500                                 | 825                                                        | 20x41          | ECR2GBK151M◇◇△△2041                                      |

|                             |     |      |   |      |      |     |         |                     |
|-----------------------------|-----|------|---|------|------|-----|---------|---------------------|
| <b>420<br/>(470)<br/>2X</b> | 1,0 | 266  | - | 0,20 | 82   | 16  | 8x11,5  | ECR2XBK010M◇◇△△0811 |
|                             |     | 266  | - | 0,20 | 82   | 19  | 10x12,5 | ECR2XBK010M◇◇△△1012 |
|                             | 2,2 | 121  | - | 0,20 | 133  | 24  | 8x11,5  | ECR2XBK2R2M◇◇△△0811 |
|                             |     | 121  | - | 0,20 | 133  | 29  | 10x12,5 | ECR2XBK2R2M◇◇△△1012 |
|                             | 3,3 | 80,4 | - | 0,20 | 156  | 34  | 10x12,5 | ECR2XBK3R3M◇◇△△1012 |
|                             |     | 80,4 | - | 0,20 | 156  | 38  | 10x16   | ECR2XBK3R3M◇◇△△1016 |
|                             | 4,7 | 56,5 | - | 0,20 | 179  | 46  | 10x16   | ECR2XBK4R7M◇◇△△1016 |
|                             |     | 56,5 | - | 0,20 | 179  | 52  | 10x20   | ECR2XBK4R7M◇◇△△1020 |
|                             | 10  | 26,5 | - | 0,20 | 268  | 100 | 10x20   | ECR2XBK100M◇◇△△1020 |
|                             |     | 26,5 | - | 0,20 | 268  | 116 | 12,5x20 | ECR2XBK100M◇◇△△1220 |
|                             | 22  | 12,1 | - | 0,20 | 470  | 162 | 12,5x25 | ECR2XBK220M◇◇△△1225 |
|                             | 33  | 8,0  | - | 0,20 | 655  | 204 | 16x20   | ECR2XBK330M◇◇△△1620 |
|                             |     | 8,0  | - | 0,20 | 655  | 228 | 16x25,5 | ECR2XBK330M◇◇△△1625 |
|                             | 47  | 5,6  | - | 0,20 | 890  | 380 | 16x31,5 | ECR2XBK470M◇◇△△1631 |
|                             | 56  | 4,7  | - | 0,20 | 1041 | 420 | 16x31,5 | ECR2XBK560M◇◇△△1631 |
|                             |     | 4,7  | - | 0,20 | 1041 | 420 | 18x25,5 | ECR2XBK560M◇◇△△1825 |
|                             | 68  | 3,9  | - | 0,20 | 1243 | 542 | 16x36   | ECR2XBK680M◇◇△△1636 |
|                             |     | 3,9  | - | 0,20 | 1243 | 542 | 18x31,5 | ECR2XBK680M◇◇△△1831 |
|                             | 82  | 3,2  | - | 0,20 | 1478 | 608 | 16x40   | ECR2XBK820M◇◇△△1640 |
|                             |     | 3,2  | - | 0,20 | 1478 | 608 | 18x31,5 | ECR2XBK820M◇◇△△1831 |
|                             | 100 | 2,7  | - | 0,20 | 1780 | 713 | 16x45   | ECR2XBK101M◇◇△△1645 |
|                             |     | 2,7  | - | 0,20 | 1780 | 713 | 18x36   | ECR2XBK101M◇◇△△1836 |
|                             | 120 | 2,2  | - | 0,20 | 2116 | 779 | 16x50   | ECR2XBK121M◇◇△△1650 |
|                             |     | 2,2  | - | 0,20 | 2116 | 779 | 18x40   | ECR2XBK121M◇◇△△1840 |
|                             | 150 | 1,8  | - | 0,20 | 2620 | 874 | 16x60   | ECR2XBK151M◇◇△△1660 |
|                             |     | 1,8  | - | 0,20 | 2620 | 874 | 20x41   | ECR2XBK151M◇◇△△2041 |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | Z <sub>max</sub><br>Max Impedance<br>20°C<br>100kHz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------|--------------------------------------|------------------------------------------------------------|----------------|----------------------------------------------------------|
| (V)                                         | (μF)                                | (Ω)                                                                 | (Ω)                                                 |                                             | (μA)                                 | (mA <sub>RMS</sub> )                                       | (mm)           | Details: Page 33                                         |
| <b>450<br/>(500)<br/>2W</b>                 | 100                                 | 2,7                                                                 | -                                                   | 0,20                                        | 1900                                 | 750                                                        | 16x45          | ECR2WBK101M◇◇△△1645                                      |
|                                             |                                     | 2,7                                                                 | -                                                   | 0,20                                        | 1900                                 | 750                                                        | 18x36          | ECR2WBK101M◇◇△△1836                                      |
|                                             | 120                                 | 2,2                                                                 | -                                                   | 0,20                                        | 2260                                 | 820                                                        | 16x50          | ECR2WBK121M◇◇△△1650                                      |
|                                             |                                     | 2,2                                                                 | -                                                   | 0,20                                        | 2260                                 | 820                                                        | 18x40          | ECR2WBK121M◇◇△△1840                                      |
|                                             | 150                                 | 1,8                                                                 | -                                                   | 0,20                                        | 2800                                 | 920                                                        | 16x60          | ECR2WBK151M◇◇△△1660                                      |
|                                             |                                     | 1,8                                                                 | -                                                   | 0,20                                        | 2800                                 | 920                                                        | 18x46          | ECR2WBK151M◇◇△△1846                                      |
|                                             |                                     | 1,8                                                                 | -                                                   | 0,20                                        | 2800                                 | 920                                                        | 20x41          | ECR2WBK151M◇◇△△2041                                      |
|                                             | 180                                 | 1,5                                                                 | -                                                   | 0,20                                        | 3340                                 | 1100                                                       | 22x41          | ECR2WBK181M◇◇△△2241                                      |
|                                             | 220                                 | 1,2                                                                 | -                                                   | 0,20                                        | 4060                                 | 1200                                                       | 22x45          | ECR2WBK221M◇◇△△2245                                      |

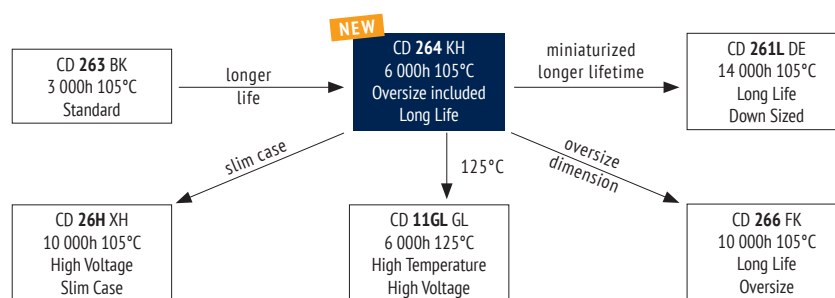
|                             |     |      |   |      |      |     |         |                     |
|-----------------------------|-----|------|---|------|------|-----|---------|---------------------|
| <b>500<br/>(550)<br/>2H</b> | 1,0 | 266  | - | 0,20 | 90   | 21  | 10x12,5 | ECR2HBK010M◇◇△△1012 |
|                             | 2,2 | 121  | - | 0,20 | 144  | 35  | 10x16   | ECR2HBK2R2M◇◇△△1016 |
|                             | 3,3 | 80,4 | - | 0,20 | 166  | 48  | 10x20   | ECR2HBK3R3M◇◇△△1020 |
|                             | 4,7 | 56,5 | - | 0,20 | 194  | 63  | 12,5x20 | ECR2HBK4R7M◇◇△△1220 |
|                             | 10  | 26,6 | - | 0,20 | 300  | 120 | 12,5x25 | ECR2HBK100M◇◇△△1225 |
|                             | 22  | 12,1 | - | 0,20 | 540  | 180 | 16x25,5 | ECR2HBK220M◇◇△△1625 |
|                             | 33  | 8,0  | - | 0,20 | 760  | 240 | 16x31,5 | ECR2HBK330M◇◇△△1631 |
|                             | 47  | 5,6  | - | 0,20 | 1040 | 405 | 18x31,5 | ECR2HBK470M◇◇△△1831 |
|                             | 56  | 4,7  | - | 0,20 | 1220 | 450 | 16x40   | ECR2HBK560M◇◇△△1640 |
|                             |     | 4,7  | - | 0,20 | 1220 | 450 | 18x31,5 | ECR2HBK560M◇◇△△1831 |
|                             | 68  | 3,9  | - | 0,20 | 1460 | 560 | 16x45   | ECR2HBK680M◇◇△△1645 |
|                             |     | 3,9  | - | 0,20 | 1460 | 560 | 18x36   | ECR2HBK680M◇◇△△1836 |
|                             | 82  | 3,2  | - | 0,20 | 1740 | 640 | 16x55   | ECR2HBK820M◇◇△△1655 |
|                             |     | 3,2  | - | 0,20 | 1740 | 640 | 18x40   | ECR2HBK820M◇◇△△1840 |
|                             | 100 | 2,7  | - | 0,20 | 2100 | 800 | 16x60   | ECR2HBK101M◇◇△△1660 |
|                             |     | 2,7  | - | 0,20 | 2100 | 800 | 18x46   | ECR2HBK101M◇◇△△1846 |
|                             |     | 2,7  | - | 0,20 | 2100 | 800 | 20x41   | ECR2HBK101M◇◇△△2041 |
|                             | 120 | 2,2  | - | 0,20 | 2500 | 840 | 22x45   | ECR2HBK121M◇◇△△2245 |
|                             | 150 | 1,8  | - | 0,20 | 3100 | 890 | 22x45   | ECR2HBK151M◇◇△△2245 |

■ = not preferred

|                             |     |      |   |      |      |     |         |                     |
|-----------------------------|-----|------|---|------|------|-----|---------|---------------------|
| <b>450<br/>(500)<br/>2W</b> | 1,0 | 266  | - | 0,20 | 85   | 16  | 8x11,5  | ECR2WBK010M◇◇△△0811 |
|                             |     | 266  | - | 0,20 | 85   | 19  | 10x12,5 | ECR2WBK010M◇◇△△1012 |
|                             | 2,2 | 121  | - | 0,20 | 139  | 26  | 10x12,5 | ECR2WBK2R2M◇◇△△1012 |
|                             |     | 121  | - | 0,20 | 139  | 29  | 10x16   | ECR2WBK2R2M◇◇△△1016 |
|                             | 3,3 | 80,4 | - | 0,20 | 160  | 38  | 10x16   | ECR2WBK3R3M◇◇△△1016 |
|                             |     | 80,4 | - | 0,20 | 160  | 42  | 10x20   | ECR2WBK3R3M◇◇△△1020 |
|                             | 4,7 | 56,5 | - | 0,20 | 185  | 49  | 10x16   | ECR2WBK4R7M◇◇△△1016 |
|                             |     | 56,5 | - | 0,20 | 185  | 54  | 10x20   | ECR2WBK4R7M◇◇△△1020 |
|                             | 10  | 26,6 | - | 0,20 | 280  | 120 | 10x20   | ECR2WBK100M◇◇△△1020 |
|                             | 22  | 12,1 | - | 0,20 | 496  | 170 | 12,5x25 | ECR2WBK220M◇◇△△1225 |
|                             | 33  | 8,1  | - | 0,20 | 694  | 240 | 16x25,5 | ECR2WBK330M◇◇△△1625 |
|                             | 47  | 5,6  | - | 0,20 | 946  | 400 | 16x31,5 | ECR2WBK470M◇◇△△1631 |
|                             | 56  | 4,7  | - | 0,20 | 1108 | 440 | 16x31,5 | ECR2WBK560M◇◇△△1631 |
|                             |     | 4,7  | - | 0,20 | 1108 | 440 | 18x25,5 | ECR2WBK560M◇◇△△1825 |
|                             | 68  | 4,0  | - | 0,20 | 1324 | 490 | 16x36   | ECR2WBK680M◇◇△△1636 |
|                             |     | 4,0  | - | 0,20 | 1324 | 570 | 18x31,5 | ECR2WBK680M◇◇△△1831 |
|                             | 82  | 3,2  | - | 0,20 | 1576 | 640 | 16x40   | ECR2WBK820M◇◇△△1640 |
|                             |     | 3,2  | - | 0,20 | 1576 | 640 | 18x31,5 | ECR2WBK820M◇◇△△1831 |

## 6 000 at 105°C

- Professional Industry
- High Voltage up to 500V
- Oversize Dimensions



## ITEM CHARACTERISTICS

|                                     |            |            |
|-------------------------------------|------------|------------|
| Operating Temperature Range (°C)    | -40 ~ +105 | -25 ~ +105 |
| Voltage Range (V)                   | 160 ~ 250  | 350 ~ 500  |
| Capacitance Range (μF)              | 1 ~ 220    |            |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%      |            |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current (μA) After 1 minute at 20°C application of rated voltage, leakage current is not more than specified in table.

| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V) | 160 | 200 | 250 | 350 | 400 | 420 | 450 | 500 |
|---------------------------------------------------------|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 3   |     |     | 6   |     |     | 8   |     |
| $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 4   |     |     | -   |     |     | -   |     |

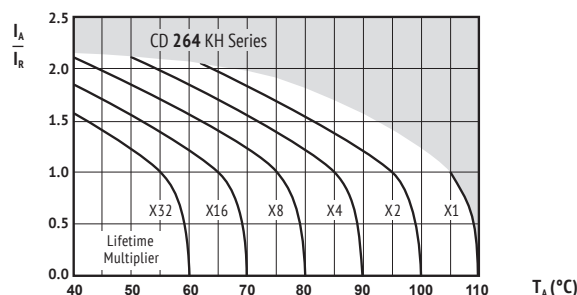
| ITEM                | USEFUL LIFE                           |                  | LOAD LIFE                             | ENDURANCE TEST                        | SHELF LIFE                            |                                                                              |
|---------------------|---------------------------------------|------------------|---------------------------------------|---------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime            | 6 000h                                | > 70 000h        | 3 000h                                | 4 000h                                | 1 000h                                |                                                                              |
| Leakage Current     | Not more than specified value         |                  | Not more than specified value         | Not more than specified value         | Not more than specified value         |                                                                              |
| Capacitance Change  | Within ± 30% of initial value         |                  | Within ± 20% of initial value         | Within ± 20% of initial value         | Within ± 20% of initial value         |                                                                              |
| Dissipation Factor  | Not more than 300% of specified value |                  | Not more than 200% of specified value | Not more than 200% of specified value | Not more than 200% of specified value |                                                                              |
| Condition:          |                                       |                  |                                       |                                       |                                       |                                                                              |
| Applied Voltage     | $U_R$                                 | $U_R$            | $U_R$                                 | $U_R$                                 | $U_R = 0$                             | After test:<br>$U_R$ to be applied for<br>30 min > 24h before<br>measurement |
| Applied Current     | $I_R$                                 | $1,4 \times I_R$ | $I_R$                                 | $I_R = 0$                             | $I_R = 0$                             |                                                                              |
| Applied Temperature | 105°C                                 | 60°C             | 105°C                                 | 105°C<br>IEC 60384                    | 105°C                                 |                                                                              |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency   |            | 50/60Hz | 120Hz | 1kHz | 10kHz | 50kHz | 100kHz |
|-------------|------------|---------|-------|------|-------|-------|--------|
| Coefficient | 1,0 ~ 10μF | 0,8     | 1     | 1,75 | 2,0   | 2,4   | 2,5    |
|             | 22 ~ 47μF  | 0,8     | 1     | 1,6  | 1,8   | 1,9   | 2,0    |
|             | 56 ~ 220μF | 0,8     | 1     | 1,3  | 1,4   | 1,55  | 1,6    |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>MAX</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>TYP</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------------------------------------|----------------|----------------------------------------------------------|
| (V)                                         | (µF)                                | (Ω)                                                              | (Ω)                                                              |                                          | (mA)                                 | (mA <sub>RMS</sub> )                                    | (mm)           | Details: Page 33                                         |
| <b>160<br/>(200)<br/>2C</b>                 | 10                                  | 15,9                                                             | 5,3                                                              | 0,12                                     | 0,118                                | 95                                                      | 10x12,5        | ECR2CKH100M◇◇501012                                      |
|                                             | 22                                  | 7,2                                                              | 2,4                                                              | 0,12                                     | 0,176                                | 145                                                     | 10x16          | ECR2CKH220M◇◇501016                                      |
|                                             | 33                                  | 4,8                                                              | 1,6                                                              | 0,12                                     | 0,228                                | 190                                                     | 10x20          | ECR2CKH330M◇◇501020                                      |
|                                             | 47                                  | 3,4                                                              | 1,1                                                              | 0,12                                     | 0,296                                | 280                                                     | 12,5x20        | ECR2CKH470M◇◇501220                                      |
|                                             | 100                                 | 1,6                                                              | 0,5                                                              | 0,12                                     | 0,550                                | 380                                                     | 16x25,5        | ECR2CKH101M◇◇751625                                      |
|                                             |                                     | 1,6                                                              | 0,5                                                              | 0,12                                     | 0,550                                | 380                                                     | 18x20          | ECR2CKH101M◇◇751820                                      |
|                                             | 220                                 | 0,7                                                              | 0,2                                                              | 0,12                                     | 1,126                                | 630                                                     | 16x35,5        | ECR2CKH221M◇◇751635                                      |

|                             |     |      |      |      |       |     |         |                     |
|-----------------------------|-----|------|------|------|-------|-----|---------|---------------------|
| <b>200<br/>(250)<br/>2D</b> | 4,7 | 33,9 | 11,2 | 0,12 | 0,096 | 60  | 10x12,5 | ECR2DKH4R7M◇◇501012 |
|                             | 10  | 15,9 | 5,3  | 0,12 | 0,130 | 95  | 10x16   | ECR2DKH100M◇◇501016 |
|                             | 22  | 7,2  | 2,4  | 0,12 | 0,202 | 145 | 10x20   | ECR2DKH220M◇◇501020 |
|                             | 33  | 4,8  | 1,6  | 0,12 | 0,268 | 190 | 12,5x20 | ECR2DKH330M◇◇501220 |
|                             | 47  | 3,4  | 1,1  | 0,12 | 0,352 | 280 | 12,5x25 | ECR2DKH470M◇◇501225 |
|                             |     | 3,4  | 1,1  | 0,12 | 0,352 | 280 | 16x20   | ECR2DKH470M◇◇751620 |
|                             | 100 | 1,6  | 0,5  | 0,12 | 0,670 | 410 | 16x25,5 | ECR2DKH101M◇◇751625 |
|                             |     | 1,6  | 0,5  | 0,12 | 0,670 | 410 | 18x20   | ECR2DKH101M◇◇751820 |

|                             |     |      |      |      |       |     |         |                     |
|-----------------------------|-----|------|------|------|-------|-----|---------|---------------------|
| <b>250<br/>(300)<br/>2E</b> | 4,7 | 33,9 | 11,2 | 0,12 | 0,105 | 60  | 10x12,5 | ECR2EKH4R7M◇◇501012 |
|                             | 10  | 15,9 | 5,3  | 0,12 | 0,145 | 105 | 10x16   | ECR2EKH100M◇◇501016 |
|                             | 22  | 7,2  | 2,4  | 0,12 | 0,235 | 180 | 12,5x20 | ECR2EKH220M◇◇501220 |
|                             | 33  | 4,8  | 1,6  | 0,12 | 0,318 | 250 | 12,5x25 | ECR2EKH330M◇◇501225 |
|                             |     | 4,8  | 1,6  | 0,12 | 0,318 | 250 | 16x20   | ECR2EKH330M◇◇751620 |
|                             | 47  | 3,4  | 1,1  | 0,12 | 0,423 | 300 | 16x25,5 | ECR2EKH470M◇◇751625 |
|                             |     | 3,4  | 1,1  | 0,12 | 0,423 | 300 | 18x20   | ECR2EKH470M◇◇751820 |
|                             | 100 | 1,6  | 0,5  | 0,12 | 0,820 | 410 | 16x31,5 | ECR2EKH101M◇◇751631 |
|                             |     | 1,6  | 0,5  | 0,12 | 0,820 | 410 | 18x25,5 | ECR2EKH101M◇◇751825 |

|                             |     |      |      |      |       |     |         |                     |
|-----------------------------|-----|------|------|------|-------|-----|---------|---------------------|
| <b>350<br/>(400)<br/>2V</b> | 3,3 | 60,3 | 19,9 | 0,15 | 0,105 | 50  | 8x11,5  | ECR2VKH3R3M◇◇350811 |
|                             | 4,7 | 42,3 | 14,0 | 0,15 | 0,119 | 65  | 10x16   | ECR2VKH4R7M◇◇501016 |
|                             | 10  | 19,9 | 6,6  | 0,15 | 0,175 | 120 | 10x20   | ECR2VKH100M◇◇501020 |
|                             | 22  | 9,0  | 3,0  | 0,15 | 0,301 | 180 | 12,5x20 | ECR2VKH220M◇◇501220 |
|                             | 33  | 6,0  | 2,0  | 0,15 | 0,417 | 210 | 12,5x25 | ECR2VKH330M◇◇501225 |
|                             | 47  | 4,2  | 1,4  | 0,15 | 0,564 | 350 | 16x25,5 | ECR2VKH470M◇◇751625 |
|                             |     | 4,2  | 1,4  | 0,15 | 0,564 | 350 | 18x20   | ECR2VKH470M◇◇751820 |
|                             | 100 | 2,0  | 0,7  | 0,15 | 1,120 | 650 | 18x31,5 | ECR2VKH101M◇◇751831 |

|                             |     |      |      |      |       |     |         |                     |
|-----------------------------|-----|------|------|------|-------|-----|---------|---------------------|
| <b>400<br/>(450)<br/>2G</b> | 2,2 | 90,5 | 29,9 | 0,15 | 0,093 | 40  | 10x12,5 | ECR2GKH2R2M◇◇501012 |
|                             | 3,3 | 60,3 | 19,9 | 0,15 | 0,110 | 50  | 10x16   | ECR2GKH3R3M◇◇501016 |
|                             | 4,7 | 42,3 | 14,0 | 0,15 | 0,126 | 70  | 10x20   | ECR2GKH4R7M◇◇501020 |
|                             | 10  | 19,9 | 6,3  | 0,15 | 0,190 | 120 | 12,5x20 | ECR2GKH100M◇◇501220 |
|                             | 22  | 9,0  | 3,0  | 0,15 | 0,334 | 200 | 12,5x25 | ECR2GKH220M◇◇501225 |
|                             | 33  | 6,0  | 2,0  | 0,15 | 0,466 | 245 | 16x25,5 | ECR2GKH330M◇◇751625 |
|                             |     | 6,0  | 2,0  | 0,15 | 0,466 | 245 | 18x20   | ECR2GKH330M◇◇751820 |
|                             | 47  | 4,2  | 1,4  | 0,15 | 0,634 | 380 | 16x31,5 | ECR2GKH470M◇◇751631 |
|                             |     | 4,2  | 1,4  | 0,15 | 0,634 | 380 | 18x25,5 | ECR2GKH470M◇◇751825 |
|                             | 68  | 2,9  | 1,0  | 0,15 | 0,886 | 500 | 18x25,5 | ECR2GKH680M◇◇751825 |
|                             | 82  | 2,4  | 0,8  | 0,15 | 1,054 | 610 | 18x31,5 | ECR2GKH820M◇◇751831 |
|                             |     | 2,4  | 0,8  | 0,15 | 1,054 | 560 | 20x25,5 | ECR2GKH820M◇◇△△2025 |
|                             | 100 | 2,0  | 0,7  | 0,15 | 1,270 | 700 | 18x36   | ECR2GKH101M◇◇751836 |
|                             |     | 2,0  | 0,7  | 0,15 | 1,270 | 640 | 20x30   | ECR2GKH101M◇◇△△2030 |
|                             | 120 | 1,7  | 0,6  | 0,15 | 1,510 | 785 | 18x40   | ECR2GKH121M◇◇751840 |
|                             | 150 | 1,3  | 0,4  | 0,15 | 1,870 | 840 | 20x41   | ECR2GKH151M◇◇△△2041 |

|                             |     |      |      |      |       |     |         |                     |
|-----------------------------|-----|------|------|------|-------|-----|---------|---------------------|
| <b>420<br/>(470)<br/>2X</b> | 1   | 266  | 88,0 | 0,20 | 0,065 | 23  | 10x12,5 | ECR2XKH010M◇◇501012 |
|                             | 2,2 | 121  | 40,0 | 0,20 | 0,095 | 38  | 10x16   | ECR2XKH2R2M◇◇501016 |
|                             | 3,3 | 81,0 | 26,5 | 0,20 | 0,112 | 45  | 10x20   | ECR2XKH3R3M◇◇501020 |
|                             | 4,7 | 56,5 | 18,6 | 0,20 | 0,129 | 60  | 10x20   | ECR2XKH4R7M◇◇501020 |
|                             | 10  | 26,5 | 8,8  | 0,20 | 0,196 | 118 | 12,5x20 | ECR2XKH100M◇◇501220 |
|                             | 22  | 12,1 | 4,0  | 0,20 | 0,347 | 170 | 12,5x25 | ECR2XKH220M◇◇501225 |
|                             | 33  | 8,0  | 2,7  | 0,20 | 0,486 | 230 | 16x25,5 | ECR2XKH330M◇◇751625 |
|                             | 47  | 5,6  | 2,3  | 0,20 | 0,662 | 350 | 16x31,5 | ECR2XKH470M◇◇751631 |
|                             | 56  | 4,7  | 1,9  | 0,20 | 0,776 | 425 | 16x31,5 | ECR2XKH560M◇◇751631 |
|                             |     | 4,7  | 1,9  | 0,20 | 0,776 | 425 | 18x25,5 | ECR2XKH560M◇◇751825 |
|                             | 68  | 3,9  | 1,6  | 0,20 | 0,927 | 510 | 16x36   | ECR2XKH680M◇◇751636 |
|                             |     | 3,9  | 1,6  | 0,20 | 0,927 | 510 | 18x31,5 | ECR2XKH680M◇◇751831 |
|                             | 82  | 3,2  | 1,3  | 0,20 | 1,103 | 625 | 16x40   | ECR2XKH820M◇◇751640 |
|                             |     | 3,2  | 1,3  | 0,20 | 1,103 | 625 | 18x31,5 | ECR2XKH820M◇◇751831 |

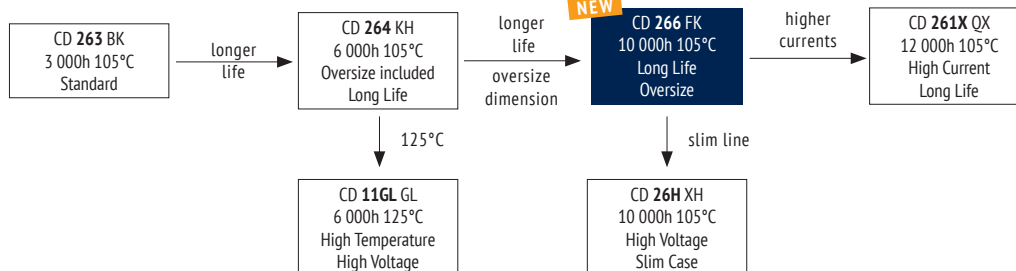
| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>MAX</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>TYP</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------------------------------------|----------------|----------------------------------------------------------|
| (V)                                         | (µF)                                | (Ω)                                                              | (Ω)                                                              |                                          | (mA)                                 | (mA <sub>RMS</sub> )                                    | (mm)           | Details: Page 33                                         |
| <b>420<br/>(470)<br/>2X</b>                 | 100                                 | 2,7                                                              | 1,1                                                              | 0,20                                     | 1,330                                | 720                                                     | 16x45          | ECR2XKH101M◇◇751645                                      |
|                                             |                                     | 2,7                                                              | 1,1                                                              | 0,20                                     | 1,330                                | 720                                                     | 18x36          | ECR2XKH101M◇◇751836                                      |
|                                             | 120                                 | 2,2                                                              | 0,9                                                              | 0,20                                     | 1,582                                | 800                                                     | 16x50          | ECR2XKH121M◇◇751650                                      |
|                                             |                                     | 2,2                                                              | 0,9                                                              | 0,20                                     | 1,582                                | 800                                                     | 18x40          | ECR2XKH121M◇◇751840                                      |
|                                             | 150                                 | 1,8                                                              | 0,7                                                              | 0,20                                     | 1,960                                | 850                                                     | 16x60          | ECR2XKH151M◇◇751660                                      |
|                                             |                                     | 1,8                                                              | 0,7                                                              | 0,20                                     | 1,960                                | 850                                                     | 20x41          | ECR2XKH151M◇◇△△2041                                      |

|                             |     |      |      |      |       |      |         |                     |
|-----------------------------|-----|------|------|------|-------|------|---------|---------------------|
| <b>450<br/>(500)<br/>2W</b> | 1   | 265  | 87,6 | 0,20 | 0,067 | 30   | 10x12,5 | ECR2WKH010M◇◇501012 |
|                             | 2,2 | 121  | 40,0 | 0,20 | 0,099 | 45   | 10x16   | ECR2WKH2R2M◇◇501016 |
|                             | 3,3 | 80,4 | 26,5 | 0,20 | 0,115 | 65   | 10x20   | ECR2WKH3R3M◇◇501020 |
|                             | 4,7 | 56,5 | 18,6 | 0,20 | 0,133 | 80   | 12,5x20 | ECR2WKH4R7M◇◇501220 |
|                             | 10  | 26,5 | 8,8  | 0,20 | 0,205 | 140  | 12,5x25 | ECR2WKH100M◇◇501225 |
|                             | 22  | 12,1 | 4,0  | 0,20 | 0,367 | 220  | 16x25,5 | ECR2WKH220M◇◇751625 |
|                             | 33  | 8,0  | 2,7  | 0,20 | 0,516 | 280  | 16x31,5 | ECR2WKH330M◇◇751631 |
|                             | 47  | 5,6  | 1,9  | 0,20 | 0,705 | 420  | 16x31,5 | ECR2WKH470M◇◇751631 |
|                             | 56  | 4,7  | 1,7  | 0,20 | 0,826 | 450  | 16x31,5 | ECR2WKH560M◇◇751631 |
|                             |     | 4,7  | 1,7  | 0,20 | 0,826 | 450  | 18x25,5 | ECR2WKH560M◇◇751825 |
|                             | 68  | 3,9  | 1,3  | 0,20 | 0,988 | 520  | 16x36   | ECR2WKH680M◇◇751636 |
|                             |     | 3,9  | 1,3  | 0,20 | 0,988 | 590  | 18x31,5 | ECR2WKH680M◇◇751831 |
|                             | 82  | 3,2  | 1,1  | 0,20 | 1,177 | 650  | 16x40   | ECR2WKH820M◇◇751640 |
|                             |     | 3,2  | 1,1  | 0,20 | 1,177 | 650  | 18x31,5 | ECR2WKH820M◇◇751831 |
|                             |     | 3,2  | 1,1  | 0,20 | 1,177 | 580  | 20x30   | ECR2WKH820M◇◇△△2030 |
|                             |     | 2,7  | 0,9  | 0,20 | 1,420 | 760  | 16x45   | ECR2WKH101M◇◇751645 |
|                             | 100 | 2,7  | 0,9  | 0,20 | 1,420 | 760  | 18x36   | ECR2WKH101M◇◇751836 |
|                             |     | 2,7  | 0,9  | 0,20 | 1,420 | 680  | 20x30   | ECR2WKH101M◇◇△△2030 |
|                             | 120 | 2,2  | 0,7  | 0,20 | 1,690 | 830  | 16x50   | ECR2WKH121M◇◇751650 |
|                             |     | 2,2  | 0,7  | 0,20 | 1,690 | 830  | 18x40   | ECR2WKH121M◇◇751840 |
|                             | 150 | 1,8  | 0,6  | 0,20 | 2,095 | 920  | 16x60   | ECR2WKH151M◇◇751660 |
|                             |     | 1,8  | 0,6  | 0,20 | 2,095 | 920  | 18x46   | ECR2WKH151M◇◇751846 |
|                             |     | 1,8  | 0,6  | 0,20 | 2,095 | 920  | 20x41   | ECR2WKH151M◇◇△△2041 |
|                             |     | 1,5  | 0,5  | 0,20 | 2,500 | 1100 | 22x41   | ECR2WKH181M◇◇102241 |
|                             | 220 | 1,2  | 0,4  | 0,20 | 3,040 | 1200 | 22x45   | ECR2WKH221M◇◇102245 |

|                             |     |      |      |      |       |     |         |                     |
|-----------------------------|-----|------|------|------|-------|-----|---------|---------------------|
| <b>500<br/>(550)<br/>2H</b> | 1   | 265  | 107  | 0,20 | 0,070 | 32  | 10x12,5 | ECR2HKH010M◇◇501012 |
|                             | 2,2 | 121  | 48,3 | 0,20 | 0,103 | 49  | 10x16   | ECR2HKH2R2M◇◇501016 |
|                             | 3,3 | 80,4 | 32,2 | 0,20 | 0,120 | 68  | 10x20   | ECR2HKH3R3M◇◇501020 |
|                             | 4,7 | 56,5 | 22,6 | 0,20 | 0,141 | 84  | 12,5x20 | ECR2HKH4R7M◇◇501220 |
|                             | 10  | 26,5 | 10,6 | 0,20 | 0,220 | 145 | 12,5x25 | ECR2HKH100M◇◇501225 |
|                             | 22  | 12,1 | 4,8  | 0,20 | 0,400 | 230 | 16x25,5 | ECR2HKH220M◇◇751625 |
|                             | 33  | 8,0  | 3,2  | 0,20 | 0,565 | 295 | 16x31,5 | ECR2HKH330M◇◇751631 |
|                             | 47  | 5,6  | 2,3  | 0,20 | 0,775 | 415 | 16x36   | ECR2HKH470M◇◇751636 |
|                             |     | 5,6  | 2,3  | 0,20 | 0,775 | 415 | 18x31,5 | ECR2HKH470M◇◇751831 |
|                             | 56  | 4,7  | 1,9  | 0,20 | 0,910 | 460 | 16x40   | ECR2HKH560M◇◇751640 |
|                             |     | 4,7  | 1,9  | 0,20 | 0,910 | 460 | 18x31,5 | ECR2HKH560M◇◇751831 |
|                             | 68  | 3,9  | 1,6  | 0,20 | 1,090 | 580 | 16x45   | ECR2HKH680M◇◇751645 |
|                             |     | 3,9  | 1,6  | 0,20 | 1,090 | 580 | 18x36   | ECR2HKH680M◇◇751836 |
|                             |     | 3,9  | 1,6  | 0,20 | 1,090 | 580 | 18x40   | ECR2HKH680M◇◇751840 |
|                             |     | 3,2  | 1,3  | 0,20 | 1,300 | 650 | 16x55   | ECR2HKH820M◇◇751655 |
|                             | 82  | 3,2  | 1,3  | 0,20 | 1,300 | 650 | 18x40   | ECR2HKH820M◇◇751840 |
|                             |     | 2,7  | 1,1  | 0,20 | 1,570 | 820 | 16x60   | ECR2HKH101M◇◇751660 |
|                             | 100 | 2,7  | 1,1  | 0,20 | 1,570 | 820 | 18x46   | ECR2HKH1            |

**10 000 at 105°C**

- Professional Industry
- High Voltage up to 500V
- OverSize Dimensions
- Longer Life

**ITEM CHARACTERISTICS**

|                                     |            |            |
|-------------------------------------|------------|------------|
| Operating Temperature Range (°C)    | -40 ~ +105 | -25 ~ +105 |
| Voltage Range (V)                   | 160 ~ 250  | 350 ~ 500  |
| Capacitance Range (μF)              | 1 ~ 220    |            |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%      |            |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current (μA) After 1 minute at 20°C application of rated voltage, leakage current is not more than specified in table.

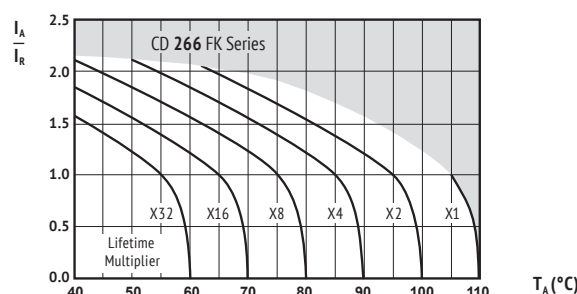
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)                                   | 160 | 200 | 250 | 350 | 400 | 450 | 500 |
|---------------------------------------------------------|-----------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|
|                                                         | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ |     | 3   |     |     | 6   |     | 8   |
|                                                         | $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ |     | 4   |     |     | -   |     | -   |

| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | Ø 10 : 8 000h<br>Ø ≥ 12,5 : 10 000h   | Ø ≥ 10 : 70 000h                  | Ø 10 : 4 000h<br>Ø ≥ 12,5 : 5 000h    | Ø 10 : 6 000h<br>Ø ≥ 12,5 : 7 000h       | 1 000h                                |                                                                              |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value            | Within ± 20% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value    | Not more than 200% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,4 \times I_R$<br>60°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for<br>30 min > 24h before<br>measurement |

**MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)**

| Frequency   |            | 50/60Hz | 120Hz | 1kHz | 10kHz | 50kHz | 100kHz |
|-------------|------------|---------|-------|------|-------|-------|--------|
| Coefficient | 1,0 ~ 10μF | 0,8     | 1     | 1,75 | 2,0   | 2,4   | 2,5    |
|             | 22 ~ 47μF  | 0,8     | 1     | 1,6  | 1,8   | 1,9   | 2,0    |
|             | 56 ~ 220μF | 0,8     | 1     | 1,3  | 1,4   | 1,55  | 1,6    |

Multipliers for typical operating conditions.

**MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)**

$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

**ENVIRONMENTAL**

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

**! SAFETY FACTOR**

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>MAX</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>TYP</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code<br>Details: Page 33 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------------------------------------|----------------|------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (Ω)                                                              | (Ω)                                                              |                                          | (mA)                                 | (mA <sub>Arms</sub> )                                   | (mm)           |                                                                              |
| <b>160</b><br>(200)<br>2C                   | 10                                  | 15,9                                                             | 7,0                                                              | 0,12                                     | 0,118                                | 95                                                      | 10x12,5        | ECR2CFK100M◇◇501012                                                          |
|                                             | 22                                  | 7,2                                                              | 3,5                                                              | 0,12                                     | 0,176                                | 145                                                     | 10x16          | ECR2CFK220M◇◇501016                                                          |
|                                             | 33                                  | 4,8                                                              | 2,2                                                              | 0,12                                     | 0,228                                | 190                                                     | 10x20          | ECR2CFK330M◇◇501020                                                          |
|                                             | 47                                  | 3,4                                                              | 1,5                                                              | 0,12                                     | 0,296                                | 280                                                     | 12,5x20        | ECR2CFK470M◇◇501220                                                          |
|                                             | 100                                 | 1,6                                                              | 0,7                                                              | 0,12                                     | 0,550                                | 380                                                     | 16x25,5        | ECR2CFK101M◇◇751625                                                          |
|                                             |                                     | 1,6                                                              | 0,7                                                              | 0,12                                     | 0,550                                | 380                                                     | 18x20          | ECR2CFK101M◇◇751820                                                          |
|                                             | 220                                 | 0,7                                                              | 0,3                                                              | 0,12                                     | 1,126                                | 630                                                     | 16x35,5        | ECR2CFK221M◇◇751635                                                          |
| <b>200</b><br>(250)<br>2D                   | 4,7                                 | 33,9                                                             | 14,0                                                             | 0,12                                     | 0,096                                | 60                                                      | 10x12,5        | ECR2DFK4R7M◇◇501012                                                          |
|                                             | 10                                  | 15,9                                                             | 7,0                                                              | 0,12                                     | 0,130                                | 95                                                      | 10x16          | ECR2DFK100M◇◇501016                                                          |
|                                             | 22                                  | 7,2                                                              | 3,5                                                              | 0,12                                     | 0,202                                | 145                                                     | 10x20          | ECR2DFK220M◇◇501020                                                          |
|                                             | 33                                  | 4,8                                                              | 2,2                                                              | 0,12                                     | 0,268                                | 190                                                     | 12,5x20        | ECR2DFK330M◇◇501220                                                          |
|                                             | 47                                  | 3,4                                                              | 1,5                                                              | 0,12                                     | 0,352                                | 280                                                     | 12,5x25        | ECR2DFK470M◇◇501225                                                          |
|                                             |                                     | 3,4                                                              | 1,5                                                              | 0,12                                     | 0,352                                | 280                                                     | 16x20          | ECR2DFK470M◇◇751620                                                          |
|                                             | 100                                 | 1,6                                                              | 0,7                                                              | 0,12                                     | 0,670                                | 410                                                     | 16x25,5        | ECR2DFK101M◇◇751625                                                          |
|                                             |                                     | 1,6                                                              | 0,7                                                              | 0,12                                     | 0,670                                | 410                                                     | 18x20          | ECR2DFK101M◇◇751820                                                          |
|                                             | 250                                 | 0,3                                                              | 0,1                                                              | 0,12                                     | 0,820                                | 410                                                     | 16x31,5        | ECR2DFK101M◇◇751631                                                          |
|                                             | 250                                 | 0,3                                                              | 0,1                                                              | 0,12                                     | 0,820                                | 410                                                     | 18x25,5        | ECR2DFK101M◇◇751825                                                          |
| <b>250</b><br>(300)<br>2E                   | 4,7                                 | 33,9                                                             | 14,0                                                             | 0,12                                     | 0,105                                | 60                                                      | 10x12,5        | ECR2EFK4R7M◇◇501012                                                          |
|                                             | 10                                  | 15,9                                                             | 7,0                                                              | 0,12                                     | 0,145                                | 105                                                     | 10x16          | ECR2EFK100M◇◇501016                                                          |
|                                             | 22                                  | 7,2                                                              | 3,5                                                              | 0,12                                     | 0,235                                | 180                                                     | 12,5x20        | ECR2EFK220M◇◇501220                                                          |
|                                             | 33                                  | 4,8                                                              | 2,2                                                              | 0,12                                     | 0,318                                | 250                                                     | 12,5x25        | ECR2EFK330M◇◇501225                                                          |
|                                             |                                     | 4,8                                                              | 2,2                                                              | 0,12                                     | 0,318                                | 250                                                     | 16x20          | ECR2EFK330M◇◇751620                                                          |
|                                             | 47                                  | 3,4                                                              | 1,5                                                              | 0,12                                     | 0,423                                | 300                                                     | 16x25,5        | ECR2EFK470M◇◇751625                                                          |
|                                             |                                     | 3,4                                                              | 1,5                                                              | 0,12                                     | 0,423                                | 300                                                     | 18x20          | ECR2EFK470M◇◇751820                                                          |
|                                             | 100                                 | 1,6                                                              | 0,7                                                              | 0,12                                     | 0,820                                | 410                                                     | 16x31,5        | ECR2EFK101M◇◇751631                                                          |
|                                             |                                     | 1,6                                                              | 0,7                                                              | 0,12                                     | 0,820                                | 410                                                     | 18x25,5        | ECR2EFK101M◇◇751825                                                          |
|                                             | 150                                 | 1,1                                                              | 0,5                                                              | 0,12                                     | 1,195                                | 500                                                     | 18x25,5        | ECR2EFK151M◇◇751825                                                          |
|                                             | 220                                 | 0,7                                                              | 0,3                                                              | 0,12                                     | 1,720                                | 700                                                     | 18x36          | ECR2EFK221M◇◇751836                                                          |
| <b>350</b><br>(400)<br>2V                   | 4,7                                 | 42,3                                                             | 19,0                                                             | 0,15                                     | 0,119                                | 65                                                      | 10x16          | ECR2VFK4R7M◇◇501016                                                          |
|                                             | 10                                  | 19,9                                                             | 10,0                                                             | 0,15                                     | 0,175                                | 120                                                     | 10x20          | ECR2VFK100M◇◇501020                                                          |
|                                             | 22                                  | 9,0                                                              | 4,0                                                              | 0,15                                     | 0,301                                | 180                                                     | 12,5x20        | ECR2VFK220M◇◇501220                                                          |
|                                             | 33                                  | 6,0                                                              | 2,5                                                              | 0,15                                     | 0,417                                | 210                                                     | 12,5x25        | ECR2VFK330M◇◇501225                                                          |
|                                             | 47                                  | 4,2                                                              | 1,8                                                              | 0,15                                     | 0,564                                | 300                                                     | 16x25,5        | ECR2VFK470M◇◇751625                                                          |
|                                             |                                     | 4,2                                                              | 1,8                                                              | 0,15                                     | 0,564                                | 300                                                     | 18x20          | ECR2VFK470M◇◇751820                                                          |
|                                             | 100                                 | 2,0                                                              | 0,8                                                              | 0,15                                     | 1,120                                | 528                                                     | 18x31,5        | ECR2VFK101M◇◇751831                                                          |
|                                             |                                     |                                                                  |                                                                  |                                          |                                      |                                                         |                |                                                                              |
| <b>400</b><br>(450)<br>2G                   | 2,2                                 | 90,5                                                             | 40,0                                                             | 0,15                                     | 0,093                                | 40                                                      | 10x12,5        | ECR2GFK2R2M◇◇501012                                                          |
|                                             | 3,3                                 | 60,3                                                             | 28,0                                                             | 0,15                                     | 0,110                                | 50                                                      | 10x16          | ECR2GFK3R3M◇◇501016                                                          |
|                                             | 4,7                                 | 42,3                                                             | 19,0                                                             | 0,15                                     | 0,126                                | 70                                                      | 10x20          | ECR2GFK4R7M◇◇501020                                                          |
|                                             | 10                                  | 19,9                                                             | 10,0                                                             | 0,15                                     | 0,190                                | 120                                                     | 12,5x20        | ECR2GFK100M◇◇501220                                                          |
|                                             | 22                                  | 9,0                                                              | 4,0                                                              | 0,15                                     | 0,334                                | 200                                                     | 12,5x25        | ECR2GFK220M◇◇501225                                                          |
|                                             | 33                                  | 6,0                                                              | 2,5                                                              | 0,15                                     | 0,466                                | 245                                                     | 16x25,5        | ECR2GFK330M◇◇751625                                                          |
|                                             |                                     | 6,0                                                              | 2,5                                                              | 0,15                                     | 0,466                                | 245                                                     | 18x20          | ECR2GFK330M◇◇751820                                                          |
|                                             | 47                                  | 4,2                                                              | 1,8                                                              | 0,15                                     | 0,634                                | 380                                                     | 16x31,5        | ECR2GFK470M◇◇751631                                                          |
|                                             |                                     | 4,2                                                              | 1,8                                                              | 0,15                                     | 0,634                                | 380                                                     | 18x25,5        | ECR2GFK470M◇◇751825                                                          |
|                                             | 68                                  | 2,9                                                              | 1,2                                                              | 0,15                                     | 0,886                                | 500                                                     | 18x25,5        | ECR2GFK680M◇◇751825                                                          |
|                                             | 82                                  | 2,4                                                              | 1,0                                                              | 0,15                                     | 1,054                                | 610                                                     | 18x31,5        | ECR2GFK820M◇◇751831                                                          |
|                                             | 100                                 | 2,0                                                              | 0,8                                                              | 0,15                                     | 1,270                                | 700                                                     | 18x36          | ECR2GFK101M◇◇751836                                                          |
|                                             | 120                                 | 1,7                                                              | 0,6                                                              | 0,15                                     | 1,510                                | 785                                                     | 18x40          | ECR2GFK121M◇◇751840                                                          |
|                                             | 150                                 | 1,3                                                              | 0,5                                                              | 0,15                                     | 1,870                                | 840                                                     | 20x41          | ECR2GFK151M◇◇△△2041                                                          |
|                                             |                                     |                                                                  |                                                                  |                                          |                                      |                                                         |                |                                                                              |
|                                             |                                     |                                                                  |                                                                  |                                          |                                      |                                                         |                |                                                                              |
| <b>450</b><br>(500)<br>2W                   | 1                                   | 266                                                              | 80,0                                                             | 0,20                                     | 0,067                                | 30                                                      | 10x12,5        | ECR2WFK010M◇◇501012                                                          |
|                                             | 2,2                                 | 121                                                              | 40,0                                                             | 0,20                                     | 0,099                                | 45                                                      | 10x16          | ECR2WFK2R2M◇◇501016                                                          |
|                                             | 3,3                                 | 80,4                                                             | 24,0                                                             | 0,20                                     | 0,115                                | 65                                                      | 10x20          | ECR2WFK3R3M◇◇501020                                                          |
|                                             | 4,7                                 | 56,5                                                             | 17,0                                                             | 0,20                                     | 0,133                                | 80                                                      | 12,5x20        | ECR2WFK4R7M◇◇501220                                                          |
|                                             | 10                                  | 26,5                                                             | 8,0                                                              | 0,20                                     | 0,205                                | 140                                                     | 12,5x25        | ECR2WFK100M◇◇501225                                                          |
|                                             | 22                                  | 12,1                                                             | 3,5                                                              | 0,20                                     | 0,367                                | 220                                                     | 16x25,5        | ECR2WFK220M◇◇751625                                                          |
|                                             | 33                                  | 8,0                                                              | 2,5                                                              | 0,20                                     | 0,516                                | 280                                                     | 16x31,5        | ECR2WFK330M◇◇751631                                                          |
|                                             | 47                                  | 5,6                                                              | 2,0                                                              | 0,20                                     | 0,705                                | 420                                                     | 16x31,5        | ECR2WFK470M◇◇751631                                                          |
|                                             | 56                                  | 4,7                                                              | 1,7                                                              | 0,20                                     | 0,826                                | 470                                                     | 18x25,5        | ECR2WFK560M◇◇751825                                                          |
|                                             | 68                                  | 3,9                                                              | 1,4                                                              | 0,20                                     | 0,988                                | 610                                                     | 18x31,5        | ECR2WFK680M◇◇751831                                                          |
|                                             | 82                                  | 3,2                                                              | 1,1                                                              | 0,20                                     | 1,177                                | 680                                                     | 18x31,5        | ECR2WFK820M◇◇751831                                                          |
|                                             | 100                                 | 2,7                                                              | 0,9                                                              | 0,20                                     | 1,420                                | 800                                                     | 18x36          | ECR2WFK101M◇◇751836                                                          |
|                                             | 120                                 | 2,2                                                              | 0,8                                                              | 0,20                                     | 1,690                                | 875                                                     | 18x40          | ECR2WFK121M◇◇751840                                                          |
|                                             | 150                                 | 1,8                                                              | 0,6                                                              | 0,20                                     | 2,095                                | 935                                                     | 20x41          | ECR2WFK151M◇◇△△2041                                                          |
|                                             | 180                                 | 1,5                                                              | 0,5                                                              | 0,20                                     | 2,500                                | 1100                                                    | 22x41          | ECR2WFK181M◇◇102241                                                          |
|                                             | 220                                 | 1,2                                                              | 0,4                                                              | 0,20                                     | 3,010                                | 1200                                                    | 22x45          | ECR2WFK221M◇◇102245                                                          |
|                                             |                                     |                                                                  |                                                                  |                                          |                                      |                                                         |                |                                                                              |
|                                             |                                     |                                                                  |                                                                  |                                          |                                      |                                                         |                |                                                                              |
|                                             |                                     |                                                                  |                                                                  |                                          |                                      |                                                         |                |                                                                              |
|                                             |                                     |                                                                  |                                                                  |                                          |                                      |                                                         |                |                                                                              |
|                                             |                                     |                                                                  |                                                                  |                                          |                                      |                                                         |                |                                                                              |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>MAX</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>TYP</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pitch code<br>Details: Page 33 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------------------------------------|----------------|------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (Ω)                                                              | (Ω)                                                              |                                          | (mA)                                 | (mA <sub>Arms</sub> )                                   | (mm)           |                                                                              |
| <b>500</b><br>(550)<br>2H                   | 1                                   | 265                                                              | 106                                                              | 0,20                                     | 0,070                                | 32                                                      | 10x12,5        | ECR2HFK010M◇◇501012                                                          |
|                                             | 2,2                                 | 121                                                              | 48,0                                                             | 0,20                                     | 0,103                                | 49                                                      | 10x16          | ECR2HFK2R2M◇◇501016                                                          |
|                                             | 3,3                                 | 80,4                                                             | 32,0                                                             | 0,20                                     | 0,120                                | 68                                                      | 10x20          | ECR2HFK3R3M◇◇501020                                                          |
|                                             | 4,7                                 | 56,5                                                             | 22,6                                                             | 0,20                                     | 0,141                                | 84                                                      | 12,5x20        | ECR2HFK4R7M◇◇501220                                                          |
|                                             | 10                                  | 26,5                                                             | 10,6                                                             | 0,20                                     | 0,220                                | 145                                                     | 12,5x25        | ECR2HFK100M◇◇501225                                                          |
|                                             | 22                                  | 12,1                                                             | 4,8                                                              | 0,20                                     | 0,400                                | 230                                                     | 16x25,5        | ECR2HFK220M◇◇751625                                                          |
|                                             | 33                                  | 8,0                                                              | 3,2                                                              | 0,20                                     | 0,565                                | 295                                                     | 16x31,5        | ECR2HFK330M◇◇751631                                                          |
|                                             | 47                                  | 5,6                                                              | 2,3                                                              | 0,20                                     | 0,775                                | 415                                                     | 18x31,5        | ECR2HFK470M◇◇751831                                                          |
|                                             | 56                                  | 4,7                                                              | 1,9                                                              | 0,20                                     | 0,910                                | 470                                                     | 18x31,5        | ECR2HFK560M◇◇751831                                                          |
|                                             | 68                                  | 3,9                                                              | 1,6                                                              | 0,20                                     | 1,090                                | 620                                                     | 18x36          | ECR2HFK680M◇◇751836                                                          |
|                                             | 82                                  | 3,2                                                              | 1,3                                                              | 0,20                                     | 1,300                                | 680                                                     | 18x36          | ECR2HFK820M◇◇751836                                                          |
|                                             | 100                                 | 2,7                                                              | 1,1                                                              | 0,20                                     | 1,570                                | 860                                                     | 18x46          | ECR2HFK101M◇◇751846                                                          |
|                                             |                                     | 2,7                                                              | 1,1                                                              | 0,20                                     | 1,570                                | 860                                                     | 20x41          | ECR2HFK101M◇◇△△2041                                                          |
|                                             | 120                                 | 2,2                                                              | 0,9                                                              | 0,20                                     | 1,870                                | 900                                                     | 22x45          | ECR2HFK121M◇◇102245                                                          |
|                                             | 150                                 | 1,8                                                              | 0,7                                                              | 0,20                                     | 2,320                                | 980                                                     | 22x45          | ECR2HFK151M◇◇102245                                                          |

6 000 ~ 10 000h  
at 105°C

- Slim Type
- High Ripple Current



## ITEM CHARACTERISTICS

|                                     |            |
|-------------------------------------|------------|
| Operating Temperature Range (°C)    | -25 ~ +105 |
| Voltage Range (V)                   | 200 ~ 500  |
| Capacitance Range (μF)              | 12 ~ 220   |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%      |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current (μA) After 2 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

| Stability at Low Temperature<br>(Impedance Ratio at 120Hz) | Rated Voltage<br>(V)                                | 200 ~ 250 | 400 ~ 500 |
|------------------------------------------------------------|-----------------------------------------------------|-----------|-----------|
|                                                            | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 3         | 8         |

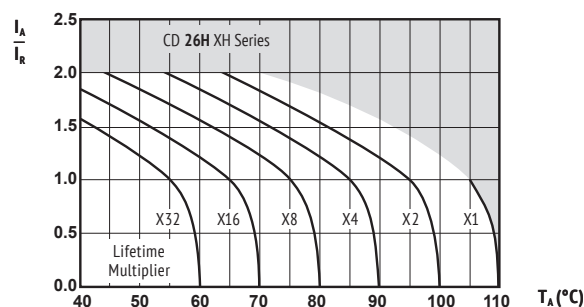
| ITEM                                                                    | USEFUL LIFE                                                |                                   | LOAD LIFE                                                 | ENDURANCE TEST                                            | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | $\emptyset \leq 10$ : 6 000h<br>$\emptyset > 10$ : 10 000h | $\geq 100\ 000\text{h}$           | $\emptyset \leq 10$ : 3 000h<br>$\emptyset > 10$ : 5 000h | $\emptyset \leq 10$ : 4 000h<br>$\emptyset > 10$ : 5 000h | 1 000h                                |                                                                              |
| Leakage Current                                                         | Not more than specified value                              |                                   | Not more than specified value                             | Not more than specified value                             | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 30% of initial value                              |                                   | Within ± 20% of initial value                             | Within ± 20% of initial value                             | Within ± 20% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value                      |                                   | Not more than 200% of specified value                     | Not more than 300% of specified value                     | Not more than 200% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C                                    | $U_R$<br>$1,2 \times I_R$<br>60°C | $U_R$<br>$I_R$<br>105°C                                   | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384                  | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for<br>30 min > 24h before<br>measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency<br>Coefficient (V) | 50/60Hz | 120Hz | 500Hz | 1kHz | >10kHz |
|------------------------------|---------|-------|-------|------|--------|
| 200 ~ 250                    | 0,8     | 1,0   | 1,20  | 1,30 | 1,40   |
| 400 ~ 500                    | 0,8     | 1,0   | 1,20  | 1,40 | 1,50   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

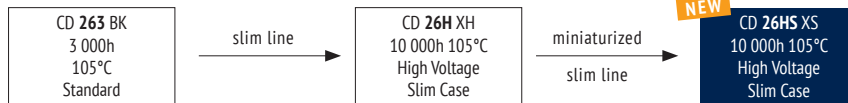
## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{MAX}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{TYP}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pitch code<br><br>Details: Page 33 |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (Ω)                                                          | (Ω)                                                          |                                                     | (mA)                          | (mA <sub>RMS</sub> )                                | (mm)                             |                                                                                      |
| <b>200<br/>(250)<br/>2D</b>          | 82                         | 1,95                                                         | 1,0                                                          | 0,12                                                | 0,328                         | 420                                                 | 10 x 36                          | ECR2DXH820M◇◇△△1036                                                                  |
|                                      | 100                        | 1,60                                                         | 0,9                                                          | 0,12                                                | 0,400                         | 480                                                 | 10 x 40                          | ECR2DXH101M◇◇△△1040                                                                  |
|                                      | 120                        | 1,33                                                         | 0,7                                                          | 0,12                                                | 0,480                         | 540                                                 | 10 x 45                          | ECR2DXH121M◇◇△△1045                                                                  |
|                                      | 150                        | 1,10                                                         | 0,6                                                          | 0,12                                                | 0,600                         | 650                                                 | 12,5 x 36                        | ECR2DXH151M◇◇△△1236                                                                  |
|                                      | 180                        | 0,90                                                         | 0,5                                                          | 0,12                                                | 0,720                         | 730                                                 | 12,5 x 42                        | ECR2DXH181M◇◇△△1242                                                                  |
|                                      | 220                        | 0,73                                                         | 0,4                                                          | 0,12                                                | 0,880                         | 840                                                 | 12,5 x 45                        | ECR2DXH221M◇◇△△1245                                                                  |
| <b>250<br/>(300)<br/>2E</b>          | 47                         | 4,20                                                         | 2,3                                                          | 0,15                                                | 0,235                         | 310                                                 | 8 x 50                           | ECR2EXH470M◇◇△△0850                                                                  |
|                                      | 68                         | 2,93                                                         | 1,6                                                          | 0,15                                                | 0,340                         | 340                                                 | 10 x 36                          | ECR2EXH680M◇◇△△1036                                                                  |
|                                      | 82                         | 2,43                                                         | 1,3                                                          | 0,15                                                | 0,410                         | 440                                                 | 10 x 43                          | ECR2EXH820M◇◇△△1043                                                                  |
|                                      | 100                        | 2,00                                                         | 1,1                                                          | 0,15                                                | 0,500                         | 500                                                 | 10 x 50                          | ECR2EXH101M◇◇△△1050                                                                  |
|                                      | 120                        | 1,70                                                         | 0,9                                                          | 0,15                                                | 0,600                         | 580                                                 | 12,5 x 40                        | ECR2EXH121M◇◇△△1240                                                                  |
|                                      | 150                        | 1,33                                                         | 0,7                                                          | 0,15                                                | 0,750                         | 680                                                 | 12,5 x 45                        | ECR2EXH151M◇◇△△1245                                                                  |
|                                      | 180                        | 1,11                                                         | 0,6                                                          | 0,15                                                | 0,900                         | 760                                                 | 12,5 x 50                        | ECR2EXH181M◇◇△△1250                                                                  |
|                                      | 220                        | 0,91                                                         | 0,5                                                          | 0,15                                                | 1,100                         | 880                                                 | 12,5 x 61                        | ECR2EXH221M◇◇△△1261                                                                  |
| <b>400<br/>(450)<br/>2G</b>          | 33                         | 6,04                                                         | 3,3                                                          | 0,15                                                | 0,264                         | 290                                                 | 10 x 40                          | ECR2GXH330M◇◇△△1040                                                                  |
|                                      | 47                         | 4,24                                                         | 2,3                                                          | 0,15                                                | 0,376                         | 390                                                 | 10 x 50                          | ECR2GXH470M◇◇△△1050                                                                  |
|                                      |                            | 4,24                                                         | 2,3                                                          | 0,15                                                | 0,376                         | 390                                                 | 12,5 x 35                        | ECR2GXH470M◇◇△△1235                                                                  |
|                                      | 56                         | 3,60                                                         | 2,0                                                          | 0,15                                                | 0,448                         | 440                                                 | 12,5 x 40                        | ECR2GXH560M◇◇△△1240                                                                  |
|                                      | 68                         | 2,93                                                         | 1,6                                                          | 0,15                                                | 0,544                         | 500                                                 | 12,5 x 45                        | ECR2GXH680M◇◇△△1245                                                                  |
|                                      | 82                         | 2,43                                                         | 1,3                                                          | 0,15                                                | 0,656                         | 540                                                 | 12,5 x 61                        | ECR2GXH820M◇◇△△1261                                                                  |
|                                      | 100                        | 2,00                                                         | 1,1                                                          | 0,15                                                | 0,800                         | 610                                                 | 12,5 x 61                        | ECR2GXH101M◇◇△△1261                                                                  |
| <b>420<br/>(470)<br/>2X</b>          | 39                         | 4,10                                                         | 2,2                                                          | 0,15                                                | 0,328                         | 320                                                 | 10 x 45                          | ECR2XXH390M◇◇△△1045                                                                  |
|                                      | 47                         | 3,40                                                         | 1,9                                                          | 0,15                                                | 0,395                         | 370                                                 | 10 x 50                          | ECR2XXH470M◇◇△△1050                                                                  |
|                                      | 56                         | 2,85                                                         | 1,6                                                          | 0,15                                                | 0,471                         | 450                                                 | 12,5 x 40                        | ECR2XXH560M◇◇△△1240                                                                  |
|                                      | 68                         | 2,35                                                         | 1,3                                                          | 0,15                                                | 0,572                         | 520                                                 | 12,5 x 45                        | ECR2XXH680M◇◇△△1245                                                                  |
|                                      | 82                         | 1,95                                                         | 1,1                                                          | 0,15                                                | 0,689                         | 580                                                 | 12,5 x 61                        | ECR2XXH820M◇◇△△1261                                                                  |
| <b>450<br/>(500)<br/>2W</b>          | 12                         | 13,3                                                         | 7,5                                                          | 0,12                                                | 0,108                         | 130                                                 | 6,3 x 50                         | ECR2WXH120M◇◇△△0650                                                                  |
|                                      | 18                         | 8,80                                                         | 5,0                                                          | 0,12                                                | 0,162                         | 190                                                 | 8 x 50                           | ECR2WXH180M◇◇△△0850                                                                  |
|                                      | 21                         | 7,60                                                         | 4,3                                                          | 0,12                                                | 0,189                         | 200                                                 | 8 x 50                           | ECR2WXH210M◇◇△△0850                                                                  |
|                                      | 27                         | 5,90                                                         | 3,3                                                          | 0,12                                                | 0,243                         | 230                                                 | 10 x 40                          | ECR2WXH270M◇◇△△1040                                                                  |
|                                      | 33                         | 4,83                                                         | 2,7                                                          | 0,12                                                | 0,297                         | 290                                                 | 10 x 45                          | ECR2WXH330M◇◇△△1045                                                                  |
|                                      | 39                         | 4,10                                                         | 2,2                                                          | 0,12                                                | 0,351                         | 330                                                 | 10 x 50                          | ECR2WXH390M◇◇△△1050                                                                  |
|                                      |                            | 4,10                                                         | 2,2                                                          | 0,12                                                | 0,351                         | 330                                                 | 12,5 x 36                        | ECR2WXH390M◇◇△△1236                                                                  |
|                                      | 47                         | 3,40                                                         | 1,9                                                          | 0,12                                                | 0,423                         | 400                                                 | 12,5 x 40                        | ECR2WXH470M◇◇△△1240                                                                  |
|                                      | 53                         | 3,01                                                         | 1,7                                                          | 0,12                                                | 0,477                         | 430                                                 | 12,5 x 45                        | ECR2WXH530M◇◇△△1245                                                                  |
|                                      | 56                         | 2,85                                                         | 1,7                                                          | 0,12                                                | 0,504                         | 460                                                 | 12,5 x 50                        | ECR2WXH560M◇◇△△1250                                                                  |
|                                      | 68                         | 2,35                                                         | 1,3                                                          | 0,12                                                | 0,612                         | 540                                                 | 12,5 x 50                        | ECR2WXH680M◇◇△△1250                                                                  |
|                                      | 82                         | 1,95                                                         | 1,0                                                          | 0,12                                                | 0,738                         | 600                                                 | 12,5 x 61                        | ECR2WXH820M◇◇△△1261                                                                  |
| <b>500<br/>(550)<br/>2H</b>          | 22                         | 12,1                                                         | 6,6                                                          | 0,20                                                | 0,220                         | 200                                                 | 8 x 50                           | ECR2HXXH220M◇◇△△0850                                                                 |
|                                      | 39                         | 6,80                                                         | 3,7                                                          | 0,20                                                | 0,390                         | 310                                                 | 10 x 50                          | ECR2HXXH390M◇◇△△1050                                                                 |
|                                      | 47                         | 5,65                                                         | 1,9                                                          | 0,20                                                | 0,470                         | 410                                                 | 12,5 x 50                        | ECR2HXXH470M◇◇△△1250                                                                 |
|                                      | 53                         | 3,00                                                         | 1,7                                                          | 0,20                                                | 0,530                         | 440                                                 | 12,5 x 61                        | ECR2HXXH530M◇◇△△1261                                                                 |
|                                      | 56                         | 2,80                                                         | 1,6                                                          | 0,20                                                | 0,560                         | 470                                                 | 12,5 x 61                        | ECR2HXXH560M◇◇△△1261                                                                 |

### 10 000h at 105°C

- Slim Type
- High Ripple Current



## ITEM CHARACTERISTICS

|                                     |            |
|-------------------------------------|------------|
| Operating Temperature Range (°C)    | -25 ~ +105 |
| Voltage Range (V)                   | 400 ~ 450  |
| Capacitance Range (μF)              | 12 ~ 220   |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%      |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current (μA) After 2 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

|                                                         |                                                     |           |
|---------------------------------------------------------|-----------------------------------------------------|-----------|
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)                                   | 400 ~ 450 |
|                                                         | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 8         |

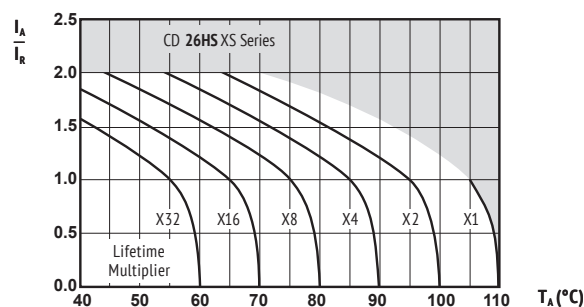
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | 10 000h                               | ≥ 100 000h                        | 5 000h                                | 5 000h                                   | 1 000h                                |                                                                              |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value            | Within ± 20% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 300% of specified value    | Not more than 200% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,2 \times I_R$<br>60°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for<br>30 min > 24h before<br>measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency<br>Coefficient (V) | 50/60Hz | 120Hz | 500Hz | 1kHz | >10kHz |
|------------------------------|---------|-------|-------|------|--------|
| 400 ~ 450                    | 0,8     | 1,0   | 1,25  | 1,4  | 1,45   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{MAX}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{Leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pitch code |
|--------------------------------------|----------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------------------------|----------------------------------|--------------------------------------------------------------|
| (V)                                  | (μF)                       | (Ω)                                                          |                                                     | (mA)                          | (mA <sub>RMS</sub> )                                | (mm)                             | Details: Page 33                                             |
| <b>400<br/>(450)<br/>2G</b>          | 39                         | 5,1                                                          | 0,15                                                | 0,312                         | 370                                                 | 10 x 40                          | ECR2GXS390M◇◇△△1040                                          |
|                                      | 47                         | 4,2                                                          | 0,15                                                | 0,376                         | 420                                                 | 10 x 45                          | ECR2GXS470M◇◇△△1045                                          |
|                                      | 56                         | 3,6                                                          | 0,15                                                | 0,448                         | 470                                                 | 10 x 50                          | ECR2GXS560M◇◇△△1050                                          |
|                                      | 68                         | 2,9                                                          | 0,15                                                | 0,544                         | 540                                                 | 12,5 x 40                        | ECR2GXS680M◇◇△△1240                                          |
|                                      | 82                         | 2,4                                                          | 0,15                                                | 0,656                         | 610                                                 | 12,5 x 45                        | ECR2GXS820M◇◇△△1245                                          |
|                                      | 100                        | 2,0                                                          | 0,15                                                | 0,800                         | 680                                                 | 12,5 x 50                        | ECR2GXS101M◇◇△△1250                                          |
|                                      |                            | 2,0                                                          | 0,15                                                | 0,800                         | 710                                                 | 16 x 31,5                        | ECR2GXS101M◇◇△△1631                                          |
|                                      | 120                        | 1,7                                                          | 0,15                                                | 0,960                         | 800                                                 | 16 x 36                          | ECR2GXS121M◇◇△△1636                                          |
|                                      | 150                        | 1,3                                                          | 0,15                                                | 1,200                         | 920                                                 | 16 x 40                          | ECR2GXS151M◇◇△△1640                                          |
|                                      |                            | 1,3                                                          | 0,15                                                | 1,200                         | 890                                                 | 18 x 31,5                        | ECR2GXS151M◇◇△△1831                                          |
|                                      | 180                        | 1,1                                                          | 0,15                                                | 1,440                         | 1080                                                | 16 x 50                          | ECR2GXS181M◇◇△△1650                                          |
|                                      |                            | 1,1                                                          | 0,15                                                | 1,440                         | 1060                                                | 18 x 40                          | ECR2GXS181M◇◇△△1840                                          |
|                                      | 220                        | 0,9                                                          | 0,15                                                | 1,760                         | 1200                                                | 18 x 46                          | ECR2GXS221M◇◇△△1846                                          |
|                                      | 220                        | 0,9                                                          | 0,15                                                | 1,760                         | 1200                                                | 18 x 46                          | ECR2GXS221M◇◇△△1846                                          |
| <b>420<br/>(470)<br/>2X</b>          | 39                         | 5,1                                                          | 0,15                                                | 0,328                         | 360                                                 | 10 x 40                          | ECR2XXS390M◇◇△△1040                                          |
|                                      | 47                         | 4,2                                                          | 0,15                                                | 0,395                         | 430                                                 | 10 x 50                          | ECR2XXS470M◇◇△△1050                                          |
|                                      | 56                         | 3,6                                                          | 0,15                                                | 0,471                         | 480                                                 | 12,5 x 40                        | ECR2XXS560M◇◇△△1240                                          |
|                                      | 68                         | 2,9                                                          | 0,15                                                | 0,572                         | 520                                                 | 12,5 x 40                        | ECR2XXS680M◇◇△△1240                                          |
|                                      | 82                         | 2,4                                                          | 0,15                                                | 0,689                         | 590                                                 | 12,5 x 45                        | ECR2XXS820M◇◇△△1245                                          |
|                                      | 100                        | 2,0                                                          | 0,15                                                | 0,840                         | 690                                                 | 16 x 31,5                        | ECR2XXS101M◇◇△△1631                                          |
|                                      | 120                        | 1,7                                                          | 0,15                                                | 1,008                         | 780                                                 | 16 x 36                          | ECR2XXS121M◇◇△△1636                                          |
|                                      |                            | 1,7                                                          | 0,15                                                | 1,008                         | 800                                                 | 18 x 31,5                        | ECR2XXS121M◇◇△△1831                                          |
|                                      | 150                        | 1,3                                                          | 0,15                                                | 1,260                         | 940                                                 | 16 x 45                          | ECR2XXS151M◇◇△△1645                                          |
|                                      |                            | 1,3                                                          | 0,15                                                | 1,260                         | 920                                                 | 18 x 36                          | ECR2XXS151M◇◇△△1836                                          |
|                                      | 180                        | 1,1                                                          | 0,15                                                | 1,512                         | 1050                                                | 16 x 50                          | ECR2XXS181M◇◇△△1650                                          |
|                                      |                            | 1,1                                                          | 0,15                                                | 1,512                         | 1040                                                | 18 x 40                          | ECR2XXS181M◇◇△△1840                                          |
|                                      | 220                        | 0,9                                                          | 0,15                                                | 1,848                         | 1220                                                | 18 x 50                          | ECR2XXS221M◇◇△△1850                                          |
|                                      | 220                        | 0,9                                                          | 0,15                                                | 1,848                         | 1220                                                | 18 x 50                          | ECR2XXS221M◇◇△△1850                                          |
| <b>450<br/>(500)<br/>2W</b>          | 33                         | 4,8                                                          | 0,12                                                | 0,297                         | 340                                                 | 10 x 40                          | ECR2WXS330M◇◇△△1040                                          |
|                                      | 39                         | 4,1                                                          | 0,12                                                | 0,351                         | 380                                                 | 10 x 45                          | ECR2WXS390M◇◇△△1045                                          |
|                                      | 47                         | 3,4                                                          | 0,12                                                | 0,423                         | 440                                                 | 12,5 x 40                        | ECR2WXS470M◇◇△△1240                                          |
|                                      | 56                         | 2,8                                                          | 0,12                                                | 0,504                         | 490                                                 | 12,5 x 40                        | ECR2WXS560M◇◇△△1240                                          |
|                                      | 68                         | 2,3                                                          | 0,12                                                | 0,612                         | 550                                                 | 12,5 x 45                        | ECR2WXS680M◇◇△△1245                                          |
|                                      | 82                         | 1,9                                                          | 0,12                                                | 0,738                         | 620                                                 | 12,5 x 50                        | ECR2WXS820M◇◇△△1250                                          |
|                                      |                            | 1,9                                                          | 0,12                                                | 0,738                         | 640                                                 | 16 x 31,5                        | ECR2WXS820M◇◇△△1631                                          |
|                                      | 100                        | 1,6                                                          | 0,12                                                | 0,900                         | 730                                                 | 16 x 36                          | ECR2WXS101M◇◇△△1636                                          |
|                                      | 120                        | 1,3                                                          | 0,12                                                | 1,080                         | 820                                                 | 16 x 40                          | ECR2WXS121M◇◇△△1640                                          |
|                                      |                            | 1,3                                                          | 0,12                                                | 1,080                         | 800                                                 | 18 x 31,5                        | ECR2WXS121M◇◇△△1831                                          |
|                                      | 150                        | 1,1                                                          | 0,12                                                | 1,350                         | 980                                                 | 16 x 50                          | ECR2WXS151M◇◇△△1650                                          |
|                                      |                            | 1,1                                                          | 0,12                                                | 1,350                         | 970                                                 | 18 x 40                          | ECR2WXS151M◇◇△△1840                                          |
|                                      | 180                        | 0,9                                                          | 0,12                                                | 1,350                         | 1090                                                | 18 x 46                          | ECR2WXS181M◇◇△△1846                                          |
|                                      | 220                        | 0,7                                                          | 0,12                                                | 1,980                         | 1220                                                | 18 x 50                          | ECR2WXS221M◇◇△△1850                                          |
|                                      | 220                        | 0,7                                                          | 0,12                                                | 1,980                         | 1220                                                | 18 x 50                          | ECR2WXS221M◇◇△△1850                                          |

#### 4 000 - 10 000h at 125°C

- High Reliability at High Temperature
- Automotive
- Professional Long-Life Applications

CD 287 GC  
10 000h  
105°C  
Low ESR

125°C

CD 269L HL  
10 000h 125°C  
High Temperature  
Low Voltage

higher  
voltage

CD 11GL GL  
6 000h 125°C  
High Temperature  
High Voltage

#### ITEM CHARACTERISTICS

|                                     |            |
|-------------------------------------|------------|
| Operating Temperature Range (°C)    | -40 ~ +125 |
| Voltage Range (V)                   | 10 ~ 100   |
| Capacitance Range (µF)              | 1 ~ 4 700  |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%      |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current (µA) After 1 minute at 20°C application of rated voltage, leakage current is not more than specified in table.

| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)                                   | 10 | 16 | 25 | 35 | 50 | 53 | 100 |
|---------------------------------------------------------|-----------------------------------------------------|----|----|----|----|----|----|-----|
|                                                         | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 3  |    |    |    | 2  |    |     |
|                                                         | $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 6  |    |    |    | 4  |    |     |

| ITEM                                                                    | USEFUL LIFE                                         |                                   | LOAD LIFE                                          | ENDURANCE TEST                                     | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------|----------------------------------------------------|----------------------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | Ø 8 : 4 000h<br>Ø 10 : 6 000h<br>Ø ≥ 12,5 : 10 000h | > 200 000h                        | Ø 8 : 2 000h<br>Ø 10 : 3 000h<br>Ø ≥ 12,5 : 5 000h | Ø 8 : 3 000h<br>Ø 10 : 5 000h<br>Ø ≥ 12,5 : 7 000h | 1 000h                                |                                                                              |
| Leakage Current                                                         | Not more than specified value                       |                                   | Not more than specified value                      | Not more than specified value                      | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 50% of initial value                       |                                   | Within ± 30% of initial value                      | Within ± 30% of initial value                      | Within ± 30% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 500% of specified value               |                                   | Not more than 300% of specified value              | Not more than 300% of specified value              | Not more than 300% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>125°C                             | $U_R$<br>$1,4 \times I_R$<br>50°C | $U_R$<br>$I_R$<br>125°C                            | $U_R$<br>$I_R = 0$<br>125°C<br>IEC 60384           | $U_R = 0$<br>$I_R = 0$<br>125°C       | After test:<br>$U_R$ to be applied for<br>30 min > 24h before<br>measurement |

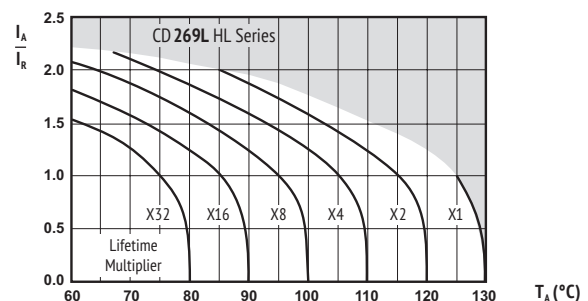
>>>> 135°C capacitors on request!

#### MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Capacitance (µF) \ Frequency | 50/60Hz | 120Hz | 1kHz | 10kHz | 100kHz |
|------------------------------|---------|-------|------|-------|--------|
| 1 ~ 4,7                      | 0,35    | 0,42  | 0,60 | 0,80  | 1,00   |
| 10 ~ 33                      | 0,45    | 0,55  | 0,75 | 0,90  | 1,00   |
| 47 ~ 330                     | 0,60    | 0,70  | 0,85 | 0,95  | 1,00   |
| 470 ~ 1 500                  | 0,65    | 0,75  | 0,90 | 0,98  | 1,00   |
| 2 200 ~ 4 700                | 0,75    | 0,80  | 0,95 | 1,00  | 1,00   |

Multipliers for typical operating conditions.

#### MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 125°C

Multiplier of Useful Life as a function of ambient temperature & ripple current load

#### ENVIRONMENTAL

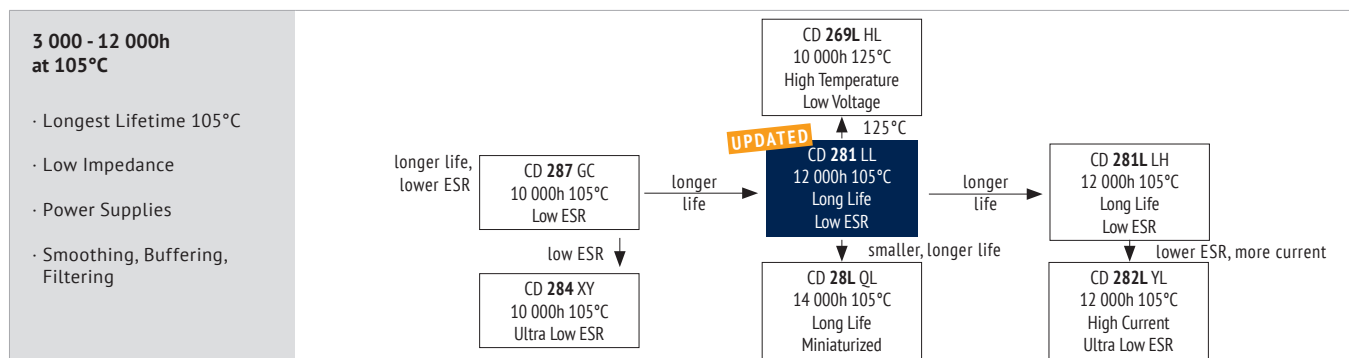
The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)



#### SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance | Z <sub>max</sub><br>Max Impedance | Z <sub>max</sub><br>Max Impedance | tanδ<br>Dissipation Factor | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current | Size<br>øD x L | ORDER CODE         |
|---------------------------------------------|-------------------------------------|----------------------------------------------------|-----------------------------------|-----------------------------------|----------------------------|--------------------------------------|------------------------------------------|----------------|--------------------|
| (V)                                         | (µF)                                | 20°C<br>120Hz<br>(Ω)                               | 20°C<br>100kHz<br>(Ω)             | -10°C<br>100kHz<br>(Ω)            | 20°C<br>120Hz              | (µA)                                 | 125°C<br>100kHz<br>(mA <sub>RMS</sub> )  | (mm)           | Details: Page 33   |
| 10<br>(13)<br>1A                            | 330                                 | 0,804                                              | 0,22                              | 0,44                              | 0,20                       | 99                                   | 360                                      | 8 x 11,5       | ECR1AHL331M◇◇△0811 |
|                                             | 470                                 | 0,565                                              | 0,15                              | 0,30                              | 0,20                       | 141                                  | 620                                      | 10 x 12,5      | ECR1AHL471M◇◇△1012 |
|                                             | 1 000                               | 0,265                                              | 0,073                             | 0,15                              | 0,20                       | 300                                  | 960                                      | 10 x 20        | ECR1AHL102M◇◇△1020 |
|                                             | 2 200                               | 0,133                                              | 0,040                             | 0,080                             | 0,22                       | 660                                  | 1430                                     | 12,5 x 25      | ECR1AHL222M◇◇△1225 |
|                                             | 3 300                               | 0,097                                              | 0,038                             | 0,076                             | 0,24                       | 990                                  | 1900                                     | 16 x 25        | ECR1AHL332M◇◇△1625 |
|                                             | 4 700                               | 0,073                                              | 0,034                             | 0,068                             | 0,26                       | 1410                                 | 2300                                     | 16 x 31,5      | ECR1AHL472M◇◇△1631 |
| 16<br>(20)<br>1C                            | 330                                 | 0,643                                              | 0,22                              | 0,44                              | 0,16                       | 158                                  | 360                                      | 8 x 11,5       | ECR1CHL331M◇◇△0811 |
|                                             | 470                                 | 0,452                                              | 0,15                              | 0,30                              | 0,16                       | 226                                  | 620                                      | 10 x 12,5      | ECR1CHL471M◇◇△1012 |
|                                             | 1 000                               | 0,212                                              | 0,073                             | 0,15                              | 0,16                       | 480                                  | 960                                      | 10 x 20        | ECR1CHL102M◇◇△1020 |
|                                             | 2 200                               | 0,109                                              | 0,040                             | 0,080                             | 0,18                       | 1056                                 | 1430                                     | 12,5 x 25      | ECR1CHL222M◇◇△1225 |
|                                             | 3 300                               | 0,080                                              | 0,034                             | 0,068                             | 0,20                       | 1584                                 | 2300                                     | 16 x 31,5      | ECR1CHL332M◇◇△1631 |
|                                             | 4 700                               | 0,062                                              | 0,031                             | 0,062                             | 0,22                       | 2256                                 | 2550                                     | 16 x 35,5      | ECR1CHL472M◇◇△1635 |
| 25<br>(32)<br>1E                            | 220                                 | 0,844                                              | 0,22                              | 0,44                              | 0,14                       | 165                                  | 360                                      | 8 x 11,5       | ECR1EHL221M◇◇△0811 |
|                                             | 330                                 | 0,563                                              | 0,15                              | 0,30                              | 0,14                       | 248                                  | 620                                      | 10 x 12,5      | ECR1EHL331M◇◇△1012 |
|                                             | 470                                 | 0,395                                              | 0,10                              | 0,20                              | 0,14                       | 353                                  | 800                                      | 10 x 16        | ECR1EHL471M◇◇△1016 |
|                                             | 1 000                               | 0,186                                              | 0,055                             | 0,11                              | 0,14                       | 750                                  | 1100                                     | 12,5 x 20      | ECR1EHL102M◇◇△1220 |
|                                             | 2 200                               | 0,097                                              | 0,034                             | 0,068                             | 0,16                       | 1650                                 | 2300                                     | 16 x 31,5      | ECR1EHL222M◇◇△1631 |
|                                             | 3 300                               | 0,072                                              | 0,031                             | 0,062                             | 0,18                       | 2475                                 | 2550                                     | 16 x 35,5      | ECR1EHL332M◇◇△1635 |
| 35<br>(44)<br>1V                            | 100                                 | 1,592                                              | 0,22                              | 0,44                              | 0,12                       | 105                                  | 360                                      | 8 x 11,5       | ECR1VHL101M◇◇△0811 |
|                                             | 220                                 | 0,724                                              | 0,15                              | 0,30                              | 0,12                       | 231                                  | 620                                      | 10 x 12,5      | ECR1VHL221M◇◇△1012 |
|                                             | 330                                 | 0,483                                              | 0,10                              | 0,20                              | 0,12                       | 347                                  | 800                                      | 10 x 16        | ECR1VHL331M◇◇△1016 |
|                                             | 470                                 | 0,339                                              | 0,073                             | 0,15                              | 0,12                       | 494                                  | 960                                      | 10 x 20        | ECR1VHL471M◇◇△1020 |
|                                             | 1 000                               | 0,159                                              | 0,040                             | 0,080                             | 0,12                       | 1050                                 | 1430                                     | 12,5 x 25      | ECR1VHL102M◇◇△1225 |
|                                             | 2 200                               | 0,084                                              | 0,031                             | 0,062                             | 0,14                       | 2310                                 | 2550                                     | 16 x 35,5      | ECR1VHL222M◇◇△1635 |
| 50<br>(63)<br>1H                            | 330                                 | 0,064                                              | 0,028                             | 0,056                             | 0,16                       | 3465                                 | 2800                                     | 18 x 36        | ECR1VHL332M◇◇△1836 |
|                                             | 1,0                                 | 133                                                | 2,5                               | 5,0                               | 0,10                       | 4                                    | 35                                       | 8 x 11,5       | ECR1HHL010M◇◇△0811 |
|                                             | 2,2                                 | 61,0                                               | 1,8                               | 3,6                               | 0,10                       | 4                                    | 50                                       | 8 x 11,5       | ECR1HHL2R2M◇◇△0811 |
|                                             | 3,3                                 | 41,0                                               | 1,3                               | 2,6                               | 0,10                       | 5                                    | 70                                       | 8 x 11,5       | ECR1HHL3R3M◇◇△0811 |
|                                             | 4,7                                 | 28,3                                               | 0,85                              | 1,7                               | 0,10                       | 7                                    | 100                                      | 8 x 11,5       | ECR1HHL4R7M◇◇△0811 |
|                                             | 10                                  | 13,3                                               | 0,60                              | 1,2                               | 0,10                       | 15                                   | 200                                      | 8 x 11,5       | ECR1HHL100M◇◇△0811 |
| 63<br>(79)<br>1J                            | 22                                  | 6,10                                               | 0,35                              | 0,70                              | 0,10                       | 33                                   | 260                                      | 8 x 11,5       | ECR1HHL220M◇◇△0811 |
|                                             | 33                                  | 4,10                                               | 0,28                              | 0,56                              | 0,10                       | 50                                   | 300                                      | 8 x 11,5       | ECR1HHL330M◇◇△0811 |
|                                             | 47                                  | 2,90                                               | 0,28                              | 0,56                              | 0,10                       | 71                                   | 300                                      | 8 x 11,5       | ECR1HHL470M◇◇△0811 |
|                                             | 100                                 | 1,33                                               | 0,18                              | 0,36                              | 0,10                       | 150                                  | 520                                      | 10 x 12,5      | ECR1HHL101M◇◇△1012 |
|                                             | 220                                 | 0,603                                              | 0,082                             | 0,17                              | 0,10                       | 330                                  | 890                                      | 10 x 20        | ECR1HHL221M◇◇△1020 |
|                                             | 330                                 | 0,402                                              | 0,065                             | 0,13                              | 0,10                       | 495                                  | 1000                                     | 12,5 x 20      | ECR1HHL331M◇◇△1220 |
|                                             | 470                                 | 0,282                                              | 0,051                             | 0,11                              | 0,10                       | 705                                  | 1200                                     | 12,5 x 25      | ECR1HHL471M◇◇△1225 |
|                                             | 1 000                               | 0,133                                              | 0,037                             | 0,074                             | 0,10                       | 1500                                 | 2180                                     | 16 x 31,5      | ECR1HHL102M◇◇△1631 |
|                                             | 2 200                               | 0,072                                              | 0,029                             | 0,058                             | 0,12                       | 3300                                 | 2800                                     | 18 x 40        | ECR1HHL222M◇◇△1840 |
|                                             | 33                                  | 3,62                                               | 0,40                              | 1,2                               | 0,09                       | 62                                   | 250                                      | 8 x 11,5       | ECR1JHL330M◇◇△0811 |
|                                             | 47                                  | 2,55                                               | 0,27                              | 0,81                              | 0,09                       | 89                                   | 400                                      | 10 x 12,5      | ECR1JHL470M◇◇△1012 |
|                                             | 100                                 | 1,20                                               | 0,20                              | 0,60                              | 0,09                       | 189                                  | 450                                      | 10 x 16        | ECR1JHL101M◇◇△1016 |
| 100<br>(125)<br>2A                          | 220                                 | 0,543                                              | 0,10                              | 0,30                              | 0,09                       | 416                                  | 820                                      | 12,5 x 20      | ECR1JHL221M◇◇△1220 |
|                                             | 330                                 | 0,362                                              | 0,072                             | 0,22                              | 0,09                       | 624                                  | 1000                                     | 12,5 x 25      | ECR1JHL331M◇◇△1225 |
|                                             | 470                                 | 0,254                                              | 0,069                             | 0,21                              | 0,09                       | 888                                  | 1500                                     | 16 x 25        | ECR1JHL471M◇◇△1625 |
|                                             | 1 000                               | 0,119                                              | 0,056                             | 0,17                              | 0,09                       | 1890                                 | 1850                                     | 16 x 31,5      | ECR1JHL102M◇◇△1631 |
|                                             | 1 500                               | 0,080                                              | 0,043                             | 0,13                              | 0,09                       | 2835                                 | 2350                                     | 18 x 40        | ECR1JHL152M◇◇△1840 |
|                                             | 4,7                                 | 22,6                                               | 1,3                               | 5,2                               | 0,08                       | 14                                   | 100                                      | 8 x 11,5       | ECR2AHL4R7M◇◇△0811 |
| 100<br>(125)<br>2A                          | 10                                  | 10,7                                               | 1,0                               | 4,0                               | 0,08                       | 30                                   | 200                                      | 8 x 11,5       | ECR2AHL100M◇◇△0811 |
|                                             | 22                                  | 4,90                                               | 0,67                              | 2,7                               | 0,08                       | 66                                   | 220                                      | 8 x 11,5       | ECR2AHL220M◇◇△0811 |
|                                             | 33                                  | 3,30                                               | 0,45                              | 1,8                               | 0,08                       | 99                                   | 260                                      | 10 x 12,5      | ECR2AHL330M◇◇△1012 |
|                                             | 47                                  | 2,30                                               | 0,33                              | 1,33                              | 0,08                       | 141                                  | 330                                      | 10 x 16        | ECR2AHL470M◇◇△1016 |
|                                             | 100                                 | 1,07                                               | 0,17                              | 0,68                              | 0,08                       | 300                                  | 670                                      | 12,5 x 20      | ECR2AHL101M◇◇△1220 |
|                                             | 220                                 | 0,483                                              | 0,13                              | 0,52                              | 0,08                       | 660                                  | 1100                                     | 16 x 25        | ECR2AHL221M◇◇△1625 |
|                                             | 330                                 | 0,322                                              | 0,10                              | 0,40                              | 0,08                       | 990                                  | 1300                                     | 16 x 31,5      | ECR2AHL331M◇◇△1631 |
|                                             | 470                                 | 0,226                                              | 0,092                             | 0,37                              | 0,08                       | 1410                                 | 1600                                     | 18 x 31,5      | ECR2AHL471M◇◇△1831 |



## ITEM CHARACTERISTICS

|                                     |               |
|-------------------------------------|---------------|
| Operating Temperature Range (°C)    | -55 ~ +105    |
| Voltage Range (V)                   | 6,3 ~ 100     |
| Capacitance Range (μF)              | 0,47 ~ 15 000 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%         |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current (μA) After 2 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

|                                                         |                         |           |
|---------------------------------------------------------|-------------------------|-----------|
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)       | 6,3 ~ 100 |
|                                                         | $Z_{-55°C} / Z_{+20°C}$ | 3         |

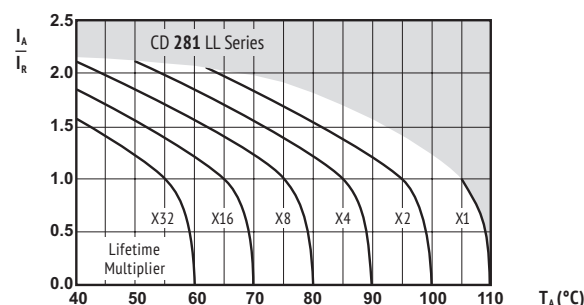
| ITEM                                                                    | USEFUL LIFE                                                                               |                                   | LOAD LIFE                                                                               | ENDURANCE TEST                                                                           | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | Ø 5 : 3 000h<br>Ø 6,3-8 : 5 000h<br>Ø 10 : 7 000h<br>Ø 12,5 : 10 000h<br>Ø ≥ 16 : 12 000h | Ø ≥ 6,3 : > 250 000h              | Ø 5 : 2 000h<br>Ø 6,3-8 : 3 000h<br>Ø 10 : 5 000h<br>Ø 12,5 : 7 000h<br>Ø ≥ 16 : 8 000h | Ø 5 : 3 000h<br>Ø 6,3-8 : 4 000h<br>Ø 10 : 6 000h<br>Ø 12,5 : 8 000h<br>Ø ≥ 16 : 10 000h | 1 000h                                |                                                                              |
| Leakage Current                                                         | Not more than specified value                                                             |                                   | Not more than specified value                                                           | Not more than specified value                                                            | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 30% of initial value                                                             |                                   | Within ± 20% of initial value                                                           | Within ± 20% of initial value                                                            | Within ± 20% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value                                                     |                                   | Not more than 200% of specified value                                                   | Not more than 200% of specified value                                                    | Not more than 200% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C                                                                   | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C                                                                 | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384                                                 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for<br>30 min > 24h before<br>measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Capacitance (μF) \ Frequency | 120Hz | 1kHz | 10kHz | 100kHz |
|------------------------------|-------|------|-------|--------|
| 0,47 ~ 4,7                   | 0,40  | 0,68 | 0,83  | 1,00   |
| 5,6 ~ 47                     | 0,50  | 0,76 | 0,87  | 1,00   |
| 56 ~ 270                     | 0,70  | 0,85 | 0,93  | 1,00   |
| 330 ~ 1 000                  | 0,80  | 0,93 | 0,98  | 1,00   |
| 1 200 ~ 15 000               | 0,90  | 0,95 | 1,00  | 1,00   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance | Z <sub>max</sub><br>Max Impedance | Z <sub>max</sub><br>Max Impedance | tanδ<br>Dissipation Factor | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current | Size<br>øD x L | ORDER CODE          |
|---------------------------------------------|-------------------------------------|----------------------------------------------------|-----------------------------------|-----------------------------------|----------------------------|--------------------------------------|------------------------------------------|----------------|---------------------|
| (V)                                         | (µF)                                | 20°C<br>120Hz<br>(Ω)                               | 20°C<br>100kHz<br>(Ω)             | -10°C<br>100kHz<br>(Ω)            | 20°C<br>120Hz              | (µA)                                 | 105°C<br>20°C<br>100kHz<br>(mArms)       | (mm)           | Details: Page 33    |
| 6,3<br>(7,9)<br>0J                          | 100                                 | 2,92                                               | 0,650                             | 1,300                             | 0,22                       | 13                                   | 175                                      | 5 x 11,5       | ECROJLL101M00000511 |
|                                             | 150                                 | 1,95                                               | 0,460                             | 0,920                             | 0,22                       | 19                                   | 235                                      | 5 x 15         | ECROJLL151M00000515 |
|                                             | 220                                 | 1,33                                               | 0,300                             | 0,600                             | 0,22                       | 28                                   | 290                                      | 6,3 x 11,5     | ECROJLL221M00000611 |
|                                             | 330                                 | 0,885                                              | 0,300                             | 0,600                             | 0,22                       | 42                                   | 290                                      | 6,3 x 11,5     | ECROJLL331M00000611 |
|                                             |                                     | 0,885                                              | 0,200                             | 0,400                             | 0,22                       | 42                                   | 400                                      | 6,3 x 15       | ECROJLL331M00000615 |
|                                             | 470                                 | 0,621                                              | 0,170                             | 0,340                             | 0,22                       | 60                                   | 488                                      | 8 x 11,5       | ECROJLL471M00000811 |
|                                             | 680                                 | 0,429                                              | 0,130                             | 0,260                             | 0,22                       | 86                                   | 617                                      | 8 x 16         | ECROJLL681M00000816 |
|                                             |                                     | 0,429                                              | 0,120                             | 0,240                             | 0,22                       | 86                                   | 613                                      | 10 x 12,5      | ECROJLL681M00001012 |
|                                             | 820                                 | 0,356                                              | 0,095                             | 0,190                             | 0,22                       | 104                                  | 734                                      | 10 x 16        | ECROJLL821M00001016 |
|                                             | 1 000                               | 0,292                                              | 0,095                             | 0,190                             | 0,22                       | 126                                  | 800                                      | 8 x 20         | ECROJLL102M00000820 |
|                                             | 1 200                               | 0,243                                              | 0,065                             | 0,130                             | 0,22                       | 152                                  | 1010                                     | 10 x 20        | ECROJLL122M00001020 |
|                                             |                                     | 0,243                                              | 0,065                             | 0,130                             | 0,22                       | 152                                  | 1010                                     | 12,5 x 15      | ECROJLL122M00001215 |
|                                             | 1 500                               | 0,195                                              | 0,055                             | 0,110                             | 0,22                       | 189                                  | 1190                                     | 10 x 25        | ECROJLL152M00001025 |
|                                             | 2 200                               | 0,145                                              | 0,045                             | 0,090                             | 0,24                       | 278                                  | 1440                                     | 10 x 30        | ECROJLL222M00001030 |
|                                             |                                     | 0,145                                              | 0,042                             | 0,084                             | 0,24                       | 278                                  | 1400                                     | 12,5 x 20      | ECROJLL222M00001220 |
|                                             | 2 700                               | 0,118                                              | 0,038                             | 0,076                             | 0,24                       | 341                                  | 1690                                     | 12,5 x 25      | ECROJLL272M00001225 |
|                                             |                                     | 0,118                                              | 0,046                             | 0,092                             | 0,24                       | 341                                  | 1310                                     | 16 x 15        | ECROJLL272M00001615 |
|                                             | 3 300                               | 0,105                                              | 0,043                             | 0,086                             | 0,26                       | 416                                  | 1460                                     | 18 x 15        | ECROJLL332M00001815 |
|                                             | 3 900                               | 0,088                                              | 0,032                             | 0,064                             | 0,26                       | 492                                  | 1950                                     | 12,5 x 30      | ECROJLL392M00001230 |
|                                             | 4 700                               | 0,079                                              | 0,028                             | 0,056                             | 0,28                       | 593                                  | 2220                                     | 12,5 x 35      | ECROJLL472M00001235 |
|                                             |                                     | 0,079                                              | 0,034                             | 0,068                             | 0,28                       | 593                                  | 1660                                     | 16 x 20        | ECROJLL472M00001620 |
|                                             | 5 600                               | 0,071                                              | 0,026                             | 0,052                             | 0,30                       | 706                                  | 2390                                     | 12,5 x 40      | ECROJLL562M00001240 |
|                                             |                                     | 0,071                                              | 0,028                             | 0,056                             | 0,30                       | 706                                  | 2070                                     | 16 x 25        | ECROJLL562M00001625 |
|                                             |                                     | 0,071                                              | 0,030                             | 0,060                             | 0,30                       | 706                                  | 1850                                     | 18 x 20        | ECROJLL562M00001820 |
|                                             | 6 800                               | 0,062                                              | 0,025                             | 0,050                             | 0,32                       | 857                                  | 2350                                     | 16 x 31,5      | ECROJLL682M00001631 |
|                                             |                                     | 0,062                                              | 0,027                             | 0,054                             | 0,32                       | 857                                  | 2120                                     | 18 x 25        | ECROJLL682M00001825 |
|                                             | 8 200                               | 0,058                                              | 0,022                             | 0,044                             | 0,36                       | 1034                                 | 2550                                     | 16 x 35,5      | ECROJLL822M00001635 |
|                                             | 10 000                              | 0,053                                              | 0,023                             | 0,046                             | 0,40                       | 1260                                 | 2410                                     | 18 x 31,5      | ECROJLL103M00001831 |
|                                             | 12 000                              | 0,049                                              | 0,020                             | 0,040                             | 0,44                       | 1512                                 | 2970                                     | 16 x 40        | ECROJLL123M00001640 |
|                                             |                                     | 0,049                                              | 0,020                             | 0,040                             | 0,44                       | 1512                                 | 2680                                     | 18 x 35,5      | ECROJLL123M00001835 |
|                                             | 15 000                              | 0,044                                              | 0,019                             | 0,038                             | 0,50                       | 1890                                 | 3010                                     | 18 x 40        | ECROJLL153M00001840 |
| x                                           |                                     |                                                    |                                   |                                   |                            |                                      |                                          |                |                     |
| 10<br>(13)<br>1A                            | 82                                  | 3,08                                               | 0,650                             | 1,30                              | 0,19                       | 17                                   | 175                                      | 5 x 11,5       | ECRIALL820M00000511 |
|                                             | 100                                 | 2,53                                               | 0,460                             | 0,920                             | 0,19                       | 20                                   | 235                                      | 5 x 15         | ECRIALL101M00000515 |
|                                             | 180                                 | 1,41                                               | 0,300                             | 0,600                             | 0,19                       | 36                                   | 290                                      | 6,3 x 11,5     | ECRIALL181M00000611 |
|                                             | 220                                 | 1,15                                               | 0,300                             | 0,600                             | 0,19                       | 36                                   | 290                                      | 6,3 x 11,5     | ECRIALL221M00000611 |
|                                             |                                     | 1,15                                               | 0,200                             | 0,400                             | 0,19                       | 44                                   | 400                                      | 6,3 x 15       | ECRIALL221M00000615 |
|                                             | 330                                 | 0,764                                              | 0,170                             | 0,340                             | 0,19                       | 66                                   | 488                                      | 8 x 11,5       | ECRIALL331M00000811 |
|                                             | 470                                 | 0,536                                              | 0,170                             | 0,340                             | 0,19                       | 94                                   | 488                                      | 8 x 11,5       | ECRIALL471M00000811 |
|                                             |                                     | 0,536                                              | 0,130                             | 0,260                             | 0,19                       | 94                                   | 617                                      | 8 x 16         | ECRIALL471M00000816 |
|                                             |                                     | 0,536                                              | 0,120                             | 0,240                             | 0,19                       | 94                                   | 613                                      | 10 x 12,5      | ECRIALL471M00001012 |
|                                             | 560                                 | 0,450                                              | 0,095                             | 0,190                             | 0,19                       | 112                                  | 734                                      | 10 x 16        | ECRIALL561M00001016 |
|                                             | 680                                 | 0,371                                              | 0,095                             | 0,190                             | 0,19                       | 136                                  | 800                                      | 8 x 20         | ECRIALL681M00000820 |
|                                             | 1 000                               | 0,252                                              | 0,095                             | 0,190                             | 0,19                       | 200                                  | 734                                      | 10 x 16        | ECRIALL102M00001016 |
|                                             |                                     | 0,252                                              | 0,065                             | 0,130                             | 0,19                       | 200                                  | 1010                                     | 10 x 20        | ECRIALL102M00001020 |
|                                             |                                     | 0,252                                              | 0,065                             | 0,130                             | 0,19                       | 200                                  | 1010                                     | 12,5 x 15      | ECRIALL102M00001215 |
|                                             | 1 200                               | 0,210                                              | 0,055                             | 0,110                             | 0,19                       | 240                                  | 1190                                     | 10 x 25        | ECRIALL122M00001025 |
|                                             | 1 500                               | 0,168                                              | 0,045                             | 0,090                             | 0,19                       | 300                                  | 1440                                     | 10 x 30        | ECRIALL152M00001030 |
|                                             | 1800                                | 0,140                                              | 0,042                             | 0,084                             | 0,19                       | 360                                  | 1400                                     | 12,5 x 20      | ECRIALL182M00001220 |
|                                             |                                     | 0,140                                              | 0,046                             | 0,092                             | 0,19                       | 360                                  | 1310                                     | 16 x 15        | ECRIALL182M00001615 |
|                                             | 2 200                               | 0,127                                              | 0,042                             | 0,084                             | 0,21                       | 440                                  | 1400                                     | 12,5 x 20      | ECRIALL222M00001220 |
|                                             |                                     | 0,127                                              | 0,038                             | 0,076                             | 0,21                       | 440                                  | 1690                                     | 12,5 x 25      | ECRIALL222M00001225 |
|                                             |                                     | 0,127                                              | 0,043                             | 0,086                             | 0,21                       | 440                                  | 1460                                     | 18 x 15        | ECRIALL222M00001815 |
|                                             | 2 700                               | 0,103                                              | 0,032                             | 0,064                             | 0,21                       | 540                                  | 1950                                     | 12,5 x 30      | ECRIALL272M00001230 |
|                                             | 3 300                               | 0,092                                              | 0,028                             | 0,056                             | 0,23                       | 660                                  | 2220                                     | 12,5 x 35      | ECRIALL332M00001235 |
|                                             |                                     | 0,092                                              | 0,034                             | 0,068                             | 0,23                       | 660                                  | 1660                                     | 16 x 20        | ECRIALL332M00001620 |
|                                             | 3 900                               | 0,078                                              | 0,026                             | 0,052                             | 0,23                       | 780                                  | 2390                                     | 12,5 x 40      | ECRIALL392M00001240 |
|                                             |                                     | 0,078                                              | 0,028                             | 0,056                             | 0,23                       | 780                                  | 2070                                     | 16 x 25        | ECRIALL392M00001625 |
|                                             |                                     | 0,078                                              | 0,030                             | 0,060                             | 0,23                       | 780                                  | 1850                                     | 18 x 20        | ECRIALL392M00001820 |
|                                             | 4 700                               | 0,071                                              | 0,028                             | 0,056                             | 0,25                       | 940                                  | 2070                                     | 16 x 25        | ECRIALL472M00001625 |
|                                             |                                     | 0,071                                              | 0,027                             | 0,054                             | 0,25                       | 940                                  | 2120                                     | 18 x 25        | ECRIALL472M00001825 |
|                                             | 5 600                               | 0,064                                              | 0,025                             | 0,050                             | 0,27                       | 1120                                 | 2350                                     | 16 x 31,5      | ECRIALL562M00001631 |
|                                             | 6 800                               | 0,057                                              | 0,022                             | 0,044                             | 0,29                       | 1360                                 | 2550                                     | 16 x 35,5      | ECRIALL682M00001635 |
|                                             |                                     | 0,057                                              | 0,023                             | 0,046                             | 0,29                       | 1360                                 | 2410                                     | 18 x 31,5      | ECRIALL682M00001831 |
|                                             | 8 200                               | 0,053                                              | 0,020                             | 0,040                             | 0,33                       | 1640                                 | 2970                                     | 16 x 40        | ECRIALL822M00001640 |
|                                             |                                     | 0,053                                              | 0,020                             | 0,040                             | 0,33                       | 1640                                 | 2680                                     | 18 x 35,5      | ECRIALL822M00001835 |
|                                             | 10 000                              | 0,049                                              | 0,019                             | 0,038                             | 0,37                       | 2000                                 | 3010                                     | 18 x 40        | ECRIALL103M00001840 |

&gt;&gt;

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current | Size<br>$\varnothing D \times L$ | ORDER CODE                                                                                    |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120kHz<br>( $\Omega$ )              | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120kHz                     | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA rms)       | (mm)                             | <div>◇◇ = pin style &amp; length</div> <div>△△ = pitch code</div> <div>Details: Page 33</div> |
| <b>16<br/>(20)<br/>1C</b>            | 47                         | 4,52                                        | 0,650                          | 1,30                            | 0,16                               | 15                            | 140                               | 5 x 11,5                         | ECR1CLL470M◇◇△△0511                                                                           |
|                                      | 56                         | 3,80                                        | 0,650                          | 1,30                            | 0,16                               | 18                            | 175                               | 5 x 11,5                         | ECR1CLL560M◇◇△△0511                                                                           |
|                                      | 82                         | 2,59                                        | 0,460                          | 0,920                           | 0,16                               | 27                            | 235                               | 5 x 15                           | ECR1CLL820M◇◇△△0515                                                                           |
|                                      | 100                        | 2,13                                        | 0,650                          | 1,300                           | 0,16                               | 32                            | 175                               | 5 x 11,5                         | ECR1CLL101M◇◇△△0511                                                                           |
|                                      | 120                        | 1,77                                        | 0,300                          | 0,600                           | 0,16                               | 39                            | 290                               | 6,3 x 11,5                       | ECR1CLL121M◇◇△△0611                                                                           |
|                                      | 180                        | 1,18                                        | 0,200                          | 0,400                           | 0,16                               | 58                            | 400                               | 6,3 x 15                         | ECR1CLL181M◇◇△△0615                                                                           |
|                                      | 220                        | 1,16                                        | 0,300                          | 0,600                           | 0,16                               | 71                            | 290                               | 6,3 x 11,5                       | ECR1CLL221M◇◇△△0611                                                                           |
|                                      |                            | 1,16                                        | 0,280                          | 0,560                           | 0,16                               | 71                            | 380                               | 8 x 11,5                         | ECR1CLL221M◇◇△△0811                                                                           |
|                                      | 270                        | 0,786                                       | 0,170                          | 0,340                           | 0,16                               | 87                            | 501                               | 8 x 11,5                         | ECR1CLL271M◇◇△△0811                                                                           |
|                                      | 330                        | 0,772                                       | 0,170                          | 0,340                           | 0,16                               | 106                           | 501                               | 8 x 11,5                         | ECR1CLL331M◇◇△△0811                                                                           |
|                                      |                            | 0,643                                       | 0,130                          | 0,260                           | 0,16                               | 106                           | 575                               | 8 x 16                           | ECR1CLL331M◇◇△△0816                                                                           |
|                                      |                            | 0,643                                       | 0,120                          | 0,240                           | 0,16                               | 106                           | 625                               | 10 x 12,5                        | ECR1CLL331M◇◇△△1012                                                                           |
|                                      | 390                        | 0,544                                       | 0,095                          | 0,190                           | 0,16                               | 125                           | 795                               | 10 x 16                          | ECR1CLL391M◇◇△△1016                                                                           |
|                                      | 470                        | 0,452                                       | 0,130                          | 0,260                           | 0,16                               | 151                           | 575                               | 8 x 16                           | ECR1CLL471M◇◇△△0816                                                                           |
|                                      |                            | 0,452                                       | 0,095                          | 0,190                           | 0,16                               | 151                           | 760                               | 8 x 20                           | ECR1CLL471M◇◇△△0820                                                                           |
|                                      | 680                        | 0,312                                       | 0,065                          | 0,130                           | 0,16                               | 218                           | 1010                              | 10 x 20                          | ECR1CLL681M◇◇△△1020                                                                           |
|                                      |                            | 0,312                                       | 0,065                          | 0,130                           | 0,16                               | 218                           | 1010                              | 12,5 x 15                        | ECR1CLL681M◇◇△△1215                                                                           |
|                                      | 820                        | 0,259                                       | 0,055                          | 0,110                           | 0,16                               | 263                           | 1190                              | 10 x 25                          | ECR1CLL821M◇◇△△1025                                                                           |
|                                      | 1 000                      | 0,212                                       | 0,065                          | 0,130                           | 0,16                               | 320                           | 1010                              | 10 x 20                          | ECR1CLL102M◇◇△△1020                                                                           |
|                                      | 1 200                      | 0,177                                       | 0,045                          | 0,090                           | 0,16                               | 384                           | 1430                              | 10 x 30                          | ECR1CLL122M◇◇△△1030                                                                           |
|                                      |                            | 0,177                                       | 0,042                          | 0,084                           | 0,16                               | 384                           | 1400                              | 12,5 x 20                        | ECR1CLL122M◇◇△△1220                                                                           |
|                                      |                            | 0,142                                       | 0,038                          | 0,076                           | 0,16                               | 480                           | 1690                              | 12,5 x 25                        | ECR1CLL152M◇◇△△1225                                                                           |
|                                      | 1 500                      | 0,142                                       | 0,046                          | 0,092                           | 0,16                               | 480                           | 1340                              | 16 x 15                          | ECR1CLL152M◇◇△△1615                                                                           |
|                                      |                            | 0,142                                       | 0,043                          | 0,086                           | 0,16                               | 480                           | 1490                              | 18 x 15                          | ECR1CLL152M◇◇△△1815                                                                           |
|                                      |                            | 0,109                                       | 0,038                          | 0,076                           | 0,18                               | 704                           | 1690                              | 12,5 x 25                        | ECR1CLL222M◇◇△△1225                                                                           |
|                                      | 2 200                      | 0,109                                       | 0,032                          | 0,064                           | 0,18                               | 704                           | 1950                              | 12,5 x 30                        | ECR1CLL222M◇◇△△1230                                                                           |
|                                      |                            | 0,109                                       | 0,034                          | 0,068                           | 0,18                               | 704                           | 1730                              | 16 x 20                          | ECR1CLL222M◇◇△△1620                                                                           |
|                                      |                            | 0,088                                       | 0,028                          | 0,056                           | 0,18                               | 864                           | 2200                              | 12,5 x 35                        | ECR1CLL272M◇◇△△1235                                                                           |
|                                      | 2 700                      | 0,088                                       | 0,028                          | 0,056                           | 0,18                               | 864                           | 2070                              | 16 x 25                          | ECR1CLL272M◇◇△△1625                                                                           |
|                                      |                            | 0,088                                       | 0,030                          | 0,060                           | 0,18                               | 864                           | 1870                              | 18 x 20                          | ECR1CLL272M◇◇△△1820                                                                           |
|                                      | 3 300                      | 0,080                                       | 0,026                          | 0,052                           | 0,20                               | 1056                          | 2390                              | 12,5 x 40                        | ECR1CLL332M◇◇△△1240                                                                           |
|                                      | 3 900                      | 0,068                                       | 0,025                          | 0,050                           | 0,20                               | 1248                          | 2350                              | 16 x 31,5                        | ECR1CLL392M◇◇△△1631                                                                           |
|                                      |                            | 0,068                                       | 0,027                          | 0,054                           | 0,20                               | 1248                          | 2160                              | 18 x 25                          | ECR1CLL392M◇◇△△1825                                                                           |
|                                      | 4 700                      | 0,062                                       | 0,022                          | 0,044                           | 0,22                               | 1504                          | 2550                              | 16 x 35,5                        | ECR1CLL472M◇◇△△1635                                                                           |
|                                      |                            | 0,062                                       | 0,023                          | 0,046                           | 0,22                               | 1504                          | 2450                              | 18 x 31,5                        | ECR1CLL472M◇◇△△1831                                                                           |
|                                      | 5 600                      | 0,057                                       | 0,020                          | 0,040                           | 0,24                               | 1792                          | 2900                              | 16 x 40                          | ECR1CLL562M◇◇△△1640                                                                           |
|                                      | 6 800                      | 0,051                                       | 0,020                          | 0,040                           | 0,26                               | 2176                          | 2730                              | 18 x 35,5                        | ECR1CLL682M◇◇△△1835                                                                           |
|                                      | 8 200                      | 0,049                                       | 0,019                          | 0,038                           | 0,30                               | 2624                          | 3060                              | 18 x 40                          | ECR1CLL822M◇◇△△1840                                                                           |

|                           |       |       |       |       |      |     |      |            |                     |
|---------------------------|-------|-------|-------|-------|------|-----|------|------------|---------------------|
| <b>25<br/>(32)<br/>1E</b> | 39    | 4,77  | 0,650 | 1,30  | 0,14 | 20  | 175  | 5 x 11,5   | ECR1ELL390M◇◇△△0511 |
|                           | 47    | 3,96  | 0,650 | 1,30  | 0,14 | 24  | 175  | 5 x 11,5   | ECR1ELL470M◇◇△△0511 |
|                           | 56    | 3,32  | 0,460 | 0,920 | 0,14 | 28  | 235  | 5 x 15     | ECR1ELL560M◇◇△△0515 |
|                           | 82    | 2,27  | 0,300 | 0,600 | 0,14 | 41  | 290  | 6,3 x 11,5 | ECR1ELL820M◇◇△△0611 |
|                           | 100   | 1,86  | 0,300 | 0,600 | 0,14 | 50  | 290  | 6,3 x 11,5 | ECR1ELL101M◇◇△△0611 |
|                           | 120   | 1,55  | 0,200 | 0,400 | 0,14 | 60  | 400  | 6,3 x 15   | ECR1ELL121M◇◇△△0615 |
|                           | 180   | 1,04  | 0,170 | 0,340 | 0,14 | 90  | 503  | 8 x 11,5   | ECR1ELL181M◇◇△△0811 |
|                           | 220   | 0,844 | 0,170 | 0,340 | 0,14 | 110 | 503  | 8 x 11,5   | ECR1ELL221M◇◇△△0811 |
|                           |       | 0,844 | 0,130 | 0,260 | 0,14 | 110 | 575  | 8 x 16     | ECR1ELL221M◇◇△△0816 |
|                           |       | 0,844 | 0,120 | 0,240 | 0,14 | 110 | 629  | 10 x 12,5  | ECR1ELL221M◇◇△△1012 |
|                           | 270   | 0,688 | 0,095 | 0,190 | 0,14 | 135 | 795  | 10 x 16    | ECR1ELL271M◇◇△△1016 |
|                           | 330   | 0,563 | 0,095 | 0,190 | 0,14 | 165 | 751  | 8 x 20     | ECR1ELL331M◇◇△△0820 |
|                           |       | 0,563 | 0,120 | 0,240 | 0,14 | 165 | 629  | 10 x 12,5  | ECR1ELL331M◇◇△△1012 |
|                           | 470   | 0,395 | 0,095 | 0,190 | 0,14 | 235 | 751  | 8 x 20     | ECR1ELL471M◇◇△△0820 |
|                           |       | 0,395 | 0,120 | 0,240 | 0,14 | 235 | 760  | 10 x 12,5  | ECR1ELL471M◇◇△△1012 |
|                           |       | 0,395 | 0,065 | 0,130 | 0,14 | 235 | 1010 | 10 x 20    | ECR1ELL471M◇◇△△1020 |
|                           |       | 0,395 | 0,065 | 0,130 | 0,14 | 235 | 1010 | 12,5 x 15  | ECR1ELL471M◇◇△△1215 |
|                           | 560   | 0,332 | 0,055 | 0,110 | 0,14 | 280 | 1190 | 10 x 25    | ECR1ELL561M◇◇△△1025 |
|                           | 820   | 0,227 | 0,045 | 0,090 | 0,14 | 410 | 1440 | 10 x 30    | ECR1ELL821M◇◇△△1030 |
|                           |       | 0,227 | 0,042 | 0,084 | 0,14 | 410 | 1400 | 12,5 x 20  | ECR1ELL821M◇◇△△1220 |
|                           |       | 0,227 | 0,046 | 0,092 | 0,14 | 410 | 1360 | 16 x 15    | ECR1ELL821M◇◇△△1615 |
|                           | 1 000 | 0,186 | 0,042 | 0,084 | 0,14 | 500 | 1400 | 12,5 x 20  | ECR1ELL102M◇◇△△1220 |
|                           |       | 0,186 | 0,038 | 0,076 | 0,14 | 500 | 1690 | 12,5 x 25  | ECR1ELL102M◇◇△△1225 |
|                           | 1 200 | 0,155 | 0,043 | 0,086 | 0,14 | 600 | 1500 | 18 x 15    | ECR1ELL122M◇◇△△1815 |
|                           | 1 500 | 0,124 | 0,032 | 0,064 | 0,14 | 750 | 1950 | 12,5 x 30  | ECR1ELL152M◇◇△△1230 |
|                           |       | 0,124 | 0,034 | 0,068 | 0,14 | 750 | 1730 | 16 x 20    | ECR1ELL152M◇◇△△1620 |
|                           | 1 800 | 0,103 | 0,028 | 0,056 | 0,14 | 900 | 2200 | 12,5 x 35  | ECR1ELL182M◇◇△△1235 |
|                           |       | 0,103 | 0,028 | 0,056 | 0,14 | 900 | 2070 | 16 x 25    | ECR1ELL182M◇◇△△1625 |
|                           |       | 0,103 | 0,030 | 0,060 | 0,14 | 900 | 1890 | 18 x 20    | ECR1ELL182M◇◇△△1820 |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance | Z <sub>max</sub><br>Max Impedance | Z <sub>max</sub><br>Max Impedance | tanδ<br>Dissipation Factor | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current | Size<br>øD x L | ORDER CODE         |
|---------------------------------------------|-------------------------------------|----------------------------------------------------|-----------------------------------|-----------------------------------|----------------------------|--------------------------------------|------------------------------------------|----------------|--------------------|
| (V)                                         | (µF)                                | 20°C<br>120Hz<br>(Ω)                               | 20°C<br>100kHz<br>(Ω)             | -10°C<br>100kHz<br>(Ω)            | 20°C<br>120Hz              | (µA)                                 | 105°C<br>100kHz<br>(mArms)               | (mm)           | Details: Page 33   |
| 25<br>(32)<br>1E                            | 2 200                               | 0,097                                              | 0,028                             | 0,056                             | 0,16                       | 1100                                 | 2200                                     | 12,5 x 35      | ECR1ELL222M◊◊◊1235 |
|                                             |                                     | 0,097                                              | 0,026                             | 0,052                             | 0,16                       | 1100                                 | 2390                                     | 12,5 x 40      | ECR1ELL222M◊◊◊1240 |
|                                             | 2 700                               | 0,079                                              | 0,025                             | 0,050                             | 0,16                       | 1350                                 | 2350                                     | 16 x 31,5      | ECR1ELL272M◊◊◊1631 |
|                                             |                                     | 0,079                                              | 0,027                             | 0,054                             | 0,16                       | 1350                                 | 2180                                     | 18 x 25        | ECR1ELL272M◊◊◊1825 |
|                                             | 3300                                | 0,072                                              | 0,022                             | 0,044                             | 0,18                       | 1650                                 | 2550                                     | 16 x 35,5      | ECR1ELL332M◊◊◊1635 |
|                                             |                                     | 0,072                                              | 0,023                             | 0,046                             | 0,18                       | 1650                                 | 2470                                     | 18 x 31,5      | ECR1ELL332M◊◊◊1831 |
|                                             | 3900                                | 0,061                                              | 0,020                             | 0,040                             | 0,18                       | 1950                                 | 2900                                     | 16 x 40        | ECR1ELL392M◊◊◊1640 |
|                                             |                                     | 0,061                                              | 0,020                             | 0,040                             | 0,18                       | 1950                                 | 2740                                     | 18 x 35,5      | ECR1ELL392M◊◊◊1835 |
|                                             | 4700                                | 0,056                                              | 0,019                             | 0,038                             | 0,20                       | 2350                                 | 3070                                     | 18 x 40        | ECR1ELL472M◊◊◊1840 |
| 35<br>(44)<br>1V                            | 27                                  | 5,90                                               | 0,650                             | 1,30                              | 0,12                       | 19                                   | 175                                      | 5 x 11,5       | ECR1VLL270M◊◊◊0511 |
|                                             | 39                                  | 4,09                                               | 0,460                             | 0,920                             | 0,12                       | 28                                   | 235                                      | 5 x 15         | ECR1VLL390M◊◊◊0515 |
|                                             | 47                                  | 3,39                                               | 0,650                             | 1,300                             | 0,12                       | 33                                   | 175                                      | 5 x 11,5       | ECR1VLL470M◊◊◊0511 |
|                                             | 56                                  | 2,85                                               | 0,300                             | 0,600                             | 0,12                       | 40                                   | 290                                      | 6,3 x 11,5     | ECR1VLL560M◊◊◊0611 |
|                                             | 82                                  | 1,95                                               | 0,200                             | 0,400                             | 0,12                       | 58                                   | 400                                      | 6,3 x 15       | ECR1VLL820M◊◊◊0615 |
|                                             | 100                                 | 1,60                                               | 0,200                             | 0,400                             | 0,12                       | 70                                   | 420                                      | 8 x 11,5       | ECR1VLL101M◊◊◊0811 |
|                                             | 120                                 | 1,33                                               | 0,170                             | 0,340                             | 0,12                       | 84                                   | 501                                      | 8 x 11,5       | ECR1VLL121M◊◊◊0811 |
|                                             | 150                                 | 1,07                                               | 0,120                             | 0,240                             | 0,12                       | 105                                  | 625                                      | 10 x 12,5      | ECR1VLL151M◊◊◊1012 |
|                                             | 180                                 | 0,885                                              | 0,130                             | 0,260                             | 0,12                       | 126                                  | 575                                      | 8 x 16         | ECR1VLL181M◊◊◊0816 |
|                                             |                                     | 0,885                                              | 0,095                             | 0,190                             | 0,12                       | 126                                  | 795                                      | 10 x 16        | ECR1VLL181M◊◊◊1016 |
|                                             | 220                                 | 0,724                                              | 0,130                             | 0,260                             | 0,12                       | 154                                  | 575                                      | 8 x 16         | ECR1VLL221M◊◊◊0816 |
|                                             |                                     | 0,724                                              | 0,095                             | 0,190                             | 0,12                       | 154                                  | 760                                      | 8 x 20         | ECR1VLL221M◊◊◊0820 |
|                                             | 330                                 | 0,483                                              | 0,095                             | 0,190                             | 0,12                       | 231                                  | 795                                      | 10 x 16        | ECR1VLL331M◊◊◊1016 |
|                                             |                                     | 0,483                                              | 0,065                             | 0,130                             | 0,12                       | 231                                  | 1010                                     | 10 x 20        | ECR1VLL331M◊◊◊1020 |
|                                             |                                     | 0,483                                              | 0,065                             | 0,130                             | 0,12                       | 231                                  | 1010                                     | 12,5 x 15      | ECR1VLL331M◊◊◊1215 |
|                                             | 390                                 | 0,408                                              | 0,055                             | 0,110                             | 0,12                       | 273                                  | 1190                                     | 10 x 25        | ECR1VLL391M◊◊◊1025 |
|                                             | 470                                 | 0,339                                              | 0,065                             | 0,130                             | 0,12                       | 329                                  | 1010                                     | 10 x 20        | ECR1VLL471M◊◊◊1020 |
|                                             | 560                                 | 0,284                                              | 0,045                             | 0,090                             | 0,12                       | 392                                  | 1450                                     | 10 x 30        | ECR1VLL561M◊◊◊1030 |
|                                             |                                     | 0,284                                              | 0,042                             | 0,084                             | 0,12                       | 392                                  | 1400                                     | 12,5 x 20      | ECR1VLL561M◊◊◊1220 |
|                                             |                                     | 0,284                                              | 0,046                             | 0,092                             | 0,12                       | 392                                  | 1360                                     | 16 x 15        | ECR1VLL561M◊◊◊1615 |
|                                             | 680                                 | 0,234                                              | 0,038                             | 0,076                             | 0,12                       | 476                                  | 1690                                     | 12,5 x 25      | ECR1VLL681M◊◊◊1225 |
|                                             |                                     | 0,234                                              | 0,043                             | 0,086                             | 0,12                       | 476                                  | 1520                                     | 18 x 15        | ECR1VLL681M◊◊◊1815 |
|                                             | 1 000                               | 0,159                                              | 0,042                             | 0,084                             | 0,12                       | 700                                  | 1500                                     | 12,5 x 20      | ECR1VLL102M◊◊◊1220 |
|                                             |                                     | 0,159                                              | 0,038                             | 0,076                             | 0,12                       | 700                                  | 1690                                     | 12,5 x 25      | ECR1VLL102M◊◊◊1225 |
|                                             |                                     | 0,159                                              | 0,032                             | 0,064                             | 0,12                       | 700                                  | 1950                                     | 12,5 x 30      | ECR1VLL102M◊◊◊1230 |
|                                             |                                     | 0,159                                              | 0,034                             | 0,068                             | 0,12                       | 700                                  | 1730                                     | 16 x 20        | ECR1VLL102M◊◊◊1620 |
|                                             | 1 200                               | 0,133                                              | 0,028                             | 0,056                             | 0,12                       | 840                                  | 2200                                     | 12,5 x 35      | ECR1VLL122M◊◊◊1235 |
|                                             |                                     | 0,133                                              | 0,028                             | 0,056                             | 0,12                       | 840                                  | 2070                                     | 16 x 25        | ECR1VLL122M◊◊◊1625 |
|                                             |                                     | 0,133                                              | 0,030                             | 0,060                             | 0,12                       | 840                                  | 1900                                     | 18 x 20        | ECR1VLL122M◊◊◊1820 |
|                                             | 1 500                               | 0,106                                              | 0,026                             | 0,052                             | 0,12                       | 1050                                 | 2390                                     | 12,5 x 40      | ECR1VLL152M◊◊◊1240 |
|                                             | 1 800                               | 0,088                                              | 0,025                             | 0,050                             | 0,12                       | 1260                                 | 2350                                     | 16 x 31,5      | ECR1VLL182M◊◊◊1631 |
|                                             |                                     | 0,088                                              | 0,027                             | 0,054                             | 0,12                       | 1260                                 | 2200                                     | 18 x 25        | ECR1VLL182M◊◊◊1825 |
|                                             | 2 200                               | 0,084                                              | 0,022                             | 0,044                             | 0,14                       | 1540                                 | 2550                                     | 16 x 35,5      | ECR1VLL222M◊◊◊1635 |
|                                             |                                     | 0,084                                              | 0,023                             | 0,046                             | 0,14                       | 1540                                 | 2490                                     | 18 x 31,5      | ECR1VLL222M◊◊◊1831 |
|                                             | 2 700                               | 0,069                                              | 0,020                             | 0,040                             | 0,14                       | 1890                                 | 2900                                     | 16 x 40        | ECR1VLL272M◊◊◊1640 |
|                                             |                                     | 0,069                                              | 0,020                             | 0,040                             | 0,14                       | 1890                                 | 2770                                     | 18 x 35,5      | ECR1VLL272M◊◊◊1835 |
|                                             | 3 300                               | 0,064                                              | 0,019                             | 0,038                             | 0,16                       | 2310                                 | 3110                                     | 18 x 40        | ECR1VLL332M◊◊◊1840 |
| 50<br>(63)<br>1H                            | 0,47                                | 283                                                | 3,90                              | 7,80                              | 0,10                       | 3                                    | 22                                       | 5 x 11,5       | ECR1HLLR47M◊◊◊0511 |
|                                             | 1,0                                 | 133                                                | 3,50                              | 7,00                              | 0,10                       | 3                                    | 36                                       | 5 x 11,5       | ECR1HLL010M◊◊◊0511 |
|                                             | 2,2                                 | 60,4                                               | 3,00                              | 6,00                              | 0,10                       | 3                                    | 54                                       | 5 x 11,5       | ECR1HLL2R2M◊◊◊0511 |
|                                             | 3,3                                 | 40,3                                               | 2,60                              | 5,20                              | 0,10                       | 4                                    | 63                                       | 5 x 11,5       | ECR1HLL3R3M◊◊◊0511 |
|                                             | 4,7                                 | 28,3                                               | 2,20                              | 4,40                              | 0,10                       | 5                                    | 75                                       | 5 x 11,5       | ECR1HLL4R7M◊◊◊0511 |
|                                             | 10                                  | 13,3                                               | 1,40                              | 2,80                              | 0,10                       | 10                                   | 110                                      | 5 x 11,5       | ECR1HLL100M◊◊◊0511 |
|                                             | 18                                  | 7,38                                               | 0,950                             | 1,90                              | 0,10                       | 18                                   | 120                                      | 5 x 11,5       | ECR1HLL180M◊◊◊0511 |
|                                             | 27                                  | 4,92                                               | 0,550                             | 1,10                              | 0,10                       | 27                                   | 135                                      | 5 x 15         | ECR1HLL270M◊◊◊0515 |
|                                             | 39                                  | 3,41                                               | 0,360                             | 0,720                             | 0,10                       | 39                                   | 148                                      | 6,3 x 11,5     | ECR1HLL390M◊◊◊0611 |
|                                             | 56                                  | 2,37                                               | 0,280                             | 0,560                             | 0,10                       | 56                                   | 153                                      | 6,3 x 15       | ECR1HLL560M◊◊◊0615 |
|                                             | 68                                  | 1,951                                              | 0,200                             | 0,400                             | 0,10                       | 68                                   | 360                                      | 8 x 11,5       | ECR1HLL680M◊◊◊0811 |
|                                             | 82                                  | 1,618                                              | 0,180                             | 0,360                             | 0,10                       | 82                                   | 460                                      | 8 x 16         | ECR1HLL820M◊◊◊0816 |
|                                             |                                     | 1,618                                              | 0,180                             | 0,360                             | 0,10                       | 82                                   | 443                                      | 10 x 12,5      | ECR1HLL820M◊◊◊1012 |
|                                             | 100                                 | 1,327                                              | 0,150                             | 0,300                             | 0,10                       | 100                                  | 553                                      | 10 x 16        | ECR1HLL101M◊◊◊1016 |
|                                             | 120                                 | 1,106                                              | 0,130                             | 0,260                             | 0,10                       | 120                                  | 670                                      | 8 x 20         | ECR1HLL121M◊◊◊0820 |
|                                             | 180                                 | 0,737                                              | 0,095                             | 0,190                             | 0,10                       | 180                                  | 676                                      | 10 x 20        | ECR1HLL181M◊◊◊1020 |
|                                             |                                     | 0,737                                              | 0,105                             | 0,210                             | 0,10                       | 180                                  | 745                                      | 12,5 x 15      | ECR1HLL181M◊◊◊1215 |
|                                             | 220                                 | 0,603                                              | 0,080                             | 0,160                             | 0,10                       | 220                                  | 876                                      | 10 x 25        | ECR1HLL221M◊◊◊1025 |

&gt;&gt;

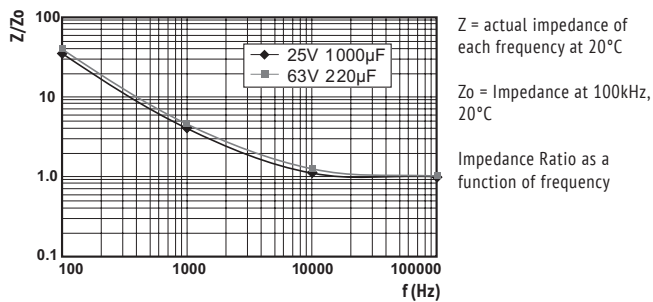
| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current       | Size<br>$\varnothing D \times L$ | ORDER CODE                                                            |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------------|----------------------------------|-----------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120kHz<br>( $\Omega$ )              | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120kHz                     | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA <sub>RMS</sub> ) | (mm)                             | ◇◇ = pin style & length<br>△△ = pitch code<br><b>Details: Page 33</b> |
| <b>50<br/>(63)<br/>1H</b>            | 330                        | 0,402                                       | 0,065                          | 0,130                           | 0,10                               | 330                           | 1010                                    | 10 x 30                          | ECR1HLL331M◇◇△△1030                                                   |
|                                      |                            | 0,402                                       | 0,070                          | 0,140                           | 0,10                               | 330                           | 979                                     | 12,5 x 20                        | ECR1HLL331M◇◇△△1220                                                   |
|                                      |                            | 0,402                                       | 0,075                          | 0,150                           | 0,10                               | 330                           | 982                                     | 16 x 15                          | ECR1HLL331M◇◇△△1615                                                   |
|                                      | 470                        | 0,282                                       | 0,054                          | 0,108                           | 0,10                               | 470                           | 1180                                    | 12,5 x 25                        | ECR1HLL471M◇◇△△1225                                                   |
|                                      |                            | 0,282                                       | 0,058                          | 0,116                           | 0,10                               | 470                           | 1180                                    | 18 x 15                          | ECR1HLL471M◇◇△△1815                                                   |
|                                      | 560                        | 0,237                                       | 0,050                          | 0,100                           | 0,10                               | 560                           | 1310                                    | 12,5 x 30                        | ECR1HLL561M◇◇△△1230                                                   |
|                                      | 680                        | 0,195                                       | 0,046                          | 0,092                           | 0,10                               | 680                           | 1470                                    | 12,5 x 35                        | ECR1HLL681M◇◇△△1235                                                   |
|                                      |                            | 0,195                                       | 0,050                          | 0,100                           | 0,10                               | 680                           | 1210                                    | 16 x 20                          | ECR1HLL681M◇◇△△1620                                                   |
|                                      | 820                        | 0,162                                       | 0,044                          | 0,088                           | 0,10                               | 820                           | 1590                                    | 12,5 x 40                        | ECR1HLL821M◇◇△△1240                                                   |
|                                      |                            | 0,162                                       | 0,048                          | 0,096                           | 0,10                               | 820                           | 1490                                    | 16 x 25                          | ECR1HLL821M◇◇△△1625                                                   |
|                                      |                            | 0,162                                       | 0,046                          | 0,092                           | 0,10                               | 820                           | 1450                                    | 18 x 20                          | ECR1HLL821M◇◇△△1820                                                   |
|                                      | 1 000                      | 0,133                                       | 0,040                          | 0,080                           | 0,10                               | 1000                          | 1890                                    | 16 x 31,5                        | ECR1HLL102M◇◇△△1631                                                   |
|                                      |                            | 0,133                                       | 0,040                          | 0,080                           | 0,10                               | 1000                          | 1720                                    | 18 x 25                          | ECR1HLL102M◇◇△△1825                                                   |
|                                      | 1 200                      | 0,111                                       | 0,032                          | 0,064                           | 0,10                               | 1200                          | 2140                                    | 16 x 35,5                        | ECR1HLL122M◇◇△△1635                                                   |
|                                      | 1 500                      | 0,088                                       | 0,026                          | 0,052                           | 0,10                               | 1500                          | 2410                                    | 16 x 40                          | ECR1HLL152M◇◇△△1640                                                   |
|                                      |                            | 0,088                                       | 0,026                          | 0,052                           | 0,10                               | 1500                          | 1970                                    | 18 x 31,5                        | ECR1HLL152M◇◇△△1831                                                   |
|                                      | 1 800                      | 0,074                                       | 0,025                          | 0,050                           | 0,10                               | 1800                          | 2310                                    | 18 x 35,5                        | ECR1HLL182M◇◇△△1835                                                   |
|                                      | 2 200                      | 0,072                                       | 0,024                          | 0,048                           | 0,12                               | 2200                          | 2530                                    | 18 x 40                          | ECR1HLL222M◇◇△△1840                                                   |

|                           |       |       |       |       |      |      |      |            |                     |
|---------------------------|-------|-------|-------|-------|------|------|------|------------|---------------------|
| <b>63<br/>(79)<br/>1J</b> | 12    | 9,952 | 1,20  | 3,60  | 0,09 | 16   | 120  | 5 x 11,5   | ECR1JLL120M◇◇△△0511 |
|                           | 18    | 6,635 | 0,850 | 2,60  | 0,09 | 23   | 135  | 5 x 15     | ECR1JLL180M◇◇△△0515 |
|                           | 27    | 4,423 | 0,550 | 1,70  | 0,09 | 34   | 148  | 6,3 x 11,5 | ECR1JLL270M◇◇△△0611 |
|                           | 39    | 3,062 | 0,380 | 1,10  | 0,09 | 50   | 153  | 6,3 x 15   | ECR1JLL390M◇◇△△0615 |
|                           | 47    | 2,541 | 0,320 | 0,960 | 0,09 | 60   | 360  | 8 x 11,5   | ECR1JLL470M◇◇△△0811 |
|                           | 56    | 2,133 | 0,230 | 0,690 | 0,09 | 71   | 448  | 10 x 12,5  | ECR1JLL560M◇◇△△1012 |
|                           | 68    | 1,756 | 0,240 | 0,720 | 0,09 | 86   | 469  | 8 x 16     | ECR1JLL680M◇◇△△0816 |
|                           |       | 1,756 | 0,170 | 0,510 | 0,09 | 86   | 553  | 10 x 16    | ECR1JLL680M◇◇△△1016 |
|                           | 82    | 1,456 | 0,170 | 0,510 | 0,09 | 104  | 682  | 8 x 20     | ECR1JLL820M◇◇△△0820 |
|                           | 120   | 0,995 | 0,120 | 0,360 | 0,09 | 152  | 676  | 10 x 20    | ECR1JLL121M◇◇△△1020 |
|                           | 150   | 0,796 | 0,100 | 0,300 | 0,09 | 189  | 876  | 10 x 25    | ECR1JLL151M◇◇△△1025 |
|                           |       | 0,796 | 0,110 | 0,330 | 0,09 | 189  | 745  | 12,5 x 15  | ECR1JLL151M◇◇△△1215 |
|                           | 180   | 0,663 | 0,085 | 0,260 | 0,09 | 227  | 1020 | 10 x 30    | ECR1JLL181M◇◇△△1030 |
|                           | 220   | 0,543 | 0,075 | 0,230 | 0,09 | 278  | 979  | 12,5 x 20  | ECR1JLL221M◇◇△△1220 |
|                           |       | 0,543 | 0,080 | 0,240 | 0,09 | 278  | 928  | 16 x 15    | ECR1JLL221M◇◇△△1615 |
|                           | 270   | 0,442 | 0,065 | 0,200 | 0,09 | 341  | 1180 | 12,5 x 25  | ECR1JLL271M◇◇△△1225 |
|                           | 330   | 0,362 | 0,065 | 0,200 | 0,09 | 416  | 1200 | 18 x 15    | ECR1JLL331M◇◇△△1815 |
|                           | 390   | 0,306 | 0,055 | 0,170 | 0,09 | 492  | 1310 | 12,5 x 30  | ECR1JLL391M◇◇△△1230 |
|                           |       | 0,306 | 0,057 | 0,170 | 0,09 | 492  | 1210 | 16 x 20    | ECR1JLL391M◇◇△△1620 |
|                           | 470   | 0,254 | 0,048 | 0,140 | 0,09 | 593  | 1470 | 12,5 x 35  | ECR1JLL471M◇◇△△1235 |
|                           |       | 0,254 | 0,052 | 0,160 | 0,09 | 593  | 1490 | 16 x 25    | ECR1JLL471M◇◇△△1625 |
|                           |       | 0,254 | 0,058 | 0,170 | 0,09 | 593  | 1460 | 18 x 20    | ECR1JLL471M◇◇△△1820 |
|                           | 560   | 0,213 | 0,042 | 0,130 | 0,09 | 706  | 1590 | 12,5 x 40  | ECR1JLL561M◇◇△△1240 |
|                           | 680   | 0,176 | 0,042 | 0,130 | 0,09 | 857  | 1890 | 16 x 31,5  | ECR1JLL681M◇◇△△1631 |
|                           |       | 0,176 | 0,050 | 0,150 | 0,09 | 857  | 1740 | 18 x 25    | ECR1JLL681M◇◇△△1825 |
|                           | 820   | 0,146 | 0,036 | 0,110 | 0,09 | 1034 | 2140 | 16 x 35,5  | ECR1JLL821M◇◇△△1635 |
|                           |       | 0,146 | 0,042 | 0,130 | 0,09 | 1034 | 1990 | 18 x 31,5  | ECR1JLL821M◇◇△△1831 |
|                           | 1 000 | 0,119 | 0,032 | 0,096 | 0,09 | 1260 | 2410 | 16 x 40    | ECR1JLL102M◇◇△△1640 |
|                           |       | 0,119 | 0,035 | 0,110 | 0,09 | 1260 | 2340 | 18 x 35,5  | ECR1JLL102M◇◇△△1835 |
|                           | 1 200 | 0,100 | 0,032 | 0,096 | 0,09 | 1512 | 2560 | 18 x 40    | ECR1JLL122M◇◇△△1840 |

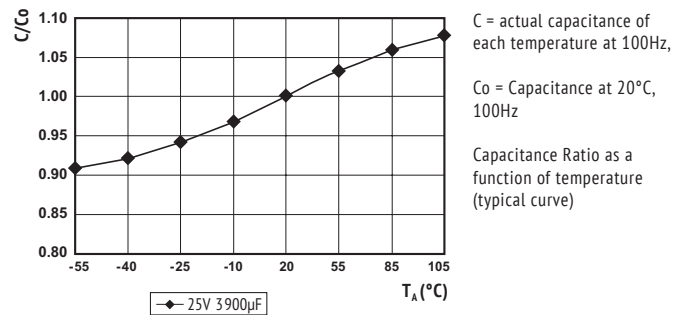
|                             |     |       |       |       |      |     |      |            |                     |
|-----------------------------|-----|-------|-------|-------|------|-----|------|------------|---------------------|
| <b>100<br/>(125)<br/>2A</b> | 5,6 | 19,0  | 1,90  | 7,60  | 0,08 | 12  | 57   | 5 x 11,5   | ECR2ALL5R6M◇◇△△0511 |
|                             | 8,2 | 13,0  | 1,30  | 5,20  | 0,08 | 17  | 74   | 5 x 15     | ECR2ALL8R2M◇◇△△0515 |
|                             | 12  | 8,85  | 1,10  | 4,40  | 0,08 | 24  | 78   | 6,3 x 11,5 | ECR2ALL120M◇◇△△0611 |
|                             | 18  | 5,90  | 0,620 | 2,50  | 0,08 | 36  | 85   | 6,3 x 15   | ECR2ALL180M◇◇△△0615 |
|                             | 22  | 4,83  | 0,530 | 2,10  | 0,08 | 44  | 275  | 8 x 11,5   | ECR2ALL220M◇◇△△0811 |
|                             | 27  | 3,94  | 0,470 | 1,90  | 0,08 | 54  | 319  | 10 x 12,5  | ECR2ALL270M◇◇△△1012 |
|                             | 33  | 3,22  | 0,350 | 1,40  | 0,08 | 66  | 360  | 8 x 16     | ECR2ALL330M◇◇△△0816 |
|                             |     | 3,22  | 0,320 | 1,30  | 0,08 | 66  | 424  | 10 x 16    | ECR2ALL330M◇◇△△1016 |
|                             | 39  | 2,73  | 0,270 | 1,10  | 0,08 | 78  | 490  | 8 x 20     | ECR2ALL390M◇◇△△0820 |
|                             | 56  | 1,90  | 0,250 | 1,00  | 0,08 | 112 | 499  | 10 x 20    | ECR2ALL560M◇◇△△1020 |
|                             | 68  | 1,57  | 0,180 | 0,720 | 0,08 | 136 | 634  | 10 x 25    | ECR2ALL680M◇◇△△1025 |
|                             |     | 1,57  | 0,200 | 0,800 | 0,08 | 136 | 613  | 12,5 x 15  | ECR2ALL680M◇◇△△1215 |
|                             | 100 | 1,07  | 0,150 | 0,600 | 0,08 | 200 | 739  | 10 x 30    | ECR2ALL101M◇◇△△1030 |
|                             |     | 1,07  | 0,130 | 0,520 | 0,08 | 200 | 805  | 12,5 x 20  | ECR2ALL101M◇◇△△1220 |
|                             | 120 | 0,885 | 0,110 | 0,440 | 0,08 | 240 | 857  | 12,5 x 25  | ECR2ALL121M◇◇△△1225 |
|                             |     | 0,885 | 0,130 | 0,500 | 0,08 | 240 | 706  | 16 x 15    | ECR2ALL121M◇◇△△1615 |
|                             | 150 | 0,708 | 0,120 | 0,480 | 0,08 | 300 | 871  | 18 x 15    | ECR2ALL151M◇◇△△1815 |
|                             | 180 | 0,590 | 0,090 | 0,360 | 0,08 | 360 | 1120 | 12,5 x 30  | ECR2ALL181M◇◇△△1230 |
|                             |     | 0,590 | 0,110 | 0,440 | 0,08 | 360 | 916  | 16 x 20    | ECR2ALL181M◇◇△△1620 |

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current       | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pitch code<br><br>Details: Page 33 |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------------|----------------------------------|--------------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120Hz<br>( $\Omega$ )               | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120Hz                      | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA <sub>RMS</sub> ) | (mm)                             |                                                                                      |
| 100<br>(125)<br>2A                   | 220                        | 0,483                                       | 0,075                          | 0,300                           | 0,08                               | 440                           | 1240                                    | 12,5 x 35                        | ECR2ALL221M◇◇△△1235                                                                  |
|                                      |                            | 0,483                                       | 0,081                          | 0,320                           | 0,08                               | 440                           | 1290                                    | 16 x 25                          | ECR2ALL221M◇◇△△1625                                                                  |
|                                      | 270                        | 0,393                                       | 0,060                          | 0,240                           | 0,08                               | 540                           | 1330                                    | 12,5 x 40                        | ECR2ALL271M◇◇△△1240                                                                  |
|                                      |                            | 0,393                                       | 0,085                          | 0,340                           | 0,08                               | 540                           | 1170                                    | 18 x 20                          | ECR2ALL271M◇◇△△1820                                                                  |
|                                      | 330                        | 0,322                                       | 0,059                          | 0,230                           | 0,08                               | 660                           | 1630                                    | 16 x 31,5                        | ECR2ALL331M◇◇△△1631                                                                  |
|                                      |                            | 0,322                                       | 0,071                          | 0,280                           | 0,08                               | 660                           | 1500                                    | 18 x 25                          | ECR2ALL331M◇◇△△1825                                                                  |
|                                      | 390                        | 0,272                                       | 0,052                          | 0,210                           | 0,08                               | 780                           | 1750                                    | 16 x 35,5                        | ECR2ALL391M◇◇△△1635                                                                  |
|                                      |                            | 0,272                                       | 0,058                          | 0,230                           | 0,08                               | 780                           | 1630                                    | 18 x 31,5                        | ECR2ALL391M◇◇△△1831                                                                  |
|                                      | 470                        | 0,226                                       | 0,045                          | 0,180                           | 0,08                               | 940                           | 1920                                    | 16 x 40                          | ECR2ALL471M◇◇△△1640                                                                  |
|                                      | 560                        | 0,190                                       | 0,054                          | 0,220                           | 0,08                               | 1120                          | 1920                                    | 18 x 35,5                        | ECR2ALL561M◇◇△△1835                                                                  |
|                                      | 680                        | 0,156                                       | 0,041                          | 0,160                           | 0,08                               | 1360                          | 2100                                    | 18 x 40                          | ECR2ALL681M◇◇△△1840                                                                  |

## IMPEDANCE RATIO

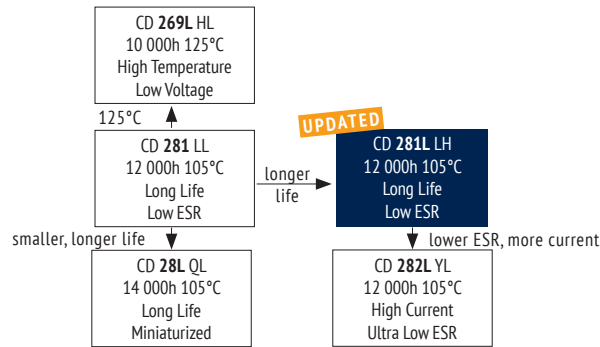


## CAPACITANCE RATIO



6 000 - 12 000h  
at 105°C

- Low impedance
- Switching Power Supplies
- Excellent ripple current capability
- High reliability at high temperature



## ITEM CHARACTERISTICS

|                                     |               |
|-------------------------------------|---------------|
| Operating Temperature Range (°C)    | -55 ~ +105    |
| Voltage Range (V)                   | 6,3 ~ 100     |
| Capacitance Range (μF)              | 0,47 ~ 15 000 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%         |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current (μA) After 2 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

|                                                         |                                                     |           |
|---------------------------------------------------------|-----------------------------------------------------|-----------|
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)                                   | 6,3 ~ 100 |
|                                                         | $Z_{-55^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 3         |

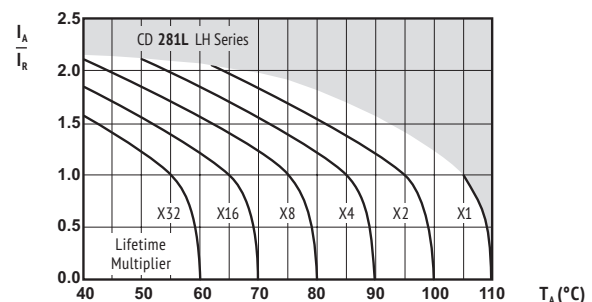
| ITEM                                                                    | USEFUL LIFE                           |                             |                             | LOAD LIFE                             |                            | ENDURANCE TEST                           |                            | SHELF LIFE                                                                   |        |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------|-----------------------------|---------------------------------------|----------------------------|------------------------------------------|----------------------------|------------------------------------------------------------------------------|--------|
|                                                                         |                                       | 6,3~10V:                    | 16~100V:                    |                                       | 6,3~10V: 16~100V:          | 6,3~10V: 16~100V:                        |                            |                                                                              |        |
| Lifetime                                                                | Ø 5-6,3:<br>Ø 8-10:<br>Ø 12,5-18:     | 6 000h<br>8 000h<br>10 000h | 7 000h<br>9 000h<br>12 000h | > 200 000h                            | 4 000h<br>6 000h<br>8 000h | 5 000h<br>7 000h<br>10 000h              | 4 000h<br>6 000h<br>8 000h | 5 000h<br>7 000h<br>10 000h                                                  | 1 000h |
| Leakage Current                                                         | Not more than specified value         |                             |                             | Not more than specified value         |                            | Not more than specified value            |                            | Not more than specified value                                                |        |
| Capacitance Change                                                      | Within ± 40% of initial value         |                             |                             | Within ± 25% of initial value         |                            | Within ± 25% of initial value            |                            | Within ± 20% of initial value                                                |        |
| Dissipation Factor                                                      | Not more than 300% of specified value |                             |                             | Not more than 200% of specified value |                            | Not more than 200% of specified value    |                            | Not more than 200% of specified value                                        |        |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               |                             |                             | $U_R$<br>$I_R$<br>105°C               |                            | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 |                            | $U_R = 0$<br>$I_R = 0$<br>105°C                                              |        |
|                                                                         | $1,4 \times I_R$<br>40°C              |                             |                             |                                       |                            |                                          |                            | After test:<br>$U_R$ to be applied for<br>30 min > 24h before<br>measurement |        |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Capacitance (μF) \ Frequency | 120Hz | 1kHz | 10kHz | 100kHz |
|------------------------------|-------|------|-------|--------|
| 0,47 ~ 4,7                   | 0,40  | 0,68 | 0,78  | 1,00   |
| 5,6 ~ 47                     | 0,50  | 0,76 | 0,87  | 1,00   |
| 56 ~ 270                     | 0,70  | 0,85 | 0,93  | 1,00   |
| 330 ~ 1 000                  | 0,80  | 0,93 | 0,98  | 1,00   |
| 1 200 ~ 15 000               | 0,90  | 0,95 | 1,00  | 1,00   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance | Z <sub>max</sub><br>Max Impedance | Z <sub>max</sub><br>Max Impedance | tanδ<br>Dissipation Factor | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current | Size<br>øD x L | ORDER CODE          |
|---------------------------------------------|-------------------------------------|----------------------------------------------------|-----------------------------------|-----------------------------------|----------------------------|--------------------------------------|------------------------------------------|----------------|---------------------|
| (V)                                         | (µF)                                | 20°C<br>120Hz<br>(Ω)                               | 20°C<br>100kHz<br>(Ω)             | -10°C<br>100kHz<br>(Ω)            | 20°C<br>120Hz              | (µA)                                 | 105°C<br>100kHz<br>(mArms)               | (mm)           | Details: Page 33    |
| 6,3<br>(7,9)<br>0J                          | 100                                 | 2,92                                               | 0,65                              | 1,3                               | 0,22                       | 13                                   | 175                                      | 5 x 11,5       | ECR0JLH101M00000511 |
|                                             | 150                                 | 1,95                                               | 0,46                              | 0,92                              | 0,22                       | 19                                   | 235                                      | 5 x 15         | ECR0JLH151M00000515 |
|                                             | 220                                 | 1,33                                               | 0,30                              | 0,60                              | 0,22                       | 28                                   | 290                                      | 6,3 x 11,5     | ECR0JLH221M00000611 |
|                                             | 330                                 | 0,885                                              | 0,30                              | 0,60                              | 0,22                       | 42                                   | 290                                      | 6,3 x 11,5     | ECR0JLH331M00000611 |
|                                             |                                     | 0,885                                              | 0,30                              | 0,60                              | 0,22                       | 42                                   | 400                                      | 6,3 x 15       | ECR0JLH331M00000615 |
|                                             | 470                                 | 0,621                                              | 0,17                              | 0,34                              | 0,22                       | 60                                   | 488                                      | 8 x 11,5       | ECR0JLH471M00000811 |
|                                             | 680                                 | 0,429                                              | 0,13                              | 0,26                              | 0,22                       | 86                                   | 617                                      | 8 x 16         | ECR0JLH681M00000816 |
|                                             |                                     | 0,429                                              | 0,12                              | 0,24                              | 0,22                       | 86                                   | 613                                      | 10 x 12,5      | ECR0JLH681M00001012 |
|                                             | 820                                 | 0,356                                              | 0,095                             | 0,19                              | 0,22                       | 104                                  | 734                                      | 10 x 16        | ECR0JLH821M00001016 |
|                                             | 1 000                               | 0,292                                              | 0,095                             | 0,19                              | 0,22                       | 126                                  | 800                                      | 8 x 20         | ECR0JLH102M00000820 |
|                                             | 1 200                               | 0,243                                              | 0,065                             | 0,13                              | 0,22                       | 152                                  | 1010                                     | 10 x 20        | ECR0JLH122M00001020 |
|                                             |                                     | 0,243                                              | 0,065                             | 0,13                              | 0,22                       | 152                                  | 1010                                     | 12,5 x 15      | ECR0JLH122M00001215 |
|                                             | 1 500                               | 0,195                                              | 0,055                             | 0,11                              | 0,22                       | 189                                  | 1190                                     | 10 x 25        | ECR0JLH152M00001025 |
|                                             | 2 200                               | 0,145                                              | 0,045                             | 0,09                              | 0,24                       | 278                                  | 1440                                     | 10 x 30        | ECR0JLH222M00001030 |
|                                             |                                     | 0,145                                              | 0,042                             | 0,084                             | 0,24                       | 278                                  | 1400                                     | 12,5 x 20      | ECR0JLH222M00001220 |
|                                             | 2 700                               | 0,118                                              | 0,038                             | 0,076                             | 0,24                       | 341                                  | 1690                                     | 12,5 x 25      | ECR0JLH272M00001225 |
|                                             |                                     | 0,118                                              | 0,046                             | 0,092                             | 0,24                       | 341                                  | 1310                                     | 16 x 15        | ECR0JLH272M00001615 |
|                                             | 3 300                               | 0,105                                              | 0,043                             | 0,086                             | 0,26                       | 416                                  | 1460                                     | 18 x 15        | ECR0JLH332M00001815 |
|                                             | 3 900                               | 0,088                                              | 0,032                             | 0,064                             | 0,26                       | 492                                  | 1950                                     | 12,5 x 30      | ECR0JLH392M00001230 |
|                                             | 4 700                               | 0,079                                              | 0,028                             | 0,056                             | 0,28                       | 593                                  | 2220                                     | 12,5 x 35      | ECR0JLH472M00001235 |
|                                             |                                     | 0,079                                              | 0,034                             | 0,068                             | 0,28                       | 593                                  | 1660                                     | 16 x 20        | ECR0JLH472M00001620 |
|                                             | 5 600                               | 0,071                                              | 0,026                             | 0,052                             | 0,30                       | 706                                  | 2390                                     | 12,5 x 40      | ECR0JLH562M00001240 |
|                                             |                                     | 0,071                                              | 0,028                             | 0,056                             | 0,30                       | 706                                  | 2070                                     | 16 x 25        | ECR0JLH562M00001625 |
|                                             |                                     | 0,071                                              | 0,030                             | 0,060                             | 0,30                       | 706                                  | 1850                                     | 18 x 20        | ECR0JLH562M00001820 |
|                                             | 6 800                               | 0,062                                              | 0,025                             | 0,050                             | 0,32                       | 857                                  | 2350                                     | 16 x 31,5      | ECR0JLH682M00001631 |
|                                             |                                     | 0,062                                              | 0,027                             | 0,054                             | 0,32                       | 857                                  | 2120                                     | 18 x 25        | ECR0JLH682M00001825 |
|                                             | 8 200                               | 0,058                                              | 0,022                             | 0,044                             | 0,36                       | 1034                                 | 2550                                     | 16 x 35,5      | ECR0JLH822M00001635 |
|                                             | 10 000                              | 0,053                                              | 0,023                             | 0,046                             | 0,40                       | 1260                                 | 2410                                     | 18 x 31,5      | ECR0JLH103M00001831 |
|                                             | 12 000                              | 0,049                                              | 0,020                             | 0,040                             | 0,44                       | 1512                                 | 2970                                     | 16 x 40        | ECR0JLH123M00001640 |
|                                             |                                     | 0,049                                              | 0,020                             | 0,040                             | 0,44                       | 1512                                 | 2680                                     | 18 x 35,5      | ECR0JLH123M00001835 |
|                                             | 15 000                              | 0,044                                              | 0,019                             | 0,038                             | 0,50                       | 1890                                 | 3010                                     | 18 x 40        | ECR0JLH153M00001840 |
| 10<br>(13)<br>1A                            | 82                                  | 3,08                                               | 0,65                              | 1,3                               | 0,19                       | 17                                   | 175                                      | 5 x 11,5       | ECR1ALH820M00000511 |
|                                             | 100                                 | 2,53                                               | 0,46                              | 0,92                              | 0,19                       | 20                                   | 235                                      | 5 x 15         | ECR1ALH101M00000515 |
|                                             | 180                                 | 1,41                                               | 0,30                              | 0,60                              | 0,19                       | 36                                   | 290                                      | 6,3 x 11,5     | ECR1ALH181M00000611 |
|                                             | 220                                 | 1,15                                               | 0,30                              | 0,60                              | 0,19                       | 44                                   | 290                                      | 6,3 x 11,5     | ECR1ALH221M00000611 |
|                                             |                                     | 1,15                                               | 0,20                              | 0,40                              | 0,19                       | 44                                   | 400                                      | 6,3 x 15       | ECR1ALH221M00000615 |
|                                             | 330                                 | 0,764                                              | 0,17                              | 0,34                              | 0,19                       | 66                                   | 488                                      | 8 x 11,5       | ECR1ALH331M00000811 |
|                                             | 470                                 | 0,536                                              | 0,17                              | 0,34                              | 0,19                       | 94                                   | 488                                      | 8 x 11,5       | ECR1ALH471M00000811 |
|                                             |                                     | 0,536                                              | 0,13                              | 0,26                              | 0,19                       | 94                                   | 617                                      | 8 x 16         | ECR1ALH471M00000816 |
|                                             |                                     | 0,536                                              | 0,12                              | 0,24                              | 0,19                       | 94                                   | 613                                      | 10 x 12,5      | ECR1ALH471M00001012 |
|                                             | 560                                 | 0,450                                              | 0,095                             | 0,19                              | 0,19                       | 112                                  | 734                                      | 10 x 16        | ECR1ALH561M00001016 |
|                                             | 680                                 | 0,374                                              | 0,095                             | 0,19                              | 0,19                       | 136                                  | 800                                      | 8 x 20         | ECR1ALH681M00000820 |
|                                             | 1 000                               | 0,252                                              | 0,095                             | 0,19                              | 0,19                       | 200                                  | 734                                      | 10 x 16        | ECR1ALH102M00001016 |
|                                             |                                     | 0,252                                              | 0,065                             | 0,13                              | 0,19                       | 200                                  | 1010                                     | 10 x 20        | ECR1ALH102M00001020 |
|                                             |                                     | 0,252                                              | 0,065                             | 0,13                              | 0,19                       | 200                                  | 1010                                     | 12,5 x 15      | ECR1ALH102M00001215 |
|                                             | 1 200                               | 0,210                                              | 0,055                             | 0,11                              | 0,19                       | 240                                  | 1190                                     | 10 x 25        | ECR1ALH122M00001025 |
|                                             | 1 500                               | 0,168                                              | 0,045                             | 0,090                             | 0,19                       | 300                                  | 1440                                     | 10 x 30        | ECR1ALH152M00001030 |
|                                             | 1 800                               | 0,140                                              | 0,042                             | 0,084                             | 0,19                       | 360                                  | 1400                                     | 12,5 x 20      | ECR1ALH182M00001220 |
|                                             |                                     | 0,140                                              | 0,046                             | 0,092                             | 0,19                       | 360                                  | 1310                                     | 16 x 15        | ECR1ALH182M00001615 |
|                                             | 2 200                               | 0,127                                              | 0,042                             | 0,084                             | 0,21                       | 440                                  | 1400                                     | 12,5 x 20      | ECR1ALH222M00001220 |
|                                             |                                     | 0,127                                              | 0,038                             | 0,076                             | 0,21                       | 440                                  | 1690                                     | 12,5 x 25      | ECR1ALH222M00001225 |
|                                             |                                     | 0,127                                              | 0,043                             | 0,086                             | 0,21                       | 440                                  | 1460                                     | 18 x 15        | ECR1ALH222M00001815 |
|                                             | 2 700                               | 0,103                                              | 0,032                             | 0,064                             | 0,21                       | 540                                  | 1950                                     | 12,5 x 30      | ECR1ALH272M00001230 |
|                                             | 3 300                               | 0,092                                              | 0,028                             | 0,056                             | 0,23                       | 660                                  | 2220                                     | 12,5 x 35      | ECR1ALH332M00001235 |
|                                             |                                     | 0,092                                              | 0,034                             | 0,068                             | 0,23                       | 660                                  | 1660                                     | 16 x 20        | ECR1ALH332M00001620 |
|                                             | 3 900                               | 0,078                                              | 0,026                             | 0,052                             | 0,23                       | 780                                  | 2390                                     | 12,5 x 40      | ECR1ALH392M00001240 |
|                                             |                                     | 0,078                                              | 0,028                             | 0,056                             | 0,23                       | 780                                  | 2070                                     | 16 x 25        | ECR1ALH392M00001625 |
|                                             |                                     | 0,078                                              | 0,030                             | 0,060                             | 0,23                       | 780                                  | 1850                                     | 18 x 20        | ECR1ALH392M00001820 |
|                                             | 47 00                               | 0,071                                              | 0,028                             | 0,056                             | 0,25                       | 940                                  | 2070                                     | 16 x 25        | ECR1ALH472M00001625 |
|                                             |                                     | 0,071                                              | 0,027                             | 0,054                             | 0,25                       | 940                                  | 2120                                     | 18 x 25        | ECR1ALH472M00001825 |
|                                             | 5 600                               | 0,064                                              | 0,025                             | 0,050                             | 0,27                       | 1120                                 | 2350                                     | 16 x 31,5      | ECR1ALH562M00001631 |
|                                             | 6 800                               | 0,057                                              | 0,022                             | 0,044                             | 0,29                       | 1360                                 | 2550                                     | 16 x 35,5      | ECR1ALH682M00001635 |
|                                             |                                     | 0,057                                              | 0,023                             | 0,046                             | 0,29                       | 1360                                 | 2410                                     | 18 x 31,5      | ECR1ALH682M00001831 |
|                                             | 8 200                               | 0,053                                              | 0,020                             | 0,040                             | 0,33                       | 1640                                 | 2970                                     | 16 x 40        | ECR1ALH822M00001640 |
|                                             |                                     | 0,053                                              | 0,020                             | 0,040                             | 0,33                       | 1640                                 | 2680                                     | 18 x 35,5      | ECR1ALH822M00001835 |
|                                             | 10 000                              | 0,049                                              | 0,019                             | 0,038                             | 0,37                       | 2000                                 | 3010                                     | 18 x 40        | ECR1ALH103M00001840 |

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current | Size<br>$\varnothing D \times L$ | ORDER CODE                                                                                                                                                   |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120kHz<br>( $\Omega$ )              | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120kHz                     | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA rms)       | (mm)                             | <div> <div><math>\diamond\diamond</math> = pin style &amp; length</div> <div><math>\Delta\Delta</math> = pitch code</div> </div> <div>Details: Page 33</div> |
| <b>16<br/>(20)<br/>1C</b>            | 47                         | 4,52                                        | 0,65                           | 1,3                             | 0,16                               | 15                            | 140                               | 5 x 11,5                         | ECR1CLH470M $\diamond\diamond\Delta\Delta$ 0511                                                                                                              |
|                                      | 56                         | 3,80                                        | 0,65                           | 1,3                             | 0,16                               | 18                            | 175                               | 5 x 11,5                         | ECR1CLH560M $\diamond\diamond\Delta\Delta$ 0511                                                                                                              |
|                                      | 82                         | 2,59                                        | 0,46                           | 0,92                            | 0,16                               | 27                            | 235                               | 5 x 15                           | ECR1CLH820M $\diamond\diamond\Delta\Delta$ 0515                                                                                                              |
|                                      | 100                        | 2,13                                        | 0,65                           | 1,3                             | 0,16                               | 32                            | 175                               | 5 x 11,5                         | ECR1CLH101M $\diamond\diamond\Delta\Delta$ 0511                                                                                                              |
|                                      | 120                        | 1,77                                        | 0,30                           | 0,60                            | 0,16                               | 39                            | 290                               | 6,3 x 11,5                       | ECR1CLH121M $\diamond\diamond\Delta\Delta$ 0611                                                                                                              |
|                                      | 180                        | 1,18                                        | 0,20                           | 0,40                            | 0,16                               | 58                            | 400                               | 6,3 x 15                         | ECR1CLH181M $\diamond\diamond\Delta\Delta$ 0615                                                                                                              |
|                                      | 220                        | 1,16                                        | 0,30                           | 0,60                            | 0,16                               | 71                            | 290                               | 6,3 x 11,5                       | ECR1CLH221M $\diamond\diamond\Delta\Delta$ 0611                                                                                                              |
|                                      |                            | 1,16                                        | 0,28                           | 0,56                            | 0,16                               | 71                            | 380                               | 8 x 11,5                         | ECR1CLH221M $\diamond\diamond\Delta\Delta$ 0811                                                                                                              |
|                                      | 270                        | 0,786                                       | 0,17                           | 0,34                            | 0,16                               | 87                            | 501                               | 8 x 11,5                         | ECR1CLH271M $\diamond\diamond\Delta\Delta$ 0811                                                                                                              |
|                                      | 330                        | 0,772                                       | 0,17                           | 0,34                            | 0,16                               | 106                           | 501                               | 8 x 11,5                         | ECR1CLH331M $\diamond\diamond\Delta\Delta$ 0811                                                                                                              |
|                                      |                            | 0,643                                       | 0,13                           | 0,26                            | 0,16                               | 106                           | 575                               | 8 x 16                           | ECR1CLH331M $\diamond\diamond\Delta\Delta$ 0816                                                                                                              |
|                                      |                            | 0,643                                       | 0,12                           | 0,24                            | 0,16                               | 106                           | 625                               | 10 x 12,5                        | ECR1CLH331M $\diamond\diamond\Delta\Delta$ 1012                                                                                                              |
|                                      | 390                        | 0,544                                       | 0,095                          | 0,19                            | 0,16                               | 125                           | 795                               | 10 x 16                          | ECR1CLH391M $\diamond\diamond\Delta\Delta$ 1016                                                                                                              |
|                                      | 470                        | 0,452                                       | 0,13                           | 0,26                            | 0,16                               | 151                           | 575                               | 8 x 16                           | ECR1CLH471M $\diamond\diamond\Delta\Delta$ 0816                                                                                                              |
|                                      |                            | 0,452                                       | 0,095                          | 0,19                            | 0,16                               | 151                           | 760                               | 8 x 20                           | ECR1CLH471M $\diamond\diamond\Delta\Delta$ 0820                                                                                                              |
|                                      | 680                        | 0,312                                       | 0,065                          | 0,13                            | 0,16                               | 218                           | 1010                              | 10 x 20                          | ECR1CLH681M $\diamond\diamond\Delta\Delta$ 1020                                                                                                              |
|                                      |                            | 0,312                                       | 0,065                          | 0,13                            | 0,16                               | 218                           | 1010                              | 12,5 x 15                        | ECR1CLH681M $\diamond\diamond\Delta\Delta$ 1215                                                                                                              |
|                                      | 820                        | 0,259                                       | 0,055                          | 0,11                            | 0,16                               | 263                           | 1190                              | 10 x 25                          | ECR1CLH821M $\diamond\diamond\Delta\Delta$ 1025                                                                                                              |
|                                      | 1 000                      | 0,212                                       | 0,065                          | 0,13                            | 0,16                               | 320                           | 1010                              | 10 x 20                          | ECR1CLH102M $\diamond\diamond\Delta\Delta$ 1020                                                                                                              |
|                                      | 1 200                      | 0,177                                       | 0,045                          | 0,090                           | 0,16                               | 384                           | 1430                              | 10 x 30                          | ECR1CLH122M $\diamond\diamond\Delta\Delta$ 1030                                                                                                              |
|                                      |                            | 0,177                                       | 0,042                          | 0,084                           | 0,16                               | 384                           | 1400                              | 12,5 x 20                        | ECR1CLH122M $\diamond\diamond\Delta\Delta$ 1220                                                                                                              |
|                                      |                            | 0,142                                       | 0,038                          | 0,076                           | 0,16                               | 480                           | 1690                              | 12,5 x 25                        | ECR1CLH152M $\diamond\diamond\Delta\Delta$ 1225                                                                                                              |
|                                      | 1 500                      | 0,142                                       | 0,046                          | 0,092                           | 0,16                               | 480                           | 1340                              | 16 x 15                          | ECR1CLH152M $\diamond\diamond\Delta\Delta$ 1615                                                                                                              |
|                                      |                            | 0,142                                       | 0,043                          | 0,086                           | 0,16                               | 480                           | 1490                              | 18 x 15                          | ECR1CLH152M $\diamond\diamond\Delta\Delta$ 1815                                                                                                              |
|                                      |                            | 0,109                                       | 0,038                          | 0,064                           | 0,18                               | 704                           | 1690                              | 12,5 x 25                        | ECR1CLH222M $\diamond\diamond\Delta\Delta$ 1225                                                                                                              |
|                                      |                            | 0,109                                       | 0,032                          | 0,064                           | 0,18                               | 704                           | 1950                              | 12,5 x 30                        | ECR1CLH222M $\diamond\diamond\Delta\Delta$ 1230                                                                                                              |
|                                      | 2 200                      | 0,109                                       | 0,034                          | 0,068                           | 0,18                               | 704                           | 1730                              | 16 x 20                          | ECR1CLH222M $\diamond\diamond\Delta\Delta$ 1620                                                                                                              |
|                                      |                            | 0,088                                       | 0,028                          | 0,056                           | 0,18                               | 864                           | 2200                              | 12,5 x 35                        | ECR1CLH272M $\diamond\diamond\Delta\Delta$ 1235                                                                                                              |
|                                      |                            | 0,088                                       | 0,028                          | 0,056                           | 0,18                               | 864                           | 2070                              | 16 x 25                          | ECR1CLH272M $\diamond\diamond\Delta\Delta$ 1625                                                                                                              |
|                                      |                            | 0,088                                       | 0,030                          | 0,060                           | 0,18                               | 864                           | 1870                              | 18 x 20                          | ECR1CLH272M $\diamond\diamond\Delta\Delta$ 1820                                                                                                              |
|                                      | 3 300                      | 0,080                                       | 0,026                          | 0,052                           | 0,20                               | 1056                          | 2390                              | 12,5 x 40                        | ECR1CLH332M $\diamond\diamond\Delta\Delta$ 1240                                                                                                              |
|                                      | 3 900                      | 0,068                                       | 0,025                          | 0,050                           | 0,20                               | 1248                          | 2350                              | 16 x 31,5                        | ECR1CLH392M $\diamond\diamond\Delta\Delta$ 1631                                                                                                              |
|                                      |                            | 0,068                                       | 0,027                          | 0,054                           | 0,20                               | 1248                          | 2160                              | 18 x 25                          | ECR1CLH392M $\diamond\diamond\Delta\Delta$ 1825                                                                                                              |
|                                      | 4 700                      | 0,062                                       | 0,022                          | 0,044                           | 0,22                               | 1504                          | 2550                              | 16 x 35,5                        | ECR1CLH472M $\diamond\diamond\Delta\Delta$ 1635                                                                                                              |
|                                      |                            | 0,062                                       | 0,023                          | 0,046                           | 0,22                               | 1504                          | 2450                              | 18 x 31,5                        | ECR1CLH472M $\diamond\diamond\Delta\Delta$ 1831                                                                                                              |
|                                      | 5 600                      | 0,057                                       | 0,020                          | 0,040                           | 0,24                               | 1792                          | 2900                              | 16 x 40                          | ECR1CLH562M $\diamond\diamond\Delta\Delta$ 1640                                                                                                              |
|                                      | 6 800                      | 0,051                                       | 0,020                          | 0,040                           | 0,26                               | 2176                          | 2730                              | 18 x 35,5                        | ECR1CLH682M $\diamond\diamond\Delta\Delta$ 1835                                                                                                              |
|                                      | 8 200                      | 0,049                                       | 0,019                          | 0,038                           | 0,30                               | 2624                          | 3060                              | 18 x 40                          | ECR1CLH822M $\diamond\diamond\Delta\Delta$ 1840                                                                                                              |
| <b>25<br/>(32)<br/>1E</b>            | 39                         | 4,77                                        | 0,65                           | 1,3                             | 0,14                               | 20                            | 175                               | 5 x 11,5                         | ECR1ELH390M $\diamond\diamond\Delta\Delta$ 0511                                                                                                              |
|                                      | 47                         | 3,96                                        | 0,65                           | 1,3                             | 0,14                               | 24                            | 175                               | 5 x 11,5                         | ECR1ELH470M $\diamond\diamond\Delta\Delta$ 0511                                                                                                              |
|                                      | 56                         | 3,32                                        | 0,46                           | 0,92                            | 0,14                               | 28                            | 235                               | 5 x 15                           | ECR1ELH560M $\diamond\diamond\Delta\Delta$ 0515                                                                                                              |
|                                      | 82                         | 2,27                                        | 0,30                           | 0,60                            | 0,14                               | 41                            | 290                               | 6,3 x 11,5                       | ECR1ELH820M $\diamond\diamond\Delta\Delta$ 0611                                                                                                              |
|                                      | 100                        | 1,86                                        | 0,30                           | 0,60                            | 0,14                               | 50                            | 290                               | 6,3 x 11,5                       | ECR1ELH101M $\diamond\diamond\Delta\Delta$ 0611                                                                                                              |
|                                      | 120                        | 1,55                                        | 0,20                           | 0,40                            | 0,14                               | 60                            | 400                               | 6,3 x 15                         | ECR1ELH121M $\diamond\diamond\Delta\Delta$ 0615                                                                                                              |
|                                      | 180                        | 1,04                                        | 0,17                           | 0,34                            | 0,14                               | 90                            | 503                               | 8 x 11,5                         | ECR1ELH181M $\diamond\diamond\Delta\Delta$ 0811                                                                                                              |
|                                      | 220                        | 0,844                                       | 0,17                           | 0,34                            | 0,14                               | 110                           | 503                               | 8 x 11,5                         | ECR1ELH221M $\diamond\diamond\Delta\Delta$ 0811                                                                                                              |
|                                      |                            | 0,844                                       | 0,13                           | 0,26                            | 0,14                               | 110                           | 575                               | 8 x 16                           | ECR1ELH221M $\diamond\diamond\Delta\Delta$ 0816                                                                                                              |
|                                      |                            | 0,844                                       | 0,12                           | 0,24                            | 0,14                               | 110                           | 629                               | 10 x 12,5                        | ECR1ELH221M $\diamond\diamond\Delta\Delta$ 1012                                                                                                              |
|                                      | 270                        | 0,688                                       | 0,095                          | 0,19                            | 0,14                               | 135                           | 795                               | 10 x 16                          | ECR1ELH271M $\diamond\diamond\Delta\Delta$ 1016                                                                                                              |
|                                      | 330                        | 0,563                                       | 0,095                          | 0,19                            | 0,14                               | 165                           | 751                               | 8 x 20                           | ECR1ELH331M $\diamond\diamond\Delta\Delta$ 0820                                                                                                              |
|                                      |                            | 0,563                                       | 0,12                           | 0,24                            | 0,14                               | 165                           | 629                               | 10 x 12,5                        | ECR1ELH331M $\diamond\diamond\Delta\Delta$ 1012                                                                                                              |
|                                      |                            | 0,395                                       | 0,095                          | 0,19                            | 0,14                               | 235                           | 751                               | 8 x 20                           | ECR1ELH471M $\diamond\diamond\Delta\Delta$ 0820                                                                                                              |
|                                      | 470                        | 0,395                                       | 0,12                           | 0,24                            | 0,14                               | 235                           | 760                               | 10 x 12,5                        | ECR1ELH471M $\diamond\diamond\Delta\Delta$ 1012                                                                                                              |
|                                      |                            | 0,395                                       | 0,065                          | 0,13                            | 0,14                               | 235                           | 1010                              | 10 x 20                          | ECR1ELH471M $\diamond\diamond\Delta\Delta$ 1020                                                                                                              |
|                                      |                            | 0,395                                       | 0,065                          | 0,13                            | 0,14                               | 235                           | 1010                              | 12,5 x 15                        | ECR1ELH471M $\diamond\diamond\Delta\Delta$ 1215                                                                                                              |
|                                      |                            | 0,332                                       | 0,055                          | 0,11                            | 0,14                               | 280                           | 1190                              | 10 x 25                          | ECR1ELH561M $\diamond\diamond\Delta\Delta$ 1025                                                                                                              |
|                                      | 820                        | 0,227                                       | 0,045                          | 0,090                           | 0,14                               | 410                           | 1440                              | 10 x 30                          | ECR1ELH821M $\diamond\diamond\Delta\Delta$ 1030                                                                                                              |
|                                      |                            | 0,227                                       | 0,042                          | 0,084                           | 0,14                               | 410                           | 1400                              | 12,5 x 20                        | ECR1ELH821M $\diamond\diamond\Delta\Delta$ 1220                                                                                                              |
|                                      |                            | 0,227                                       | 0,046                          | 0,092                           | 0,14                               | 410                           | 1360                              | 16 x 15                          | ECR1ELH821M $\diamond\diamond\Delta\Delta$ 1615                                                                                                              |
|                                      | 1 000                      | 0,186                                       | 0,042                          | 0,084                           | 0,14                               | 500                           | 1400                              | 12,5 x 20                        | ECR1ELH102M $\diamond\diamond\Delta\Delta$ 1220                                                                                                              |
|                                      |                            | 0,186                                       | 0,038                          | 0,076                           | 0,14                               | 500                           | 1690                              | 12,5 x 25                        | ECR1ELH102M $\diamond\diamond\Delta\Delta$ 1225                                                                                                              |
|                                      | 1 200                      | 0,155                                       | 0,043                          | 0,086                           | 0,14                               | 600                           | 1500                              | 18 x 15                          | ECR1ELH122M $\diamond\diamond\Delta\Delta$ 1815                                                                                                              |
|                                      | 1 500                      | 0,124                                       | 0,032                          | 0,064                           | 0,14                               | 750                           | 1950                              | 12,5 x 30                        | ECR1ELH152M $\diamond\diamond\Delta\Delta$ 1230                                                                                                              |
|                                      |                            | 0,124                                       | 0,034                          | 0,068                           | 0,14                               | 750                           | 1730                              | 16 x 20                          | ECR1ELH152M $\diamond\diamond\Delta\Delta$ 1620                                                                                                              |
|                                      | 1 800                      | 0,103                                       | 0,028                          | 0,056                           | 0,14                               | 900                           | 2200                              | 12,5 x 35                        | ECR1ELH182M $\diamond\diamond\Delta\Delta$ 1235                                                                                                              |
|                                      |                            | 0,103                                       | 0,028                          | 0,056                           | 0,14                               | 900                           | 2070                              | 16 x 25                          | ECR1ELH182M $\diamond\diamond\Delta\Delta$ 1625                                                                                                              |
|                                      |                            | 0,103                                       | 0,030                          | 0,060                           | 0,14                               | 900                           | 1890                              | 18 x 20                          | ECR1ELH182M $\diamond\diamond\Delta\Delta$ 1820                                                                                                              |



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance | Z <sub>max</sub><br>Max Impedance | Z <sub>max</sub><br>Max Impedance | tanδ<br>Dissipation Factor | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current | Size<br>øD x L | ORDER CODE         |
|---------------------------------------------|-------------------------------------|----------------------------------------------------|-----------------------------------|-----------------------------------|----------------------------|--------------------------------------|------------------------------------------|----------------|--------------------|
| (V)                                         | (µF)                                | 20°C<br>120Hz<br>(Ω)                               | 20°C<br>100kHz<br>(Ω)             | -10°C<br>100kHz<br>(Ω)            | 20°C<br>120Hz              | (µA)                                 | 105°C<br>100kHz<br>(mArms)               | (mm)           | Details: Page 33   |
| 25<br>(32)<br>1E                            | 2200                                | 0,097                                              | 0,028                             | 0,056                             | 0,16                       | 1100                                 | 2200                                     | 12,5 x 35      | ECR1ELH222M◇◇◇1235 |
|                                             |                                     | 0,097                                              | 0,026                             | 0,052                             | 0,16                       | 1100                                 | 2390                                     | 12,5 x 40      | ECR1ELH222M◇◇◇1240 |
|                                             | 2700                                | 0,079                                              | 0,025                             | 0,050                             | 0,16                       | 1350                                 | 2350                                     | 16 x 31,5      | ECR1ELH272M◇◇◇1631 |
|                                             |                                     | 0,079                                              | 0,027                             | 0,054                             | 0,16                       | 1350                                 | 2180                                     | 18 x 25        | ECR1ELH272M◇◇◇1825 |
|                                             | 3300                                | 0,072                                              | 0,022                             | 0,044                             | 0,18                       | 1650                                 | 2550                                     | 16 x 35,5      | ECR1ELH332M◇◇◇1635 |
|                                             |                                     | 0,072                                              | 0,023                             | 0,046                             | 0,18                       | 1650                                 | 2470                                     | 18 x 31,5      | ECR1ELH332M◇◇◇1831 |
|                                             | 3900                                | 0,061                                              | 0,020                             | 0,040                             | 0,18                       | 1950                                 | 2900                                     | 16 x 40        | ECR1ELH392M◇◇◇1640 |
|                                             |                                     | 0,061                                              | 0,020                             | 0,040                             | 0,18                       | 1950                                 | 2740                                     | 18 x 35,5      | ECR1ELH392M◇◇◇1835 |
|                                             | 4700                                | 0,056                                              | 0,019                             | 0,038                             | 0,20                       | 2350                                 | 3070                                     | 18 x 40        | ECR1ELH472M◇◇◇1840 |
| 35<br>(44)<br>1V                            | 27                                  | 5,90                                               | 0,65                              | 1,3                               | 0,12                       | 19                                   | 175                                      | 5 x 11,5       | ECR1VLH270M◇◇◇0511 |
|                                             | 39                                  | 4,09                                               | 0,46                              | 0,92                              | 0,12                       | 28                                   | 235                                      | 5 x 15         | ECR1VLH390M◇◇◇0515 |
|                                             | 47                                  | 3,39                                               | 0,65                              | 1,3                               | 0,12                       | 33                                   | 175                                      | 5 x 11,5       | ECR1VLH470M◇◇◇0511 |
|                                             | 56                                  | 2,85                                               | 0,30                              | 0,60                              | 0,12                       | 40                                   | 290                                      | 6,3 x 11,5     | ECR1VLH560M◇◇◇0611 |
|                                             | 82                                  | 1,95                                               | 0,20                              | 0,40                              | 0,12                       | 58                                   | 400                                      | 6,3 x 15       | ECR1VLH820M◇◇◇0615 |
|                                             | 100                                 | 1,60                                               | 0,20                              | 0,40                              | 0,12                       | 70                                   | 420                                      | 8 x 11,5       | ECR1VLH101M◇◇◇0811 |
|                                             | 120                                 | 1,33                                               | 0,17                              | 0,34                              | 0,12                       | 84                                   | 501                                      | 8 x 11,5       | ECR1VLH121M◇◇◇0811 |
|                                             | 150                                 | 1,07                                               | 0,12                              | 0,24                              | 0,12                       | 105                                  | 625                                      | 10 x 12,5      | ECR1VLH151M◇◇◇1012 |
|                                             | 180                                 | 0,885                                              | 0,13                              | 0,26                              | 0,12                       | 126                                  | 575                                      | 8 x 16         | ECR1VLH181M◇◇◇0816 |
|                                             |                                     | 0,885                                              | 0,095                             | 0,19                              | 0,12                       | 126                                  | 795                                      | 10 x 16        | ECR1VLH181M◇◇◇1016 |
|                                             | 220                                 | 0,724                                              | 0,13                              | 0,26                              | 0,12                       | 154                                  | 575                                      | 8 x 16         | ECR1VLH221M◇◇◇0816 |
|                                             |                                     | 0,724                                              | 0,095                             | 0,19                              | 0,12                       | 154                                  | 760                                      | 8 x 20         | ECR1VLH221M◇◇◇0820 |
|                                             | 330                                 | 0,483                                              | 0,095                             | 0,19                              | 0,12                       | 231                                  | 795                                      | 10 x 16        | ECR1VLH331M◇◇◇1016 |
|                                             |                                     | 0,483                                              | 0,065                             | 0,13                              | 0,12                       | 231                                  | 1010                                     | 10 x 20        | ECR1VLH331M◇◇◇1020 |
|                                             |                                     | 0,483                                              | 0,065                             | 0,13                              | 0,12                       | 231                                  | 1010                                     | 12,5 x 15      | ECR1VLH331M◇◇◇1215 |
|                                             | 390                                 | 0,408                                              | 0,055                             | 0,11                              | 0,12                       | 273                                  | 1190                                     | 10 x 25        | ECR1VLH391M◇◇◇1025 |
|                                             | 470                                 | 0,339                                              | 0,065                             | 0,13                              | 0,12                       | 330                                  | 1010                                     | 10 x 20        | ECR1VLH471M◇◇◇1020 |
|                                             | 560                                 | 0,284                                              | 0,045                             | 0,090                             | 0,12                       | 392                                  | 1450                                     | 10 x 30        | ECR1VLH561M◇◇◇1030 |
|                                             |                                     | 0,284                                              | 0,042                             | 0,084                             | 0,12                       | 392                                  | 1400                                     | 12,5 x 20      | ECR1VLH561M◇◇◇1220 |
|                                             |                                     | 0,284                                              | 0,046                             | 0,092                             | 0,12                       | 392                                  | 1360                                     | 16 x 15        | ECR1VLH561M◇◇◇1615 |
|                                             | 680                                 | 0,234                                              | 0,038                             | 0,076                             | 0,12                       | 476                                  | 1690                                     | 12,5 x 25      | ECR1VLH681M◇◇◇1225 |
|                                             |                                     | 0,234                                              | 0,043                             | 0,086                             | 0,12                       | 476                                  | 1520                                     | 18 x 15        | ECR1VLH681M◇◇◇1815 |
|                                             | 1 000                               | 0,150                                              | 0,042                             | 0,084                             | 0,12                       | 700                                  | 1500                                     | 12,5 x 20      | ECR1VLH102M◇◇◇1220 |
|                                             |                                     | 0,159                                              | 0,038                             | 0,076                             | 0,12                       | 700                                  | 1690                                     | 12,5 x 25      | ECR1VLH102M◇◇◇1225 |
|                                             |                                     | 0,159                                              | 0,032                             | 0,064                             | 0,12                       | 700                                  | 1950                                     | 12,5 x 30      | ECR1VLH102M◇◇◇1230 |
|                                             |                                     | 0,159                                              | 0,034                             | 0,068                             | 0,12                       | 700                                  | 1730                                     | 16 x 20        | ECR1VLH102M◇◇◇1620 |
|                                             | 1 200                               | 0,133                                              | 0,028                             | 0,056                             | 0,12                       | 840                                  | 2200                                     | 12,5 x 35      | ECR1VLH122M◇◇◇1235 |
|                                             |                                     | 0,133                                              | 0,028                             | 0,056                             | 0,12                       | 840                                  | 2070                                     | 16 x 25        | ECR1VLH122M◇◇◇1625 |
|                                             |                                     | 0,133                                              | 0,030                             | 0,060                             | 0,12                       | 840                                  | 1900                                     | 18 x 20        | ECR1VLH122M◇◇◇1820 |
|                                             | 1 500                               | 0,106                                              | 0,026                             | 0,052                             | 0,12                       | 1050                                 | 2390                                     | 12,5 x 40      | ECR1VLH152M◇◇◇1240 |
|                                             | 1 800                               | 0,088                                              | 0,025                             | 0,050                             | 0,12                       | 1260                                 | 2350                                     | 16 x 31,5      | ECR1VLH182M◇◇◇1631 |
|                                             |                                     | 0,088                                              | 0,027                             | 0,054                             | 0,12                       | 1260                                 | 2200                                     | 18 x 25        | ECR1VLH182M◇◇◇1825 |
|                                             | 2 200                               | 0,084                                              | 0,022                             | 0,044                             | 0,14                       | 1540                                 | 2550                                     | 16 x 35,5      | ECR1VLH222M◇◇◇1635 |
|                                             |                                     | 0,084                                              | 0,023                             | 0,046                             | 0,14                       | 1540                                 | 2490                                     | 18 x 31,5      | ECR1VLH222M◇◇◇1831 |
|                                             | 2 700                               | 0,069                                              | 0,020                             | 0,040                             | 0,14                       | 1890                                 | 2900                                     | 16 x 40        | ECR1VLH272M◇◇◇1640 |
|                                             |                                     | 0,069                                              | 0,020                             | 0,040                             | 0,14                       | 1890                                 | 2770                                     | 18 x 35,5      | ECR1VLH272M◇◇◇1835 |
|                                             | 3 300                               | 0,064                                              | 0,019                             | 0,038                             | 0,16                       | 2310                                 | 3110                                     | 18 x 40        | ECR1VLH332M◇◇◇1840 |
| 50<br>(63)<br>1H                            | 0,47                                | 283                                                | 3,9                               | 7,8                               | 0,10                       | 3                                    | 22                                       | 5 x 11,5       | ECR1HLHR47M◇◇◇0511 |
|                                             | 1,0                                 | 133                                                | 3,5                               | 7,0                               | 0,10                       | 3                                    | 36                                       | 5 x 11,5       | ECR1HLH010M◇◇◇0511 |
|                                             | 2,2                                 | 60,3                                               | 3,0                               | 6,0                               | 0,10                       | 3                                    | 54                                       | 5 x 11,5       | ECR1HLH2R2M◇◇◇0511 |
|                                             | 3,3                                 | 40,2                                               | 2,6                               | 5,2                               | 0,10                       | 4                                    | 63                                       | 5 x 11,5       | ECR1HLH3R3M◇◇◇0511 |
|                                             | 4,7                                 | 28,3                                               | 2,2                               | 4,4                               | 0,10                       | 5                                    | 75                                       | 5 x 11,5       | ECR1HLH4R7M◇◇◇0511 |
|                                             | 10                                  | 13,3                                               | 1,4                               | 2,8                               | 0,10                       | 10                                   | 110                                      | 5 x 11,5       | ECR1HLH100M◇◇◇0511 |
|                                             | 18                                  | 7,38                                               | 0,95                              | 1,9                               | 0,10                       | 18                                   | 120                                      | 5 x 11,5       | ECR1HLH180M◇◇◇0511 |
|                                             | 27                                  | 4,92                                               | 0,55                              | 1,1                               | 0,10                       | 27                                   | 135                                      | 5 x 15         | ECR1HLH270M◇◇◇0515 |
|                                             | 39                                  | 3,41                                               | 0,36                              | 0,72                              | 0,10                       | 39                                   | 148                                      | 6,3 x 11,5     | ECR1HLH390M◇◇◇0611 |
|                                             | 56                                  | 2,37                                               | 0,28                              | 0,56                              | 0,10                       | 56                                   | 153                                      | 6,3 x 15       | ECR1HLH560M◇◇◇0615 |
|                                             | 68                                  | 1,96                                               | 0,20                              | 0,40                              | 0,10                       | 68                                   | 360                                      | 8 x 11,5       | ECR1HLH680M◇◇◇0811 |
|                                             | 82                                  | 1,62                                               | 0,18                              | 0,36                              | 0,10                       | 82                                   | 460                                      | 8 x 16         | ECR1HLH820M◇◇◇0816 |
|                                             |                                     | 1,62                                               | 0,18                              | 0,36                              | 0,10                       | 82                                   | 443                                      | 10 x 12,5      | ECR1HLH820M◇◇◇1012 |
|                                             | 100                                 | 1,33                                               | 0,15                              | 0,30                              | 0,10                       | 100                                  | 553                                      | 10 x 16        | ECR1HLH101M◇◇◇1016 |
|                                             | 120                                 | 1,11                                               | 0,13                              | 0,26                              | 0,10                       | 120                                  | 670                                      | 8 x 20         | ECR1HLH121M◇◇◇0820 |
|                                             | 180                                 | 0,737                                              | 0,095                             | 0,19                              | 0,10                       | 180                                  | 676                                      | 10 x 20        | ECR1HLH181M◇◇◇1020 |
|                                             |                                     | 0,737                                              | 0,105                             | 0,21                              | 0,10                       | 180                                  | 745                                      | 12,5 x 15      | ECR1HLH181M◇◇◇1215 |
|                                             | 220                                 | 0,603                                              | 0,080                             | 0,16                              | 0,10                       | 220                                  | 876                                      | 10 x 25        | ECR1HLH221M◇◇◇1025 |

&gt;&gt;

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current       | Size<br>$\varnothing D \times L$ | ORDER CODE                                                        |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------------|----------------------------------|-------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120kHz<br>( $\Omega$ )              | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120kHz                     | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA <sub>RMS</sub> ) | (mm)                             | <div>◇◇ = pin style &amp; length</div> <div>△△ = pitch code</div> |
| Details: Page 33                     |                            |                                             |                                |                                 |                                    |                               |                                         |                                  |                                                                   |
| <b>50</b><br>(63)<br>1H              | 330                        | 0,402                                       | 0,065                          | 0,13                            | 0,10                               | 330                           | 1010                                    | 10 x 30                          | ECR1HLH331M◇◇△△1030                                               |
|                                      |                            | 0,402                                       | 0,070                          | 0,14                            | 0,10                               | 330                           | 979                                     | 12,5 x 20                        | ECR1HLH331M◇◇△△1220                                               |
|                                      |                            | 0,402                                       | 0,075                          | 0,15                            | 0,10                               | 330                           | 982                                     | 16 x 15                          | ECR1HLH331M◇◇△△1615                                               |
|                                      | 470                        | 0,282                                       | 0,054                          | 0,108                           | 0,10                               | 470                           | 1180                                    | 12,5 x 25                        | ECR1HLH471M◇◇△△1225                                               |
|                                      |                            | 0,282                                       | 0,058                          | 0,116                           | 0,10                               | 470                           | 1180                                    | 18 x 15                          | ECR1HLH471M◇◇△△1815                                               |
|                                      | 560                        | 0,237                                       | 0,050                          | 0,100                           | 0,10                               | 560                           | 1310                                    | 12,5 x 30                        | ECR1HLH561M◇◇△△1230                                               |
|                                      | 680                        | 0,195                                       | 0,046                          | 0,092                           | 0,10                               | 680                           | 1470                                    | 12,5 x 35                        | ECR1HLH681M◇◇△△1235                                               |
|                                      |                            | 0,195                                       | 0,050                          | 0,100                           | 0,10                               | 680                           | 1210                                    | 16 x 20                          | ECR1HLH681M◇◇△△1620                                               |
|                                      | 820                        | 0,162                                       | 0,044                          | 0,088                           | 0,10                               | 820                           | 1590                                    | 12,5 x 40                        | ECR1HLH821M◇◇△△1240                                               |
|                                      |                            | 0,162                                       | 0,048                          | 0,096                           | 0,10                               | 820                           | 1490                                    | 16 x 25                          | ECR1HLH821M◇◇△△1625                                               |
|                                      |                            | 0,162                                       | 0,046                          | 0,092                           | 0,10                               | 820                           | 1450                                    | 18 x 20                          | ECR1HLH821M◇◇△△1820                                               |
|                                      | 1 000                      | 0,133                                       | 0,040                          | 0,080                           | 0,10                               | 1000                          | 1890                                    | 16 x 31,5                        | ECR1HLH102M◇◇△△1631                                               |
|                                      |                            | 0,133                                       | 0,040                          | 0,080                           | 0,10                               | 1000                          | 1720                                    | 18 x 25                          | ECR1HLH102M◇◇△△1825                                               |
|                                      | 1 200                      | 0,111                                       | 0,032                          | 0,064                           | 0,10                               | 1200                          | 2140                                    | 16 x 35,5                        | ECR1HLH122M◇◇△△1635                                               |
|                                      | 1 500                      | 0,088                                       | 0,026                          | 0,052                           | 0,10                               | 1500                          | 2410                                    | 16 x 40                          | ECR1HLH152M◇◇△△1640                                               |
|                                      |                            | 0,088                                       | 0,026                          | 0,052                           | 0,10                               | 1500                          | 1970                                    | 18 x 31,5                        | ECR1HLH152M◇◇△△1831                                               |
|                                      | 1 800                      | 0,074                                       | 0,025                          | 0,050                           | 0,10                               | 1800                          | 2310                                    | 18 x 35,5                        | ECR1HLH182M◇◇△△1835                                               |
|                                      | 2 200                      | 0,072                                       | 0,024                          | 0,048                           | 0,12                               | 2200                          | 2530                                    | 18 x 40                          | ECR1HLH222M◇◇△△1840                                               |

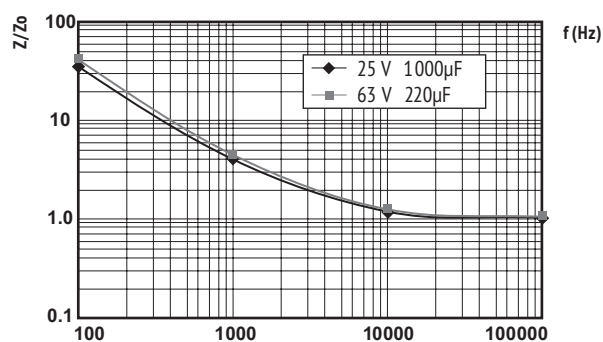
|                         |       |       |       |       |      |      |      |            |                     |
|-------------------------|-------|-------|-------|-------|------|------|------|------------|---------------------|
| <b>63</b><br>(79)<br>1J | 12    | 9,96  | 1,2   | 3,6   | 0,09 | 16   | 120  | 5 x 11,5   | ECR1JLH120M◇◇△△0511 |
|                         | 18    | 6,64  | 0,85  | 2,6   | 0,09 | 23   | 135  | 5 x 15     | ECR1JLH180M◇◇△△0515 |
|                         | 27    | 4,43  | 0,55  | 1,7   | 0,09 | 34   | 148  | 6,3 x 11,5 | ECR1JLH270M◇◇△△0611 |
|                         | 39    | 3,07  | 0,38  | 1,1   | 0,09 | 50   | 153  | 6,3 x 15   | ECR1JLH390M◇◇△△0615 |
|                         | 47    | 2,55  | 0,32  | 0,96  | 0,09 | 60   | 360  | 8 x 11,5   | ECR1JLH470M◇◇△△0811 |
|                         | 56    | 2,14  | 0,23  | 0,69  | 0,09 | 71   | 448  | 10 x 12,5  | ECR1JLH560M◇◇△△1012 |
|                         | 68    | 1,76  | 0,24  | 0,72  | 0,09 | 86   | 469  | 8 x 16     | ECR1JLH680M◇◇△△0816 |
|                         |       | 1,76  | 0,17  | 0,51  | 0,09 | 86   | 553  | 10 x 16    | ECR1JLH680M◇◇△△1016 |
|                         | 82    | 1,46  | 0,17  | 0,51  | 0,09 | 104  | 682  | 8 x 20     | ECR1JLH820M◇◇△△0820 |
|                         | 120   | 0,995 | 0,12  | 0,36  | 0,09 | 152  | 676  | 10 x 20    | ECR1JLH121M◇◇△△1020 |
|                         | 150   | 0,796 | 0,10  | 0,30  | 0,09 | 189  | 876  | 10 x 25    | ECR1JLH151M◇◇△△1025 |
|                         |       | 0,796 | 0,11  | 0,33  | 0,09 | 189  | 745  | 12,5 x 15  | ECR1JLH151M◇◇△△1215 |
|                         | 180   | 0,663 | 0,085 | 0,26  | 0,09 | 227  | 1020 | 10 x 30    | ECR1JLH181M◇◇△△1030 |
|                         | 220   | 0,543 | 0,075 | 0,23  | 0,09 | 278  | 979  | 12,5 x 20  | ECR1JLH221M◇◇△△1220 |
|                         |       | 0,543 | 0,080 | 0,24  | 0,09 | 278  | 928  | 16 x 15    | ECR1JLH221M◇◇△△1615 |
|                         | 270   | 0,442 | 0,065 | 0,20  | 0,09 | 341  | 1180 | 12,5 x 25  | ECR1JLH271M◇◇△△1225 |
|                         | 330   | 0,362 | 0,065 | 0,20  | 0,09 | 416  | 1200 | 18 x 15    | ECR1JLH331M◇◇△△1815 |
|                         | 390   | 0,306 | 0,055 | 0,17  | 0,09 | 492  | 1310 | 12,5 x 30  | ECR1JLH391M◇◇△△1230 |
|                         |       | 0,306 | 0,057 | 0,17  | 0,09 | 492  | 1210 | 16 x 20    | ECR1JLH391M◇◇△△1620 |
|                         | 470   | 0,254 | 0,048 | 0,14  | 0,09 | 593  | 1470 | 12,5 x 35  | ECR1JLH471M◇◇△△1235 |
|                         |       | 0,254 | 0,052 | 0,16  | 0,09 | 593  | 1490 | 16 x 25    | ECR1JLH471M◇◇△△1625 |
|                         |       | 0,254 | 0,058 | 0,17  | 0,09 | 593  | 1460 | 18 x 20    | ECR1JLH471M◇◇△△1820 |
|                         | 560   | 0,213 | 0,042 | 0,13  | 0,09 | 706  | 1590 | 12,5 x 40  | ECR1JLH561M◇◇△△1240 |
|                         | 680   | 0,176 | 0,042 | 0,13  | 0,09 | 857  | 1890 | 16 x 31,5  | ECR1JLH681M◇◇△△1631 |
|                         |       | 0,176 | 0,050 | 0,15  | 0,09 | 857  | 1740 | 18 x 25    | ECR1JLH681M◇◇△△1825 |
|                         | 820   | 0,146 | 0,036 | 0,11  | 0,09 | 1034 | 2140 | 16 x 35,5  | ECR1JLH821M◇◇△△1635 |
|                         |       | 0,146 | 0,042 | 0,13  | 0,09 | 1034 | 1990 | 18 x 31,5  | ECR1JLH821M◇◇△△1831 |
|                         | 1 000 | 0,119 | 0,032 | 0,096 | 0,09 | 1260 | 2410 | 16 x 40    | ECR1JLH102M◇◇△△1640 |
|                         |       | 0,119 | 0,035 | 0,110 | 0,09 | 1260 | 2340 | 18 x 35,5  | ECR1JLH102M◇◇△△1835 |
|                         | 1 200 | 0,100 | 0,032 | 0,096 | 0,09 | 1512 | 2560 | 18 x 40    | ECR1JLH122M◇◇△△1840 |

|                           |     |       |      |      |      |     |     |            |                     |
|---------------------------|-----|-------|------|------|------|-----|-----|------------|---------------------|
| <b>100</b><br>(125)<br>2A | 5,6 | 19,0  | 1,9  | 7,6  | 0,08 | 12  | 57  | 5 x 11,5   | ECR2ALH5R6M◇◇△△0511 |
|                           | 8,2 | 13,0  | 1,3  | 5,2  | 0,08 | 17  | 74  | 5 x 15     | ECR2ALH8R2M◇◇△△0515 |
|                           | 12  | 8,85  | 1,1  | 4,4  | 0,08 | 24  | 78  | 6,3 x 11,5 | ECR2ALH120M◇◇△△0611 |
|                           | 18  | 5,90  | 0,62 | 2,5  | 0,08 | 36  | 85  | 6,3 x 15   | ECR2ALH180M◇◇△△0615 |
|                           | 22  | 4,83  | 0,53 | 2,1  | 0,08 | 44  | 275 | 8 x 11,5   | ECR2ALH220M◇◇△△0811 |
|                           | 27  | 3,94  | 0,47 | 1,9  | 0,08 | 54  | 319 | 10 x 12,5  | ECR2ALH270M◇◇△△1012 |
|                           | 33  | 3,22  | 0,35 | 1,4  | 0,08 | 66  | 360 | 8 x 16     | ECR2ALH330M◇◇△△0816 |
|                           |     | 3,22  | 0,32 | 1,3  | 0,08 | 66  | 424 | 10 x 16    | ECR2ALH330M◇◇△△1016 |
|                           | 39  | 2,73  | 0,27 | 1,1  | 0,08 | 78  | 490 | 8 x 20     | ECR2ALH390M◇◇△△0820 |
|                           | 56  | 1,90  | 0,25 | 1,0  | 0,08 | 112 | 499 | 10 x 20    | ECR2ALH560M◇◇△△1020 |
|                           | 68  | 1,57  | 0,18 | 0,72 | 0,08 | 136 | 634 | 10 x 25    | ECR2ALH680M◇◇△△1025 |
|                           |     | 1,57  | 0,20 | 0,80 | 0,08 | 136 | 613 | 12,5 x 15  | ECR2ALH680M◇◇△△1215 |
|                           | 100 | 1,07  | 0,15 | 0,60 | 0,08 | 200 | 739 | 10 x 30    | ECR2ALH101M◇◇△△1030 |
|                           |     | 1,07  | 0,13 | 0,52 | 0,08 | 200 | 805 | 12,5 x 20  | ECR2ALH101M◇◇△△1220 |
|                           | 120 | 0,885 | 0,11 | 0,44 | 0,08 | 240 | 857 | 12,5 x 25  | ECR2ALH121M◇◇△△1225 |
|                           |     | 0,885 | 0,13 | 0,50 | 0,08 | 240 | 706 | 16 x 15    | ECR2ALH121M◇◇△△1615 |
|                           | 150 | 0,708 | 0,12 | 0,48 | 0,08 | 300 | 871 | 18 x 15    | ECR2ALH151M◇◇△△1815 |



| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current       | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pitch code<br><br>Details: Page 33 |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------------|----------------------------------|--------------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120Hz<br>( $\Omega$ )               | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120Hz                      | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA <sub>RMS</sub> ) | (mm)                             |                                                                                      |
| 100<br>(125)<br>2A                   | 180                        | 0,590                                       | 0,090                          | 0,36                            | 0,08                               | 360                           | 1120                                    | 12,5 x 30                        | ECR2ALH181M◇◇△△1230                                                                  |
|                                      |                            | 0,590                                       | 0,11                           | 0,44                            | 0,08                               | 360                           | 916                                     | 16 x 20                          | ECR2ALH181M◇◇△△1620                                                                  |
|                                      | 220                        | 0,483                                       | 0,075                          | 0,30                            | 0,08                               | 440                           | 1240                                    | 12,5 x 35                        | ECR2ALH221M◇◇△△1235                                                                  |
|                                      |                            | 0,483                                       | 0,081                          | 0,32                            | 0,08                               | 440                           | 1290                                    | 16 x 25                          | ECR2ALH221M◇◇△△1625                                                                  |
|                                      | 270                        | 0,393                                       | 0,060                          | 0,24                            | 0,08                               | 540                           | 1330                                    | 12,5 x 40                        | ECR2ALH271M◇◇△△1240                                                                  |
|                                      |                            | 0,393                                       | 0,085                          | 0,34                            | 0,08                               | 540                           | 1170                                    | 18 x 20                          | ECR2ALH271M◇◇△△1820                                                                  |
|                                      | 330                        | 0,322                                       | 0,059                          | 0,23                            | 0,08                               | 660                           | 1630                                    | 16 x 31,5                        | ECR2ALH331M◇◇△△1631                                                                  |
|                                      |                            | 0,322                                       | 0,071                          | 0,28                            | 0,08                               | 660                           | 1500                                    | 18 x 25                          | ECR2ALH331M◇◇△△1825                                                                  |
|                                      | 390                        | 0,272                                       | 0,052                          | 0,21                            | 0,08                               | 780                           | 1750                                    | 16 x 35,5                        | ECR2ALH391M◇◇△△1635                                                                  |
|                                      |                            | 0,272                                       | 0,058                          | 0,23                            | 0,08                               | 780                           | 1630                                    | 18 x 31,5                        | ECR2ALH391M◇◇△△1831                                                                  |
|                                      | 470                        | 0,226                                       | 0,045                          | 0,18                            | 0,08                               | 940                           | 1920                                    | 16 x 40                          | ECR2ALH471M◇◇△△1640                                                                  |
|                                      | 560                        | 0,190                                       | 0,054                          | 0,22                            | 0,08                               | 1120                          | 1920                                    | 18 x 35,5                        | ECR2ALH561M◇◇△△1835                                                                  |
|                                      | 680                        | 0,156                                       | 0,041                          | 0,16                            | 0,08                               | 1360                          | 2100                                    | 18 x 40                          | ECR2ALH681M◇◇△△1840                                                                  |

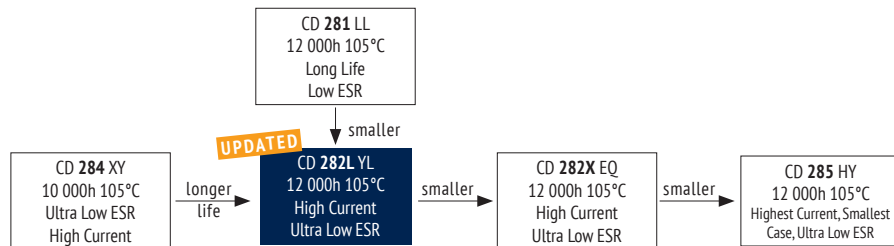
## IMPEDANCE RATIO



Z = actual impedance of each frequency at 20°C,  
 Zo = Impedance at 100kHz, 20°C  
 Impedance Ratio as a function of frequency

4 000 - 10 000h  
at 105°C

- Ultra Low Impedance
- High Ripple Current
- Switching Power Supplies



## ITEM CHARACTERISTICS

|                                     |              |
|-------------------------------------|--------------|
| Operating Temperature Range (°C)    | -40 ~ +105   |
| Voltage Range (V)                   | 6,3 ~ 100    |
| Capacitance Range (μF)              | 6,8 ~ 18 000 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%        |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current (μA) After 2 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V) | 6,3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
|---------------------------------------------------------|-------------------|-----|----|----|----|----|----|----|-----|
| $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 4   | 3  |    |    |    | 2  |    |     |
| $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 8   | 6  | 4  |    |    | 3  |    |     |

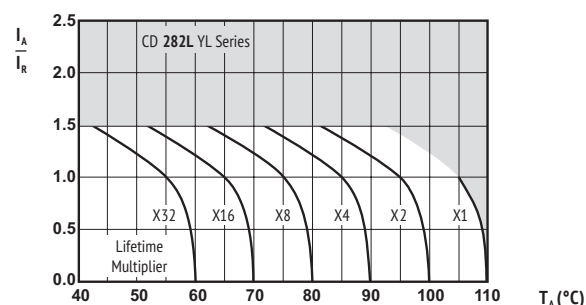
| ITEM                                                                    | USEFUL LIFE                           |                                   |                             | LOAD LIFE                             |                                          | ENDURANCE TEST                        |                                                                              | SHELF LIFE                            |        |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|-----------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------------|---------------------------------------|--------|
|                                                                         | 6,3~10V:                              | 16~100V:                          |                             | 6,3~10V:                              | 16~100V:                                 | 6,3~10V:                              | 16~100V:                                                                     |                                       |        |
| Lifetime                                                                | Ø 5~6,3:<br>Ø 8~10:<br>Ø 12,5~18:     | 6 000h<br>8 000h<br>10 000h       | 7 000h<br>9 000h<br>12 000h | > 250 000h                            | 4 000h<br>6 000h<br>8 000h               | 5 000h<br>7 000h<br>10 000h           | 6 000h<br>8 000h<br>10 000h                                                  | 7 000h<br>9 000h<br>12 000h           | 1 000h |
| Leakage Current                                                         | Not more than specified value         |                                   |                             | Not more than specified value         |                                          | Not more than specified value         |                                                                              | Not more than specified value         |        |
| Capacitance Change                                                      | Within ± 40% of initial value         |                                   |                             | Within ± 25% of initial value         |                                          | Within ± 25% of initial value         |                                                                              | Within ± 20% of initial value         |        |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   |                             | Not more than 200% of specified value |                                          | Not more than 200% of specified value |                                                                              | Not more than 200% of specified value |        |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C     | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for<br>30 min > 24h before<br>measurement |                                       |        |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Capacitance (μF) \ Frequency | 120Hz | 1kHz | 10kHz | 100kHz |
|------------------------------|-------|------|-------|--------|
| 6,8 ~ 33                     | 0,42  | 0,70 | 0,90  | 1,00   |
| 39 ~ 270                     | 0,50  | 0,73 | 0,92  | 1,00   |
| 330 ~ 680                    | 0,55  | 0,77 | 0,94  | 1,00   |
| 820 ~ 1 800                  | 0,60  | 0,80 | 0,96  | 1,00   |
| 2 200 ~ 18 000               | 0,70  | 0,85 | 0,98  | 1,00   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance | Z <sub>max</sub><br>Max Impedance | Z <sub>max</sub><br>Max Impedance | tanδ<br>Dissipation Factor | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current | Size<br>øD x L | ORDER CODE                                                     |
|---------------------------------------------|-------------------------------------|----------------------------------------------------|-----------------------------------|-----------------------------------|----------------------------|--------------------------------------|------------------------------------------|----------------|----------------------------------------------------------------|
| (V)                                         | (µF)                                | 20°C<br>120Hz<br>(Ω)                               | 20°C<br>100kHz<br>(Ω)             | -10°C<br>100kHz<br>(Ω)            | 20°C<br>120Hz              | (µA)                                 | 105°C<br>100kHz<br>(mArms)               | (mm)           | ◇◇ = pin style & length<br>△△ = pitch code<br>Details: Page 33 |
| 6,3<br>(7,2)<br>0J                          | 150                                 | 1,95                                               | 0,580                             | 2,30                              | 0,22                       | 10                                   | 210                                      | 5 x 11,5       | ECR0JYL151M◇◇△△0511                                            |
|                                             | 330                                 | 0,884                                              | 0,220                             | 0,870                             | 0,22                       | 21                                   | 340                                      | 6,3 x 11,5     | ECR0JYL331M◇◇△△0611                                            |
|                                             | 680                                 | 0,429                                              | 0,130                             | 0,520                             | 0,22                       | 43                                   | 640                                      | 8 x 11,5       | ECR0JYL681M◇◇△△0811                                            |
|                                             | 820                                 | 0,356                                              | 0,080                             | 0,320                             | 0,22                       | 52                                   | 865                                      | 10 x 12,5      | ECR0JYL821M◇◇△△1012                                            |
|                                             | 1 000                               | 0,292                                              | 0,087                             | 0,350                             | 0,22                       | 63                                   | 840                                      | 8 x 16         | ECR0JYL102M◇◇△△0816                                            |
|                                             |                                     | 0,243                                              | 0,069                             | 0,270                             | 0,22                       | 76                                   | 1050                                     | 8 x 20         | ECR0JYL122M◇◇△△0820                                            |
|                                             | 1 200                               | 0,243                                              | 0,060                             | 0,240                             | 0,22                       | 76                                   | 1210                                     | 10 x 16        | ECR0JYL122M◇◇△△1016                                            |
|                                             |                                     | 0,195                                              | 0,046                             | 0,180                             | 0,22                       | 95                                   | 1400                                     | 10 x 20        | ECR0JYL152M◇◇△△1020                                            |
|                                             | 1 500                               | 0,195                                              | 0,046                             | 0,180                             | 0,22                       | 95                                   | 1400                                     | 10 x 20        | ECR0JYL152M◇◇△△1020                                            |
|                                             | 1 800                               | 0,162                                              | 0,049                             | 0,160                             | 0,22                       | 114                                  | 1450                                     | 12,5 x 16      | ECR0JYL182M◇◇△△1216                                            |
|                                             | 2 200                               | 0,145                                              | 0,042                             | 0,170                             | 0,24                       | 139                                  | 1650                                     | 10 x 25        | ECR0JYL222M◇◇△△1025                                            |
|                                             |                                     | 0,118                                              | 0,031                             | 0,120                             | 0,24                       | 171                                  | 1910                                     | 10 x 30        | ECR0JYL272M◇◇△△1030                                            |
|                                             | 2 700                               | 0,118                                              | 0,042                             | 0,120                             | 0,24                       | 171                                  | 1940                                     | 16 x 16        | ECR0JYL272M◇◇△△1616                                            |
|                                             |                                     | 0,104                                              | 0,035                             | 0,120                             | 0,26                       | 208                                  | 1900                                     | 12,5 x 20      | ECR0JYL332M◇◇△△1220                                            |
|                                             | 3 300                               | 0,088                                              | 0,027                             | 0,089                             | 0,26                       | 246                                  | 2230                                     | 12,5 x 25      | ECR0JYL392M◇◇△△1225                                            |
|                                             |                                     | 0,088                                              | 0,043                             | 0,110                             | 0,26                       | 246                                  | 2210                                     | 18 x 16        | ECR0JYL392M◇◇△△1816                                            |
|                                             | 4 700                               | 0,079                                              | 0,024                             | 0,078                             | 0,28                       | 297                                  | 2650                                     | 12,5 x 30      | ECR0JYL472M◇◇△△1230                                            |
|                                             |                                     | 0,071                                              | 0,020                             | 0,065                             | 0,30                       | 353                                  | 2880                                     | 12,5 x 35      | ECR0JYL562M◇◇△△1235                                            |
|                                             | 5 600                               | 0,071                                              | 0,027                             | 0,078                             | 0,30                       | 353                                  | 2530                                     | 16 x 20        | ECR0JYL562M◇◇△△1620                                            |
|                                             |                                     | 0,062                                              | 0,017                             | 0,056                             | 0,32                       | 429                                  | 3350                                     | 12,5 x 40      | ECR0JYL682M◇◇△△1240                                            |
|                                             | 6 800                               | 0,062                                              | 0,021                             | 0,060                             | 0,32                       | 429                                  | 2930                                     | 16 x 25        | ECR0JYL682M◇◇△△1625                                            |
|                                             |                                     | 0,062                                              | 0,026                             | 0,067                             | 0,32                       | 429                                  | 2860                                     | 18 x 20        | ECR0JYL682M◇◇△△1820                                            |
|                                             | 8 200                               | 0,058                                              | 0,017                             | 0,050                             | 0,36                       | 517                                  | 3450                                     | 16 x 31,5      | ECR0JYL822M◇◇△△1631                                            |
|                                             |                                     | 0,053                                              | 0,015                             | 0,044                             | 0,40                       | 630                                  | 3610                                     | 16 x 35,5      | ECR0JYL103M◇◇△△1635                                            |
|                                             | 10 000                              | 0,053                                              | 0,019                             | 0,049                             | 0,40                       | 630                                  | 3140                                     | 18 x 25        | ECR0JYL103M◇◇△△1825                                            |
|                                             |                                     | 0,049                                              | 0,013                             | 0,038                             | 0,44                       | 756                                  | 4080                                     | 16 x 40        | ECR0JYL123M◇◇△△1640                                            |
|                                             | 12 000                              | 0,049                                              | 0,015                             | 0,040                             | 0,44                       | 756                                  | 4170                                     | 18 x 31,5      | ECR0JYL123M◇◇△△1831                                            |
|                                             |                                     | 0,044                                              | 0,014                             | 0,038                             | 0,50                       | 945                                  | 4220                                     | 18 x 35,5      | ECR0JYL153M◇◇△△1835                                            |
|                                             | 18 000                              | 0,041                                              | 0,012                             | 0,032                             | 0,56                       | 1.134                                | 4280                                     | 18 x 40        | ECR0JYL183M◇◇△△1840                                            |
| 10<br>(13)<br>1A                            | 100                                 | 2,52                                               | 0,580                             | 2,30                              | 0,19                       | 10                                   | 210                                      | 5 x 11,5       | ECR1AYL101M◇◇△△0511                                            |
|                                             | 220                                 | 1,15                                               | 0,220                             | 0,870                             | 0,19                       | 22                                   | 340                                      | 6,3 x 11,5     | ECR1AYL221M◇◇△△0611                                            |
|                                             | 470                                 | 0,536                                              | 0,130                             | 0,520                             | 0,19                       | 47                                   | 640                                      | 8 x 11,5       | ECR1AYL471M◇◇△△0811                                            |
|                                             | 680                                 | 0,371                                              | 0,087                             | 0,350                             | 0,19                       | 68                                   | 840                                      | 8 x 16         | ECR1AYL681M◇◇△△0816                                            |
|                                             |                                     | 0,371                                              | 0,080                             | 0,320                             | 0,19                       | 68                                   | 865                                      | 10 x 12,5      | ECR1AYL681M◇◇△△1012                                            |
|                                             | 1 000                               | 0,252                                              | 0,069                             | 0,270                             | 0,19                       | 100                                  | 1050                                     | 8 x 20         | ECR1AYL102M◇◇△△0820                                            |
|                                             |                                     | 0,252                                              | 0,060                             | 0,240                             | 0,19                       | 100                                  | 1210                                     | 10 x 16        | ECR1AYL102M◇◇△△1016                                            |
|                                             | 1 200                               | 0,210                                              | 0,460                             | 0,180                             | 0,19                       | 120                                  | 1400                                     | 10 x 20        | ECR1AYL122M◇◇△△1020                                            |
|                                             | 1 500                               | 0,168                                              | 0,042                             | 0,170                             | 0,19                       | 150                                  | 1650                                     | 10 x 25        | ECR1AYL152M◇◇△△1025                                            |
|                                             |                                     | 0,168                                              | 0,049                             | 0,160                             | 0,19                       | 150                                  | 1450                                     | 12,5 x 16      | ECR1AYL152M◇◇△△1216                                            |
|                                             | 2 200                               | 0,127                                              | 0,031                             | 0,120                             | 0,21                       | 220                                  | 1910                                     | 10 x 30        | ECR1AYL222M◇◇△△1030                                            |
|                                             |                                     | 0,127                                              | 0,035                             | 0,120                             | 0,21                       | 220                                  | 1900                                     | 12,5 x 20      | ECR1AYL222M◇◇△△1220                                            |
|                                             | 2 700                               | 0,127                                              | 0,042                             | 0,120                             | 0,21                       | 220                                  | 1940                                     | 16 x 16        | ECR1AYL222M◇◇△△1616                                            |
|                                             |                                     | 0,103                                              | 0,043                             | 0,110                             | 0,21                       | 270                                  | 2210                                     | 18 x 16        | ECR1AYL272M◇◇△△1816                                            |
|                                             | 3 300                               | 0,092                                              | 0,027                             | 0,089                             | 0,23                       | 330                                  | 2230                                     | 12,5 x 25      | ECR1AYL332M◇◇△△1225                                            |
|                                             | 3 900                               | 0,078                                              | 0,024                             | 0,078                             | 0,23                       | 390                                  | 2650                                     | 12,5 x 30      | ECR1AYL392M◇◇△△1230                                            |
|                                             |                                     | 0,078                                              | 0,027                             | 0,078                             | 0,23                       | 390                                  | 2530                                     | 16 x 20        | ECR1AYL392M◇◇△△1620                                            |
|                                             | 4 700                               | 0,071                                              | 0,020                             | 0,065                             | 0,25                       | 470                                  | 2880                                     | 12,5 x 35      | ECR1AYL472M◇◇△△1235                                            |
|                                             | 5 600                               | 0,064                                              | 0,017                             | 0,056                             | 0,27                       | 560                                  | 3350                                     | 12,5 x 40      | ECR1AYL562M◇◇△△1240                                            |
|                                             |                                     | 0,064                                              | 0,021                             | 0,060                             | 0,27                       | 560                                  | 2930                                     | 16 x 25        | ECR1AYL562M◇◇△△1625                                            |
|                                             | 6 800                               | 0,064                                              | 0,026                             | 0,067                             | 0,27                       | 560                                  | 2860                                     | 18 x 20        | ECR1AYL562M◇◇△△1820                                            |
|                                             |                                     | 0,057                                              | 0,017                             | 0,050                             | 0,29                       | 680                                  | 3450                                     | 16 x 31,5      | ECR1AYL682M◇◇△△1631                                            |
|                                             | 8 200                               | 0,057                                              | 0,019                             | 0,049                             | 0,29                       | 680                                  | 3140                                     | 18 x 25        | ECR1AYL682M◇◇△△1825                                            |
|                                             |                                     | 0,053                                              | 0,015                             | 0,044                             | 0,33                       | 820                                  | 3610                                     | 16 x 35,5      | ECR1AYL822M◇◇△△1635                                            |
|                                             | 10 000                              | 0,053                                              | 0,015                             | 0,040                             | 0,33                       | 820                                  | 4170                                     | 18 x 31,5      | ECR1AYL822M◇◇△△1831                                            |
|                                             |                                     | 0,049                                              | 0,013                             | 0,038                             | 0,37                       | 1.000                                | 4080                                     | 16 x 40        | ECR1AYL103M◇◇△△1640                                            |
|                                             | 12 000                              | 0,049                                              | 0,014                             | 0,038                             | 0,37                       | 1.000                                | 4220                                     | 18 x 35,5      | ECR1AYL103M◇◇△△1835                                            |
|                                             |                                     | 0,045                                              | 0,012                             | 0,032                             | 0,41                       | 1.200                                | 4280                                     | 18 x 40        | ECR1AYL123M◇◇△△1840                                            |
| 16<br>(20)<br>1C                            | 56                                  | 3,79                                               | 0,580                             | 2,30                              | 0,16                       | 9                                    | 210                                      | 5 x 11,5       | ECR1CYL560M◇◇△△0511                                            |
|                                             | 120                                 | 1,77                                               | 0,220                             | 0,870                             | 0,16                       | 20                                   | 340                                      | 6,3 x 11,5     | ECR1CYL121M◇◇△△0611                                            |
|                                             | 330                                 | 0,643                                              | 0,130                             | 0,520                             | 0,16                       | 53                                   | 640                                      | 8 x 11,5       | ECR1CYL331M◇◇△△0811                                            |
|                                             | 470                                 | 0,452                                              | 0,087                             | 0,350                             | 0,16                       | 76                                   | 840                                      | 8 x 16         | ECR1CYL471M◇◇△△0816                                            |
|                                             |                                     | 0,452                                              | 0,080                             | 0,320                             | 0,16                       | 76                                   | 865                                      | 10 x 12,5      | ECR1CYL471M◇◇△△1012                                            |
|                                             | 680                                 | 0,312                                              | 0,069                             | 0,270                             | 0,16                       | 109                                  | 1050                                     | 8 x 20         | ECR1CYL681M◇◇△△0820                                            |
|                                             |                                     | 0,312                                              | 0,060                             | 0,240                             | 0,16                       | 109                                  | 1210                                     | 10 x 16        | ECR1CYL681M◇◇△△1016                                            |

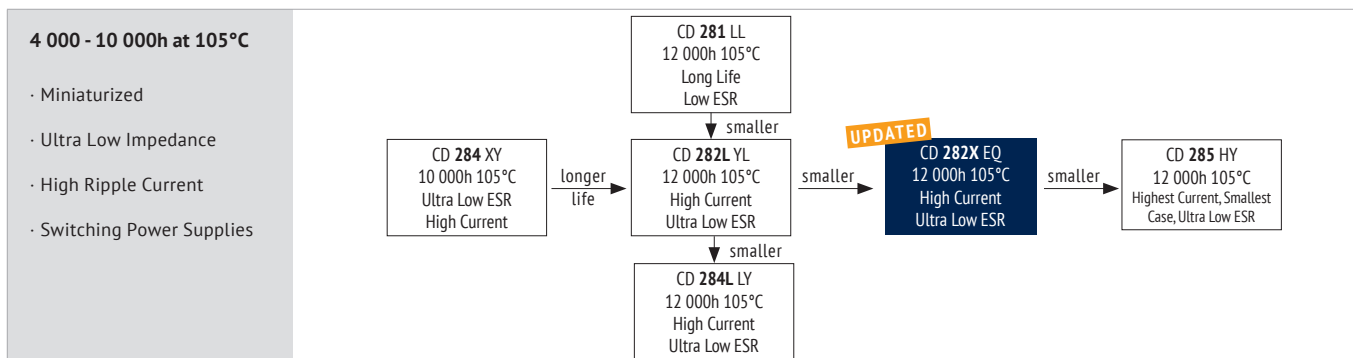
&gt;&gt;

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current | Size<br>$\varnothing D \times L$ | ORDER CODE                                                                                                                       |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120kHz<br>( $\Omega$ )              | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120kHz                     | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA rms)       | (mm)                             | <div> <div><math>\diamond\diamond</math> = pin style &amp; length</div> <div><math>\Delta\Delta</math> = pitch code</div> </div> |
| Details: Page 33                     |                            |                                             |                                |                                 |                                    |                               |                                   |                                  |                                                                                                                                  |
| <b>16<br/>(20)<br/>1C</b>            | 1 000                      | 0,212                                       | 0,046                          | 0,180                           | 0,16                               | 160                           | 1400                              | 10 x 20                          | ECR1CYL102M $\diamond\diamond\Delta\Delta$ 1020                                                                                  |
|                                      |                            | 0,212                                       | 0,049                          | 0,160                           | 0,16                               | 160                           | 1450                              | 12,5 x 16                        | ECR1CYL102M $\diamond\diamond\Delta\Delta$ 1216                                                                                  |
|                                      | 1 200                      | 0,177                                       | 0,042                          | 0,170                           | 0,16                               | 192                           | 1650                              | 10 x 25                          | ECR1CYL122M $\diamond\diamond\Delta\Delta$ 1025                                                                                  |
|                                      | 1 500                      | 0,141                                       | 0,031                          | 0,120                           | 0,16                               | 240                           | 1910                              | 10 x 30                          | ECR1CYL152M $\diamond\diamond\Delta\Delta$ 1030                                                                                  |
|                                      |                            | 0,141                                       | 0,035                          | 0,120                           | 0,16                               | 240                           | 1900                              | 12,5 x 20                        | ECR1CYL152M $\diamond\diamond\Delta\Delta$ 1220                                                                                  |
|                                      |                            | 0,141                                       | 0,042                          | 0,120                           | 0,16                               | 240                           | 1940                              | 16 x 16                          | ECR1CYL152M $\diamond\diamond\Delta\Delta$ 1616                                                                                  |
|                                      | 2 200                      | 0,109                                       | 0,027                          | 0,089                           | 0,18                               | 352                           | 2230                              | 12,5 x 25                        | ECR1CYL222M $\diamond\diamond\Delta\Delta$ 1225                                                                                  |
|                                      |                            | 0,107                                       | 0,043                          | 0,110                           | 0,18                               | 352                           | 2210                              | 18 x 16                          | ECR1CYL222M $\diamond\diamond\Delta\Delta$ 1816                                                                                  |
|                                      | 2 700                      | 0,088                                       | 0,024                          | 0,078                           | 0,18                               | 432                           | 2650                              | 12,5 x 30                        | ECR1CYL272M $\diamond\diamond\Delta\Delta$ 1230                                                                                  |
|                                      |                            | 0,088                                       | 0,027                          | 0,078                           | 0,18                               | 432                           | 2530                              | 16 x 20                          | ECR1CYL272M $\diamond\diamond\Delta\Delta$ 1620                                                                                  |
|                                      | 3 300                      | 0,080                                       | 0,020                          | 0,065                           | 0,20                               | 528                           | 2880                              | 12,5 x 35                        | ECR1CYL332M $\diamond\diamond\Delta\Delta$ 1235                                                                                  |
|                                      | 3 900                      | 0,068                                       | 0,017                          | 0,056                           | 0,20                               | 624                           | 3350                              | 12,5 x 40                        | ECR1CYL392M $\diamond\diamond\Delta\Delta$ 1240                                                                                  |
|                                      |                            | 0,068                                       | 0,021                          | 0,060                           | 0,20                               | 624                           | 2930                              | 16 x 25                          | ECR1CYL392M $\diamond\diamond\Delta\Delta$ 1625                                                                                  |
|                                      |                            | 0,068                                       | 0,026                          | 0,037                           | 0,20                               | 624                           | 2860                              | 18 x 20                          | ECR1CYL392M $\diamond\diamond\Delta\Delta$ 1820                                                                                  |
|                                      | 4 700                      | 0,062                                       | 0,017                          | 0,050                           | 0,22                               | 752                           | 3450                              | 16 x 31,5                        | ECR1CYL472M $\diamond\diamond\Delta\Delta$ 1631                                                                                  |
|                                      |                            | 0,062                                       | 0,019                          | 0,049                           | 0,22                               | 752                           | 3140                              | 18 x 25                          | ECR1CYL472M $\diamond\diamond\Delta\Delta$ 1825                                                                                  |
|                                      | 5 600                      | 0,057                                       | 0,015                          | 0,044                           | 0,24                               | 896                           | 3610                              | 16 x 35,5                        | ECR1CYL562M $\diamond\diamond\Delta\Delta$ 1635                                                                                  |
|                                      |                            | 0,057                                       | 0,015                          | 0,040                           | 0,24                               | 896                           | 4170                              | 18 x 31,5                        | ECR1CYL562M $\diamond\diamond\Delta\Delta$ 1831                                                                                  |
|                                      | 6 800                      | 0,051                                       | 0,013                          | 0,038                           | 0,26                               | 1.088                         | 4080                              | 16 x 40                          | ECR1CYL682M $\diamond\diamond\Delta\Delta$ 1640                                                                                  |
|                                      | 8 200                      | 0,049                                       | 0,014                          | 0,038                           | 0,30                               | 1.312                         | 4220                              | 18 x 35,5                        | ECR1CYL822M $\diamond\diamond\Delta\Delta$ 1835                                                                                  |
|                                      | 10 000                     | 0,045                                       | 0,012                          | 0,033                           | 0,34                               | 1.600                         | 4280                              | 18 x 40                          | ECR1CYL103M $\diamond\diamond\Delta\Delta$ 1840                                                                                  |
| <b>25<br/>(32)<br/>1E</b>            | 47                         | 3,96                                        | 0,580                          | 2,30                            | 0,14                               | 12                            | 210                               | 5 x 11,5                         | ECR1EYL470M $\diamond\diamond\Delta\Delta$ 0511                                                                                  |
|                                      | 100                        | 1,86                                        | 0,220                          | 0,870                           | 0,14                               | 25                            | 340                               | 6,3 x 11,5                       | ECR1EYL101M $\diamond\diamond\Delta\Delta$ 0611                                                                                  |
|                                      | 220                        | 0,844                                       | 0,130                          | 0,520                           | 0,14                               | 55                            | 640                               | 8 x 11,5                         | ECR1EYL221M $\diamond\diamond\Delta\Delta$ 0811                                                                                  |
|                                      | 330                        | 0,563                                       | 0,087                          | 0,350                           | 0,14                               | 83                            | 840                               | 8 x 16                           | ECR1EYL331M $\diamond\diamond\Delta\Delta$ 0816                                                                                  |
|                                      |                            | 0,563                                       | 0,080                          | 0,320                           | 0,14                               | 83                            | 865                               | 10 x 12,5                        | ECR1EYL331M $\diamond\diamond\Delta\Delta$ 1012                                                                                  |
|                                      | 470                        | 0,395                                       | 0,069                          | 0,270                           | 0,14                               | 118                           | 1050                              | 8 x 20                           | ECR1EYL471M $\diamond\diamond\Delta\Delta$ 0820                                                                                  |
|                                      |                            | 0,395                                       | 0,060                          | 0,240                           | 0,14                               | 118                           | 1210                              | 10 x 16                          | ECR1EYL471M $\diamond\diamond\Delta\Delta$ 1016                                                                                  |
|                                      | 680                        | 0,273                                       | 0,046                          | 0,180                           | 0,14                               | 170                           | 1400                              | 10 x 20                          | ECR1EYL681M $\diamond\diamond\Delta\Delta$ 1020                                                                                  |
|                                      |                            | 0,273                                       | 0,049                          | 0,160                           | 0,14                               | 170                           | 1450                              | 12,5 x 16                        | ECR1EYL681M $\diamond\diamond\Delta\Delta$ 1216                                                                                  |
|                                      | 820                        | 0,226                                       | 0,042                          | 0,170                           | 0,14                               | 205                           | 1650                              | 10 x 25                          | ECR1EYL821M $\diamond\diamond\Delta\Delta$ 1025                                                                                  |
|                                      | 1 000                      | 0,186                                       | 0,031                          | 0,120                           | 0,14                               | 250                           | 1910                              | 10 x 30                          | ECR1EYL102M $\diamond\diamond\Delta\Delta$ 1030                                                                                  |
|                                      |                            | 0,186                                       | 0,035                          | 0,120                           | 0,14                               | 250                           | 1900                              | 12,5 x 20                        | ECR1EYL102M $\diamond\diamond\Delta\Delta$ 1220                                                                                  |
|                                      |                            | 0,186                                       | 0,042                          | 0,120                           | 0,14                               | 250                           | 1940                              | 16 x 16                          | ECR1EYL102M $\diamond\diamond\Delta\Delta$ 1616                                                                                  |
|                                      | 1 200                      | 0,155                                       | 0,043                          | 0,110                           | 0,14                               | 300                           | 2210                              | 18 x 16                          | ECR1EYL122M $\diamond\diamond\Delta\Delta$ 1816                                                                                  |
|                                      | 1 500                      | 0,124                                       | 0,027                          | 0,089                           | 0,14                               | 375                           | 2230                              | 12,5 x 25                        | ECR1EYL152M $\diamond\diamond\Delta\Delta$ 1225                                                                                  |
|                                      | 1 800                      | 0,103                                       | 0,024                          | 0,078                           | 0,14                               | 450                           | 2650                              | 12,5 x 30                        | ECR1EYL182M $\diamond\diamond\Delta\Delta$ 1230                                                                                  |
|                                      |                            | 0,103                                       | 0,027                          | 0,078                           | 0,14                               | 450                           | 2530                              | 16 x 20                          | ECR1EYL182M $\diamond\diamond\Delta\Delta$ 1620                                                                                  |
|                                      | 2 200                      | 0,096                                       | 0,020                          | 0,065                           | 0,16                               | 550                           | 2880                              | 12,5 x 35                        | ECR1EYL222M $\diamond\diamond\Delta\Delta$ 1235                                                                                  |
|                                      |                            | 0,096                                       | 0,026                          | 0,067                           | 0,16                               | 550                           | 2860                              | 18 x 20                          | ECR1EYL222M $\diamond\diamond\Delta\Delta$ 1820                                                                                  |
|                                      | 2 700                      | 0,079                                       | 0,017                          | 0,056                           | 0,16                               | 675                           | 3350                              | 12,5 x 40                        | ECR1EYL272M $\diamond\diamond\Delta\Delta$ 1240                                                                                  |
|                                      |                            | 0,079                                       | 0,021                          | 0,060                           | 0,16                               | 675                           | 2930                              | 16 x 25                          | ECR1EYL272M $\diamond\diamond\Delta\Delta$ 1625                                                                                  |
|                                      | 3 300                      | 0,072                                       | 0,017                          | 0,050                           | 0,18                               | 825                           | 3450                              | 16 x 31,5                        | ECR1EYL332M $\diamond\diamond\Delta\Delta$ 1631                                                                                  |
|                                      |                            | 0,072                                       | 0,019                          | 0,049                           | 0,18                               | 825                           | 3140                              | 18 x 25                          | ECR1EYL332M $\diamond\diamond\Delta\Delta$ 1825                                                                                  |
|                                      | 3 900                      | 0,061                                       | 0,015                          | 0,044                           | 0,18                               | 975                           | 3610                              | 16 x 35,5                        | ECR1EYL392M $\diamond\diamond\Delta\Delta$ 1635                                                                                  |
|                                      |                            | 0,061                                       | 0,015                          | 0,040                           | 0,18                               | 975                           | 4170                              | 18 x 31,5                        | ECR1EYL392M $\diamond\diamond\Delta\Delta$ 1831                                                                                  |
|                                      | 4 700                      | 0,056                                       | 0,013                          | 0,038                           | 0,20                               | 1.175                         | 4080                              | 16 x 40                          | ECR1EYL472M $\diamond\diamond\Delta\Delta$ 1640                                                                                  |
|                                      |                            | 0,056                                       | 0,014                          | 0,038                           | 0,20                               | 1.175                         | 4220                              | 18 x 35,5                        | ECR1EYL472M $\diamond\diamond\Delta\Delta$ 1835                                                                                  |
|                                      | 5 600                      | 0,052                                       | 0,012                          | 0,032                           | 0,22                               | 1.400                         | 4280                              | 18 x 40                          | ECR1EYL562M $\diamond\diamond\Delta\Delta$ 1840                                                                                  |
| <b>35<br/>(44)<br/>1V</b>            | 33                         | 4,83                                        | 0,580                          | 2,30                            | 0,12                               | 12                            | 210                               | 5 x 11,5                         | ECR1VYL330M $\diamond\diamond\Delta\Delta$ 0511                                                                                  |
|                                      | 56                         | 2,85                                        | 0,220                          | 0,870                           | 0,12                               | 20                            | 340                               | 6,3 x 11,5                       | ECR1VYL560M $\diamond\diamond\Delta\Delta$ 0611                                                                                  |
|                                      | 150                        | 1,07                                        | 0,130                          | 0,520                           | 0,12                               | 53                            | 640                               | 8 x 11,5                         | ECR1VYL151M $\diamond\diamond\Delta\Delta$ 0811                                                                                  |
|                                      | 220                        | 0,723                                       | 0,087                          | 0,350                           | 0,12                               | 77                            | 840                               | 8 x 16                           | ECR1VYL221M $\diamond\diamond\Delta\Delta$ 0816                                                                                  |
|                                      |                            | 0,723                                       | 0,080                          | 0,320                           | 0,12                               | 77                            | 865                               | 10 x 12,5                        | ECR1VYL221M $\diamond\diamond\Delta\Delta$ 1012                                                                                  |
|                                      | 270                        | 0,589                                       | 0,069                          | 0,270                           | 0,12                               | 95                            | 1050                              | 8 x 20                           | ECR1VYL271M $\diamond\diamond\Delta\Delta$ 0820                                                                                  |
|                                      | 330                        | 0,482                                       | 0,060                          | 0,240                           | 0,12                               | 116                           | 1210                              | 10 x 16                          | ECR1VYL331M $\diamond\diamond\Delta\Delta$ 1016                                                                                  |
|                                      | 470                        | 0,339                                       | 0,046                          | 0,180                           | 0,12                               | 165                           | 1400                              | 10 x 20                          | ECR1VYL471M $\diamond\diamond\Delta\Delta$ 1020                                                                                  |
|                                      |                            | 0,339                                       | 0,049                          | 0,160                           | 0,12                               | 165                           | 1450                              | 12,5 x 16                        | ECR1VYL471M $\diamond\diamond\Delta\Delta$ 1216                                                                                  |
|                                      | 560                        | 0,284                                       | 0,042                          | 0,170                           | 0,12                               | 196                           | 1650                              | 10 x 25                          | ECR1VYL561M $\diamond\diamond\Delta\Delta$ 1025                                                                                  |
|                                      | 680                        | 0,234                                       | 0,031                          | 0,120                           | 0,12                               | 238                           | 1910                              | 10 x 30                          | ECR1VYL681M $\diamond\diamond\Delta\Delta$ 1030                                                                                  |
|                                      |                            | 0,234                                       | 0,035                          | 0,120                           | 0,12                               | 238                           | 1900                              | 12,5 x 20                        | ECR1VYL681M $\diamond\diamond\Delta\Delta$ 1220                                                                                  |
|                                      |                            | 0,234                                       | 0,042                          | 0,120                           | 0,12                               | 238                           | 1940                              | 16 x 16                          | ECR1VYL681M $\diamond\diamond\Delta\Delta$ 1616                                                                                  |
|                                      | 1 000                      | 0,159                                       | 0,027                          | 0,089                           | 0,12                               | 350                           | 2230                              | 12,5 x 25                        | ECR1VYL102M $\diamond\diamond\Delta\Delta$ 1225                                                                                  |
|                                      |                            | 0,159                                       | 0,043                          | 0,110                           | 0,12                               | 350                           | 2210                              | 18 x 16                          | ECR1VYL102M $\diamond\diamond\Delta\Delta$ 1816                                                                                  |
|                                      | 1 200                      | 0,133                                       | 0,024                          | 0,078                           | 0,12                               | 420                           | 2650                              | 12,5 x 30                        | ECR1VYL122M $\diamond\diamond\Delta\Delta$ 1230                                                                                  |
|                                      |                            | 0,133                                       | 0,027                          | 0,078                           | 0,12                               | 420                           | 2530                              | 16 x 20                          | ECR1VYL122M $\diamond\diamond\Delta\Delta$ 1620                                                                                  |

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance | $Z_{max}$<br>Max Impedance | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pitch code<br><br>Details: Page 33 |
|--------------------------------------|----------------------------|---------------------------------------------|----------------------------|----------------------------|------------------------------------|-------------------------------|-----------------------------------|----------------------------------|--------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | 20°C<br>120Hz<br>(Ω)                        | 20°C<br>100kHz<br>(Ω)      | -10°C<br>100kHz<br>(Ω)     | 20°C<br>120Hz                      | (μA)                          | 105°C<br>100kHz<br>(mArms)        | (mm)                             |                                                                                      |
| 35<br>(44)<br>1V                     | 1 500                      | 0,106                                       | 0,020                      | 0,065                      | 0,12                               | 525                           | 2880                              | 12,5 x 35                        | ECR1VYL152M◇◇△△1235                                                                  |
|                                      |                            | 0,088                                       | 0,017                      | 0,056                      | 0,12                               | 630                           | 3350                              | 12,5 x 40                        | ECR1VYL182M◇◇△△1240                                                                  |
|                                      | 1 800                      | 0,088                                       | 0,024                      | 0,060                      | 0,12                               | 630                           | 2930                              | 16 x 25                          | ECR1VYL182M◇◇△△1625                                                                  |
|                                      |                            | 0,088                                       | 0,026                      | 0,067                      | 0,12                               | 630                           | 2860                              | 18 x 20                          | ECR1VYL182M◇◇△△1820                                                                  |
|                                      | 2 200                      | 0,084                                       | 0,017                      | 0,050                      | 0,14                               | 770                           | 3450                              | 16 x 31,5                        | ECR1VYL222M◇◇△△1631                                                                  |
|                                      |                            | 0,084                                       | 0,019                      | 0,049                      | 0,14                               | 770                           | 3140                              | 18 x 25                          | ECR1VYL222M◇◇△△1825                                                                  |
|                                      | 2 700                      | 0,069                                       | 0,015                      | 0,044                      | 0,14                               | 945                           | 3610                              | 16 x 35,5                        | ECR1VYL272M◇◇△△1635                                                                  |
|                                      |                            | 0,069                                       | 0,015                      | 0,040                      | 0,14                               | 945                           | 4170                              | 18 x 31,5                        | ECR1VYL272M◇◇△△1831                                                                  |
|                                      | 3 300                      | 0,064                                       | 0,013                      | 0,038                      | 0,16                               | 1.155                         | 4080                              | 16 x 40                          | ECR1VYL332M◇◇△△1640                                                                  |
|                                      |                            | 0,064                                       | 0,014                      | 0,038                      | 0,16                               | 1.155                         | 4220                              | 18 x 35,5                        | ECR1VYL332M◇◇△△1835                                                                  |
|                                      | 3 900                      | 0,054                                       | 0,012                      | 0,032                      | 0,16                               | 1.365                         | 4280                              | 18 x 40                          | ECR1VYL392M◇◇△△1840                                                                  |
|                                      |                            |                                             |                            |                            |                                    |                               |                                   |                                  |                                                                                      |
| 50<br>(63)<br>1H                     | 22                         | 6,03                                        | 0,700                      | 2,80                       | 0,10                               | 11                            | 180                               | 5 x 11,5                         | ECR1HYL220M◇◇△△0511                                                                  |
|                                      | 56                         | 2,37                                        | 0,300                      | 1,20                       | 0,10                               | 28                            | 295                               | 6,3 x 11,5                       | ECR1HYL560M◇◇△△0611                                                                  |
|                                      | 100                        | 1,33                                        | 0,170                      | 0,680                      | 0,10                               | 50                            | 555                               | 8 x 11,5                         | ECR1HYL101M◇◇△△0811                                                                  |
|                                      | 120                        | 1,11                                        | 0,120                      | 0,480                      | 0,10                               | 60                            | 730                               | 8 x 16                           | ECR1HYL121M◇◇△△0816                                                                  |
|                                      | 150                        | 0,884                                       | 0,120                      | 0,480                      | 0,10                               | 75                            | 760                               | 10 x 12,5                        | ECR1HYL151M◇◇△△1012                                                                  |
|                                      | 180                        | 0,737                                       | 0,091                      | 0,360                      | 0,10                               | 90                            | 910                               | 8 x 20                           | ECR1HYL181M◇◇△△0820                                                                  |
|                                      | 220                        | 0,603                                       | 0,084                      | 0,340                      | 0,10                               | 110                           | 1050                              | 10 x 16                          | ECR1HYL221M◇◇△△016E                                                                  |
|                                      | 270                        | 0,491                                       | 0,060                      | 0,240                      | 0,10                               | 135                           | 1220                              | 10 x 20                          | ECR1HYL271M◇◇△△1020                                                                  |
|                                      |                            | 0,491                                       | 0,061                      | 0,200                      | 0,10                               | 135                           | 1260                              | 12,5 x 16                        | ECR1HYL271M◇◇△△1216                                                                  |
|                                      | 330                        | 0,402                                       | 0,055                      | 0,220                      | 0,10                               | 165                           | 1440                              | 10 x 25                          | ECR1HYL331M◇◇△△1025                                                                  |
|                                      |                            | 0,282                                       | 0,043                      | 0,170                      | 0,10                               | 235                           | 1690                              | 10 x 30                          | ECR1HYL471M◇◇△△1030                                                                  |
|                                      | 470                        | 0,282                                       | 0,045                      | 0,150                      | 0,10                               | 235                           | 1660                              | 12,5 x 20                        | ECR1HYL471M◇◇△△1220                                                                  |
|                                      |                            | 0,282                                       | 0,055                      | 0,170                      | 0,10                               | 235                           | 1690                              | 16 x 16                          | ECR1HYL471M◇◇△△1616                                                                  |
|                                      |                            | 0,237                                       | 0,034                      | 0,110                      | 0,10                               | 280                           | 1950                              | 12,5 x 25                        | ECR1HYL561M◇◇△△1225                                                                  |
|                                      | 560                        | 0,237                                       | 0,054                      | 0,150                      | 0,10                               | 280                           | 1930                              | 18 x 16                          | ECR1HYL561M◇◇△△1816                                                                  |
|                                      |                            | 0,195                                       | 0,030                      | 0,100                      | 0,10                               | 340                           | 2310                              | 12,5 x 30                        | ECR1HYL681M◇◇△△1230                                                                  |
|                                      | 820                        | 0,162                                       | 0,025                      | 0,083                      | 0,10                               | 410                           | 2510                              | 12,5 x 35                        | ECR1HYL821M◇◇△△1235                                                                  |
|                                      |                            | 0,162                                       | 0,034                      | 0,100                      | 0,10                               | 410                           | 2210                              | 16 x 20                          | ECR1HYL821M◇◇△△1620                                                                  |
|                                      | 1 000                      | 0,133                                       | 0,021                      | 0,069                      | 0,10                               | 500                           | 2920                              | 12,5 x 40                        | ECR1HYL102M◇◇△△1240                                                                  |
|                                      |                            | 0,133                                       | 0,025                      | 0,075                      | 0,10                               | 500                           | 2555                              | 16 x 25                          | ECR1HYL102M◇◇△△1625                                                                  |
|                                      |                            | 0,133                                       | 0,036                      | 0,097                      | 0,10                               | 500                           | 2490                              | 18 x 20                          | ECR1HYL102M◇◇△△1820                                                                  |
|                                      | 1 200                      | 0,111                                       | 0,022                      | 0,066                      | 0,10                               | 600                           | 3010                              | 16 x 31,5                        | ECR1HYL122M◇◇△△1631                                                                  |
|                                      |                            | 0,111                                       | 0,026                      | 0,070                      | 0,10                               | 600                           | 2740                              | 18 x 25                          | ECR1HYL122M◇◇△△1825                                                                  |
|                                      | 1 500                      | 0,088                                       | 0,019                      | 0,057                      | 0,10                               | 750                           | 3150                              | 16 x 35,5                        | ECR1HYL152M◇◇△△1635                                                                  |
|                                      | 1 800                      | 0,074                                       | 0,016                      | 0,048                      | 0,10                               | 900                           | 3710                              | 16 x 40                          | ECR1HYL182M◇◇△△1640                                                                  |
|                                      |                            | 0,074                                       | 0,021                      | 0,057                      | 0,10                               | 900                           | 3635                              | 18 x 31,5                        | ECR1HYL182M◇◇△△1831                                                                  |
|                                      | 2 200                      | 0,072                                       | 0,017                      | 0,046                      | 0,12                               | 1.100                         | 3680                              | 18 x 35,5                        | ECR1HYL222M◇◇△△1835                                                                  |
|                                      | 2 700                      | 0,059                                       | 0,014                      | 0,038                      | 0,12                               | 1.350                         | 3880                              | 18 x 40                          | ECR1HYL272M◇◇△△1840                                                                  |
|                                      | 3 300                      | 0,056                                       | 0,014                      | 0,038                      | 0,14                               | 1.650                         | 3800                              | 18 x 40                          | ECR1HYL332M◇◇△△1840                                                                  |
| 63<br>(79)<br>1J                     | 15                         | 7,96                                        | 1,80                       | 7,30                       | 0,09                               | 10                            | 61                                | 5 x 11,5                         | ECR1JYL150M◇◇△△0511                                                                  |
|                                      | 33                         | 3,62                                        | 1,00                       | 4,10                       | 0,09                               | 21                            | 126                               | 6,3 x 11,5                       | ECR1JYL330M◇◇△△0611                                                                  |
|                                      | 56                         | 2,14                                        | 0,500                      | 2,20                       | 0,09                               | 36                            | 260                               | 8 x 11,5                         | ECR1JYL560M◇◇△△0811                                                                  |
|                                      | 82                         | 1,46                                        | 0,360                      | 1,70                       | 0,09                               | 52                            | 335                               | 8 x 16                           | ECR1JYL820M◇◇△△0816                                                                  |
|                                      |                            | 1,46                                        | 0,340                      | 1,40                       | 0,09                               | 52                            | 325                               | 10 x 12,5                        | ECR1JYL820M◇◇△△1012                                                                  |
|                                      | 120                        | 0,995                                       | 0,260                      | 1,30                       | 0,09                               | 76                            | 408                               | 8 x 20                           | ECR1JYL121M◇◇△△0820                                                                  |
|                                      |                            | 0,995                                       | 0,250                      | 1,20                       | 0,09                               | 76                            | 400                               | 10 x 16                          | ECR1JYL121M◇◇△△1016                                                                  |
|                                      | 180                        | 0,663                                       | 0,170                      | 0,760                      | 0,09                               | 114                           | 518                               | 10 x 20                          | ECR1JYL181M◇◇△△1020                                                                  |
|                                      |                            | 0,663                                       | 0,180                      | 0,860                      | 0,09                               | 114                           | 527                               | 12,5 x 16                        | ECR1JYL181M◇◇△△1216                                                                  |
|                                      | 220                        | 0,543                                       | 0,160                      | 0,670                      | 0,09                               | 139                           | 595                               | 10 x 25                          | ECR1JYL221M◇◇△△1025                                                                  |
|                                      | 270                        | 0,442                                       | 0,120                      | 0,570                      | 0,09                               | 171                           | 740                               | 10 x 30                          | ECR1JYL271M◇◇△△1030                                                                  |
|                                      |                            | 0,442                                       | 0,130                      | 0,520                      | 0,09                               | 171                           | 765                               | 12,5 x 20                        | ECR1JYL271M◇◇△△1220                                                                  |
|                                      |                            | 0,442                                       | 0,110                      | 0,520                      | 0,09                               | 171                           | 895                               | 16 x 16                          | ECR1JYL271M◇◇△△1616                                                                  |
|                                      | 330                        | 0,362                                       | 0,096                      | 0,360                      | 0,09                               | 208                           | 875                               | 12,5 x 25                        | ECR1JYL331M◇◇△△1225                                                                  |
|                                      | 390                        | 0,306                                       | 0,096                      | 0,400                      | 0,09                               | 246                           | 1030                              | 18 x 16                          | ECR1JYL391M◇◇△△1816                                                                  |
|                                      | 470                        | 0,254                                       | 0,080                      | 0,340                      | 0,09                               | 297                           | 1010                              | 12,5 x 30                        | ECR1JYL471M◇◇△△1230                                                                  |
|                                      |                            | 0,254                                       | 0,077                      | 0,320                      | 0,09                               | 297                           | 1130                              | 16 x 20                          | ECR1JYL471M◇◇△△1620                                                                  |
|                                      | 560                        | 0,213                                       | 0,070                      | 0,300                      | 0,09                               | 353                           | 1140                              | 12,5 x 35                        | ECR1JYL561M◇◇△△1235                                                                  |
|                                      | 680                        | 0,176                                       | 0,060                      | 0,250                      | 0,09                               | 429                           | 1280                              | 12,5 x 40                        | ECR1JYL681M◇◇△△1240                                                                  |
|                                      |                            | 0,176                                       | 0,062                      | 0,230                      | 0,09                               | 429                           | 1350                              | 16 x 25                          | ECR1JYL681M◇◇△△1625                                                                  |
|                                      |                            | 0,176                                       | 0,072                      | 0,270                      | 0,09                               | 429                           | 1300                              | 18 x 20                          | ECR1JYL681M◇◇△△1820                                                                  |
|                                      | 820                        | 0,146                                       | 0,049                      | 0,180                      | 0,09                               | 517                           | 1650                              | 16 x 31,5                        | ECR1JYL821M◇◇△△1631                                                                  |
|                                      |                            | 0,146                                       | 0,052                      | 0,190                      | 0,09                               | 517                           | 1560                              | 18 x 25                          | ECR1JYL821M◇◇△△1825                                                                  |
|                                      | 1 000                      | 0,119                                       | 0,040                      | 0,150                      | 0,09                               | 630                           | 1900                              | 16 x 35,5                        | ECR1JYL102M◇◇△△1635                                                                  |
|                                      |                            | 0,119                                       | 0,042                      | 0,150                      | 0,09                               | 630                           | 1720                              | 18 x 31,5                        | ECR1JYL102M◇◇△△1831                                                                  |

&gt;&gt;

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance | $Z_{max}$<br>Max Impedance | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pitch code<br><br>Details: Page 33 |
|--------------------------------------|----------------------------|---------------------------------------------|----------------------------|----------------------------|------------------------------------|-------------------------------|-----------------------------------|----------------------------------|--------------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | ( $\Omega$ )                                | ( $\Omega$ )               | ( $\Omega$ )               | ( $\Omega$ )                       | ( $\mu A$ )                   | (mA <sub>RMS</sub> )              | (mm)                             |                                                                                      |
| <b>63<br/>(79)<br/>1J</b>            | 1 200                      | 0,099                                       | 0,036                      | 0,130                      | 0,09                               | 756                           | 2130                              | 16 x 40                          | ECR1JYL122M◇◇△△1640                                                                  |
|                                      |                            | 0,099                                       | 0,036                      | 0,130                      | 0,09                               | 756                           | 1890                              | 18 x 35,5                        | ECR1JYL122M◇◇△△1835                                                                  |
|                                      | 1 500                      | 0,080                                       | 0,032                      | 0,120                      | 0,09                               | 945                           | 2470                              | 18 x 40                          | ECR1JYL152M◇◇△△1840                                                                  |
|                                      | 2 700                      | 0,055                                       | 0,025                      | 0,100                      | 0,11                               | 1 701                         | 2900                              | 18 x 40                          | ECR1JYL272M◇◇△△1840                                                                  |
|                                      | 3 300                      | 0,053                                       | 0,022                      | 0,100                      | 0,13                               | 2 079                         | 3200                              | 18 x 40                          | ECR1JYL332M◇◇△△1840                                                                  |
| <b>100<br/>(125)<br/>2A</b>          | 6,8                        | 15,6                                        | 1,80                       | 7,30                       | 0,08                               | 7                             | 62                                | 5 x 11,5                         | ECR2AYL6R8M◇◇△△0511                                                                  |
|                                      | 15                         | 7,08                                        | 1,00                       | 4,10                       | 0,08                               | 15                            | 126                               | 6,3 x 11,5                       | ECR2AYL150M◇◇△△0611                                                                  |
|                                      | 27                         | 3,93                                        | 0,500                      | 2,20                       | 0,08                               | 27                            | 260                               | 8 x 11,5                         | ECR2AYL270M◇◇△△0811                                                                  |
|                                      | 39                         | 2,73                                        | 0,360                      | 1,70                       | 0,08                               | 39                            | 335                               | 8 x 16                           | ECR2AYL390M◇◇△△0816                                                                  |
|                                      | 47                         | 2,26                                        | 0,340                      | 1,40                       | 0,08                               | 47                            | 325                               | 10 x 12,5                        | ECR2AYL470M◇◇△△1012                                                                  |
|                                      | 56                         | 1,90                                        | 0,260                      | 1,30                       | 0,08                               | 56                            | 408                               | 8 x 20                           | ECR2AYL560M◇◇△△0820                                                                  |
|                                      | 68                         | 1,56                                        | 0,250                      | 1,20                       | 0,08                               | 68                            | 400                               | 10 x 16                          | ECR2AYL680M◇◇△△1016                                                                  |
|                                      | 82                         | 1,30                                        | 0,170                      | 0,760                      | 0,08                               | 82                            | 518                               | 10 x 20                          | ECR2AYL820M◇◇△△1020                                                                  |
|                                      |                            | 1,30                                        | 0,180                      | 0,860                      | 0,08                               | 82                            | 527                               | 12,5 x 16                        | ECR2AYL820M◇◇△△1216                                                                  |
|                                      | 100                        | 1,07                                        | 0,160                      | 0,670                      | 0,08                               | 100                           | 595                               | 10 x 25                          | ECR2AYL101M◇◇△△1025                                                                  |
|                                      | 120                        | 0,884                                       | 0,120                      | 0,570                      | 0,08                               | 120                           | 740                               | 10 x 30                          | ECR2AYL121M◇◇△△1030                                                                  |
|                                      |                            | 0,884                                       | 0,130                      | 0,520                      | 0,08                               | 120                           | 765                               | 12,5 x 20                        | ECR2AYL121M◇◇△△1220                                                                  |
|                                      | 150                        | 0,707                                       | 0,110                      | 0,520                      | 0,08                               | 150                           | 895                               | 16 x 16                          | ECR2AYL151M◇◇△△1616                                                                  |
|                                      | 180                        | 0,589                                       | 0,096                      | 0,360                      | 0,08                               | 180                           | 875                               | 12,5 x 25                        | ECR2AYL181M◇◇△△1225                                                                  |
|                                      |                            | 0,589                                       | 0,096                      | 0,400                      | 0,08                               | 180                           | 1030                              | 18 x 16                          | ECR2AYL181M◇◇△△1816                                                                  |
|                                      | 220                        | 0,482                                       | 0,080                      | 0,340                      | 0,08                               | 220                           | 1010                              | 12,5 x 30                        | ECR2AYL221M◇◇△△1230                                                                  |
|                                      |                            | 0,482                                       | 0,077                      | 0,320                      | 0,08                               | 220                           | 1130                              | 16 x 20                          | ECR2AYL221M◇◇△△1620                                                                  |
|                                      | 270                        | 0,393                                       | 0,070                      | 0,300                      | 0,08                               | 270                           | 1140                              | 12,5 x 35                        | ECR2AYL271M◇◇△△1235                                                                  |
|                                      |                            | 0,393                                       | 0,062                      | 0,230                      | 0,08                               | 270                           | 1350                              | 16 x 25                          | ECR2AYL271M◇◇△△1625                                                                  |
|                                      | 330                        | 0,322                                       | 0,060                      | 0,250                      | 0,08                               | 330                           | 1280                              | 12,5 x 40                        | ECR2AYL331M◇◇△△1240                                                                  |
|                                      |                            | 0,322                                       | 0,072                      | 0,270                      | 0,08                               | 330                           | 1300                              | 18 x 20                          | ECR2AYL331M◇◇△△1820                                                                  |
|                                      | 390                        | 0,272                                       | 0,049                      | 0,180                      | 0,08                               | 390                           | 1650                              | 16 x 31,5                        | ECR2AYL391M◇◇△△1631                                                                  |
|                                      |                            | 0,272                                       | 0,052                      | 0,190                      | 0,08                               | 390                           | 1560                              | 18 x 25                          | ECR2AYL391M◇◇△△1825                                                                  |
|                                      | 470                        | 0,226                                       | 0,040                      | 0,150                      | 0,08                               | 470                           | 1900                              | 16 x 35,5                        | ECR2AYL471M◇◇△△1635                                                                  |
|                                      |                            | 0,226                                       | 0,042                      | 0,150                      | 0,08                               | 470                           | 1720                              | 18 x 31,5                        | ECR2AYL471M◇◇△△1831                                                                  |
|                                      | 560                        | 0,189                                       | 0,036                      | 0,130                      | 0,08                               | 560                           | 2130                              | 16 x 40                          | ECR2AYL561M◇◇△△1640                                                                  |
|                                      | 680                        | 0,156                                       | 0,036                      | 0,130                      | 0,08                               | 680                           | 1890                              | 18 x 35,5                        | ECR2AYL681M◇◇△△1835                                                                  |
|                                      | 820                        | 0,129                                       | 0,032                      | 0,120                      | 0,08                               | 820                           | 2470                              | 18 x 40                          | ECR2AYL821M◇◇△△1840                                                                  |



## ITEM CHARACTERISTICS

|                                     |            |
|-------------------------------------|------------|
| Operating Temperature Range (°C)    | -40 ~ +105 |
| Voltage Range (V)                   | 6,3 ~ 100  |
| Capacitance Range (µF)              | 1 ~ 15 000 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%      |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current (µA) After 2 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

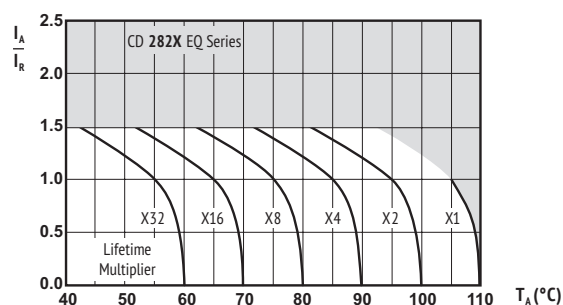
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V) | 6,3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
|---------------------------------------------------------|-------------------|-----|----|----|----|----|----|----|-----|
| $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 4   | 3  |    |    |    | 2  |    |     |
| $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 8   | 6  | 4  |    |    | 3  |    |     |

| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             |            | ENDURANCE TEST                           |                             | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------|------------------------------------------|-----------------------------|---------------------------------------|------------------------------------------------------------------------------|
|                                                                         | 6,3~10V:                              | 16~100V:                          |                                       |            | 6,3~10V:                                 | 16~100V:                    |                                       |                                                                              |
| Lifetime                                                                | Ø 5:<br>Ø 6,3-8:<br>Ø 10-18:          | 6 000h<br>8 000h<br>10 000h       | 7 000h<br>9 000h<br>12 000h           | > 250 000h | 4 000h<br>6 000h<br>8 000h               | 5 000h<br>7 000h<br>10 000h | 6 000h<br>8 000h<br>10 000h           | 7 000h<br>9 000h<br>12 000h                                                  |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         |            | Not more than specified value            |                             | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 40% of initial value         |                                   | Within ± 25% of initial value         |            | Within ± 25% of initial value            |                             | Within ± 20% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value |            | Not more than 200% of specified value    |                             | Not more than 200% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C               |            | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 |                             | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for<br>30 min > 24h before<br>measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT) MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)

| Capacitance (µF) \ Frequency | 120Hz | 1kHz | 10kHz | 100kHz |
|------------------------------|-------|------|-------|--------|
| 1                            | 0,35  | 0,60 | 0,80  | 1,00   |
| 2,2 ~ 10                     | 0,42  | 0,60 | 0,80  | 1,00   |
| 22 ~ 47                      | 0,55  | 0,75 | 0,90  | 1,00   |
| 100 ~ 330                    | 0,70  | 0,85 | 0,95  | 1,00   |
| 470 ~ 1 000                  | 0,75  | 0,90 | 0,98  | 1,00   |
| 2 200 ~ 15 000               | 0,80  | 0,95 | 1,00  | 1,00   |

Multipliers for typical operating conditions.



$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL SAFETY FACTOR

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

**!** This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current | Size<br>$\varnothing D \times L$ | ORDER CODE                                                                                 |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------|----------------------------------|--------------------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120kHz<br>( $\Omega$ )              | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120kHz                     | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA rms)       | (mm)                             | $\diamond\diamond$ = pin style & length<br>$\Delta\Delta$ = pitch code<br>Details: Page 33 |
| 6,3<br>(7,9)<br>0J                   | 100                        | 2,92                                        | 0,900                          | 3,60                            | 0,22                               | 7                             | 150                               | 5 x 11,5                         | ECR0JEQ101M $\diamond\diamond\Delta\Delta$ 0511                                            |
|                                      | 180                        | 1,63                                        | 0,400                          | 1,20                            | 0,22                               | 12                            | 250                               | 5 x 11,5                         | ECR0JEQ181M $\diamond\diamond\Delta\Delta$ 0511                                            |
|                                      | 220                        | 1,33                                        | 0,400                          | 1,20                            | 0,22                               | 14                            | 250                               | 5 x 11,5                         | ECR0JEQ221M $\diamond\diamond\Delta\Delta$ 0511                                            |
|                                      | 330                        | 0,884                                       | 0,220                          | 0,870                           | 0,22                               | 21                            | 340                               | 6,3 x 11,5                       | ECR0JEQ331M $\diamond\diamond\Delta\Delta$ 0611                                            |
|                                      | 470                        | 0,621                                       | 0,220                          | 0,870                           | 0,22                               | 30                            | 400                               | 6,3 x 11,5                       | ECR0JEQ471M $\diamond\diamond\Delta\Delta$ 0611                                            |
|                                      | 1 000                      | 0,292                                       | 0,130                          | 0,520                           | 0,22                               | 63                            | 640                               | 8 x 11,5                         | ECR0JEQ102M $\diamond\diamond\Delta\Delta$ 0811                                            |
|                                      | 1 200                      | 0,244                                       | 0,087                          | 0,350                           | 0,22                               | 76                            | 840                               | 8 x 16                           | ECR0JEQ122M $\diamond\diamond\Delta\Delta$ 0816                                            |
|                                      |                            | 0,244                                       | 0,080                          | 0,320                           | 0,22                               | 76                            | 865                               | 10 x 12,5                        | ECR0JEQ122M $\diamond\diamond\Delta\Delta$ 1012                                            |
|                                      | 1 500                      | 0,195                                       | 0,069                          | 0,270                           | 0,22                               | 65                            | 1050                              | 8 x 20                           | ECR0JEQ152M $\diamond\diamond\Delta\Delta$ 0820                                            |
|                                      | 2 200                      | 0,145                                       | 0,062                          | 0,250                           | 0,24                               | 139                           | 1300                              | 10 x 16                          | ECR0JEQ222M $\diamond\diamond\Delta\Delta$ 1016                                            |
|                                      | 3 300                      | 0,104                                       | 0,046                          | 0,180                           | 0,26                               | 208                           | 1400                              | 10 x 20                          | ECR0JEQ332M $\diamond\diamond\Delta\Delta$ 1020                                            |
|                                      | 3 900                      | 0,089                                       | 0,041                          | 0,140                           | 0,26                               | 246                           | 1900                              | 12,5 x 20                        | ECR0JEQ392M $\diamond\diamond\Delta\Delta$ 1220                                            |
|                                      | 4 700                      | 0,079                                       | 0,032                          | 0,110                           | 0,28                               | 297                           | 2230                              | 12,5 x 25                        | ECR0JEQ472M $\diamond\diamond\Delta\Delta$ 1225                                            |
|                                      | 6 800                      | 0,062                                       | 0,032                          | 0,110                           | 0,32                               | 429                           | 2230                              | 12,5 x 25                        | ECR0JEQ682M $\diamond\diamond\Delta\Delta$ 1225                                            |
|                                      | 10 000                     | 0,053                                       | 0,021                          | 0,060                           | 0,40                               | 630                           | 2930                              | 16 x 25                          | ECR0JEQ103M $\diamond\diamond\Delta\Delta$ 1625                                            |
|                                      | 12 000                     | 0,049                                       | 0,019                          | 0,056                           | 0,44                               | 756                           | 3450                              | 16 x 31,5                        | ECR0JEQ123M $\diamond\diamond\Delta\Delta$ 1631                                            |
|                                      | 15 000                     | 0,044                                       | 0,015                          | 0,044                           | 0,50                               | 945                           | 3610                              | 16 x 35,5                        | ECR0JEQ153M $\diamond\diamond\Delta\Delta$ 1635                                            |

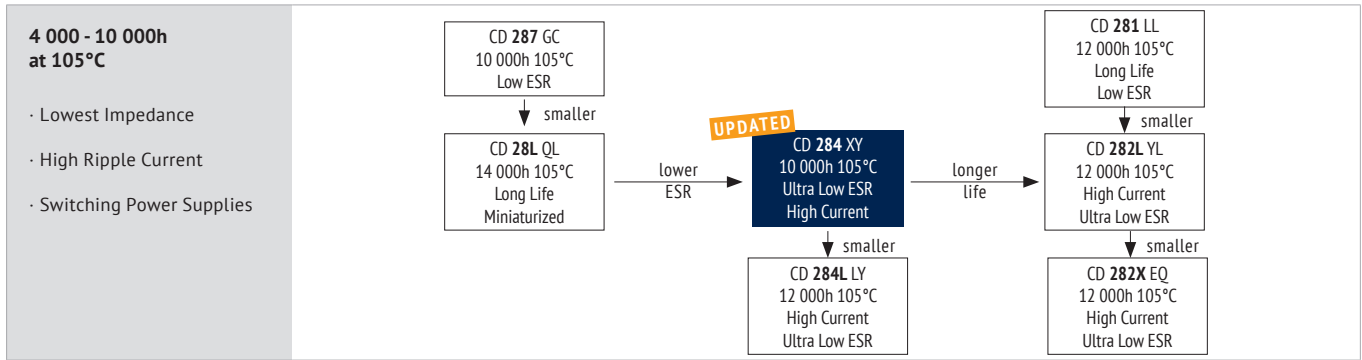
|                  |        |       |       |       |      |      |      |            |                                                 |
|------------------|--------|-------|-------|-------|------|------|------|------------|-------------------------------------------------|
| 10<br>(13)<br>1A | 100    | 2,52  | 0,900 | 3,60  | 0,19 | 10   | 150  | 5 x 11,5   | ECR1AEQ101M $\diamond\diamond\Delta\Delta$ 0511 |
|                  | 120    | 2,10  | 0,400 | 1,60  | 0,19 | 12   | 250  | 5 x 11,5   | ECR1AEQ121M $\diamond\diamond\Delta\Delta$ 0511 |
|                  | 220    | 1,15  | 0,400 | 1,20  | 0,19 | 22   | 250  | 5 x 11,5   | ECR1AEQ221M $\diamond\diamond\Delta\Delta$ 0511 |
|                  | 330    | 0,764 | 0,220 | 0,870 | 0,19 | 33   | 400  | 6,3 x 11,5 | ECR1AEQ331M $\diamond\diamond\Delta\Delta$ 0611 |
|                  | 470    | 0,536 | 0,220 | 0,870 | 0,19 | 47   | 400  | 6,3 x 11,5 | ECR1AEQ471M $\diamond\diamond\Delta\Delta$ 0611 |
|                  | 560    | 0,451 | 0,130 | 0,520 | 0,19 | 56   | 640  | 8 x 11,5   | ECR1AEQ561M $\diamond\diamond\Delta\Delta$ 0811 |
|                  | 820    | 0,310 | 0,087 | 0,350 | 0,19 | 82   | 840  | 8 x 16     | ECR1AEQ821M $\diamond\diamond\Delta\Delta$ 0816 |
|                  |        | 0,310 | 0,080 | 0,320 | 0,19 | 82   | 865  | 10 x 12,5  | ECR1AEQ821M $\diamond\diamond\Delta\Delta$ 1012 |
|                  | 1 000  | 0,252 | 0,080 | 0,320 | 0,19 | 100  | 865  | 10 x 12,5  | ECR1AEQ102M $\diamond\diamond\Delta\Delta$ 1012 |
|                  | 1 200  | 0,220 | 0,069 | 0,270 | 0,19 | 120  | 1050 | 8 x 20     | ECR1AEQ122M $\diamond\diamond\Delta\Delta$ 0820 |
|                  |        | 0,211 | 0,062 | 0,250 | 0,19 | 120  | 1300 | 10 x 16    | ECR1AEQ122M $\diamond\diamond\Delta\Delta$ 1016 |
|                  | 1 800  | 0,141 | 0,046 | 0,180 | 0,19 | 180  | 1400 | 10 x 20    | ECR1AEQ182M $\diamond\diamond\Delta\Delta$ 1020 |
|                  | 2 200  | 0,127 | 0,046 | 0,180 | 0,21 | 220  | 1400 | 10 x 20    | ECR1AEQ222M $\diamond\diamond\Delta\Delta$ 1020 |
|                  | 3 300  | 0,092 | 0,041 | 0,140 | 0,23 | 330  | 1900 | 12,5 x 20  | ECR1AEQ332M $\diamond\diamond\Delta\Delta$ 1220 |
|                  | 4 700  | 0,071 | 0,032 | 0,110 | 0,25 | 470  | 2230 | 12,5 x 25  | ECR1AEQ472M $\diamond\diamond\Delta\Delta$ 1225 |
|                  | 6 800  | 0,057 | 0,021 | 0,060 | 0,29 | 680  | 2930 | 16 x 25    | ECR1AEQ682M $\diamond\diamond\Delta\Delta$ 1625 |
|                  | 10 000 | 0,049 | 0,019 | 0,056 | 0,37 | 1000 | 3450 | 16 x 31,5  | ECR1AEQ103M $\diamond\diamond\Delta\Delta$ 1631 |
|                  | 12 000 | 0,046 | 0,015 | 0,044 | 0,41 | 1200 | 3610 | 16 x 35,5  | ECR1AEQ123M $\diamond\diamond\Delta\Delta$ 1635 |

|                  |        |       |       |       |      |      |      |            |                                                 |
|------------------|--------|-------|-------|-------|------|------|------|------------|-------------------------------------------------|
| 16<br>(20)<br>1C | 47     | 4,52  | 0,400 | 1,20  | 0,16 | 8    | 250  | 5 x 11,5   | ECR1CEQ470M $\diamond\diamond\Delta\Delta$ 0511 |
|                  | 100    | 2,13  | 0,400 | 1,20  | 0,16 | 16   | 250  | 5 x 11,5   | ECR1CEQ101M $\diamond\diamond\Delta\Delta$ 0511 |
|                  | 220    | 0,965 | 0,220 | 0,870 | 0,16 | 36   | 400  | 6,3 x 11,5 | ECR1CEQ221M $\diamond\diamond\Delta\Delta$ 0611 |
|                  | 330    | 0,643 | 0,220 | 0,870 | 0,16 | 53   | 400  | 6,3 x 11,5 | ECR1CEQ331M $\diamond\diamond\Delta\Delta$ 0611 |
|                  | 470    | 0,452 | 0,130 | 0,520 | 0,16 | 76   | 640  | 8 x 11,5   | ECR1CEQ471M $\diamond\diamond\Delta\Delta$ 0811 |
|                  | 680    | 0,313 | 0,087 | 0,350 | 0,16 | 109  | 840  | 8 x 16     | ECR1CEQ681M $\diamond\diamond\Delta\Delta$ 0816 |
|                  |        | 0,313 | 0,080 | 0,320 | 0,16 | 41   | 865  | 10 x 12,5  | ECR1CEQ681M $\diamond\diamond\Delta\Delta$ 1012 |
|                  | 820    | 0,259 | 0,069 | 0,270 | 0,16 | 132  | 1050 | 8 x 20     | ECR1CEQ821M $\diamond\diamond\Delta\Delta$ 0820 |
|                  | 1 000  | 0,212 | 0,062 | 0,250 | 0,16 | 160  | 1210 | 10 x 16    | ECR1CEQ102M $\diamond\diamond\Delta\Delta$ 1016 |
|                  | 1 500  | 0,142 | 0,046 | 0,180 | 0,16 | 240  | 1400 | 10 x 20    | ECR1CEQ152M $\diamond\diamond\Delta\Delta$ 1020 |
|                  | 1 800  | 0,118 | 0,042 | 0,170 | 0,16 | 288  | 1650 | 10 x 25    | ECR1CEQ182M $\diamond\diamond\Delta\Delta$ 1025 |
|                  | 2 200  | 0,109 | 0,041 | 0,140 | 0,18 | 352  | 1900 | 12,5 x 20  | ECR1CEQ222M $\diamond\diamond\Delta\Delta$ 1220 |
|                  | 3 300  | 0,080 | 0,032 | 0,110 | 0,20 | 528  | 2230 | 12,5 x 25  | ECR1CEQ332M $\diamond\diamond\Delta\Delta$ 1225 |
|                  | 4 700  | 0,062 | 0,021 | 0,060 | 0,22 | 752  | 2930 | 16 x 25    | ECR1CEQ472M $\diamond\diamond\Delta\Delta$ 1625 |
|                  | 5 600  | 0,057 | 0,021 | 0,060 | 0,24 | 896  | 2930 | 16 x 25    | ECR1CEQ562M $\diamond\diamond\Delta\Delta$ 1625 |
|                  | 6 800  | 0,051 | 0,019 | 0,056 | 0,26 | 1088 | 3450 | 16 x 31,5  | ECR1CEQ682M $\diamond\diamond\Delta\Delta$ 1631 |
|                  | 8 200  | 0,049 | 0,019 | 0,056 | 0,30 | 1312 | 3450 | 16 x 31,5  | ECR1CEQ822M $\diamond\diamond\Delta\Delta$ 1631 |
|                  | 10 000 | 0,046 | 0,015 | 0,044 | 0,34 | 1600 | 3610 | 16 x 35,5  | ECR1CEQ103M $\diamond\diamond\Delta\Delta$ 1635 |

|                  |       |       |       |       |      |     |      |            |                                                 |
|------------------|-------|-------|-------|-------|------|-----|------|------------|-------------------------------------------------|
| 25<br>(32)<br>1E | 33    | 5,63  | 0,400 | 1,20  | 0,14 | 9   | 250  | 5 x 11,5   | ECR1EEQ330M $\diamond\diamond\Delta\Delta$ 0511 |
|                  | 47    | 3,96  | 0,400 | 1,20  | 0,14 | 12  | 250  | 5 x 11,5   | ECR1EEQ470M $\diamond\diamond\Delta\Delta$ 0511 |
|                  | 68    | 2,73  | 0,400 | 1,20  | 0,14 | 17  | 250  | 5 x 11,5   | ECR1EEQ680M $\diamond\diamond\Delta\Delta$ 0511 |
|                  | 100   | 1,86  | 0,400 | 1,20  | 0,14 | 25  | 250  | 5 x 11,5   | ECR1EEQ101M $\diamond\diamond\Delta\Delta$ 0511 |
|                  | 150   | 1,24  | 0,220 | 0,870 | 0,14 | 38  | 400  | 6,3 x 11,5 | ECR1EEQ151M $\diamond\diamond\Delta\Delta$ 0611 |
|                  | 220   | 0,844 | 0,220 | 0,870 | 0,14 | 55  | 400  | 6,3 x 11,5 | ECR1EEQ221M $\diamond\diamond\Delta\Delta$ 0611 |
|                  | 330   | 0,563 | 0,130 | 0,520 | 0,14 | 83  | 640  | 8 x 11,5   | ECR1EEQ331M $\diamond\diamond\Delta\Delta$ 0811 |
|                  | 390   | 0,477 | 0,087 | 0,350 | 0,14 | 98  | 840  | 8 x 16     | ECR1EEQ391M $\diamond\diamond\Delta\Delta$ 0816 |
|                  | 470   | 0,395 | 0,080 | 0,320 | 0,14 | 118 | 865  | 10 x 12,5  | ECR1EEQ471M $\diamond\diamond\Delta\Delta$ 1012 |
|                  | 560   | 0,332 | 0,069 | 0,270 | 0,14 | 140 | 1050 | 8 x 20     | ECR1EEQ561M $\diamond\diamond\Delta\Delta$ 0820 |
|                  | 680   | 0,274 | 0,062 | 0,250 | 0,14 | 170 | 1300 | 10 x 16    | ECR1EEQ681M $\diamond\diamond\Delta\Delta$ 1016 |
|                  | 1 000 | 0,186 | 0,046 | 0,180 | 0,14 | 250 | 1400 | 10 x 20    | ECR1EEQ102M $\diamond\diamond\Delta\Delta$ 1020 |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance | Z <sub>max</sub><br>Max Impedance | Z <sub>max</sub><br>Max Impedance | tanδ<br>Dissipation Factor | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current | Size<br>øD x L | ORDER CODE                                                     |
|---------------------------------------------|-------------------------------------|----------------------------------------------------|-----------------------------------|-----------------------------------|----------------------------|--------------------------------------|------------------------------------------|----------------|----------------------------------------------------------------|
| (V)                                         | (µF)                                | 20°C<br>120Hz<br>(Ω)                               | 20°C<br>100kHz<br>(Ω)             | -10°C<br>100kHz<br>(Ω)            | 20°C<br>120Hz              | (µA)                                 | 105°C<br>100kHz<br>(mArms)               | (mm)           | ◇◇ = pin style & length<br>ΔΔ = pitch code<br>Details: Page 33 |
| 25<br>(32)<br>1E                            | 1 200                               | 0,155                                              | 0,042                             | 0,170                             | 0,14                       | 300                                  | 1650                                     | 10 x 25        | ECR1EEQ122M◇◇ΔΔ1025                                            |
|                                             | 1 500                               | 0,124                                              | 0,041                             | 0,140                             | 0,14                       | 375                                  | 1900                                     | 12,5 x 20      | ECR1EEQ152M◇◇ΔΔ1220                                            |
|                                             | 2 200                               | 0,096                                              | 0,032                             | 0,110                             | 0,16                       | 550                                  | 2230                                     | 12,5 x 25      | ECR1EEQ222M◇◇ΔΔ1225                                            |
|                                             | 3 300                               | 0,072                                              | 0,021                             | 0,060                             | 0,18                       | 825                                  | 2930                                     | 16 x 25        | ECR1EEQ332M◇◇ΔΔ1625                                            |
|                                             | 4 700                               | 0,056                                              | 0,019                             | 0,056                             | 0,20                       | 1175                                 | 3450                                     | 16 x 31,5      | ECR1EEQ472M◇◇ΔΔ1631                                            |
|                                             | 5 600                               | 0,053                                              | 0,015                             | 0,044                             | 0,22                       | 1400                                 | 3610                                     | 16 x 35,5      | ECR1EEQ562M◇◇ΔΔ1635                                            |
| 35<br>(44)<br>1V                            | 33                                  | 4,83                                               | 0,400                             | 1,20                              | 0,12                       | 12                                   | 250                                      | 5 x 11,5       | ECR1VEQ330M◇◇ΔΔ0511                                            |
|                                             | 47                                  | 3,39                                               | 0,400                             | 1,20                              | 0,12                       | 17                                   | 250                                      | 5 x 11,5       | ECR1VEQ470M◇◇ΔΔ0511                                            |
|                                             | 100                                 | 1,60                                               | 0,220                             | 0,870                             | 0,12                       | 35                                   | 400                                      | 6,3 x 11,5     | ECR1VEQ101M◇◇ΔΔ0611                                            |
|                                             | 220                                 | 0,723                                              | 0,130                             | 0,520                             | 0,12                       | 77                                   | 640                                      | 8 x 11,5       | ECR1VEQ221M◇◇ΔΔ0811                                            |
|                                             | 270                                 | 0,590                                              | 0,087                             | 0,350                             | 0,12                       | 95                                   | 840                                      | 8 x 16         | ECR1VEQ271M◇◇ΔΔ0816                                            |
|                                             | 330                                 | 0,482                                              | 0,080                             | 0,320                             | 0,12                       | 116                                  | 865                                      | 10 x 12,5      | ECR1VEQ331M◇◇ΔΔ1012                                            |
|                                             | 390                                 | 0,409                                              | 0,069                             | 0,270                             | 0,12                       | 137                                  | 1050                                     | 8 x 20         | ECR1VEQ391M◇◇ΔΔ0820                                            |
|                                             | 470                                 | 0,339                                              | 0,062                             | 0,250                             | 0,12                       | 165                                  | 1210                                     | 10 x 16        | ECR1VEQ471M◇◇ΔΔ1016                                            |
|                                             | 680                                 | 0,235                                              | 0,046                             | 0,180                             | 0,12                       | 238                                  | 1400                                     | 10 x 20        | ECR1VEQ681M◇◇ΔΔ1020                                            |
|                                             | 820                                 | 0,195                                              | 0,042                             | 0,170                             | 0,12                       | 287                                  | 1650                                     | 10 x 25        | ECR1VEQ821M◇◇ΔΔ1025                                            |
|                                             | 1 000                               | 0,159                                              | 0,041                             | 0,140                             | 0,12                       | 350                                  | 1900                                     | 12,5 x 20      | ECR1VEQ102M◇◇ΔΔ1220                                            |
|                                             | 1 500                               | 0,107                                              | 0,032                             | 0,110                             | 0,12                       | 525                                  | 2230                                     | 12,5 x 25      | ECR1VEQ152M◇◇ΔΔ1225                                            |
|                                             | 2 200                               | 0,084                                              | 0,021                             | 0,060                             | 0,14                       | 770                                  | 2930                                     | 16 x 25        | ECR1VEQ222M◇◇ΔΔ1625                                            |
|                                             | 2 700                               | 0,069                                              | 0,021                             | 0,060                             | 0,14                       | 945                                  | 2930                                     | 16 x 25        | ECR1VEQ272M◇◇ΔΔ1625                                            |
|                                             | 3 300                               | 0,064                                              | 0,019                             | 0,056                             | 0,16                       | 1155                                 | 3450                                     | 16 x 31,5      | ECR1VEQ332M◇◇ΔΔ1631                                            |
|                                             | 3 900                               | 0,055                                              | 0,015                             | 0,044                             | 0,16                       | 1365                                 | 3610                                     | 16 x 35,5      | ECR1VEQ392M◇◇ΔΔ1635                                            |
| 50<br>(63)<br>1H                            | 1,0                                 | 133                                                | 4,00                              | 8,00                              | 0,10                       | 3                                    | 30                                       | 5 x 11,5       | ECR1HEQ010M◇◇ΔΔ0511                                            |
|                                             | 2,2                                 | 60,3                                               | 2,50                              | 6,00                              | 0,10                       | 3                                    | 43                                       | 5 x 11,5       | ECR1HEQ2R2M◇◇ΔΔ0511                                            |
|                                             | 3,3                                 | 40,2                                               | 2,20                              | 5,60                              | 0,10                       | 3                                    | 53                                       | 5 x 11,5       | ECR1HEQ3R3M◇◇ΔΔ0511                                            |
|                                             | 4,7                                 | 28,3                                               | 1,90                              | 5,00                              | 0,10                       | 3                                    | 88                                       | 5 x 11,5       | ECR1HEQ4R7M◇◇ΔΔ0511                                            |
|                                             | 10                                  | 13,3                                               | 1,50                              | 4,00                              | 0,10                       | 5                                    | 100                                      | 5 x 11,5       | ECR1HEQ100M◇◇ΔΔ0511                                            |
|                                             | 22                                  | 6,03                                               | 0,700                             | 2,80                              | 0,10                       | 11                                   | 180                                      | 5 x 11,5       | ECR1HEQ220M◇◇ΔΔ0511                                            |
|                                             | 33                                  | 4,02                                               | 0,700                             | 2,80                              | 0,10                       | 17                                   | 250                                      | 5 x 11,5       | ECR1HEQ330M◇◇ΔΔ0511                                            |
|                                             | 47                                  | 3,02                                               | 0,300                             | 1,20                              | 0,10                       | 24                                   | 295                                      | 6,3 x 11,5     | ECR1HEQ470M◇◇ΔΔ0611                                            |
|                                             | 56                                  | 2,37                                               | 0,300                             | 1,20                              | 0,10                       | 28                                   | 295                                      | 6,3 x 11,5     | ECR1HEQ560M◇◇ΔΔ0611                                            |
|                                             | 100                                 | 1,33                                               | 0,170                             | 0,680                             | 0,10                       | 50                                   | 555                                      | 8 x 11,5       | ECR1HEQ101M◇◇ΔΔ0811                                            |
|                                             | 150                                 | 0,885                                              | 0,120                             | 0,480                             | 0,10                       | 75                                   | 730                                      | 8 x 16         | ECR1HEQ151M◇◇ΔΔ0816                                            |
|                                             | 180                                 | 0,737                                              | 0,091                             | 0,360                             | 0,10                       | 90                                   | 910                                      | 8 x 20         | ECR1HEQ181M◇◇ΔΔ0820                                            |
|                                             |                                     | 0,737                                              | 0,120                             | 0,480                             | 0,10                       | 90                                   | 760                                      | 10 x 12,5      | ECR1HEQ181M◇◇ΔΔ1012                                            |
|                                             | 220                                 | 0,603                                              | 0,084                             | 0,340                             | 0,10                       | 110                                  | 1050                                     | 10 x 16        | ECR1HEQ221M◇◇ΔΔ1016                                            |
|                                             | 330                                 | 0,402                                              | 0,060                             | 0,240                             | 0,10                       | 165                                  | 1220                                     | 10 x 20        | ECR1HEQ331M◇◇ΔΔ1020                                            |
|                                             | 470                                 | 0,283                                              | 0,055                             | 0,220                             | 0,10                       | 235                                  | 1440                                     | 10 x 25        | ECR1HEQ471M◇◇ΔΔ1025                                            |
|                                             |                                     | 0,282                                              | 0,045                             | 0,150                             | 0,10                       | 235                                  | 1660                                     | 12,5 x 20      | ECR1HEQ471M◇◇ΔΔ1220                                            |
|                                             | 560                                 | 0,237                                              | 0,045                             | 0,150                             | 0,10                       | 280                                  | 1660                                     | 12,5 x 20      | ECR1HEQ561M◇◇ΔΔ1220                                            |
|                                             | 820                                 | 0,162                                              | 0,034                             | 0,110                             | 0,10                       | 410                                  | 1950                                     | 12,5 x 25      | ECR1HEQ821M◇◇ΔΔ1225                                            |
|                                             | 1 000                               | 0,133                                              | 0,032                             | 0,096                             | 0,10                       | 500                                  | 2730                                     | 16 x 25        | ECR1HEQ102M◇◇ΔΔ1625                                            |
|                                             | 1 200                               | 0,111                                              | 0,025                             | 0,075                             | 0,10                       | 600                                  | 2730                                     | 16 x 25        | ECR1HEQ122M◇◇ΔΔ1625                                            |
|                                             | 1 800                               | 0,074                                              | 0,022                             | 0,066                             | 0,10                       | 900                                  | 3010                                     | 16 x 31,5      | ECR1HEQ182M◇◇ΔΔ1631                                            |
|                                             | 2 200                               | 0,072                                              | 0,019                             | 0,057                             | 0,12                       | 1100                                 | 3150                                     | 16 x 35,5      | ECR1HEQ222M◇◇ΔΔ1635                                            |
| 63<br>(79)<br>1J                            | 10                                  | 12,0                                               | 0,880                             | 3,50                              | 0,09                       | 7                                    | 173                                      | 5 x 11,5       | ECR1JEQ100M◇◇ΔΔ0511                                            |
|                                             | 22                                  | 5,43                                               | 0,880                             | 3,50                              | 0,09                       | 14                                   | 173                                      | 5 x 11,5       | ECR1JEQ220M◇◇ΔΔ0511                                            |
|                                             | 33                                  | 3,62                                               | 0,350                             | 1,40                              | 0,09                       | 21                                   | 278                                      | 6,3 x 11,5     | ECR1JEQ330M◇◇ΔΔ0611                                            |
|                                             | 56                                  | 2,14                                               | 0,220                             | 0,880                             | 0,09                       | 36                                   | 500                                      | 8 x 11,5       | ECR1JEQ560M◇◇ΔΔ0811                                            |
|                                             | 82                                  | 1,46                                               | 0,160                             | 0,640                             | 0,09                       | 52                                   | 665                                      | 8 x 16         | ECR1JEQ820M◇◇ΔΔ0816                                            |
|                                             | 100                                 | 1,20                                               | 0,150                             | 0,600                             | 0,09                       | 63                                   | 725                                      | 10 x 12,5      | ECR1JEQ101M◇◇ΔΔ1012                                            |
|                                             | 120                                 | 0,995                                              | 0,120                             | 0,480                             | 0,09                       | 76                                   | 820                                      | 8 x 20         | ECR1JEQ121M◇◇ΔΔ0820                                            |
|                                             | 220                                 | 0,543                                              | 0,078                             | 0,310                             | 0,09                       | 139                                  | 1200                                     | 10 x 20        | ECR1JEQ221M◇◇ΔΔ1020                                            |
|                                             | 330                                 | 0,362                                              | 0,060                             | 0,190                             | 0,09                       | 208                                  | 1570                                     | 12,5 x 20      | ECR1JEQ331M◇◇ΔΔ1220                                            |
|                                             | 390                                 | 0,307                                              | 0,060                             | 0,190                             | 0,09                       | 246                                  | 1570                                     | 12,5 x 20      | ECR1JEQ391M◇◇ΔΔ1220                                            |
|                                             | 470                                 | 0,254                                              | 0,043                             | 0,140                             | 0,09                       | 297                                  | 1990                                     | 12,5 x 25      | ECR1JEQ471M◇◇ΔΔ1225                                            |
|                                             | 560                                 | 0,214                                              | 0,043                             | 0,140                             | 0,09                       | 353                                  | 1990                                     | 12,5 x 25      | ECR1JEQ561M◇◇ΔΔ1225                                            |
|                                             | 1 000                               | 0,119                                              | 0,032                             | 0,096                             | 0,09                       | 630                                  | 2730                                     | 16 x 25        | ECR1JEQ102M◇◇ΔΔ1625                                            |
|                                             | 1 200                               | 0,100                                              | 0,021                             | 0,063                             | 0,09                       | 756                                  | 2850                                     | 16 x 31,5      | ECR1JEQ122M◇◇ΔΔ1631                                            |
|                                             | 1 500                               | 0,080                                              | 0,019                             | 0,057                             | 0,09                       | 945                                  | 2900                                     | 16 x 35,5      | ECR1JEQ152M◇◇ΔΔ1635                                            |
| 100<br>(125)<br>2A                          | 1,0                                 | 107                                                | 4,50                              | 15,0                              | 0,08                       | 3                                    | 20                                       | 5 x 11,5       | ECR2AEQ010M◇◇ΔΔ0511                                            |
|                                             | 2,2                                 | 48,3                                               | 3,00                              | 13,0                              | 0,08                       | 3                                    | 30                                       | 5 x 11,5       | ECR2AEQ2R2M◇◇ΔΔ0511                                            |
|                                             | 3,3                                 | 32,2                                               | 2,70                              | 11,0                              | 0,08                       | 4                                    | 40                                       | 5 x 11,5       | ECR2AEQ3R3M◇◇ΔΔ0511                                            |
|                                             | 4,7                                 | 23,6                                               | 2,50                              | 10,0                              | 0,08                       | 5                                    | 65                                       | 5 x 11,5       | ECR2AEQ4R7M◇◇ΔΔ0511                                            |

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance | $Z_{max}$<br>Max Impedance | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pitch code<br><br>Details: Page 33 |
|--------------------------------------|----------------------------|---------------------------------------------|----------------------------|----------------------------|------------------------------------|-------------------------------|-----------------------------------|----------------------------------|--------------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | ( $\Omega$ )                                | ( $\Omega$ )               | ( $\Omega$ )               |                                    | ( $\mu A$ )                   | (mA <sub>RMS</sub> )              | (mm)                             |                                                                                      |
| 100<br>(125)<br>2A                   | 6,8                        | 15,6                                        | 1,40                       | 5,60                       | 0,08                               | 7                             | 125                               | 5 x 11,5                         | ECR2AEQ6R8M◇◇△△0511                                                                  |
|                                      | 10                         | 10,7                                        | 0,570                      | 2,30                       | 0,08                               | 10                            | 267                               | 6,3 x 11,5                       | ECR2AEQ100M◇◇△△0611                                                                  |
|                                      | 22                         | 4,83                                        | 0,570                      | 2,30                       | 0,08                               | 22                            | 267                               | 6,3 x 11,5                       | ECR2AEQ220M◇◇△△0611                                                                  |
|                                      | 33                         | 3,22                                        | 0,360                      | 1,40                       | 0,08                               | 33                            | 462                               | 8 x 11,5                         | ECR2AEQ330M◇◇△△0811                                                                  |
|                                      | 47                         | 2,26                                        | 0,250                      | 1,00                       | 0,08                               | 47                            | 585                               | 8 x 16                           | ECR2AEQ470M◇◇△△0816                                                                  |
|                                      | 56                         | 1,90                                        | 0,190                      | 0,760                      | 0,08                               | 56                            | 735                               | 8 x 20                           | ECR2AEQ560M◇◇△△0820                                                                  |
|                                      | 68                         | 1,57                                        | 0,110                      | 0,470                      | 0,08                               | 68                            | 780                               | 10 x 16                          | ECR2AEQ680M◇◇△△1016                                                                  |
|                                      | 100                        | 1,07                                        | 0,120                      | 0,520                      | 0,08                               | 100                           | 1040                              | 10 x 20                          | ECR2AEQ101M◇◇△△1020                                                                  |
|                                      | 150                        | 0,708                                       | 0,110                      | 0,470                      | 0,08                               | 150                           | 1170                              | 10 x 25                          | ECR2AEQ151M◇◇△△1025                                                                  |
|                                      | 220                        | 0,482                                       | 0,060                      | 0,230                      | 0,08                               | 220                           | 1620                              | 12,5 x 25                        | ECR2AEQ221M◇◇△△1225                                                                  |
|                                      | 330                        | 0,322                                       | 0,044                      | 0,160                      | 0,08                               | 330                           | 2210                              | 16 x 25                          | ECR2AEQ331M◇◇△△1625                                                                  |
|                                      | 470                        | 0,226                                       | 0,032                      | 0,095                      | 0,08                               | 470                           | 2400                              | 16 x 31,5                        | ECR2AEQ471M◇◇△△1631                                                                  |
|                                      | 560                        | 0,190                                       | 0,029                      | 0,086                      | 0,08                               | 560                           | 2600                              | 16 x 35,5                        | ECR2AEQ561M◇◇△△1635                                                                  |



## ITEM CHARACTERISTICS

|                                     |             |
|-------------------------------------|-------------|
| Operating Temperature Range (°C)    | -40 ~ +105  |
| Voltage Range (V)                   | 6,3 ~ 100   |
| Capacitance Range (µF)              | 6,8 ~ 6 800 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%       |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

|                      |                                                                                                            |
|----------------------|------------------------------------------------------------------------------------------------------------|
| Leakage Current (µA) | After 2 minutes at 20°C application of rated voltage, leakage current is not more than specified in table. |
|----------------------|------------------------------------------------------------------------------------------------------------|

| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V) | 6,3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |
|---------------------------------------------------------|-------------------|-----|----|----|----|----|----|----|----|-----|
| $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 4   | 3  |    |    |    | 2  |    |    |     |
| $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 12  | 10 | 8  | 6  | 4  |    | 3  |    |     |

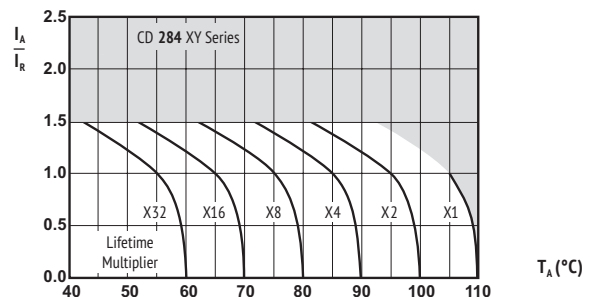
| ITEM                                                                    | USEFUL LIFE                                                                                                                                                   |                                                   | LOAD LIFE                                                                                                                                                    | ENDURANCE TEST                                                                                                                                               | SHELF LIFE                                      |                                                                              |
|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | $\varnothing \leq 6,3 : 4\,000\text{h}$<br>$\varnothing 8 : 6\,000\text{h}$<br>$\varnothing 10 : 8\,000\text{h}$<br>$\varnothing \geq 12,5 : 10\,000\text{h}$ | $\varnothing \geq 8 : > 250\,000\text{h}$         | $\varnothing \leq 6,3 : 2\,000\text{h}$<br>$\varnothing 8 : 3\,000\text{h}$<br>$\varnothing 10 : 4\,000\text{h}$<br>$\varnothing \geq 12,5 : 5\,000\text{h}$ | $\varnothing \leq 6,3 : 2\,500\text{h}$<br>$\varnothing 8 : 3\,500\text{h}$<br>$\varnothing 10 : 5\,000\text{h}$<br>$\varnothing \geq 12,5 : 6\,000\text{h}$ | 1000h                                           |                                                                              |
| Leakage Current                                                         | Not more than specified value                                                                                                                                 |                                                   | Not more than specified value                                                                                                                                | Not more than specified value                                                                                                                                | Not more than specified value                   |                                                                              |
| Capacitance Change                                                      | Within $\pm 50\%$ of initial value                                                                                                                            |                                                   | Within $\pm 25\%$ of initial value                                                                                                                           | Within $\pm 25\%$ of initial value                                                                                                                           | Within $\pm 20\%$ of initial value              |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value                                                                                                                         |                                                   | Not more than 200% of specified value                                                                                                                        | Not more than 200% of specified value                                                                                                                        | Not more than 200% of specified value           |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>$105^{\circ}\text{C}$                                                                                                                       | $U_R$<br>$1,4 \times I_R$<br>$40^{\circ}\text{C}$ | $U_R$<br>$I_R$<br>$105^{\circ}\text{C}$                                                                                                                      | $U_R$<br>$I_R = 0$<br>$105^{\circ}\text{C}$<br>IEC 60384                                                                                                     | $U_R = 0$<br>$I_R = 0$<br>$105^{\circ}\text{C}$ | After test:<br>$U_R$ to be applied for<br>30 min > 24h before<br>measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Capacitance (µF) \ Frequency | 120Hz | 1kHz | 10kHz | 100kHz |
|------------------------------|-------|------|-------|--------|
| 6,8 ~ 33                     | 0,42  | 0,70 | 0,90  | 1,00   |
| 39 ~ 270                     | 0,50  | 0,73 | 0,92  | 1,00   |
| 330 ~ 680                    | 0,55  | 0,88 | 0,98  | 1,00   |
| 820 ~ 1 800                  | 0,66  | 0,90 | 0,99  | 1,00   |
| 2 200 ~ 6 800                | 0,70  | 0,92 | 1,00  | 1,00   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current       | Size<br>$\varnothing D \times L$ | ORDER CODE                                                                                 |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120kHz<br>( $\Omega$ )              | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120kHz                     | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA <sub>RMS</sub> ) | (mm)                             | $\diamond\diamond$ = pin style & length<br>$\Delta\Delta$ = pitch code<br>Details: Page 33 |
| 6,3<br>(7,9)<br>0J                   | 150                        | 1,95                                        | 0,300                          | 1,00                            | 0,22                               | 10                            | 250                                     | 5 x 11,5                         | ECR0JXY151M $\diamond\diamond\Delta\Delta$ 0511                                            |
|                                      | 330                        | 0,885                                       | 0,130                          | 0,410                           | 0,22                               | 21                            | 405                                     | 6,3 x 11,5                       | ECR0JXY331M $\diamond\diamond\Delta\Delta$ 0611                                            |
|                                      | 560                        | 0,522                                       | 0,072                          | 0,220                           | 0,22                               | 36                            | 760                                     | 8 x 11,5                         | ECR0JXY561M $\diamond\diamond\Delta\Delta$ 0811                                            |
|                                      | 820                        | 0,356                                       | 0,056                          | 0,170                           | 0,22                               | 52                            | 995                                     | 8 x 16                           | ECR0JXY821M $\diamond\diamond\Delta\Delta$ 0816                                            |
|                                      | 1 000                      | 0,292                                       | 0,053                          | 0,160                           | 0,22                               | 63                            | 1030                                    | 10 x 12,5                        | ECR0JXY102M $\diamond\diamond\Delta\Delta$ 1012                                            |
|                                      | 1 200                      | 0,244                                       | 0,041                          | 0,130                           | 0,22                               | 76                            | 1250                                    | 8 x 20                           | ECR0JXY122M $\diamond\diamond\Delta\Delta$ 0820                                            |
|                                      |                            | 0,244                                       | 0,038                          | 0,120                           | 0,22                               | 76                            | 1430                                    | 10 x 16                          | ECR0JXY122M $\diamond\diamond\Delta\Delta$ 1016                                            |
|                                      | 1 500                      | 0,195                                       | 0,023                          | 0,069                           | 0,22                               | 95                            | 1820                                    | 10 x 20                          | ECR0JXY152M $\diamond\diamond\Delta\Delta$ 1020                                            |
|                                      | 2 200                      | 0,145                                       | 0,022                          | 0,066                           | 0,24                               | 139                           | 2150                                    | 10 x 25                          | ECR0JXY222M $\diamond\diamond\Delta\Delta$ 1025                                            |
|                                      | 3 300                      | 0,105                                       | 0,021                          | 0,053                           | 0,26                               | 208                           | 2360                                    | 12,5 x 20                        | ECR0JXY332M $\diamond\diamond\Delta\Delta$ 1220                                            |
|                                      | 3 900                      | 0,089                                       | 0,018                          | 0,045                           | 0,26                               | 246                           | 2770                                    | 12,5 x 25                        | ECR0JXY392M $\diamond\diamond\Delta\Delta$ 1225                                            |
|                                      | 4 700                      | 0,080                                       | 0,016                          | 0,041                           | 0,28                               | 297                           | 3290                                    | 12,5 x 30                        | ECR0JXY472M $\diamond\diamond\Delta\Delta$ 1230                                            |
|                                      | 5 600                      | 0,072                                       | 0,015                          | 0,039                           | 0,30                               | 353                           | 3400                                    | 12,5 x 35                        | ECR0JXY562M $\diamond\diamond\Delta\Delta$ 1235                                            |
|                                      |                            | 0,072                                       | 0,018                          | 0,045                           | 0,30                               | 353                           | 3140                                    | 16 x 20                          | ECR0JXY562M $\diamond\diamond\Delta\Delta$ 1620                                            |
|                                      | 6 800                      | 0,063                                       | 0,016                          | 0,043                           | 0,32                               | 429                           | 3460                                    | 16 x 25                          | ECR0JXY682M $\diamond\diamond\Delta\Delta$ 1625                                            |
| 10<br>(13)<br>1A                     | 100                        | 2,52                                        | 0,300                          | 1,00                            | 0,19                               | 10                            | 250                                     | 5 x 11,5                         | ECR1AXY101M $\diamond\diamond\Delta\Delta$ 0511                                            |
|                                      | 220                        | 1,15                                        | 0,130                          | 0,410                           | 0,19                               | 22                            | 405                                     | 6,3 x 11,5                       | ECR1AXY221M $\diamond\diamond\Delta\Delta$ 0611                                            |
|                                      | 470                        | 0,537                                       | 0,072                          | 0,220                           | 0,19                               | 47                            | 760                                     | 8 x 11,5                         | ECR1AXY471M $\diamond\diamond\Delta\Delta$ 0811                                            |
|                                      | 680                        | 0,371                                       | 0,056                          | 0,170                           | 0,19                               | 68                            | 995                                     | 8 x 16                           | ECR1AXY681M $\diamond\diamond\Delta\Delta$ 0816                                            |
|                                      |                            | 0,371                                       | 0,053                          | 0,160                           | 0,19                               | 68                            | 1030                                    | 10 x 12,5                        | ECR1AXY681M $\diamond\diamond\Delta\Delta$ 1012                                            |
|                                      | 1 000                      | 0,252                                       | 0,041                          | 0,130                           | 0,19                               | 100                           | 1250                                    | 8 x 20                           | ECR1AXY102M $\diamond\diamond\Delta\Delta$ 0820                                            |
|                                      |                            | 0,252                                       | 0,038                          | 0,120                           | 0,19                               | 100                           | 1430                                    | 10 x 16                          | ECR1AXY102M $\diamond\diamond\Delta\Delta$ 1016                                            |
|                                      | 1 200                      | 0,210                                       | 0,023                          | 0,069                           | 0,19                               | 120                           | 1820                                    | 10 x 20                          | ECR1AXY122M $\diamond\diamond\Delta\Delta$ 1020                                            |
|                                      | 1 500                      | 0,168                                       | 0,022                          | 0,066                           | 0,19                               | 150                           | 2150                                    | 10 x 25                          | ECR1AXY152M $\diamond\diamond\Delta\Delta$ 1025                                            |
|                                      | 2 200                      | 0,127                                       | 0,021                          | 0,053                           | 0,21                               | 220                           | 2360                                    | 12,5 x 20                        | ECR1AXY222M $\diamond\diamond\Delta\Delta$ 1220                                            |
|                                      | 3 300                      | 0,093                                       | 0,018                          | 0,045                           | 0,23                               | 330                           | 2770                                    | 12,5 x 25                        | ECR1AXY332M $\diamond\diamond\Delta\Delta$ 1225                                            |
|                                      | 3 900                      | 0,079                                       | 0,016                          | 0,041                           | 0,23                               | 390                           | 3290                                    | 12,5 x 30                        | ECR1AXY392M $\diamond\diamond\Delta\Delta$ 1230                                            |
|                                      |                            | 0,079                                       | 0,018                          | 0,045                           | 0,23                               | 390                           | 3140                                    | 16 x 20                          | ECR1AXY392M $\diamond\diamond\Delta\Delta$ 1620                                            |
|                                      | 4 700                      | 0,071                                       | 0,015                          | 0,039                           | 0,25                               | 470                           | 3400                                    | 12,5 x 35                        | ECR1AXY472M $\diamond\diamond\Delta\Delta$ 1235                                            |
|                                      | 5 600                      | 0,064                                       | 0,016                          | 0,043                           | 0,27                               | 560                           | 3460                                    | 16 x 25                          | ECR1AXY562M $\diamond\diamond\Delta\Delta$ 1625                                            |
| 16<br>(20)<br>1C                     | 56                         | 3,79                                        | 0,300                          | 1,00                            | 0,16                               | 9                             | 250                                     | 5 x 11,5                         | ECR1CXY560M $\diamond\diamond\Delta\Delta$ 0511                                            |
|                                      | 120                        | 1,77                                        | 0,130                          | 0,410                           | 0,16                               | 20                            | 405                                     | 6,3 x 11,5                       | ECR1CXY121M $\diamond\diamond\Delta\Delta$ 0611                                            |
|                                      | 330                        | 0,644                                       | 0,072                          | 0,220                           | 0,16                               | 53                            | 760                                     | 8 x 11,5                         | ECR1CXY331M $\diamond\diamond\Delta\Delta$ 0811                                            |
|                                      | 470                        | 0,452                                       | 0,056                          | 0,170                           | 0,16                               | 76                            | 995                                     | 8 x 16                           | ECR1CXY471M $\diamond\diamond\Delta\Delta$ 0816                                            |
|                                      |                            | 0,452                                       | 0,053                          | 0,160                           | 0,16                               | 76                            | 1030                                    | 10 x 12,5                        | ECR1CXY471M $\diamond\diamond\Delta\Delta$ 1012                                            |
|                                      | 680                        | 0,313                                       | 0,041                          | 0,130                           | 0,16                               | 109                           | 1250                                    | 8 x 20                           | ECR1CXY681M $\diamond\diamond\Delta\Delta$ 0820                                            |
|                                      | 680                        | 0,313                                       | 0,038                          | 0,120                           | 0,16                               | 109                           | 1430                                    | 10 x 16                          | ECR1CXY681M $\diamond\diamond\Delta\Delta$ 1016                                            |
|                                      | 1 000                      | 0,213                                       | 0,023                          | 0,069                           | 0,16                               | 160                           | 1820                                    | 10 x 20                          | ECR1CXY102M $\diamond\diamond\Delta\Delta$ 1020                                            |
|                                      | 1 200                      | 0,177                                       | 0,022                          | 0,066                           | 0,16                               | 192                           | 2150                                    | 10 x 25                          | ECR1CXY122M $\diamond\diamond\Delta\Delta$ 1025                                            |
|                                      | 1 500                      | 0,142                                       | 0,021                          | 0,053                           | 0,16                               | 240                           | 2360                                    | 12,5 x 20                        | ECR1CXY152M $\diamond\diamond\Delta\Delta$ 1220                                            |
|                                      | 2 200                      | 0,109                                       | 0,018                          | 0,045                           | 0,18                               | 352                           | 2770                                    | 12,5 x 25                        | ECR1CXY222M $\diamond\diamond\Delta\Delta$ 1225                                            |
|                                      | 2 700                      | 0,089                                       | 0,016                          | 0,041                           | 0,18                               | 432                           | 3290                                    | 12,5 x 30                        | ECR1CXY272M $\diamond\diamond\Delta\Delta$ 1230                                            |
|                                      |                            | 0,089                                       | 0,018                          | 0,045                           | 0,18                               | 432                           | 3140                                    | 16 x 20                          | ECR1CXY272M $\diamond\diamond\Delta\Delta$ 1620                                            |
|                                      | 3 300                      | 0,081                                       | 0,015                          | 0,039                           | 0,20                               | 528                           | 3400                                    | 12,5 x 35                        | ECR1CXY332M $\diamond\diamond\Delta\Delta$ 1235                                            |
|                                      | 3 900                      | 0,069                                       | 0,016                          | 0,043                           | 0,20                               | 624                           | 3460                                    | 16 x 25                          | ECR1CXY392M $\diamond\diamond\Delta\Delta$ 1625                                            |
| 25<br>(32)<br>1E                     | 47                         | 3,96                                        | 0,300                          | 1,00                            | 0,14                               | 12                            | 250                                     | 5 x 11,5                         | ECR1EXY470M $\diamond\diamond\Delta\Delta$ 0511                                            |
|                                      | 100                        | 1,86                                        | 0,130                          | 0,410                           | 0,14                               | 25                            | 405                                     | 6,3 x 11,5                       | ECR1EXY101M $\diamond\diamond\Delta\Delta$ 0611                                            |
|                                      | 220                        | 0,845                                       | 0,072                          | 0,220                           | 0,14                               | 55                            | 760                                     | 8 x 11,5                         | ECR1EXY221M $\diamond\diamond\Delta\Delta$ 0811                                            |
|                                      | 330                        | 0,563                                       | 0,056                          | 0,170                           | 0,14                               | 83                            | 995                                     | 8 x 16                           | ECR1EXY331M $\diamond\diamond\Delta\Delta$ 0816                                            |
|                                      |                            | 0,563                                       | 0,053                          | 0,160                           | 0,14                               | 83                            | 1030                                    | 10 x 12,5                        | ECR1EXY331M $\diamond\diamond\Delta\Delta$ 1012                                            |
|                                      | 470                        | 0,396                                       | 0,041                          | 0,130                           | 0,14                               | 118                           | 1250                                    | 8 x 20                           | ECR1EXY471M $\diamond\diamond\Delta\Delta$ 0820                                            |
|                                      |                            | 0,396                                       | 0,038                          | 0,120                           | 0,14                               | 118                           | 1430                                    | 10 x 16                          | ECR1EXY471M $\diamond\diamond\Delta\Delta$ 1016                                            |
|                                      | 680                        | 0,274                                       | 0,023                          | 0,069                           | 0,14                               | 170                           | 1820                                    | 10 x 20                          | ECR1EXY681M $\diamond\diamond\Delta\Delta$ 1020                                            |
|                                      | 820                        | 0,227                                       | 0,022                          | 0,066                           | 0,14                               | 205                           | 2150                                    | 10 x 25                          | ECR1EXY821M $\diamond\diamond\Delta\Delta$ 1025                                            |
|                                      | 1 000                      | 0,186                                       | 0,021                          | 0,053                           | 0,14                               | 250                           | 2360                                    | 12,5 x 20                        | ECR1EXY102M $\diamond\diamond\Delta\Delta$ 1220                                            |
|                                      | 1 500                      | 0,124                                       | 0,018                          | 0,045                           | 0,14                               | 375                           | 2770                                    | 12,5 x 25                        | ECR1EXY152M $\diamond\diamond\Delta\Delta$ 1225                                            |
|                                      | 1 800                      | 0,104                                       | 0,016                          | 0,041                           | 0,14                               | 450                           | 3290                                    | 12,5 x 30                        | ECR1EXY182M $\diamond\diamond\Delta\Delta$ 1230                                            |
|                                      |                            | 0,104                                       | 0,018                          | 0,045                           | 0,14                               | 450                           | 3140                                    | 16 x 20                          | ECR1EXY182M $\diamond\diamond\Delta\Delta$ 1620                                            |
|                                      | 2 200                      | 0,097                                       | 0,015                          | 0,039                           | 0,16                               | 550                           | 3400                                    | 12,5 x 35                        | ECR1EXY222M $\diamond\diamond\Delta\Delta$ 1235                                            |
|                                      | 2 700                      | 0,079                                       | 0,016                          | 0,043                           | 0,16                               | 675                           | 3460                                    | 16 x 25                          | ECR1EXY272M $\diamond\diamond\Delta\Delta$ 1625                                            |

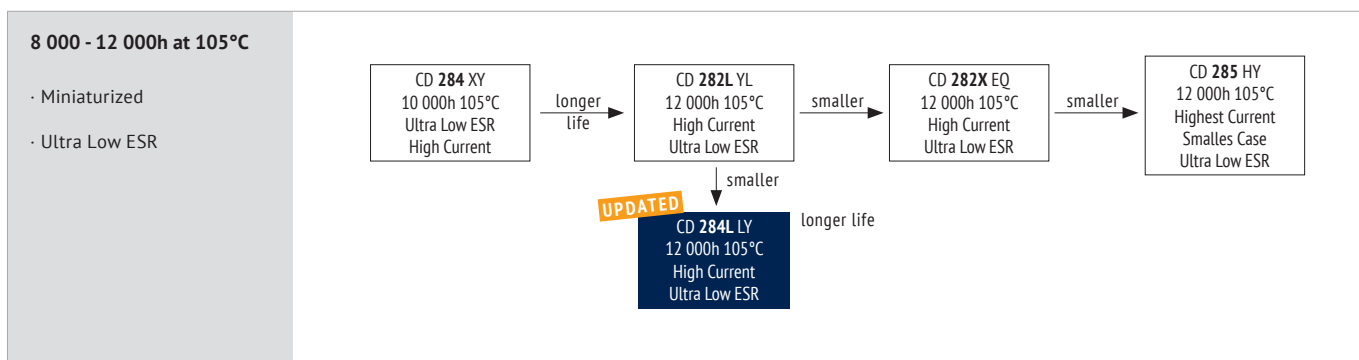


| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current       | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pitch code |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------------|----------------------------------|--------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120kHz<br>( $\Omega$ )              | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120Hz                      | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA <sub>RMS</sub> ) | (mm)                             | Details: Page 33                                             |
| 35<br>(44)<br>1V                     | 33                         | 4,83                                        | 0,300                          | 1,00                            | 0,12                               | 12                            | 250                                     | 5 x 11,5                         | ECR1VXY330M◇◇△△0511                                          |
|                                      | 56                         | 2,85                                        | 0,130                          | 0,410                           | 0,12                               | 20                            | 405                                     | 6,3 x 11,5                       | ECR1VXY560M◇◇△△0611                                          |
|                                      | 150                        | 1,07                                        | 0,072                          | 0,220                           | 0,12                               | 53                            | 760                                     | 8 x 11,5                         | ECR1VXY151M◇◇△△0811                                          |
|                                      | 220                        | 0,724                                       | 0,056                          | 0,170                           | 0,12                               | 77                            | 995                                     | 8 x 16                           | ECR1VXY221M◇◇△△0816                                          |
|                                      |                            | 0,724                                       | 0,053                          | 0,160                           | 0,12                               | 77                            | 1030                                    | 10 x 12,5                        | ECR1VXY221M◇◇△△1012                                          |
|                                      | 270                        | 0,590                                       | 0,041                          | 0,130                           | 0,12                               | 95                            | 1250                                    | 8 x 20                           | ECR1VXY271M◇◇△△0820                                          |
|                                      | 330                        | 0,483                                       | 0,038                          | 0,120                           | 0,12                               | 116                           | 1430                                    | 10 x 16                          | ECR1VXY331M◇◇△△1016                                          |
|                                      | 470                        | 0,339                                       | 0,023                          | 0,069                           | 0,12                               | 165                           | 1820                                    | 10 x 20                          | ECR1VXY471M◇◇△△1020                                          |
|                                      | 560                        | 0,285                                       | 0,022                          | 0,066                           | 0,12                               | 196                           | 2150                                    | 10 x 25                          | ECR1VXY561M◇◇△△1025                                          |
|                                      | 680                        | 0,235                                       | 0,021                          | 0,053                           | 0,12                               | 238                           | 2360                                    | 12,5 x 20                        | ECR1VXY681M◇◇△△1220                                          |
|                                      | 1 000                      | 0,160                                       | 0,018                          | 0,045                           | 0,12                               | 350                           | 2770                                    | 12,5 x 25                        | ECR1VXY102M◇◇△△1225                                          |
|                                      | 1 200                      | 0,133                                       | 0,016                          | 0,041                           | 0,12                               | 420                           | 3290                                    | 12,5 x 30                        | ECR1VXY122M◇◇△△1230                                          |
|                                      |                            | 0,133                                       | 0,018                          | 0,045                           | 0,12                               | 420                           | 3140                                    | 16 x 20                          | ECR1VXY122M◇◇△△1620                                          |
|                                      | 1 500                      | 0,107                                       | 0,015                          | 0,039                           | 0,12                               | 525                           | 3400                                    | 12,5 x 35                        | ECR1VXY152M◇◇△△1235                                          |
|                                      | 1 800                      | 0,089                                       | 0,016                          | 0,043                           | 0,12                               | 630                           | 3460                                    | 16 x 25                          | ECR1VXY182M◇◇△△1625                                          |
| 50<br>(63)<br>1H                     | 22                         | 6,03                                        | 0,340                          | 1,18                            | 0,10                               | 11                            | 238                                     | 5 x 11,5                         | ECR1HXY220M◇◇△△0511                                          |
|                                      | 56                         | 2,37                                        | 0,140                          | 0,500                           | 0,10                               | 28                            | 385                                     | 6,3 x 11,5                       | ECR1HXY560M◇◇△△0611                                          |
|                                      | 100                        | 1,33                                        | 0,074                          | 0,220                           | 0,10                               | 50                            | 724                                     | 8 x 11,5                         | ECR1HXY101M◇◇△△0811                                          |
|                                      | 120                        | 1,11                                        | 0,061                          | 0,180                           | 0,10                               | 60                            | 950                                     | 8 x 16                           | ECR1HXY121M◇◇△△0816                                          |
|                                      | 150                        | 0,885                                       | 0,061                          | 0,180                           | 0,10                               | 75                            | 979                                     | 10 x 12,5                        | ECR1HXY151M◇◇△△1012                                          |
|                                      | 180                        | 0,737                                       | 0,046                          | 0,140                           | 0,10                               | 90                            | 1190                                    | 8 x 20                           | ECR1HXY181M◇◇△△0820                                          |
|                                      | 220                        | 0,603                                       | 0,042                          | 0,120                           | 0,10                               | 110                           | 1370                                    | 10 x 16                          | ECR1HXY221M◇◇△△1016                                          |
|                                      | 270                        | 0,492                                       | 0,030                          | 0,090                           | 0,10                               | 135                           | 1580                                    | 10 x 20                          | ECR1HXY271M◇◇△△1020                                          |
|                                      | 330                        | 0,402                                       | 0,028                          | 0,085                           | 0,10                               | 165                           | 1870                                    | 10 x 25                          | ECR1HXY331M◇◇△△1025                                          |
|                                      | 470                        | 0,283                                       | 0,027                          | 0,068                           | 0,10                               | 235                           | 2050                                    | 12,5 x 20                        | ECR1HXY471M◇◇△△1220                                          |
|                                      | 560                        | 0,237                                       | 0,023                          | 0,059                           | 0,10                               | 280                           | 2410                                    | 12,5 x 25                        | ECR1HXY561M◇◇△△1225                                          |
|                                      | 680                        | 0,196                                       | 0,021                          | 0,052                           | 0,10                               | 340                           | 2860                                    | 12,5 x 30                        | ECR1HXY681M◇◇△△1230                                          |
|                                      | 820                        | 0,162                                       | 0,019                          | 0,051                           | 0,10                               | 410                           | 2960                                    | 12,5 x 35                        | ECR1HXY821M◇◇△△1235                                          |
|                                      |                            | 0,162                                       | 0,023                          | 0,059                           | 0,10                               | 410                           | 2730                                    | 16 x 20                          | ECR1HXY821M◇◇△△1620                                          |
|                                      | 1 000                      | 0,133                                       | 0,021                          | 0,056                           | 0,10                               | 500                           | 3010                                    | 16 x 25                          | ECR1HXY102M◇◇△△1625                                          |
| 63<br>(79)<br>1J                     | 15                         | 7,96                                        | 0,880                          | 3,50                            | 0,09                               | 10                            | 165                                     | 5 x 11,5                         | ECR1JXY150M◇◇△△0511                                          |
|                                      | 33                         | 3,62                                        | 0,350                          | 1,40                            | 0,09                               | 21                            | 265                                     | 6,3 x 11,5                       | ECR1JXY330M◇◇△△0611                                          |
|                                      | 56                         | 2,14                                        | 0,220                          | 0,880                           | 0,09                               | 36                            | 500                                     | 8 x 11,5                         | ECR1JXY560M◇◇△△0811                                          |
|                                      | 82                         | 1,46                                        | 0,160                          | 0,640                           | 0,09                               | 52                            | 665                                     | 8 x 16                           | ECR1JXY820M◇◇△△0816                                          |
|                                      |                            | 1,46                                        | 0,150                          | 0,600                           | 0,09                               | 52                            | 685                                     | 10 x 12,5                        | ECR1JXY820M◇◇△△1012                                          |
|                                      | 120                        | 0,995                                       | 0,120                          | 0,480                           | 0,09                               | 76                            | 820                                     | 8 x 20                           | ECR1JXY121M◇◇△△0820                                          |
|                                      |                            | 0,995                                       | 0,110                          | 0,440                           | 0,09                               | 76                            | 945                                     | 10 x 16                          | ECR1JXY121M◇◇△△1016                                          |
|                                      | 180                        | 0,664                                       | 0,080                          | 0,320                           | 0,09                               | 114                           | 1100                                    | 10 x 20                          | ECR1JXY181M◇◇△△1020                                          |
|                                      |                            | 0,664                                       | 0,082                          | 0,270                           | 0,09                               | 114                           | 1135                                    | 12,5 x 16                        | ECR1JXY181M◇◇△△1216                                          |
|                                      | 220                        | 0,543                                       | 0,073                          | 0,290                           | 0,09                               | 139                           | 1300                                    | 10 x 25                          | ECR1JXY221M◇◇△△1025                                          |
|                                      | 270                        | 0,443                                       | 0,060                          | 0,200                           | 0,09                               | 171                           | 1495                                    | 12,5 x 20                        | ECR1JXY271M◇◇△△1220                                          |
|                                      | 330                        | 0,362                                       | 0,043                          | 0,140                           | 0,09                               | 208                           | 1850                                    | 12,5 x 25                        | ECR1JXY331M◇◇△△1225                                          |
|                                      | 470                        | 0,254                                       | 0,039                          | 0,130                           | 0,09                               | 297                           | 2250                                    | 12,5 x 30                        | ECR1JXY471M◇◇△△1230                                          |
|                                      |                            | 0,254                                       | 0,045                          | 0,140                           | 0,09                               | 297                           | 1990                                    | 16 x 20                          | ECR1JXY471M◇◇△△1620                                          |
|                                      | 560                        | 0,214                                       | 0,033                          | 0,110                           | 0,09                               | 353                           | 2500                                    | 12,5 x 35                        | ECR1JXY561M◇◇△△1235                                          |
|                                      |                            | 0,214                                       | 0,032                          | 0,096                           | 0,09                               | 353                           | 2550                                    | 16 x 25                          | ECR1JXY561M◇◇△△1625                                          |
|                                      | 680                        | 0,176                                       | 0,029                          | 0,096                           | 0,09                               | 429                           | 2780                                    | 12,5 x 40                        | ECR1JXY681M◇◇△△1240                                          |
|                                      |                            | 0,176                                       | 0,038                          | 0,100                           | 0,09                               | 429                           | 2450                                    | 18 x 20                          | ECR1JXY681M◇◇△△1820                                          |
|                                      | 820                        | 0,146                                       | 0,026                          | 0,078                           | 0,09                               | 517                           | 2810                                    | 16 x 31,5                        | ECR1JXY821M◇◇△△1631                                          |
|                                      |                            | 0,146                                       | 0,031                          | 0,084                           | 0,09                               | 517                           | 2780                                    | 18 x 25                          | ECR1JXY821M◇◇△△1825                                          |
|                                      | 1 000                      | 0,120                                       | 0,021                          | 0,063                           | 0,09                               | 630                           | 2835                                    | 16 x 35,5                        | ECR1JXY102M◇◇△△1635                                          |
|                                      | 1 200                      | 0,100                                       | 0,019                          | 0,057                           | 0,09                               | 756                           | 3400                                    | 16 x 40                          | ECR1JXY122M◇◇△△1640                                          |
|                                      |                            | 0,100                                       | 0,020                          | 0,054                           | 0,09                               | 756                           | 3300                                    | 18 x 31,5                        | ECR1JXY122M◇◇△△1831                                          |
|                                      | 1 500                      | 0,080                                       | 0,018                          | 0,054                           | 0,09                               | 756                           | 3400                                    | 18 x 35,5                        | ECR1JXY152M◇◇△△1835                                          |
|                                      | 1 800                      | 0,080                                       | 0,017                          | 0,051                           | 0,09                               | 1134                          | 3500                                    | 18 x 40                          | ECR1JXY182M◇◇△△1840                                          |
| 80<br>(100)<br>1K                    | 68                         | 1,57                                        | 0,170                          | 0,660                           | 0,08                               | 55                            | 480                                     | 10 x 12,5                        | ECR1KXY680M◇◇△△1012                                          |
|                                      | 100                        | 1,07                                        | 0,110                          | 0,470                           | 0,08                               | 80                            | 600                                     | 10 x 16                          | ECR1KXY101M◇◇△△1016                                          |
|                                      | 120                        | 0,885                                       | 0,084                          | 0,340                           | 0,08                               | 96                            | 800                                     | 10 x 20                          | ECR1KXY121M◇◇△△1020                                          |
|                                      | 150                        | 0,708                                       | 0,069                          | 0,280                           | 0,08                               | 120                           | 900                                     | 10 x 25                          | ECR1KXY151M◇◇△△1025                                          |
|                                      |                            | 0,708                                       | 0,110                          | 0,340                           | 0,08                               | 120                           | 750                                     | 12,5 x 16                        | ECR1KXY151M◇◇△△1216                                          |
|                                      | 220                        | 0,483                                       | 0,062                          | 0,180                           | 0,08                               | 176                           | 1100                                    | 12,5 x 20                        | ECR1KXY221M◇◇△△1220                                          |
|                                      | 330                        | 0,322                                       | 0,047                          | 0,140                           | 0,08                               | 264                           | 1250                                    | 12,5 x 25                        | ECR1KXY331M◇◇△△1225                                          |
|                                      |                            | 0,322                                       | 0,048                          | 0,150                           | 0,08                               | 264                           | 1350                                    | 16 x 20                          | ECR1KXY331M◇◇△△1620                                          |
|                                      | 390                        | 0,272                                       | 0,042                          | 0,130                           | 0,08                               | 312                           | 1500                                    | 12,5 x 30                        | ECR1KXY391M◇◇△△1230                                          |

&gt;&gt;



| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current       | Size<br>$\varnothing D \times L$ | ORDER CODE                                                                                 |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120Hz<br>( $\Omega$ )               | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120Hz                      | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA <sub>RMS</sub> ) | (mm)                             | $\diamond\diamond$ = pin style & length<br>$\Delta\Delta$ = pitch code<br>Details: Page 33 |
| 80<br>(100)<br>1K                    | 470                        | 0,226                                       | 0,036                          | 0,110                           | 0,08                               | 376                           | 1650                                    | 12,5 x 35                        | ECR1KXY471M $\diamond\diamond\Delta\Delta$ 1235                                            |
|                                      |                            | 0,226                                       | 0,038                          | 0,120                           | 0,08                               | 376                           | 1700                                    | 16 x 25                          | ECR1KXY471M $\diamond\diamond\Delta\Delta$ 1625                                            |
|                                      |                            | 0,226                                       | 0,045                          | 0,140                           | 0,08                               | 376                           | 1500                                    | 18 x 20                          | ECR1KXY471M $\diamond\diamond\Delta\Delta$ 1820                                            |
|                                      | 560                        | 0,490                                       | 0,032                          | 0,095                           | 0,08                               | 448                           | 1800                                    | 12,5 x 40                        | ECR1KXY561M $\diamond\diamond\Delta\Delta$ 1240                                            |
|                                      | 680                        | 0,156                                       | 0,032                          | 0,095                           | 0,08                               | 544                           | 1850                                    | 16 x 31,5                        | ECR1KXY681M $\diamond\diamond\Delta\Delta$ 1631                                            |
|                                      |                            | 0,156                                       | 0,036                          | 0,110                           | 0,08                               | 544                           | 1750                                    | 18 x 25                          | ECR1KXY681M $\diamond\diamond\Delta\Delta$ 1825                                            |
|                                      | 820                        | 0,130                                       | 0,029                          | 0,086                           | 0,08                               | 656                           | 2000                                    | 16 x 35,5                        | ECR1KXY821M $\diamond\diamond\Delta\Delta$ 1635                                            |
|                                      |                            | 0,130                                       | 0,030                          | 0,090                           | 0,08                               | 656                           | 1900                                    | 18 x 31,5                        | ECR1KXY821M $\diamond\diamond\Delta\Delta$ 1831                                            |
|                                      | 1 000                      | 0,106                                       | 0,027                          | 0,081                           | 0,08                               | 800                           | 2200                                    | 16 x 40                          | ECR1KXY102M $\diamond\diamond\Delta\Delta$ 1640                                            |
|                                      |                            | 0,106                                       | 0,027                          | 0,081                           | 0,08                               | 800                           | 2200                                    | 18 x 35,5                        | ECR1KXY102M $\diamond\diamond\Delta\Delta$ 1835                                            |
|                                      | 1 200                      | 0,089                                       | 0,026                          | 0,077                           | 0,08                               | 960                           | 2700                                    | 18 x 40                          | ECR1KXY122M $\diamond\diamond\Delta\Delta$ 1840                                            |
| 100<br>(125)<br>2A                   | 6,8                        | 15,6                                        | 1,40                           | 5,60                            | 0,08                               | 7                             | 125                                     | 5 x 11,5                         | ECR2AXY6R8M $\diamond\diamond\Delta\Delta$ 0511                                            |
|                                      | 15                         | 7,08                                        | 0,570                          | 2,30                            | 0,08                               | 15                            | 205                                     | 6,3 x 11,5                       | ECR2AXY150M $\diamond\diamond\Delta\Delta$ 0611                                            |
|                                      | 27                         | 3,93                                        | 0,360                          | 1,40                            | 0,08                               | 27                            | 355                                     | 8 x 11,5                         | ECR2AXY270M $\diamond\diamond\Delta\Delta$ 0811                                            |
|                                      | 39                         | 2,73                                        | 0,250                          | 1,00                            | 0,08                               | 39                            | 450                                     | 8 x 16                           | ECR2AXY390M $\diamond\diamond\Delta\Delta$ 0816                                            |
|                                      | 47                         | 2,26                                        | 0,240                          | 0,960                           | 0,08                               | 47                            | 450                                     | 10 x 12,5                        | ECR2AXY470M $\diamond\diamond\Delta\Delta$ 1012                                            |
|                                      | 56                         | 1,90                                        | 0,190                          | 0,760                           | 0,08                               | 56                            | 565                                     | 8 x 20                           | ECR2AXY560M $\diamond\diamond\Delta\Delta$ 0820                                            |
|                                      | 68                         | 1,57                                        | 0,180                          | 0,720                           | 0,08                               | 68                            | 580                                     | 10 x 16                          | ECR2AXY680M $\diamond\diamond\Delta\Delta$ 1016                                            |
|                                      | 82                         | 1,30                                        | 0,130                          | 0,520                           | 0,08                               | 82                            | 750                                     | 10 x 20                          | ECR2AXY820M $\diamond\diamond\Delta\Delta$ 1020                                            |
|                                      | 100                        | 1,07                                        | 0,110                          | 0,340                           | 0,08                               | 100                           | 750                                     | 12,5 x 16                        | ECR2AXY101M $\diamond\diamond\Delta\Delta$ 1216                                            |
|                                      | 120                        | 0,885                                       | 0,069                          | 0,280                           | 0,08                               | 120                           | 900                                     | 10 x 25                          | ECR2AXY121M $\diamond\diamond\Delta\Delta$ 1025                                            |
|                                      | 150                        | 0,590                                       | 0,062                          | 0,180                           | 0,08                               | 150                           | 1100                                    | 12,5 x 20                        | ECR2AXY151M $\diamond\diamond\Delta\Delta$ 1220                                            |
|                                      | 220                        | 0,483                                       | 0,047                          | 0,140                           | 0,08                               | 220                           | 1250                                    | 12,5 x 25                        | ECR2AXY221M $\diamond\diamond\Delta\Delta$ 1225                                            |
|                                      |                            | 0,483                                       | 0,048                          | 0,150                           | 0,08                               | 220                           | 1350                                    | 16 x 20                          | ECR2AXY221M $\diamond\diamond\Delta\Delta$ 1620                                            |
|                                      | 270                        | 0,393                                       | 0,042                          | 0,130                           | 0,08                               | 270                           | 1500                                    | 12,5 x 30                        | ECR2AXY271M $\diamond\diamond\Delta\Delta$ 1230                                            |
|                                      | 330                        | 0,393                                       | 0,036                          | 0,110                           | 0,08                               | 330                           | 1650                                    | 12,5 x 35                        | ECR2AXY331M $\diamond\diamond\Delta\Delta$ 1235                                            |
|                                      |                            | 0,393                                       | 0,038                          | 0,120                           | 0,08                               | 330                           | 1700                                    | 16 x 25                          | ECR2AXY331M $\diamond\diamond\Delta\Delta$ 1625                                            |
|                                      |                            | 0,393                                       | 0,045                          | 0,140                           | 0,08                               | 330                           | 1500                                    | 18 x 20                          | ECR2AXY331M $\diamond\diamond\Delta\Delta$ 1820                                            |
|                                      | 390                        | 0,273                                       | 0,049                          | 0,130                           | 0,08                               | 390                           | 1620                                    | 18 x 25                          | ECR2AXY391M $\diamond\diamond\Delta\Delta$ 1825                                            |
|                                      | 470                        | 0,226                                       | 0,033                          | 0,100                           | 0,08                               | 470                           | 1850                                    | 16 x 31,5                        | ECR2AXY471M $\diamond\diamond\Delta\Delta$ 1631                                            |
|                                      |                            | 0,226                                       | 0,036                          | 0,110                           | 0,08                               | 470                           | 1750                                    | 18 x 25                          | ECR2AXY471M $\diamond\diamond\Delta\Delta$ 1825                                            |
|                                      | 560                        | 0,190                                       | 0,029                          | 0,086                           | 0,08                               | 560                           | 2000                                    | 16 x 35,5                        | ECR2AXY561M $\diamond\diamond\Delta\Delta$ 1635                                            |
|                                      |                            | 0,190                                       | 0,030                          | 0,090                           | 0,08                               | 560                           | 1900                                    | 18 x 31,5                        | ECR2AXY561M $\diamond\diamond\Delta\Delta$ 1831                                            |
|                                      | 680                        | 0,157                                       | 0,027                          | 0,081                           | 0,08                               | 680                           | 2200                                    | 16 x 40                          | ECR2AXY681M $\diamond\diamond\Delta\Delta$ 1640                                            |
|                                      |                            | 0,157                                       | 0,027                          | 0,081                           | 0,08                               | 680                           | 2200                                    | 18 x 35,5                        | ECR2AXY681M $\diamond\diamond\Delta\Delta$ 1835                                            |
|                                      | 820                        | 0,156                                       | 0,026                          | 0,077                           | 0,08                               | 820                           | 2700                                    | 18 x 40                          | ECR2AXY821M $\diamond\diamond\Delta\Delta$ 1840                                            |



## ITEM CHARACTERISTICS

|                                     |             |
|-------------------------------------|-------------|
| Operating Temperature Range (°C)    | -40 ~ +105  |
| Voltage Range (V)                   | 6,3 ~ 120   |
| Capacitance Range (µF)              | 8,2 ~ 8 200 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%       |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current (µA) After 2 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V) | 6,3 | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 | 120 |
|---------------------------------------------------------|-------------------|-----|----|----|----|----|----|----|----|-----|-----|
| $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 4   | 3  |    |    |    | 2  |    |    |     |     |
| $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 12  | 10 | 8  | 6  | 4  |    | 3  |    |     |     |

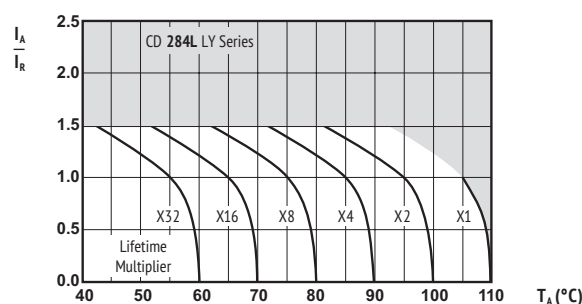
| ITEM                                                                    | USEFUL LIFE                                                                                                         | LOAD LIFE                                                                                                          | ENDURANCE TEST                                                                                                      | SHELF LIFE                                                             |
|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| Lifetime                                                                | $\emptyset \leq 6,3 : 8\ 000\text{h}$<br>$\emptyset = 8 : 10\ 000\text{h}$<br>$\emptyset \geq 10 : 12\ 000\text{h}$ | $\emptyset \leq 6,3 : 6\ 000\text{h}$<br>$\emptyset = 8 : 8\ 000\text{h}$<br>$\emptyset \geq 10 : 10\ 000\text{h}$ | $\emptyset \leq 6,3 : 7\ 000\text{h}$<br>$\emptyset = 8 : 10\ 000\text{h}$<br>$\emptyset \geq 10 : 12\ 000\text{h}$ | 500h                                                                   |
| Leakage Current                                                         | Not more than specified value                                                                                       | Not more than specified value                                                                                      | Not more than specified value                                                                                       | Not more than specified value                                          |
| Capacitance Change                                                      | Within ± 30% of initial value (6,3V, 10V, ± 40%)                                                                    | Within ± 25% of initial value (6,3V, 10V, ± 30%)                                                                   | Within ± 25% of initial value (6,3V, 10V, ± 30%)                                                                    | Within ± 20% of initial value                                          |
| Dissipation Factor                                                      | Not more than 300% of specified value (6,3V, 10V, 400%)                                                             | Not more than 200% of specified value (6,3V, 10V, 300%)                                                            | Not more than 200% of specified value (6,3V, 10V, 300%)                                                             | Not more than 200% of specified value                                  |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C                                                                                             | $U_R$<br>$1,4 \times I_R$<br>60°C                                                                                  | $U_R$<br>$I_R$<br>105°C                                                                                             | $U_R = 0$<br>$I_R = 0$<br>105°C<br>IEC 60384                           |
|                                                                         |                                                                                                                     |                                                                                                                    |                                                                                                                     | After test:<br>$U_R$ to be applied for 30 min > 24h before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Capacitance (µF) \ Frequency | 120Hz | 1kHz | 10kHz | 100kHz |
|------------------------------|-------|------|-------|--------|
| 8,2 ~ 33                     | 0,42  | 0,70 | 0,90  | 1,00   |
| 47 ~ 270                     | 0,50  | 0,73 | 0,92  | 1,00   |
| 330 ~ 680                    | 0,55  | 0,77 | 0,94  | 1,00   |
| 820 ~ 1 800                  | 0,60  | 0,80 | 0,96  | 1,00   |
| 2 200 ~ 8 200                | 0,70  | 0,85 | 0,98  | 1,00   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current | Size<br>$\varnothing D \times L$ | ORDER CODE                                                            |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------|----------------------------------|-----------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120Hz<br>( $\Omega$ )               | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120Hz                      | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA rms)       | (mm)                             | ◇◇ = pin style & length<br>△△ = pitch code<br><b>Details: Page 33</b> |
| <b>6,3<br/>(7,2)<br/>0J</b>          | 220                        | 1,33                                        | 0,220                          | 0,800                           | 0,22                               | 14                            | 345                               | 5 x 11,5                         | ECR0JLY221M◇◇△△0511                                                   |
|                                      | 470                        | 0,621                                       | 0,094                          | 0,350                           | 0,22                               | 30                            | 540                               | 6,3 x 11,5                       | ECR0JLY471M◇◇△△0611                                                   |
|                                      | 820                        | 0,356                                       | 0,056                          | 0,190                           | 0,22                               | 52                            | 945                               | 8 x 11,5                         | ECR0JLY821M◇◇△△0811                                                   |
|                                      | 1 200                      | 0,243                                       | 0,045                          | 0,150                           | 0,22                               | 76                            | 1250                              | 8 x 16                           | ECR0JLY122M◇◇△△0816                                                   |
|                                      |                            | 0,243                                       | 0,039                          | 0,140                           | 0,22                               | 76                            | 1330                              | 10 x 12,5                        | ECR0JLY122M◇◇△△1012                                                   |
|                                      | 1 500                      | 0,195                                       | 0,029                          | 0,110                           | 0,22                               | 95                            | 1500                              | 8 x 20                           | ECR0JLY152M◇◇△△0820                                                   |
|                                      | 1 800                      | 0,162                                       | 0,028                          | 0,100                           | 0,22                               | 114                           | 1760                              | 10 x 16                          | ECR0JLY182M◇◇△△1016                                                   |
|                                      | 2 200                      | 0,145                                       | 0,020                          | 0,060                           | 0,24                               | 139                           | 1960                              | 10 x 20                          | ECR0JLY222M◇◇△△1020                                                   |
|                                      | 2 700                      | 0,118                                       | 0,018                          | 0,054                           | 0,24                               | 171                           | 2250                              | 10 x 25                          | ECR0JLY272M◇◇△△1025                                                   |
|                                      | 3 900                      | 0,088                                       | 0,017                          | 0,043                           | 0,26                               | 246                           | 2480                              | 12,5 x 20                        | ECR0JLY392M◇◇△△1220                                                   |
|                                      | 4 700                      | 0,079                                       | 0,015                          | 0,038                           | 0,28                               | 297                           | 2900                              | 12,5 x 25                        | ECR0JLY472M◇◇△△1225                                                   |
|                                      | 5 600                      | 0,071                                       | 0,013                          | 0,033                           | 0,30                               | 353                           | 3450                              | 12,5 x 30                        | ECR0JLY562M◇◇△△1230                                                   |
|                                      |                            | 0,062                                       | 0,012                          | 0,031                           | 0,32                               | 429                           | 3570                              | 12,5 x 35                        | ECR0JLY682M◇◇△△1235                                                   |
|                                      |                            | 0,062                                       | 0,015                          | 0,038                           | 0,32                               | 429                           | 3250                              | 16 x 20                          | ECR0JLY682M◇◇△△1620                                                   |
|                                      | 8 200                      | 0,058                                       | 0,013                          | 0,035                           | 0,36                               | 517                           | 3630                              | 16 x 25                          | ECR0JLY822M◇◇△△1625                                                   |
| <b>10<br/>(13)<br/>1A</b>            | 150                        | 1,68                                        | 0,220                          | 0,800                           | 0,19                               | 15                            | 345                               | 5 x 11,5                         | ECR1ALY151M◇◇△△0511                                                   |
|                                      | 330                        | 0,764                                       | 0,094                          | 0,350                           | 0,19                               | 33                            | 540                               | 6,3 x 11,5                       | ECR1ALY331M◇◇△△0611                                                   |
|                                      | 680                        | 0,371                                       | 0,056                          | 0,190                           | 0,19                               | 68                            | 945                               | 8 x 11,5                         | ECR1ALY681M◇◇△△0811                                                   |
|                                      | 1 000                      | 0,252                                       | 0,045                          | 0,150                           | 0,19                               | 100                           | 1250                              | 8 x 16                           | ECR1ALY102M◇◇△△0816                                                   |
|                                      |                            | 0,252                                       | 0,039                          | 0,140                           | 0,19                               | 100                           | 1330                              | 10 x 12,5                        | ECR1ALY102M◇◇△△1012                                                   |
|                                      | 1 500                      | 0,168                                       | 0,029                          | 0,110                           | 0,19                               | 150                           | 1500                              | 8 x 20                           | ECR1ALY152M◇◇△△0820                                                   |
|                                      |                            | 0,168                                       | 0,028                          | 0,100                           | 0,19                               | 150                           | 1760                              | 10 x 16                          | ECR1ALY152M◇◇△△1016                                                   |
|                                      | 1 800                      | 0,140                                       | 0,020                          | 0,060                           | 0,19                               | 180                           | 1960                              | 10 x 20                          | ECR1ALY182M◇◇△△1020                                                   |
|                                      | 2 200                      | 0,127                                       | 0,018                          | 0,054                           | 0,21                               | 220                           | 2250                              | 10 x 25                          | ECR1ALY222M◇◇△△1025                                                   |
|                                      | 3 300                      | 0,092                                       | 0,017                          | 0,043                           | 0,23                               | 330                           | 2480                              | 12,5 x 20                        | ECR1ALY332M◇◇△△1220                                                   |
|                                      | 3 900                      | 0,078                                       | 0,015                          | 0,038                           | 0,23                               | 390                           | 2900                              | 12,5 x 25                        | ECR1ALY392M◇◇△△1225                                                   |
|                                      | 4 700                      | 0,071                                       | 0,013                          | 0,033                           | 0,25                               | 470                           | 3450                              | 12,5 x 30                        | ECR1ALY472M◇◇△△1230                                                   |
|                                      |                            | 0,071                                       | 0,015                          | 0,038                           | 0,25                               | 470                           | 3250                              | 16 x 20                          | ECR1ALY472M◇◇△△1620                                                   |
|                                      | 5 600                      | 0,064                                       | 0,012                          | 0,031                           | 0,27                               | 560                           | 3570                              | 12,5 x 35                        | ECR1ALY562M◇◇△△1235                                                   |
|                                      | 6 800                      | 0,057                                       | 0,013                          | 0,035                           | 0,29                               | 680                           | 3630                              | 16 x 25                          | ECR1ALY682M◇◇△△1625                                                   |
| <b>16<br/>(20)<br/>1C</b>            | 100                        | 2,13                                        | 0,220                          | 0,800                           | 0,16                               | 16                            | 345                               | 5 x 11,5                         | ECR1CLY101M◇◇△△0511                                                   |
|                                      | 220                        | 0,965                                       | 0,094                          | 0,350                           | 0,16                               | 36                            | 540                               | 6,3 x 11,5                       | ECR1CLY221M◇◇△△0611                                                   |
|                                      | 470                        | 0,452                                       | 0,056                          | 0,190                           | 0,16                               | 76                            | 945                               | 8 x 11,5                         | ECR1CLY471M◇◇△△0811                                                   |
|                                      | 680                        | 0,312                                       | 0,045                          | 0,150                           | 0,16                               | 109                           | 1250                              | 8 x 16                           | ECR1CLY681M◇◇△△0816                                                   |
|                                      |                            | 0,312                                       | 0,039                          | 0,140                           | 0,16                               | 109                           | 1330                              | 10 x 12,5                        | ECR1CLY681M◇◇△△1012                                                   |
|                                      | 1 000                      | 0,212                                       | 0,029                          | 0,110                           | 0,16                               | 160                           | 1500                              | 8 x 20                           | ECR1CLY102M◇◇△△0820                                                   |
|                                      |                            | 0,212                                       | 0,028                          | 0,100                           | 0,16                               | 160                           | 1760                              | 10 x 16                          | ECR1CLY102M◇◇△△1016                                                   |
|                                      | 1 500                      | 0,141                                       | 0,020                          | 0,060                           | 0,16                               | 240                           | 1960                              | 10 x 20                          | ECR1CLY152M◇◇△△1020                                                   |
|                                      | 1 800                      | 0,118                                       | 0,018                          | 0,054                           | 0,16                               | 288                           | 2250                              | 10 x 25                          | ECR1CLY182M◇◇△△1025                                                   |
|                                      | 2 200                      | 0,109                                       | 0,017                          | 0,043                           | 0,18                               | 352                           | 2480                              | 12,5 x 20                        | ECR1CLY222M◇◇△△1220                                                   |
|                                      | 2 700                      | 0,088                                       | 0,015                          | 0,038                           | 0,18                               | 432                           | 2900                              | 12,5 x 25                        | ECR1CLY272M◇◇△△1225                                                   |
|                                      | 3 300                      | 0,080                                       | 0,013                          | 0,033                           | 0,20                               | 528                           | 3450                              | 12,5 x 30                        | ECR1CLY332M◇◇△△1230                                                   |
|                                      |                            | 0,080                                       | 0,015                          | 0,038                           | 0,20                               | 528                           | 3250                              | 16 x 20                          | ECR1CLY332M◇◇△△1620                                                   |
|                                      | 3 900                      | 0,068                                       | 0,012                          | 0,031                           | 0,20                               | 624                           | 3570                              | 12,5 x 35                        | ECR1CLY392M◇◇△△1235                                                   |
|                                      | 4 700                      | 0,062                                       | 0,013                          | 0,035                           | 0,22                               | 752                           | 3630                              | 16 x 25                          | ECR1CLY472M◇◇△△1625                                                   |
| <b>25<br/>(32)<br/>1E</b>            | 68                         | 2,74                                        | 0,220                          | 0,800                           | 0,14                               | 17                            | 345                               | 5 x 11,5                         | ECR1ELY680M◇◇△△0511                                                   |
|                                      | 150                        | 1,24                                        | 0,094                          | 0,350                           | 0,14                               | 38                            | 540                               | 6,3 x 11,5                       | ECR1ELY151M◇◇△△0611                                                   |
|                                      | 330                        | 0,563                                       | 0,056                          | 0,190                           | 0,14                               | 83                            | 945                               | 8 x 11,5                         | ECR1ELY331M◇◇△△0811                                                   |
|                                      | 390                        | 0,476                                       | 0,045                          | 0,150                           | 0,14                               | 98                            | 1250                              | 8 x 16                           | ECR1ELY391M◇◇△△0816                                                   |
|                                      | 470                        | 0,395                                       | 0,039                          | 0,140                           | 0,14                               | 118                           | 1330                              | 10 x 12,5                        | ECR1ELY471M◇◇△△1012                                                   |
|                                      | 560                        | 0,332                                       | 0,029                          | 0,110                           | 0,14                               | 140                           | 1500                              | 8 x 20                           | ECR1ELY561M◇◇△△0820                                                   |
|                                      | 680                        | 0,273                                       | 0,028                          | 0,100                           | 0,14                               | 170                           | 1760                              | 10 x 16                          | ECR1ELY681M◇◇△△1016                                                   |
|                                      | 820                        | 0,226                                       | 0,020                          | 0,060                           | 0,14                               | 205                           | 1960                              | 10 x 20                          | ECR1ELY821M◇◇△△1020                                                   |
|                                      | 1 000                      | 0,186                                       | 0,018                          | 0,054                           | 0,14                               | 250                           | 2250                              | 10 x 25                          | ECR1ELY102M◇◇△△1025                                                   |
|                                      | 1 500                      | 0,124                                       | 0,017                          | 0,043                           | 0,14                               | 375                           | 2480                              | 12,5 x 20                        | ECR1ELY152M◇◇△△1220                                                   |
|                                      | 1 800                      | 0,103                                       | 0,015                          | 0,038                           | 0,14                               | 450                           | 2900                              | 12,5 x 25                        | ECR1ELY182M◇◇△△1225                                                   |
|                                      | 2 200                      | 0,096                                       | 0,013                          | 0,033                           | 0,16                               | 550                           | 3450                              | 12,5 x 30                        | ECR1ELY222M◇◇△△1230                                                   |
|                                      |                            | 0,096                                       | 0,015                          | 0,038                           | 0,16                               | 550                           | 3250                              | 16 x 20                          | ECR1ELY222M◇◇△△1620                                                   |
|                                      | 2 700                      | 0,079                                       | 0,012                          | 0,031                           | 0,16                               | 675                           | 3570                              | 12,5 x 35                        | ECR1ELY272M◇◇△△1235                                                   |
|                                      | 3 300                      | 0,072                                       | 0,013                          | 0,035                           | 0,18                               | 825                           | 3630                              | 16 x 25                          | ECR1ELY332M◇◇△△1625                                                   |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance | Z <sub>max</sub><br>Max Impedance | Z <sub>max</sub><br>Max Impedance | tanδ<br>Dissipation Factor | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current | Size<br>øD x L | ORDER CODE         |
|---------------------------------------------|-------------------------------------|----------------------------------------------------|-----------------------------------|-----------------------------------|----------------------------|--------------------------------------|------------------------------------------|----------------|--------------------|
| (V)                                         | (µF)                                | 20°C<br>120Hz<br>(Ω)                               | 20°C<br>100kHz<br>(Ω)             | -10°C<br>100kHz<br>(Ω)            | 20°C<br>120Hz              | (µA)                                 | 105°C<br>100kHz<br>(mA <sub>rms</sub> )  | (mm)           | Details: Page 33   |
| 35<br>(44)<br>1V                            | 47                                  | 3,39                                               | 0,220                             | 0,800                             | 0,12                       | 17                                   | 345                                      | 5 x 11,5       | ECR1VLY470M◊◊◊0511 |
|                                             | 100                                 | 1,60                                               | 0,094                             | 0,350                             | 0,12                       | 35                                   | 540                                      | 6,3 x 11,5     | ECR1VLY101M◊◊◊0611 |
|                                             | 220                                 | 0,723                                              | 0,056                             | 0,190                             | 0,12                       | 77                                   | 945                                      | 8 x 11,5       | ECR1VLY221M◊◊◊0811 |
|                                             | 270                                 | 0,589                                              | 0,045                             | 0,150                             | 0,12                       | 95                                   | 1250                                     | 8 x 16         | ECR1VLY271M◊◊◊0816 |
|                                             | 330                                 | 0,482                                              | 0,039                             | 0,140                             | 0,12                       | 116                                  | 1330                                     | 10 x 12,5      | ECR1VLY331M◊◊◊1012 |
|                                             | 390                                 | 0,408                                              | 0,029                             | 0,110                             | 0,12                       | 137                                  | 1500                                     | 8 x 20         | ECR1VLY391M◊◊◊0820 |
|                                             | 470                                 | 0,339                                              | 0,028                             | 0,100                             | 0,12                       | 165                                  | 1760                                     | 10 x 16        | ECR1VLY471M◊◊◊1016 |
|                                             | 560                                 | 0,284                                              | 0,020                             | 0,060                             | 0,12                       | 196                                  | 1960                                     | 10 x 20        | ECR1VLY561M◊◊◊1020 |
|                                             | 680                                 | 0,234                                              | 0,018                             | 0,054                             | 0,12                       | 238                                  | 2250                                     | 10 x 25        | ECR1VLY681M◊◊◊1025 |
|                                             | 1 000                               | 0,159                                              | 0,017                             | 0,043                             | 0,12                       | 350                                  | 2480                                     | 12,5 x 20      | ECR1VLY102M◊◊◊1220 |
|                                             | 1 200                               | 0,133                                              | 0,015                             | 0,038                             | 0,12                       | 420                                  | 2900                                     | 12,5 x 25      | ECR1VLY122M◊◊◊1225 |
|                                             | 1 500                               | 0,106                                              | 0,013                             | 0,033                             | 0,12                       | 525                                  | 3450                                     | 12,5 x 30      | ECR1VLY152M◊◊◊1230 |
|                                             |                                     | 0,106                                              | 0,015                             | 0,038                             | 0,12                       | 525                                  | 3250                                     | 16 x 20        | ECR1VLY152M◊◊◊1620 |
|                                             | 1 800                               | 0,088                                              | 0,012                             | 0,031                             | 0,12                       | 630                                  | 3570                                     | 12,5 x 35      | ECR1VLY182M◊◊◊1235 |
|                                             | 2 200                               | 0,084                                              | 0,013                             | 0,035                             | 0,14                       | 770                                  | 3630                                     | 16 x 25        | ECR1VLY222M◊◊◊1625 |
| 50<br>(63)<br>1H                            | 27                                  | 4,92                                               | 0,340                             | 1,18                              | 0,10                       | 14                                   | 238                                      | 5 x 11,5       | ECR1HLY270M◊◊◊0511 |
|                                             | 56                                  | 2,37                                               | 0,140                             | 0,500                             | 0,10                       | 28                                   | 385                                      | 6,3 x 11,5     | ECR1HLY560M◊◊◊0611 |
|                                             | 100                                 | 1,33                                               | 0,074                             | 0,220                             | 0,10                       | 50                                   | 724                                      | 8 x 11,5       | ECR1HLY101M◊◊◊0811 |
|                                             | 120                                 | 1,11                                               | 0,061                             | 0,180                             | 0,10                       | 60                                   | 950                                      | 8 x 16         | ECR1HLY121M◊◊◊0816 |
|                                             | 150                                 | 0,884                                              | 0,061                             | 0,180                             | 0,10                       | 75                                   | 979                                      | 10 x 12,5      | ECR1HLY151M◊◊◊1012 |
|                                             | 180                                 | 0,737                                              | 0,046                             | 0,140                             | 0,10                       | 90                                   | 1190                                     | 8 x 20         | ECR1HLY181M◊◊◊0820 |
|                                             | 220                                 | 0,603                                              | 0,042                             | 0,120                             | 0,10                       | 110                                  | 1370                                     | 10 x 16        | ECR1HLY221M◊◊◊1016 |
|                                             | 270                                 | 0,491                                              | 0,030                             | 0,090                             | 0,10                       | 135                                  | 1580                                     | 10 x 20        | ECR1HLY271M◊◊◊1020 |
|                                             | 330                                 | 0,402                                              | 0,028                             | 0,085                             | 0,10                       | 165                                  | 1870                                     | 10 x 25        | ECR1HLY331M◊◊◊1025 |
|                                             | 470                                 | 0,282                                              | 0,027                             | 0,068                             | 0,10                       | 235                                  | 2050                                     | 12,5 x 20      | ECR1HLY471M◊◊◊1220 |
|                                             | 560                                 | 0,237                                              | 0,023                             | 0,059                             | 0,10                       | 280                                  | 2410                                     | 12,5 x 25      | ECR1HLY561M◊◊◊1225 |
|                                             | 680                                 | 0,195                                              | 0,021                             | 0,052                             | 0,10                       | 340                                  | 2860                                     | 12,5 x 30      | ECR1HLY681M◊◊◊1230 |
|                                             | 820                                 | 0,162                                              | 0,019                             | 0,050                             | 0,10                       | 410                                  | 2960                                     | 12,5 x 35      | ECR1HLY821M◊◊◊1235 |
|                                             |                                     | 0,162                                              | 0,023                             | 0,059                             | 0,10                       | 410                                  | 2730                                     | 16 x 20        | ECR1HLY821M◊◊◊1620 |
|                                             | 1 000                               | 0,133                                              | 0,021                             | 0,056                             | 0,10                       | 500                                  | 3010                                     | 16 x 25        | ECR1HLY102M◊◊◊1625 |
| 63<br>(79)<br>1J                            | 15                                  | 7,96                                               | 0,880                             | 3,50                              | 0,09                       | 10                                   | 173                                      | 5 x 11,5       | ECR1JLY150M◊◊◊0511 |
|                                             | 33                                  | 3,62                                               | 0,350                             | 1,40                              | 0,09                       | 21                                   | 278                                      | 6,3 x 11,5     | ECR1JLY330M◊◊◊0611 |
|                                             | 82                                  | 1,45                                               | 0,220                             | 0,880                             | 0,09                       | 52                                   | 525                                      | 8 x 11,5       | ECR1JLY820M◊◊◊0811 |
|                                             | 100                                 | 1,20                                               | 0,160                             | 0,640                             | 0,09                       | 63                                   | 688                                      | 8 x 16         | ECR1JLY101M◊◊◊0816 |
|                                             | 120                                 | 0,995                                              | 0,150                             | 0,600                             | 0,09                       | 76                                   | 725                                      | 10 x 12,5      | ECR1JLY121M◊◊◊1012 |
|                                             | 150                                 | 0,796                                              | 0,120                             | 0,480                             | 0,09                       | 95                                   | 861                                      | 8 x 20         | ECR1JLY151M◊◊◊0820 |
|                                             | 180                                 | 0,663                                              | 0,110                             | 0,440                             | 0,09                       | 114                                  | 998                                      | 10 x 16        | ECR1JLY181M◊◊◊1016 |
|                                             | 220                                 | 0,543                                              | 0,078                             | 0,310                             | 0,09                       | 139                                  | 1200                                     | 10 x 20        | ECR1JLY221M◊◊◊1020 |
|                                             | 330                                 | 0,362                                              | 0,069                             | 0,280                             | 0,09                       | 208                                  | 1410                                     | 10 x 25        | ECR1JLY331M◊◊◊1025 |
|                                             | 390                                 | 0,306                                              | 0,060                             | 0,190                             | 0,09                       | 246                                  | 1570                                     | 12,5 x 20      | ECR1JLY391M◊◊◊1220 |
|                                             | 470                                 | 0,254                                              | 0,043                             | 0,140                             | 0,09                       | 297                                  | 1990                                     | 12,5 x 25      | ECR1JLY471M◊◊◊1225 |
|                                             | 560                                 | 0,213                                              | 0,035                             | 0,130                             | 0,09                       | 353                                  | 2410                                     | 12,5 x 30      | ECR1JLY561M◊◊◊1230 |
|                                             |                                     | 0,213                                              | 0,043                             | 0,140                             | 0,09                       | 353                                  | 2100                                     | 16 x 20        | ECR1JLY561M◊◊◊1620 |
|                                             | 680                                 | 0,176                                              | 0,033                             | 0,110                             | 0,09                       | 429                                  | 2620                                     | 12,5 x 35      | ECR1JLY681M◊◊◊1235 |
|                                             | 820                                 | 0,146                                              | 0,027                             | 0,090                             | 0,09                       | 517                                  | 2940                                     | 12,5 x 40      | ECR1JLY821M◊◊◊1240 |
|                                             |                                     | 0,146                                              | 0,032                             | 0,096                             | 0,09                       | 517                                  | 2730                                     | 16 x 25        | ECR1JLY821M◊◊◊1625 |
|                                             |                                     | 0,146                                              | 0,038                             | 0,100                             | 0,09                       | 517                                  | 2500                                     | 18 x 20        | ECR1JLY821M◊◊◊1820 |
|                                             | 1 200                               | 0,099                                              | 0,024                             | 0,068                             | 0,09                       | 756                                  | 2990                                     | 16 x 31,5      | ECR1JLY122M◊◊◊1631 |
|                                             |                                     | 0,099                                              | 0,031                             | 0,084                             | 0,09                       | 756                                  | 2800                                     | 18 x 25        | ECR1JLY122M◊◊◊1825 |
|                                             | 1 500                               | 0,080                                              | 0,021                             | 0,057                             | 0,09                       | 945                                  | 3040                                     | 16 x 35,5      | ECR1JLY152M◊◊◊1635 |
|                                             |                                     | 0,080                                              | 0,025                             | 0,068                             | 0,09                       | 945                                  | 3300                                     | 18 x 31,5      | ECR1JLY152M◊◊◊1831 |
|                                             | 1 800                               | 0,066                                              | 0,020                             | 0,054                             | 0,09                       | 1134                                 | 3570                                     | 18 x 35,5      | ECR1JLY182M◊◊◊1835 |
|                                             | 2 200                               | 0,066                                              | 0,018                             | 0,049                             | 0,11                       | 1386                                 | 3670                                     | 18 x 40        | ECR1JLY222M◊◊◊1840 |
| 80<br>(100)<br>1K                           | 12                                  | 8,85                                               | 1,40                              | 5,60                              | 0,08                       | 10                                   | 163                                      | 5 x 11,5       | ECR1KLY120M◊◊◊0511 |
|                                             | 33                                  | 3,22                                               | 0,570                             | 2,30                              | 0,08                       | 27                                   | 267                                      | 6,3 x 11,5     | ECR1KLY330M◊◊◊0611 |
|                                             | 56                                  | 1,90                                               | 0,360                             | 1,40                              | 0,08                       | 45                                   | 462                                      | 8 x 11,5       | ECR1KLY560M◊◊◊0811 |
|                                             | 68                                  | 1,56                                               | 0,250                             | 1,00                              | 0,08                       | 55                                   | 585                                      | 8 x 16         | ECR1KLY680M◊◊◊0816 |
|                                             | 82                                  | 1,30                                               | 0,230                             | 0,960                             | 0,08                       | 66                                   | 624                                      | 10 x 12,5      | ECR1KLY820M◊◊◊1012 |
|                                             | 100                                 | 1,07                                               | 0,190                             | 0,760                             | 0,08                       | 80                                   | 735                                      | 8 x 20         | ECR1KLY101M◊◊◊0820 |
|                                             | 120                                 | 0,884                                              | 0,170                             | 0,720                             | 0,08                       | 96                                   | 780                                      | 10 x 16        | ECR1KLY121M◊◊◊1016 |
|                                             | 180                                 | 0,589                                              | 0,120                             | 0,520                             | 0,08                       | 144                                  | 1040                                     | 10 x 20        | ECR1KLY181M◊◊◊1020 |
|                                             | 220                                 | 0,482                                              | 0,110                             | 0,470                             | 0,08                       | 176                                  | 1170                                     | 10 x 25        | ECR1KLY221M◊◊◊1025 |
|                                             | 270                                 | 0,393                                              | 0,085                             | 0,310                             | 0,08                       | 216                                  | 1430                                     | 12,5 x 20      | ECR1KLY271M◊◊◊1220 |

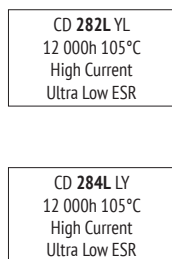
&gt;&gt;

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current | Size<br>$\varnothing D \times L$ | ORDER CODE                                                                                    |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120Hz<br>( $\Omega$ )               | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120Hz                      | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA rms)       | (mm)                             | <div>◇◇ = pin style &amp; length</div> <div>△△ = pitch code</div> <div>Details: Page 33</div> |
| 80<br>(100)<br>1K                    | 330                        | 0,322                                       | 0,060                          | 0,230                           | 0,08                               | 264                           | 1620                              | 12,5 x 25                        | ECR1KLY331M◇◇△△1225                                                                           |
|                                      | 390                        | 0,272                                       | 0,051                          | 0,210                           | 0,08                               | 312                           | 1950                              | 12,5 x 30                        | ECR1KLY391M◇◇△△1230                                                                           |
|                                      |                            | 0,272                                       | 0,058                          | 0,210                           | 0,08                               | 312                           | 1750                              | 16 x 20                          | ECR1KLY391M◇◇△△1620                                                                           |
|                                      | 470                        | 0,226                                       | 0,043                          | 0,170                           | 0,08                               | 376                           | 2140                              | 12,5 x 35                        | ECR1KLY471M◇◇△△1235                                                                           |
|                                      | 560                        | 0,189                                       | 0,036                          | 0,150                           | 0,08                               | 448                           | 2340                              | 12,5 x 40                        | ECR1KLY561M◇◇△△1240                                                                           |
|                                      |                            | 0,189                                       | 0,044                          | 0,160                           | 0,08                               | 448                           | 2210                              | 16 x 25                          | ECR1KLY561M◇◇△△1625                                                                           |
|                                      |                            | 0,189                                       | 0,054                          | 0,180                           | 0,08                               | 448                           | 1950                              | 18 x 20                          | ECR1KLY561M◇◇△△1820                                                                           |
|                                      | 680                        | 0,156                                       | 0,033                          | 0,120                           | 0,08                               | 544                           | 2400                              | 16 x 31,5                        | ECR1KLY681M◇◇△△1631                                                                           |
|                                      | 820                        | 0,129                                       | 0,029                          | 0,100                           | 0,08                               | 656                           | 2600                              | 16 x 35,5                        | ECR1KLY821M◇◇△△1635                                                                           |
|                                      |                            | 0,129                                       | 0,038                          | 0,130                           | 0,08                               | 656                           | 2270                              | 18 x 25                          | ECR1KLY821M◇◇△△1825                                                                           |
|                                      | 1 000                      | 0,106                                       | 0,027                          | 0,090                           | 0,08                               | 800                           | 2860                              | 16 x 40                          | ECR1KLY102M◇◇△△1640                                                                           |
|                                      |                            | 0,106                                       | 0,031                          | 0,110                           | 0,08                               | 800                           | 2470                              | 18 x 31,5                        | ECR1KLY102M◇◇△△1831                                                                           |
|                                      | 1 200                      | 0,088                                       | 0,027                          | 0,084                           | 0,08                               | 960                           | 2860                              | 18 x 35,5                        | ECR1KLY122M◇◇△△1835                                                                           |
|                                      | 1 500                      | 0,071                                       | 0,026                          | 0,076                           | 0,08                               | 1200                          | 3510                              | 18 x 40                          | ECR1KLY152M◇◇△△1840                                                                           |
| 100<br>(125)<br>2A                   | 8,2                        | 13,0                                        | 1,40                           | 5,60                            | 0,08                               | 9                             | 163                               | 5 x 11,5                         | ECR2ALY8R2M◇◇△△0511                                                                           |
|                                      | 18                         | 5,90                                        | 0,570                          | 2,30                            | 0,08                               | 18                            | 267                               | 6,3 x 11,5                       | ECR2ALY180M◇◇△△0611                                                                           |
|                                      | 33                         | 3,22                                        | 0,360                          | 1,40                            | 0,08                               | 33                            | 462                               | 8 x 11,5                         | ECR2ALY330M◇◇△△0811                                                                           |
|                                      | 47                         | 2,26                                        | 0,250                          | 1,00                            | 0,08                               | 47                            | 585                               | 8 x 16                           | ECR2ALY470M◇◇△△0816                                                                           |
|                                      | 56                         | 1,90                                        | 0,230                          | 0,960                           | 0,08                               | 56                            | 624                               | 10 x 12,5                        | ECR2ALY560M◇◇△△1012                                                                           |
|                                      | 68                         | 1,56                                        | 0,190                          | 0,760                           | 0,08                               | 68                            | 735                               | 8 x 20                           | ECR2ALY680M◇◇△△0820                                                                           |
|                                      | 82                         | 1,30                                        | 0,170                          | 0,720                           | 0,08                               | 82                            | 780                               | 10 x 16                          | ECR2ALY820M◇◇△△1016                                                                           |
|                                      | 100                        | 1,07                                        | 0,120                          | 0,520                           | 0,08                               | 100                           | 1040                              | 10 x 20                          | ECR2ALY101M◇◇△△1020                                                                           |
|                                      | 120                        | 0,884                                       | 0,110                          | 0,470                           | 0,08                               | 120                           | 1170                              | 10 x 25                          | ECR2ALY121M◇◇△△1025                                                                           |
|                                      | 150                        | 0,707                                       | 0,085                          | 0,310                           | 0,08                               | 150                           | 1430                              | 12,5 x 20                        | ECR2ALY151M◇◇△△1220                                                                           |
|                                      | 220                        | 0,482                                       | 0,060                          | 0,230                           | 0,08                               | 220                           | 1620                              | 12,5 x 25                        | ECR2ALY221M◇◇△△1225                                                                           |
|                                      | 270                        | 0,393                                       | 0,051                          | 0,210                           | 0,08                               | 270                           | 1950                              | 12,5 x 30                        | ECR2ALY271M◇◇△△1230                                                                           |
|                                      |                            | 0,393                                       | 0,058                          | 0,210                           | 0,08                               | 270                           | 1750                              | 16 x 20                          | ECR2ALY271M◇◇△△1620                                                                           |
|                                      | 330                        | 0,322                                       | 0,043                          | 0,170                           | 0,08                               | 330                           | 2140                              | 12,5 x 35                        | ECR2ALY331M◇◇△△1235                                                                           |
|                                      | 390                        | 0,272                                       | 0,036                          | 0,150                           | 0,08                               | 390                           | 2340                              | 12,5 x 40                        | ECR2ALY391M◇◇△△1240                                                                           |
|                                      |                            | 0,272                                       | 0,044                          | 0,160                           | 0,08                               | 390                           | 2210                              | 16 x 25                          | ECR2ALY391M◇◇△△1625                                                                           |
|                                      |                            | 0,272                                       | 0,054                          | 0,180                           | 0,08                               | 390                           | 1950                              | 18 x 20                          | ECR2ALY391M◇◇△△1820                                                                           |
|                                      | 470                        | 0,226                                       | 0,033                          | 0,120                           | 0,08                               | 470                           | 2400                              | 16 x 31,5                        | ECR2ALY471M◇◇△△1631                                                                           |
|                                      |                            | 0,226                                       | 0,038                          | 0,113                           | 0,08                               | 470                           | 2270                              | 18 x 25                          | ECR2ALY471M◇◇△△1825                                                                           |
|                                      | 560                        | 0,189                                       | 0,029                          | 0,100                           | 0,08                               | 560                           | 2600                              | 16 x 35,5                        | ECR2ALY561M◇◇△△1635                                                                           |
|                                      |                            | 0,189                                       | 0,031                          | 0,110                           | 0,08                               | 560                           | 2470                              | 18 x 31,5                        | ECR2ALY561M◇◇△△1831                                                                           |
|                                      | 680                        | 0,156                                       | 0,027                          | 0,090                           | 0,08                               | 680                           | 2860                              | 16 x 40                          | ECR2ALY681M◇◇△△1640                                                                           |
|                                      |                            | 0,156                                       | 0,027                          | 0,084                           | 0,08                               | 680                           | 2860                              | 18 x 35,5                        | ECR2ALY681M◇◇△△1835                                                                           |
|                                      | 820                        | 0,129                                       | 0,026                          | 0,076                           | 0,08                               | 820                           | 3510                              | 18 x 40                          | ECR2ALY821M◇◇△△1840                                                                           |
| 120<br>(150)<br>2B                   | 33                         | 3,22                                        | 0,250                          | 1,00                            | 0,08                               | 40                            | 585                               | 8 x 16                           | ECR2BLY330M◇◇△△0816                                                                           |
|                                      | 47                         | 2,26                                        | 0,190                          | 0,746                           | 0,08                               | 57                            | 735                               | 8 x 20                           | ECR2BLY470M◇◇△△0820                                                                           |
|                                      | 56                         | 1,90                                        | 0,170                          | 0,720                           | 0,08                               | 68                            | 780                               | 10 x 16                          | ECR2BLY560M◇◇△△1016                                                                           |
|                                      | 82                         | 1,30                                        | 0,120                          | 0,520                           | 0,08                               | 99                            | 1040                              | 10 x 20                          | ECR2BLY820M◇◇△△1020                                                                           |
|                                      | 100                        | 1,07                                        | 0,100                          | 0,430                           | 0,08                               | 120                           | 1250                              | 10 x 25                          | ECR2BLY101M◇◇△△1025                                                                           |
|                                      | 120                        | 0,885                                       | 0,090                          | 0,380                           | 0,08                               | 144                           | 1400                              | 10 x 30                          | ECR2BLY121M◇◇△△1030                                                                           |
|                                      |                            | 0,885                                       | 0,085                          | 0,310                           | 0,08                               | 144                           | 1430                              | 12,5 x 20                        | ECR2BLY121M◇◇△△1220                                                                           |
|                                      | 150                        | 0,708                                       | 0,210                          | 0,840                           | 0,08                               | 180                           | 1620                              | 12,5 x 25                        | ECR2BLY151M◇◇△△1225                                                                           |
|                                      | 180                        | 0,590                                       | 0,180                          | 0,720                           | 0,08                               | 216                           | 1880                              | 12,5 x 30                        | ECR2BLY181M◇◇△△1230                                                                           |
|                                      |                            | 0,590                                       | 0,170                          | 0,650                           | 0,08                               | 216                           | 1700                              | 16 x 20                          | ECR2BLY181M◇◇△△1620                                                                           |
|                                      | 220                        | 0,483                                       | 0,150                          | 0,600                           | 0,08                               | 264                           | 2140                              | 12,5 x 35                        | ECR2BLY221M◇◇△△1235                                                                           |
|                                      | 270                        | 0,393                                       | 0,120                          | 0,480                           | 0,08                               | 324                           | 2340                              | 12,5 x 40                        | ECR2BLY271M◇◇△△1240                                                                           |
|                                      |                            | 0,393                                       | 0,130                          | 0,490                           | 0,08                               | 324                           | 2100                              | 16 x 25                          | ECR2BLY271M◇◇△△1625                                                                           |
|                                      |                            | 0,393                                       | 0,140                          | 0,520                           | 0,08                               | 324                           | 1850                              | 18 x 20                          | ECR2BLY271M◇◇△△1820                                                                           |
|                                      | 330                        | 0,322                                       | 0,100                          | 0,380                           | 0,08                               | 396                           | 2400                              | 16 x 31,5                        | ECR2BLY331M◇◇△△1631                                                                           |
|                                      | 390                        | 0,272                                       | 0,085                          | 0,320                           | 0,08                               | 468                           | 2600                              | 16 x 35,5                        | ECR2BLY391M◇◇△△1635                                                                           |
|                                      |                            | 0,272                                       | 0,100                          | 0,370                           | 0,08                               | 468                           | 2270                              | 18 x 25                          | ECR2BLY391M◇◇△△1825                                                                           |
|                                      | 470                        | 0,226                                       | 0,075                          | 0,290                           | 0,08                               | 564                           | 2860                              | 16 x 40                          | ECR2BLY471M◇◇△△1640                                                                           |
|                                      |                            | 0,226                                       | 0,080                          | 0,300                           | 0,08                               | 564                           | 2470                              | 18 x 31,5                        | ECR2BLY471M◇◇△△1831                                                                           |
|                                      | 560                        | 0,190                                       | 0,070                          | 0,260                           | 0,08                               | 672                           | 2860                              | 18 x 35,5                        | ECR2BLY561M◇◇△△1835                                                                           |
|                                      | 680                        | 0,156                                       | 0,060                          | 0,220                           | 0,08                               | 816                           | 3510                              | 18 x 40                          | ECR2BLY681M◇◇△△1840                                                                           |



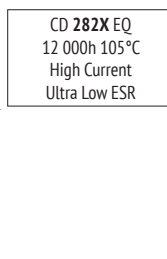
## 8 000 - 12 000h at 105°C

- Lowest ESR
- Smallest Can Size
- Long Life



smaller

smaller



UPDATED



## ITEM

## CHARACTERISTICS

|                                     |             |
|-------------------------------------|-------------|
| Operating Temperature Range (°C)    | -40 ~ +105  |
| Voltage Range (V)                   | 6,3 ~ 100   |
| Capacitance Range (µF)              | 8,2 ~ 8 200 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%       |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current (µA) After 2 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)                                   | 6,3   | 10 | 16 | 25 | 35 | 50 | 63 | 80 | 100 |
|---------------------------------------------------------|-----------------------------------------------------|-------|----|----|----|----|----|----|----|-----|
|                                                         | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 2     |    |    |    |    |    |    |    |     |
|                                                         | $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | Ø≤6,3 | 5  |    | 4  |    |    | 3  |    |     |
|                                                         |                                                     | Ø≥8   |    |    |    | 3  |    |    |    |     |

## ITEM

## USEFUL LIFE

## LOAD LIFE

## ENDURANCE TEST

## SHELF LIFE

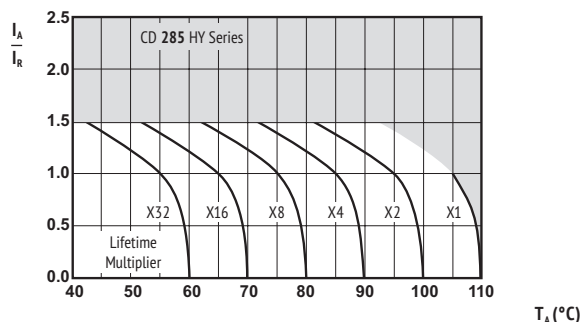
|                                                                         | Case Size                                                  | Lifetime                                       |                      |                       | Case Size                                                  | Lifetime           |                      |                       | Case Size                                                  | Lifetime           |                      |                       |                                                   |                                                                                       |
|-------------------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------|----------------------|-----------------------|------------------------------------------------------------|--------------------|----------------------|-----------------------|------------------------------------------------------------|--------------------|----------------------|-----------------------|---------------------------------------------------|---------------------------------------------------------------------------------------|
|                                                                         |                                                            | 6,3V <sub>DC</sub>                             | 10-50V <sub>DC</sub> | 63-100V <sub>DC</sub> |                                                            | 6,3V <sub>DC</sub> | 10-50V <sub>DC</sub> | 63-100V <sub>DC</sub> |                                                            | 6,3V <sub>DC</sub> | 10-50V <sub>DC</sub> | 63-100V <sub>DC</sub> |                                                   |                                                                                       |
| Lifetime                                                                | Ø≤6,3                                                      | 8 000                                          | 9 000                | 8 000                 | Ø≤6,3                                                      | 6 000              | 7 000                | 6 000                 | Ø≤6,3                                                      | 7 000              | 8 000                | 9 000                 | 500h                                              |                                                                                       |
|                                                                         | 8x11,5                                                     | 10 000                                         | 11 000               | 10 000                | 8x11,5                                                     | 8 000              | 9 000                | 8 000                 | 8x11,5                                                     | 10 000             | 11 000               | 10 000                |                                                   |                                                                                       |
|                                                                         | 10x12,5                                                    | 11 000                                         | 11 000               | 11 000                | 10x12,5                                                    | 9 000              | 9 000                | 9 000                 | 10x12,5                                                    | 11 000             | 11 000               | 11 000                |                                                   |                                                                                       |
|                                                                         | 8x16,8x20                                                  | 11 000                                         | 12 000               | 11 000                | 8x16,8x20                                                  | 9 000              | 10 000               | 9 000                 | 8x16,8x20                                                  | 11 000             | 12 000               | 11 000                |                                                   |                                                                                       |
|                                                                         | 10x16,<br>10x20,<br>10x25<br>Ø≥12,5                        | 12 000                                         |                      |                       | 10x16,<br>10x20,<br>10x25<br>Ø≥12,5                        | 10 000             |                      |                       | 10x16,<br>10x20,<br>10x25<br>Ø≥12,5                        | 12 000             |                      |                       |                                                   |                                                                                       |
| Leakage Current                                                         | Not more than specified value                              |                                                |                      |                       | Not more than specified value                              |                    |                      |                       | Not more than specified value                              |                    |                      |                       | Not more than specified value                     |                                                                                       |
| Capacitance Change                                                      | Within ± 30% of initial value<br>(6,3V, 10V: ± 40%)        |                                                |                      |                       | Within ± 25% of initial value<br>(6,3V, 10V: ± 30%)        |                    |                      |                       | Within ± 25% of initial value<br>(6,3V, 10V: ± 30%)        |                    |                      |                       | Within ± 20% of initial value                     |                                                                                       |
| Dissipation Factor                                                      | Not more than 300% of specified<br>value (6,3V, 10V: 400%) |                                                |                      |                       | Not more than 200% of specified value<br>(6,3V, 10V: 300%) |                    |                      |                       | Not more than 200% of specified value<br>(6,3V, 10V: 300%) |                    |                      |                       | Not more than 200% of<br>specified value          |                                                                                       |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | U <sub>R</sub><br>I <sub>R</sub><br>105°C                  | U <sub>R</sub><br>1,4 x I <sub>R</sub><br>60°C |                      |                       | U <sub>R</sub><br>I <sub>R</sub><br>105°C                  |                    |                      |                       | U <sub>R</sub><br>I <sub>R</sub> = 0<br>105°C<br>IEC 60384 |                    |                      |                       | U <sub>R</sub> = 0<br>I <sub>R</sub> = 0<br>105°C | After test: U <sub>R</sub> to<br>be applied for 30<br>min > 24h before<br>measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Capacitance (µF) | Frequency | 120Hz | 1kHz | 10kHz | 100kHz |
|------------------|-----------|-------|------|-------|--------|
| 8,2 ~ 33         |           | 0,42  | 0,70 | 0,90  | 1,00   |
| 47 ~ 270         |           | 0,50  | 0,73 | 0,92  | 1,00   |
| 330 ~ 680        |           | 0,55  | 0,77 | 0,94  | 1,00   |
| 820 ~ 1 800      |           | 0,60  | 0,80 | 0,96  | 1,00   |
| 2 200 ~ 8 200    |           | 0,70  | 0,85 | 0,98  | 1,00   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current | Size<br>$\varnothing D \times L$ | ORDER CODE                                                            |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------|----------------------------------|-----------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120kHz<br>( $\Omega$ )              | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120kHz                     | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA rms)       | (mm)                             | ◇◇ = pin style & length<br>△△ = pitch code<br><b>Details: Page 33</b> |
| <b>6,3<br/>(7,2)<br/>0J</b>          | 220                        | 1,33                                        | 0,400                          | 1,20                            | 0,22                               | 14                            | 345                               | 5 x 11,5                         | ECR0JHY221M◇◇△△0511                                                   |
|                                      | 470                        | 0,621                                       | 0,170                          | 0,510                           | 0,22                               | 30                            | 540                               | 6,3 x 11,5                       | ECR0JHY471M◇◇△△0611                                                   |
|                                      | 820                        | 0,356                                       | 0,075                          | 0,230                           | 0,22                               | 52                            | 945                               | 8 x 11,5                         | ECR0JHY821M◇◇△△0811                                                   |
|                                      | 1 000                      | 0,292                                       | 0,059                          | 0,180                           | 0,22                               | 63                            | 1250                              | 8 x 16                           | ECR0JHY102M◇◇△△0816                                                   |
|                                      | 1 200                      | 0,243                                       | 0,053                          | 0,160                           | 0,22                               | 76                            | 1330                              | 10 x 12,5                        | ECR0JHY122M◇◇△△1012                                                   |
|                                      | 1 500                      | 0,195                                       | 0,041                          | 0,130                           | 0,22                               | 95                            | 1500                              | 8 x 20                           | ECR0JHY152M◇◇△△0820                                                   |
|                                      | 1 800                      | 0,162                                       | 0,038                          | 0,120                           | 0,22                               | 114                           | 1760                              | 10 x 16                          | ECR0JHY182M◇◇△△1016                                                   |
|                                      | 2 700                      | 0,118                                       | 0,028                          | 0,084                           | 0,24                               | 171                           | 1960                              | 10 x 20                          | ECR0JHY272M◇◇△△1020                                                   |
|                                      | 3 300                      | 0,104                                       | 0,024                          | 0,072                           | 0,26                               | 208                           | 2250                              | 10 x 25                          | ECR0JHY332M◇◇△△1025                                                   |
|                                      | 3 900                      | 0,088                                       | 0,025                          | 0,075                           | 0,26                               | 246                           | 2480                              | 12,5 x 20                        | ECR0JHY392M◇◇△△1220                                                   |
|                                      | 4 700                      | 0,079                                       | 0,019                          | 0,057                           | 0,28                               | 297                           | 2900                              | 12,5 x 25                        | ECR0JHY472M◇◇△△1225                                                   |
|                                      | 5 600                      | 0,071                                       | 0,018                          | 0,054                           | 0,30                               | 353                           | 3450                              | 12,5 x 30                        | ECR0JHY562M◇◇△△1230                                                   |
|                                      | 6 800                      | 0,062                                       | 0,016                          | 0,048                           | 0,32                               | 429                           | 3570                              | 12,5 x 35                        | ECR0JHY682M◇◇△△1235                                                   |
|                                      |                            | 0,062                                       | 0,021                          | 0,063                           | 0,32                               | 429                           | 3250                              | 16 x 20                          | ECR0JHY682M◇◇△△1620                                                   |
|                                      | 8 200                      | 0,058                                       | 0,017                          | 0,051                           | 0,36                               | 517                           | 3630                              | 16 x 25                          | ECR0JHY822M◇◇△△1625                                                   |
| <b>10<br/>(13)<br/>1A</b>            | 150                        | 1,68                                        | 0,400                          | 1,20                            | 0,19                               | 15                            | 450                               | 5 x 11,5                         | ECR1AHY151M◇◇△△0511                                                   |
|                                      | 330                        | 0,764                                       | 0,170                          | 0,510                           | 0,19                               | 33                            | 700                               | 6,3 x 11,5                       | ECR1AHY331M◇◇△△0611                                                   |
|                                      | 560                        | 0,450                                       | 0,075                          | 0,230                           | 0,19                               | 56                            | 1200                              | 8 x 11,5                         | ECR1AHY561M◇◇△△0811                                                   |
|                                      | 680                        | 0,371                                       | 0,059                          | 0,180                           | 0,19                               | 68                            | 1600                              | 8 x 16                           | ECR1AHY681M◇◇△△0816                                                   |
|                                      | 820                        | 0,307                                       | 0,053                          | 0,160                           | 0,19                               | 82                            | 1700                              | 10 x 12,5                        | ECR1AHY821M◇◇△△1012                                                   |
|                                      | 1 000                      | 0,252                                       | 0,041                          | 0,130                           | 0,19                               | 100                           | 1960                              | 8 x 20                           | ECR1AHY102M◇◇△△0820                                                   |
|                                      | 1 200                      | 0,210                                       | 0,038                          | 0,120                           | 0,19                               | 120                           | 2000                              | 10 x 16                          | ECR1AHY122M◇◇△△1016                                                   |
|                                      | 1 800                      | 0,140                                       | 0,028                          | 0,084                           | 0,19                               | 180                           | 2500                              | 10 x 20                          | ECR1AHY182M◇◇△△1020                                                   |
|                                      | 2 200                      | 0,127                                       | 0,024                          | 0,072                           | 0,21                               | 220                           | 2900                              | 10 x 25                          | ECR1AHY222M◇◇△△1025                                                   |
|                                      | 2 700                      | 0,103                                       | 0,025                          | 0,075                           | 0,21                               | 270                           | 2600                              | 12,5 x 20                        | ECR1AHY272M◇◇△△1220                                                   |
|                                      | 3 300                      | 0,092                                       | 0,019                          | 0,057                           | 0,23                               | 330                           | 3200                              | 12,5 x 25                        | ECR1AHY332M◇◇△△1225                                                   |
|                                      | 4 700                      | 0,071                                       | 0,018                          | 0,054                           | 0,25                               | 470                           | 3660                              | 12,5 x 30                        | ECR1AHY472M◇◇△△1230                                                   |
|                                      |                            | 0,071                                       | 0,021                          | 0,063                           | 0,25                               | 470                           | 3330                              | 16 x 20                          | ECR1AHY472M◇◇△△1620                                                   |
|                                      | 5 600                      | 0,064                                       | 0,016                          | 0,048                           | 0,27                               | 560                           | 4120                              | 12,5 x 35                        | ECR1AHY562M◇◇△△1235                                                   |
|                                      |                            | 0,064                                       | 0,017                          | 0,051                           | 0,27                               | 560                           | 3810                              | 16 x 25                          | ECR1AHY562M◇◇△△1625                                                   |
| <b>16<br/>(20)<br/>1C</b>            | 120                        | 1,77                                        | 0,400                          | 1,20                            | 0,16                               | 20                            | 450                               | 5 x 11,5                         | ECR1CHY121M◇◇△△0511                                                   |
|                                      | 270                        | 0,786                                       | 0,170                          | 0,510                           | 0,16                               | 44                            | 700                               | 6,3 x 11,5                       | ECR1CHY271M◇◇△△0611                                                   |
|                                      | 470                        | 0,452                                       | 0,075                          | 0,230                           | 0,16                               | 76                            | 1200                              | 8 x 11,5                         | ECR1CHY471M◇◇△△0811                                                   |
|                                      | 560                        | 0,379                                       | 0,059                          | 0,180                           | 0,16                               | 90                            | 1600                              | 8 x 16                           | ECR1CHY561M◇◇△△0816                                                   |
|                                      | 680                        | 0,312                                       | 0,053                          | 0,160                           | 0,16                               | 109                           | 1700                              | 10 x 12,5                        | ECR1CHY681M◇◇△△1012                                                   |
|                                      | 820                        | 0,259                                       | 0,041                          | 0,130                           | 0,16                               | 132                           | 1960                              | 8 x 20                           | ECR1CHY821M◇◇△△0820                                                   |
|                                      | 1 000                      | 0,212                                       | 0,038                          | 0,120                           | 0,16                               | 160                           | 2000                              | 10 x 16                          | ECR1CHY102M◇◇△△1016                                                   |
|                                      | 1 500                      | 0,141                                       | 0,028                          | 0,084                           | 0,16                               | 240                           | 2500                              | 10 x 20                          | ECR1CHY152M◇◇△△1020                                                   |
|                                      | 1 800                      | 0,118                                       | 0,024                          | 0,072                           | 0,16                               | 288                           | 2900                              | 10 x 25                          | ECR1CHY182M◇◇△△1025                                                   |
|                                      | 2 200                      | 0,109                                       | 0,025                          | 0,075                           | 0,18                               | 352                           | 2600                              | 12,5 x 20                        | ECR1CHY222M◇◇△△1220                                                   |
|                                      | 2 700                      | 0,088                                       | 0,019                          | 0,057                           | 0,18                               | 432                           | 3200                              | 12,5 x 25                        | ECR1CHY272M◇◇△△1225                                                   |
|                                      | 3 300                      | 0,080                                       | 0,018                          | 0,054                           | 0,20                               | 528                           | 3660                              | 12,5 x 30                        | ECR1CHY332M◇◇△△1230                                                   |
|                                      |                            | 0,080                                       | 0,021                          | 0,063                           | 0,20                               | 528                           | 3330                              | 16 x 20                          | ECR1CHY332M◇◇△△1620                                                   |
|                                      | 3 900                      | 0,068                                       | 0,016                          | 0,048                           | 0,20                               | 624                           | 4120                              | 12,5 x 35                        | ECR1CHY392M◇◇△△1235                                                   |
|                                      | 4 700                      | 0,062                                       | 0,017                          | 0,051                           | 0,22                               | 752                           | 3810                              | 16 x 25                          | ECR1CHY472M◇◇△△1625                                                   |
| <b>25<br/>(32)<br/>1E</b>            | 68                         | 2,74                                        | 0,400                          | 1,20                            | 0,14                               | 17                            | 450                               | 5 x 11,5                         | ECR1EHY680M◇◇△△0511                                                   |
|                                      | 150                        | 1,24                                        | 0,170                          | 0,510                           | 0,14                               | 38                            | 700                               | 6,3 x 11,5                       | ECR1EHY151M◇◇△△0611                                                   |
|                                      | 330                        | 0,563                                       | 0,075                          | 0,230                           | 0,14                               | 83                            | 1200                              | 8 x 11,5                         | ECR1EHY331M◇◇△△0811                                                   |
|                                      | 390                        | 0,476                                       | 0,059                          | 0,180                           | 0,14                               | 98                            | 1600                              | 8 x 16                           | ECR1EHY391M◇◇△△0816                                                   |
|                                      | 470                        | 0,395                                       | 0,053                          | 0,160                           | 0,14                               | 118                           | 1700                              | 10 x 12,5                        | ECR1EHY471M◇◇△△1012                                                   |
|                                      | 560                        | 0,332                                       | 0,041                          | 0,130                           | 0,14                               | 140                           | 1960                              | 8 x 20                           | ECR1EHY561M◇◇△△0820                                                   |
|                                      | 680                        | 0,273                                       | 0,038                          | 0,120                           | 0,14                               | 170                           | 2000                              | 10 x 16                          | ECR1EHY681M◇◇△△1016                                                   |
|                                      | 1 000                      | 0,186                                       | 0,028                          | 0,084                           | 0,14                               | 250                           | 2500                              | 10 x 20                          | ECR1EHY102M◇◇△△1020                                                   |
|                                      | 1 200                      | 0,155                                       | 0,024                          | 0,072                           | 0,14                               | 300                           | 2900                              | 10 x 25                          | ECR1EHY122M◇◇△△1025                                                   |
|                                      | 1 500                      | 0,124                                       | 0,025                          | 0,075                           | 0,14                               | 375                           | 2600                              | 12,5 x 20                        | ECR1EHY152M◇◇△△1220                                                   |
|                                      | 1 800                      | 0,103                                       | 0,019                          | 0,057                           | 0,14                               | 450                           | 3200                              | 12,5 x 25                        | ECR1EHY182M◇◇△△1225                                                   |
|                                      | 2 200                      | 0,096                                       | 0,018                          | 0,054                           | 0,16                               | 550                           | 3660                              | 12,5 x 30                        | ECR1EHY222M◇◇△△1230                                                   |
|                                      |                            | 0,096                                       | 0,021                          | 0,063                           | 0,16                               | 550                           | 3330                              | 16 x 20                          | ECR1EHY222M◇◇△△1620                                                   |
|                                      | 2 700                      | 0,079                                       | 0,016                          | 0,048                           | 0,16                               | 675                           | 4120                              | 12,5 x 35                        | ECR1EHY272M◇◇△△1235                                                   |
|                                      | 3 300                      | 0,072                                       | 0,017                          | 0,051                           | 0,18                               | 825                           | 3810                              | 16 x 25                          | ECR1EHY332M◇◇△△1625                                                   |
| <b>35<br/>(44)<br/>1V</b>            | 47                         | 3,39                                        | 0,400                          | 1,20                            | 0,12                               | 17                            | 450                               | 5 x 11,5                         | ECR1VHY470M◇◇△△0511                                                   |
|                                      | 100                        | 1,60                                        | 0,170                          | 0,510                           | 0,12                               | 35                            | 700                               | 6,3 x 11,5                       | ECR1VHY101M◇◇△△0611                                                   |
|                                      | 180                        | 0,884                                       | 0,075                          | 0,230                           | 0,12                               | 63                            | 1200                              | 8 x 11,5                         | ECR1VHY181M◇◇△△0811                                                   |
|                                      | 220                        | 0,723                                       | 0,059                          | 0,180                           | 0,12                               | 77                            | 1600                              | 8 x 16                           | ECR1VHY221M◇◇△△0816                                                   |
|                                      | 270                        | 0,589                                       | 0,053                          | 0,160                           | 0,12                               | 95                            | 1700                              | 10 x 12,5                        | ECR1VHY271M◇◇△△1012                                                   |

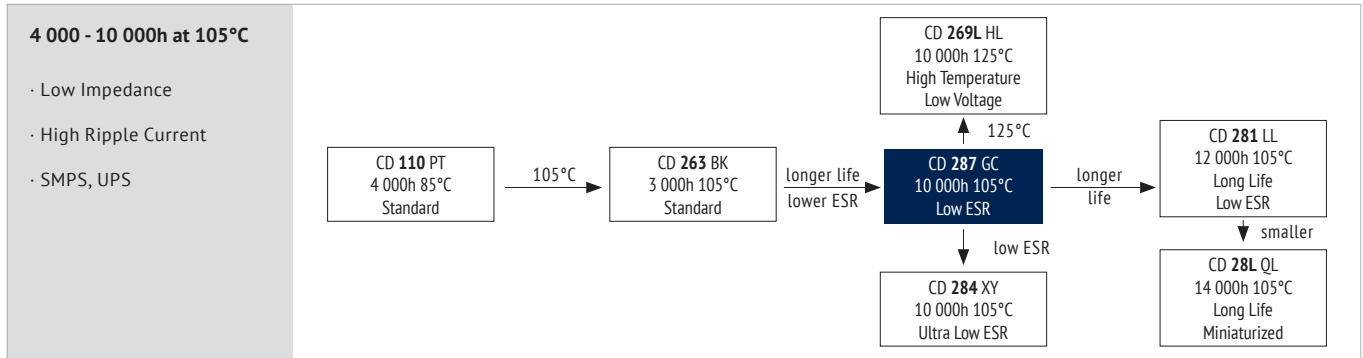
| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance | Z <sub>max</sub><br>Max Impedance | Z <sub>max</sub><br>Max Impedance | tanδ<br>Dissipation Factor | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current | Size<br>øD x L | ORDER CODE          |
|---------------------------------------------|-------------------------------------|----------------------------------------------------|-----------------------------------|-----------------------------------|----------------------------|--------------------------------------|------------------------------------------|----------------|---------------------|
| (V)                                         | (µF)                                | 20°C<br>120Hz<br>(Ω)                               | 20°C<br>100kHz<br>(Ω)             | -10°C<br>100kHz<br>(Ω)            | 20°C<br>120Hz              | (µA)                                 | 105°C<br>100kHz<br>(mArms)               | (mm)           | Details: Page 33    |
| 35<br>(44)<br>1V                            | 330                                 | 0,482                                              | 0,041                             | 0,130                             | 0,12                       | 116                                  | 1960                                     | 8 x 20         | ECR1VHY331M◇◇△△0820 |
|                                             | 390                                 | 0,408                                              | 0,041                             | 0,130                             | 0,12                       | 137                                  | 1960                                     | 8 x 20         | ECR1VHY391M◇◇△△0820 |
|                                             |                                     | 0,408                                              | 0,038                             | 0,120                             | 0,12                       | 137                                  | 2000                                     | 10 x 16        | ECR1VHY391M◇◇△△1016 |
|                                             | 470                                 | 0,339                                              | 0,038                             | 0,120                             | 0,12                       | 165                                  | 2000                                     | 10 x 16        | ECR1VHY471M◇◇△△1016 |
|                                             | 560                                 | 0,284                                              | 0,028                             | 0,084                             | 0,12                       | 196                                  | 2500                                     | 10 x 20        | ECR1VHY561M◇◇△△1020 |
|                                             | 680                                 | 0,234                                              | 0,024                             | 0,072                             | 0,12                       | 238                                  | 2900                                     | 10 x 25        | ECR1VHY681M◇◇△△1025 |
|                                             | 820                                 | 0,194                                              | 0,025                             | 0,075                             | 0,12                       | 287                                  | 2600                                     | 12,5 x 20      | ECR1VHY821M◇◇△△1220 |
|                                             | 1 000                               | 0,159                                              | 0,025                             | 0,075                             | 0,12                       | 350                                  | 2600                                     | 12,5 x 20      | ECR1VHY102M◇◇△△1220 |
|                                             | 1 200                               | 0,133                                              | 0,019                             | 0,057                             | 0,12                       | 420                                  | 3200                                     | 12,5 x 25      | ECR1VHY122M◇◇△△1225 |
|                                             | 1 500                               | 0,106                                              | 0,018                             | 0,054                             | 0,12                       | 525                                  | 3660                                     | 12,5 x 30      | ECR1VHY152M◇◇△△1230 |
|                                             |                                     | 0,106                                              | 0,021                             | 0,063                             | 0,12                       | 525                                  | 3330                                     | 16 x 20        | ECR1VHY152M◇◇△△1620 |
|                                             | 1 800                               | 0,088                                              | 0,016                             | 0,048                             | 0,12                       | 630                                  | 4120                                     | 12,5 x 35      | ECR1VHY182M◇◇△△1235 |
|                                             |                                     | 0,088                                              | 0,017                             | 0,051                             | 0,12                       | 630                                  | 3810                                     | 16 x 25        | ECR1VHY182M◇◇△△1625 |
| 50<br>(63)<br>1H                            | 27                                  | 4,92                                               | 0,480                             | 1,50                              | 0,10                       | 14                                   | 310                                      | 5 x 11,5       | ECR1HHY270M◇◇△△0511 |
|                                             | 56                                  | 2,37                                               | 0,220                             | 0,660                             | 0,10                       | 28                                   | 500                                      | 6,3 x 11,5     | ECR1HHY560M◇◇△△0611 |
|                                             | 100                                 | 1,33                                               | 0,120                             | 0,360                             | 0,10                       | 50                                   | 950                                      | 8 x 11,5       | ECR1HHY101M◇◇△△0811 |
|                                             | 120                                 | 1,106                                              | 0,110                             | 0,330                             | 0,10                       | 60                                   | 950                                      | 8 x 11,5       | ECR1HHY121M◇◇△△0811 |
|                                             |                                     | 1,11                                               | 0,082                             | 0,250                             | 0,10                       | 60                                   | 1230                                     | 8 x 16         | ECR1HHY121M◇◇△△0816 |
|                                             | 150                                 | 0,884                                              | 0,073                             | 0,220                             | 0,10                       | 75                                   | 1280                                     | 10 x 12,5      | ECR1HHY151M◇◇△△1012 |
|                                             | 180                                 | 0,737                                              | 0,081                             | 0,240                             | 0,10                       | 90                                   | 1700                                     | 8 x 16         | ECR1HHY181M◇◇△△0816 |
|                                             | 220                                 | 0,603                                              | 0,071                             | 0,210                             | 0,10                       | 110                                  | 1700                                     | 10 x 12,5      | ECR1HHY221M◇◇△△1012 |
|                                             | 270                                 | 0,493                                              | 0,058                             | 0,170                             | 0,10                       | 135                                  | 2100                                     | 8 x 20         | ECR1HHY271M◇◇△△0820 |
|                                             | 330                                 | 0,402                                              | 0,052                             | 0,160                             | 0,10                       | 165                                  | 2100                                     | 10 x 16        | ECR1HHY331M◇◇△△1016 |
|                                             | 390                                 | 0,340                                              | 0,032                             | 0,100                             | 0,10                       | 195                                  | 2420                                     | 10 x 25        | ECR1HHY391M◇◇△△1025 |
|                                             | 470                                 | 0,282                                              | 0,037                             | 0,110                             | 0,10                       | 235                                  | 2500                                     | 10 x 20        | ECR1HHY471M◇◇△△1020 |
|                                             |                                     | 0,282                                              | 0,040                             | 0,120                             | 0,10                       | 235                                  | 2200                                     | 12,5 x 16      | ECR1HHY471M◇◇△△1216 |
|                                             |                                     | 0,282                                              | 0,032                             | 0,100                             | 0,10                       | 235                                  | 2300                                     | 12,5 x 20      | ECR1HHY471M◇◇△△1220 |
|                                             | 560                                 | 0,238                                              | 0,031                             | 0,093                             | 0,10                       | 280                                  | 2900                                     | 10 x 25        | ECR1HHY561M◇◇△△1025 |
|                                             | 680                                 | 0,195                                              | 0,029                             | 0,087                             | 0,10                       | 340                                  | 2700                                     | 12,5 x 20      | ECR1HHY681M◇◇△△1220 |
|                                             |                                     | 0,195                                              | 0,025                             | 0,080                             | 0,10                       | 340                                  | 2800                                     | 12,5 x 25      | ECR1HHY681M◇◇△△1225 |
|                                             | 820                                 | 0,162                                              | 0,023                             | 0,074                             | 0,10                       | 410                                  | 3370                                     | 12,5 x 30      | ECR1HHY821M◇◇△△1230 |
|                                             |                                     | 0,162                                              | 0,026                             | 0,084                             | 0,10                       | 410                                  | 3070                                     | 16 x 20        | ECR1HHY821M◇◇△△1620 |
|                                             | 1 000                               | 0,133                                              | 0,022                             | 0,066                             | 0,10                       | 500                                  | 3000                                     | 12,5 x 25      | ECR1HHY102M◇◇△△1225 |
|                                             |                                     | 0,133                                              | 0,020                             | 0,060                             | 0,10                       | 500                                  | 3500                                     | 12,5 x 30      | ECR1HHY102M◇◇△△1230 |
|                                             |                                     | 0,133                                              | 0,021                             | 0,067                             | 0,10                       | 500                                  | 3810                                     | 12,5 x 35      | ECR1HHY102M◇◇△△1235 |
|                                             |                                     | 0,133                                              | 0,022                             | 0,070                             | 0,10                       | 500                                  | 3510                                     | 16 x 25        | ECR1HHY102M◇◇△△1625 |
|                                             | 1 200                               | 0,111                                              | 0,017                             | 0,051                             | 0,10                       | 600                                  | 4000                                     | 12,5 x 35      | ECR1HHY122M◇◇△△1235 |
|                                             |                                     | 0,111                                              | 0,023                             | 0,069                             | 0,10                       | 600                                  | 3100                                     | 16 x 20        | ECR1HHY122M◇◇△△1620 |
|                                             | 1 500                               | 0,089                                              | 0,019                             | 0,057                             | 0,10                       | 750                                  | 4500                                     | 12,5 x 40      | ECR1HHY152M◇◇△△1240 |
|                                             |                                     | 0,089                                              | 0,018                             | 0,054                             | 0,10                       | 750                                  | 3600                                     | 16 x 25        | ECR1HHY152M◇◇△△1625 |
|                                             |                                     | 0,089                                              | 0,029                             | 0,087                             | 0,10                       | 750                                  | 3200                                     | 18 x 20        | ECR1HHY152M◇◇△△1820 |
|                                             | 2 200                               | 0,073                                              | 0,018                             | 0,054                             | 0,12                       | 1100                                 | 4100                                     | 16 x 31,5      | ECR1HHY222M◇◇△△1631 |
|                                             |                                     | 0,073                                              | 0,022                             | 0,066                             | 0,12                       | 1100                                 | 3700                                     | 18 x 25        | ECR1HHY222M◇◇△△1825 |
|                                             | 2 700                               | 0,059                                              | 0,016                             | 0,048                             | 0,12                       | 1350                                 | 4400                                     | 16 x 35,5      | ECR1HHY272M◇◇△△1635 |
|                                             |                                     | 0,059                                              | 0,014                             | 0,042                             | 0,12                       | 1350                                 | 4800                                     | 16 x 40        | ECR1HHY272M◇◇△△1640 |
|                                             |                                     | 0,059                                              | 0,019                             | 0,057                             | 0,12                       | 1350                                 | 4200                                     | 18 x 31,5      | ECR1HHY272M◇◇△△1831 |
|                                             | 3 300                               | 0,057                                              | 0,016                             | 0,048                             | 0,14                       | 1650                                 | 4600                                     | 18 x 35,5      | ECR1HHY332M◇◇△△1835 |
|                                             | 3 900                               | 0,048                                              | 0,014                             | 0,042                             | 0,14                       | 1950                                 | 5000                                     | 18 x 40        | ECR1HHY392M◇◇△△1840 |
| 63<br>(79)<br>1J                            | 18                                  | 6,64                                               | 0,710                             | 3,20                              | 0,09                       | 12                                   | 240                                      | 5 x 11,5       | ECR1JHY180M◇◇△△0511 |
|                                             | 47                                  | 2,54                                               | 0,280                             | 1,30                              | 0,09                       | 30                                   | 420                                      | 6,3 x 11,5     | ECR1JHY470M◇◇△△0611 |
|                                             | 82                                  | 1,46                                               | 0,180                             | 0,790                             | 0,09                       | 52                                   | 720                                      | 8 x 11,5       | ECR1JHY820M◇◇△△0811 |
|                                             | 100                                 | 1,20                                               | 0,130                             | 0,580                             | 0,09                       | 63                                   | 1000                                     | 8 x 11,5       | ECR1JHY101M◇◇△△0811 |
|                                             | 120                                 | 0,995                                              | 0,095                             | 0,290                             | 0,09                       | 76                                   | 1300                                     | 8 x 16         | ECR1JHY121M◇◇△△0816 |
|                                             |                                     | 0,995                                              | 0,110                             | 0,440                             | 0,09                       | 76                                   | 990                                      | 10 x 12,5      | ECR1JHY121M◇◇△△1012 |
|                                             | 150                                 | 0,796                                              | 0,096                             | 0,430                             | 0,09                       | 95                                   | 1200                                     | 8 x 20         | ECR1JHY151M◇◇△△0820 |
|                                             |                                     | 0,796                                              | 0,080                             | 0,240                             | 0,09                       | 95                                   | 1300                                     | 10 x 12,5      | ECR1JHY151M◇◇△△1012 |
|                                             | 180                                 | 0,663                                              | 0,069                             | 0,210                             | 0,09                       | 114                                  | 1600                                     | 8 x 20         | ECR1JHY181M◇◇△△0820 |
|                                             |                                     | 0,663                                              | 0,076                             | 0,310                             | 0,09                       | 114                                  | 1200                                     | 10 x 16        | ECR1JHY181M◇◇△△1016 |
|                                             | 220                                 | 0,543                                              | 0,058                             | 0,170                             | 0,09                       | 139                                  | 1700                                     | 10 x 16        | ECR1JHY221M◇◇△△1016 |
|                                             | 270                                 | 0,442                                              | 0,056                             | 0,230                             | 0,09                       | 171                                  | 1570                                     | 10 x 20        | ECR1JHY271M◇◇△△1020 |
|                                             |                                     | 0,442                                              | 0,072                             | 0,270                             | 0,09                       | 171                                  | 1570                                     | 12,5 x 16      | ECR1JHY271M◇◇△△1216 |
|                                             | 330                                 | 0,362                                              | 0,042                             | 0,130                             | 0,09                       | 208                                  | 2000                                     | 10 x 20        | ECR1JHY331M◇◇△△1020 |
|                                             |                                     | 0,362                                              | 0,045                             | 0,140                             | 0,09                       | 208                                  | 1900                                     | 12,5 x 16      | ECR1JHY331M◇◇△△1216 |
|                                             | 390                                 | 0,306                                              | 0,035                             | 0,110                             | 0,09                       | 246                                  | 2400                                     | 10 x 25        | ECR1JHY391M◇◇△△1025 |
|                                             |                                     | 0,306                                              | 0,041                             | 0,130                             | 0,09                       | 246                                  | 1990                                     | 12,5 x 20      | ECR1JHY391M◇◇△△1220 |
|                                             | 470                                 | 0,254                                              | 0,033                             | 0,099                             | 0,09                       | 297                                  | 2400                                     | 12,5 x 20      | ECR1JHY471M◇◇△△1220 |
|                                             |                                     | 0,254                                              | 0,031                             | 0,093                             | 0,09                       | 297                                  | 2460                                     | 12,5 x 25      | ECR1JHY471M◇◇△△1225 |

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current | Size<br>$\varnothing \times L$ | ORDER CODE                                                                                                                       |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120kHz<br>( $\Omega$ )              | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120kHz                     | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA rms)       | (mm)                           | <div> <div><math>\diamond\diamond</math> = pin style &amp; length</div> <div><math>\Delta\Delta</math> = pitch code</div> </div> |
| Details: Page 33                     |                            |                                             |                                |                                 |                                    |                               |                                   |                                |                                                                                                                                  |
| 63<br>(79)<br>1J                     | 560                        | 0,213                                       | 0,028                          | 0,084                           | 0,09                               | 353                           | 2760                              | 12,5 x 30                      | ECR1JHY561M $\diamond\diamond\Delta\Delta$ 1230                                                                                  |
|                                      |                            | 0,213                                       | 0,032                          | 0,096                           | 0,09                               | 353                           | 2380                              | 16 x 20                        | ECR1JHY561M $\diamond\diamond\Delta\Delta$ 1620                                                                                  |
|                                      | 680                        | 0,176                                       | 0,025                          | 0,075                           | 0,09                               | 429                           | 2800                              | 12,5 x 25                      | ECR1JHY681M $\diamond\diamond\Delta\Delta$ 1225                                                                                  |
|                                      |                            | 0,176                                       | 0,024                          | 0,072                           | 0,09                               | 429                           | 3040                              | 12,5 x 35                      | ECR1JHY681M $\diamond\diamond\Delta\Delta$ 1235                                                                                  |
|                                      | 820                        | 0,146                                       | 0,022                          | 0,066                           | 0,09                               | 517                           | 3200                              | 12,5 x 30                      | ECR1JHY821M $\diamond\diamond\Delta\Delta$ 1230                                                                                  |
|                                      |                            | 0,146                                       | 0,025                          | 0,075                           | 0,09                               | 517                           | 2900                              | 16 x 20                        | ECR1JHY821M $\diamond\diamond\Delta\Delta$ 1620                                                                                  |
|                                      | 1 000                      | 0,120                                       | 0,018                          | 0,054                           | 0,09                               | 630                           | 3500                              | 12,5 x 35                      | ECR1JHY102M $\diamond\diamond\Delta\Delta$ 1235                                                                                  |
|                                      |                            | 0,120                                       | 0,020                          | 0,060                           | 0,09                               | 630                           | 3200                              | 16 x 25                        | ECR1JHY102M $\diamond\diamond\Delta\Delta$ 1625                                                                                  |
|                                      | 1 200                      | 0,100                                       | 0,021                          | 0,063                           | 0,09                               | 756                           | 3800                              | 12,5 x 40                      | ECR1JHY122M $\diamond\diamond\Delta\Delta$ 1240                                                                                  |
|                                      |                            | 0,100                                       | 0,032                          | 0,096                           | 0,09                               | 756                           | 3000                              | 18 x 20                        | ECR1JHY122M $\diamond\diamond\Delta\Delta$ 1820                                                                                  |
|                                      | 1 500                      | 0,080                                       | 0,020                          | 0,060                           | 0,09                               | 945                           | 3500                              | 16 x 31,5                      | ECR1JHY152M $\diamond\diamond\Delta\Delta$ 1631                                                                                  |
|                                      |                            | 0,080                                       | 0,024                          | 0,072                           | 0,09                               | 945                           | 3200                              | 18 x 25                        | ECR1JHY152M $\diamond\diamond\Delta\Delta$ 1825                                                                                  |
|                                      | 1 800                      | 0,067                                       | 0,017                          | 0,051                           | 0,09                               | 1134                          | 3800                              | 16 x 35,5                      | ECR1JHY182M $\diamond\diamond\Delta\Delta$ 1635                                                                                  |
|                                      |                            | 0,067                                       | 0,020                          | 0,060                           | 0,09                               | 1134                          | 3700                              | 18 x 31,5                      | ECR1JHY182M $\diamond\diamond\Delta\Delta$ 1831                                                                                  |
|                                      | 2 200                      | 0,067                                       | 0,015                          | 0,045                           | 0,11                               | 1386                          | 4100                              | 16 x 40                        | ECR1JHY222M $\diamond\diamond\Delta\Delta$ 1640                                                                                  |
|                                      |                            | 0,067                                       | 0,017                          | 0,051                           | 0,11                               | 1386                          | 3900                              | 18 x 35,5                      | ECR1JHY222M $\diamond\diamond\Delta\Delta$ 1835                                                                                  |
| 2 700                                | 2 700                      | 0,054                                       | 0,015                          | 0,045                           | 0,11                               | 1701                          | 4300                              | 18 x 40                        | ECR1JHY272M $\diamond\diamond\Delta\Delta$ 1840                                                                                  |

RADIAL

|                   |       |       |       |       |      |     |      |            |                                                 |
|-------------------|-------|-------|-------|-------|------|-----|------|------------|-------------------------------------------------|
| 80<br>(100)<br>1K | 12    | 8,84  | 1,200 | 5,40  | 0,08 | 10  | 220  | 5 x 11,5   | ECR1KHY120M $\diamond\diamond\Delta\Delta$ 0511 |
|                   | 27    | 3,93  | 0,460 | 2,10  | 0,08 | 22  | 370  | 6,3 x 11,5 | ECR1KHY270M $\diamond\diamond\Delta\Delta$ 0611 |
|                   | 47    | 2,26  | 0,290 | 1,30  | 0,08 | 38  | 620  | 8 x 11,5   | ECR1KHY470M $\diamond\diamond\Delta\Delta$ 0811 |
|                   | 56    | 1,90  | 0,200 | 0,900 | 0,08 | 45  | 780  | 8 x 16     | ECR1KHY560M $\diamond\diamond\Delta\Delta$ 0816 |
|                   | 68    | 1,56  | 0,170 | 0,660 | 0,08 | 55  | 780  | 10 x 12,5  | ECR1KHY680M $\diamond\diamond\Delta\Delta$ 1012 |
|                   | 82    | 1,30  | 0,160 | 0,660 | 0,08 | 66  | 1040 | 8 x 20     | ECR1KHY820M $\diamond\diamond\Delta\Delta$ 0820 |
|                   | 100   | 1,07  | 0,110 | 0,470 | 0,08 | 80  | 1040 | 10 x 16    | ECR1KHY101M $\diamond\diamond\Delta\Delta$ 1016 |
|                   | 150   | 0,707 | 0,084 | 0,340 | 0,08 | 120 | 1430 | 10 x 20    | ECR1KHY151M $\diamond\diamond\Delta\Delta$ 1020 |
|                   |       | 0,707 | 0,110 | 0,340 | 0,08 | 120 | 1430 | 12,5 x 16  | ECR1KHY151M $\diamond\diamond\Delta\Delta$ 1216 |
|                   | 180   | 0,589 | 0,069 | 0,280 | 0,08 | 144 | 1620 | 10 x 25    | ECR1KHY181M $\diamond\diamond\Delta\Delta$ 1025 |
|                   | 220   | 0,482 | 0,062 | 0,180 | 0,08 | 176 | 1750 | 12,5 x 20  | ECR1KHY221M $\diamond\diamond\Delta\Delta$ 1220 |
|                   | 270   | 0,393 | 0,047 | 0,140 | 0,08 | 216 | 2210 | 12,5 x 25  | ECR1KHY271M $\diamond\diamond\Delta\Delta$ 1225 |
|                   | 330   | 0,322 | 0,042 | 0,130 | 0,08 | 264 | 2400 | 12,5 x 30  | ECR1KHY331M $\diamond\diamond\Delta\Delta$ 1230 |
|                   |       | 0,322 | 0,048 | 0,150 | 0,08 | 264 | 1950 | 16 x 20    | ECR1KHY331M $\diamond\diamond\Delta\Delta$ 1620 |
|                   | 390   | 0,272 | 0,036 | 0,110 | 0,08 | 312 | 2600 | 12,5 x 35  | ECR1KHY391M $\diamond\diamond\Delta\Delta$ 1235 |
|                   |       | 0,226 | 0,032 | 0,095 | 0,08 | 376 | 2860 | 12,5 x 40  | ECR1KHY471M $\diamond\diamond\Delta\Delta$ 1240 |
|                   | 470   | 0,226 | 0,038 | 0,120 | 0,08 | 376 | 2430 | 16 x 25    | ECR1KHY471M $\diamond\diamond\Delta\Delta$ 1625 |
|                   |       | 0,226 | 0,045 | 0,140 | 0,08 | 376 | 2270 | 18 x 20    | ECR1KHY471M $\diamond\diamond\Delta\Delta$ 1820 |
|                   |       | 0,189 | 0,032 | 0,095 | 0,08 | 448 | 2640 | 16 x 31,5  | ECR1KHY561M $\diamond\diamond\Delta\Delta$ 1631 |
|                   | 680   | 0,156 | 0,029 | 0,086 | 0,08 | 544 | 2860 | 16 x 35,5  | ECR1KHY681M $\diamond\diamond\Delta\Delta$ 1635 |
|                   |       | 0,156 | 0,036 | 0,110 | 0,08 | 544 | 2500 | 18 x 25    | ECR1KHY681M $\diamond\diamond\Delta\Delta$ 1825 |
|                   | 820   | 0,129 | 0,027 | 0,081 | 0,08 | 656 | 3510 | 16 x 40    | ECR1KHY821M $\diamond\diamond\Delta\Delta$ 1640 |
|                   |       | 0,129 | 0,030 | 0,090 | 0,08 | 656 | 2860 | 18 x 31,5  | ECR1KHY821M $\diamond\diamond\Delta\Delta$ 1831 |
|                   | 1 000 | 0,106 | 0,027 | 0,081 | 0,08 | 800 | 3510 | 18 x 35,5  | ECR1KHY102M $\diamond\diamond\Delta\Delta$ 1835 |
|                   | 1 200 | 0,088 | 0,026 | 0,076 | 0,08 | 960 | 3860 | 18 x 40    | ECR1KHY122M $\diamond\diamond\Delta\Delta$ 1840 |

|                    |     |       |       |       |      |     |      |            |                                                 |
|--------------------|-----|-------|-------|-------|------|-----|------|------------|-------------------------------------------------|
| 100<br>(125)<br>2A | 8,2 | 13,0  | 1,20  | 5,40  | 0,08 | 9   | 220  | 5 x 11,5   | ECR2AHY8R2M $\diamond\diamond\Delta\Delta$ 0511 |
|                    | 18  | 5,90  | 0,460 | 2,10  | 0,08 | 18  | 370  | 6,3 x 11,5 | ECR2AHY180M $\diamond\diamond\Delta\Delta$ 0611 |
|                    | 33  | 3,22  | 0,290 | 1,30  | 0,08 | 33  | 620  | 8 x 11,5   | ECR2AHY330M $\diamond\diamond\Delta\Delta$ 0811 |
|                    | 47  | 2,26  | 0,200 | 0,900 | 0,08 | 47  | 780  | 8 x 16     | ECR2AHY470M $\diamond\diamond\Delta\Delta$ 0816 |
|                    | 56  | 1,90  | 0,170 | 0,660 | 0,08 | 56  | 780  | 10 x 12,5  | ECR2AHY560M $\diamond\diamond\Delta\Delta$ 1012 |
|                    | 68  | 1,56  | 0,160 | 0,660 | 0,08 | 68  | 1040 | 8 x 20     | ECR2AHY680M $\diamond\diamond\Delta\Delta$ 0820 |
|                    | 82  | 1,30  | 0,110 | 0,470 | 0,08 | 82  | 1040 | 10 x 16    | ECR2AHY820M $\diamond\diamond\Delta\Delta$ 1016 |
|                    | 100 | 1,07  | 0,084 | 0,340 | 0,08 | 100 | 1430 | 10 x 20    | ECR2AHY101M $\diamond\diamond\Delta\Delta$ 1020 |
|                    |     | 1,07  | 0,110 | 0,340 | 0,08 | 100 | 1430 | 12,5 x 16  | ECR2AHY101M $\diamond\diamond\Delta\Delta$ 1216 |
|                    | 120 | 0,884 | 0,069 | 0,280 | 0,08 | 120 | 1620 | 10 x 25    | ECR2AHY121M $\diamond\diamond\Delta\Delta$ 1025 |
|                    | 150 | 0,707 | 0,062 | 0,180 | 0,08 | 150 | 1750 | 12,5 x 20  | ECR2AHY151M $\diamond\diamond\Delta\Delta$ 1220 |
|                    | 220 | 0,482 | 0,047 | 0,140 | 0,08 | 220 | 2210 | 12,5 x 25  | ECR2AHY221M $\diamond\diamond\Delta\Delta$ 1225 |
|                    | 270 | 0,393 | 0,042 | 0,130 | 0,08 | 270 | 2400 | 12,5 x 30  | ECR2AHY271M $\diamond\diamond\Delta\Delta$ 1230 |
|                    |     | 0,393 | 0,048 | 0,150 | 0,08 | 270 | 1950 | 16 x 20    | ECR2AHY271M $\diamond\diamond\Delta\Delta$ 1620 |
|                    | 330 | 0,322 | 0,036 | 0,110 | 0,08 | 330 | 2600 | 12,5 x 35  | ECR2AHY331M $\diamond\diamond\Delta\Delta$ 1235 |
|                    |     | 0,272 | 0,032 | 0,095 | 0,08 | 390 | 2860 | 12,5 x 40  | ECR2AHY391M $\diamond\diamond\Delta\Delta$ 1240 |
|                    | 390 | 0,272 | 0,038 | 0,120 | 0,08 | 390 | 2430 | 16 x 25    | ECR2AHY391M $\diamond\diamond\Delta\Delta$ 1625 |
|                    |     | 0,272 | 0,045 | 0,140 | 0,08 | 390 | 2270 | 18 x 20    | ECR2AHY391M $\diamond\diamond\Delta\Delta$ 1820 |
|                    |     | 0,226 | 0,032 | 0,095 | 0,08 | 470 | 2640 | 16 x 31,5  | ECR2AHY471M $\diamond\diamond\Delta\Delta$ 1631 |
|                    | 470 | 0,226 | 0,036 | 0,110 | 0,08 | 470 | 2500 | 18 x 25    | ECR2AHY471M $\diamond\diamond\Delta\Delta$ 1825 |
|                    |     | 0,189 | 0,029 | 0,086 | 0,08 | 560 | 2860 | 16 x 35,5  | ECR2AHY561M $\diamond\diamond\Delta\Delta$ 1635 |
|                    | 560 | 0,189 | 0,030 | 0,090 | 0,08 | 560 | 2860 | 18 x 31,5  | ECR2AHY561M $\diamond\diamond\Delta\Delta$ 1831 |
|                    |     | 0,156 | 0,027 | 0,081 | 0,08 | 680 | 3510 | 16 x 40    | ECR2AHY681M $\diamond\diamond\Delta\Delta$ 1640 |
|                    | 680 | 0,156 | 0,027 | 0,081 | 0,08 | 680 | 3510 | 18 x 35,5  | ECR2AHY681M $\diamond\diamond\Delta\Delta$ 1835 |
|                    | 820 | 0,129 | 0,026 | 0,076 | 0,08 | 820 | 3860 | 18 x 40    | ECR2AHY821M $\diamond\diamond\Delta\Delta$ 1840 |



## ITEM CHARACTERISTICS

|                                     |               |
|-------------------------------------|---------------|
| Operating Temperature Range (°C)    | -55 ~ +105    |
| Voltage Range (V)                   | 6,3 ~ 100     |
| Capacitance Range (µF)              | 0,47 ~ 15 000 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%         |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

|                      |                                                                                                            |
|----------------------|------------------------------------------------------------------------------------------------------------|
| Leakage Current (µA) | After 2 minutes at 20°C application of rated voltage, leakage current is not more than specified in table. |
|----------------------|------------------------------------------------------------------------------------------------------------|

|                                                         |                         |           |
|---------------------------------------------------------|-------------------------|-----------|
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)       | 6,3 ~ 100 |
|                                                         | $Z_{-55°C} / Z_{+20°C}$ | 3         |

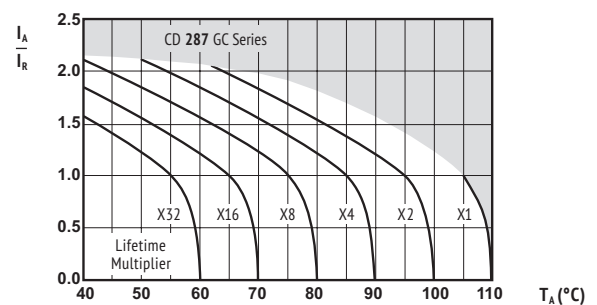
| ITEM                                                                    | USEFUL LIFE                                                                                   |                                   | LOAD LIFE                                                                                    | ENDURANCE TEST                                                                               | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | $\emptyset \leq 6,3$ : 4 000h<br>$\emptyset 8-10$ : 6 000h<br>$\emptyset \geq 12,5$ : 10 000h | $\emptyset \geq 8$ : > 250 000h   | $\emptyset \leq 6,3$ : 2 000h<br>$\emptyset 8-10$ : 3 000h<br>$\emptyset \geq 12,5$ : 5 000h | $\emptyset \leq 6,3$ : 3 000h<br>$\emptyset 8-10$ : 5 000h<br>$\emptyset \geq 12,5$ : 7 000h | 1 000h                                |                                                                              |
| Leakage Current                                                         | Not more than specified value                                                                 |                                   | Not more than specified value                                                                | Not more than specified value                                                                | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 30% of initial value                                                                 |                                   | Within ± 20% of initial value                                                                | Within ± 20% of initial value                                                                | Within ± 20% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value                                                         |                                   | Not more than 200% of specified value                                                        | Not more than 200% of specified value                                                        | Not more than 200% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C                                                                       | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C                                                                      | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384                                                     | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for<br>30 min > 24h before<br>measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Capacitance (µF) \ Frequency | 120Hz | 1kHz | 10kHz | 100kHz |
|------------------------------|-------|------|-------|--------|
| 0,47 ~ 4,7                   | 0,40  | 0,68 | 0,83  | 1,00   |
| 5,6 ~ 47                     | 0,50  | 0,76 | 0,87  | 1,00   |
| 56 ~ 270                     | 0,70  | 0,85 | 0,93  | 1,00   |
| 330 ~ 1 000                  | 0,80  | 0,93 | 0,98  | 1,00   |
| 1 200 ~ 15 000               | 0,90  | 0,95 | 1,00  | 1,00   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current | Size<br>$\varnothing D \times L$ | ORDER CODE                                                                                 |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------|----------------------------------|--------------------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120kHz<br>( $\Omega$ )              | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120kHz                     | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA rms)       | (mm)                             | $\diamond\diamond$ = pin style & length<br>$\Delta\Delta$ = pitch code<br>Details: Page 33 |
| 6,3<br>(7,2)<br>0J                   | 100                        | 2,92                                        | 0,650                          | 1,30                            | 0,22                               | 13                            | 175                               | 5 x 11,5                         | ECR0JGC101M $\diamond\diamond\Delta\Delta$ 0511                                            |
|                                      | 150                        | 1,95                                        | 0,460                          | 0,920                           | 0,22                               | 19                            | 235                               | 5 x 15                           | ECR0JGC151M $\diamond\diamond\Delta\Delta$ 0515                                            |
|                                      | 220                        | 1,33                                        | 0,300                          | 0,600                           | 0,22                               | 28                            | 290                               | 6,3 x 11,5                       | ECR0JGC221M $\diamond\diamond\Delta\Delta$ 0611                                            |
|                                      | 330                        | 0,885                                       | 0,200                          | 0,400                           | 0,22                               | 42                            | 400                               | 6,3 x 15                         | ECR0JGC331M $\diamond\diamond\Delta\Delta$ 0615                                            |
|                                      | 470                        | 0,621                                       | 0,170                          | 0,340                           | 0,22                               | 60                            | 488                               | 8 x 11,5                         | ECR0JGC471M $\diamond\diamond\Delta\Delta$ 0811                                            |
|                                      | 680                        | 0,430                                       | 0,130                          | 0,260                           | 0,22                               | 86                            | 617                               | 8 x 16                           | ECR0JGC681M $\diamond\diamond\Delta\Delta$ 0816                                            |
|                                      |                            | 0,430                                       | 0,120                          | 0,240                           | 0,22                               | 86                            | 613                               | 10 x 12,5                        | ECR0JGC681M $\diamond\diamond\Delta\Delta$ 1012                                            |
|                                      | 820                        | 0,356                                       | 0,095                          | 0,190                           | 0,22                               | 104                           | 734                               | 10 x 16                          | ECR0JGC821M $\diamond\diamond\Delta\Delta$ 1016                                            |
|                                      | 1 000                      | 0,292                                       | 0,095                          | 0,190                           | 0,22                               | 126                           | 800                               | 8 x 20                           | ECR0JGC102M $\diamond\diamond\Delta\Delta$ 0820                                            |
|                                      | 1 200                      | 0,244                                       | 0,065                          | 0,130                           | 0,22                               | 152                           | 1010                              | 10 x 20                          | ECR0JGC122M $\diamond\diamond\Delta\Delta$ 1020                                            |
|                                      |                            | 0,244                                       | 0,065                          | 0,130                           | 0,22                               | 152                           | 1010                              | 12,5 x 15                        | ECR0JGC122M $\diamond\diamond\Delta\Delta$ 1215                                            |
|                                      | 1 500                      | 0,195                                       | 0,055                          | 0,110                           | 0,22                               | 189                           | 1190                              | 10 x 25                          | ECR0JGC152M $\diamond\diamond\Delta\Delta$ 1025                                            |
|                                      | 2 200                      | 0,145                                       | 0,045                          | 0,090                           | 0,24                               | 278                           | 1440                              | 10 x 30                          | ECR0JGC222M $\diamond\diamond\Delta\Delta$ 1030                                            |
|                                      |                            | 0,145                                       | 0,042                          | 0,084                           | 0,24                               | 278                           | 1400                              | 12,5 x 20                        | ECR0JGC222M $\diamond\diamond\Delta\Delta$ 1220                                            |
|                                      | 2 700                      | 0,118                                       | 0,038                          | 0,076                           | 0,24                               | 341                           | 1690                              | 12,5 x 25                        | ECR0JGC272M $\diamond\diamond\Delta\Delta$ 1225                                            |
|                                      |                            | 0,118                                       | 0,046                          | 0,092                           | 0,24                               | 341                           | 1310                              | 16 x 15                          | ECR0JGC272M $\diamond\diamond\Delta\Delta$ 1615                                            |
|                                      | 3 300                      | 0,105                                       | 0,043                          | 0,086                           | 0,26                               | 416                           | 1460                              | 18 x 15                          | ECR0JGC332M $\diamond\diamond\Delta\Delta$ 1815                                            |
|                                      | 3 900                      | 0,089                                       | 0,032                          | 0,064                           | 0,26                               | 492                           | 1950                              | 12,5 x 30                        | ECR0JGC392M $\diamond\diamond\Delta\Delta$ 1230                                            |
|                                      | 4 700                      | 0,080                                       | 0,028                          | 0,056                           | 0,28                               | 593                           | 2220                              | 12,5 x 35                        | ECR0JGC472M $\diamond\diamond\Delta\Delta$ 1235                                            |
|                                      |                            | 0,080                                       | 0,034                          | 0,068                           | 0,28                               | 593                           | 1660                              | 16 x 20                          | ECR0JGC472M $\diamond\diamond\Delta\Delta$ 1620                                            |
|                                      | 5 600                      | 0,072                                       | 0,026                          | 0,052                           | 0,30                               | 706                           | 2390                              | 12,5 x 40                        | ECR0JGC562M $\diamond\diamond\Delta\Delta$ 1240                                            |
|                                      |                            | 0,072                                       | 0,028                          | 0,056                           | 0,30                               | 706                           | 2070                              | 16 x 25                          | ECR0JGC562M $\diamond\diamond\Delta\Delta$ 1625                                            |
|                                      |                            | 0,072                                       | 0,030                          | 0,060                           | 0,30                               | 706                           | 1850                              | 18 x 20                          | ECR0JGC562M $\diamond\diamond\Delta\Delta$ 1820                                            |
|                                      | 6 800                      | 0,063                                       | 0,025                          | 0,050                           | 0,32                               | 857                           | 2350                              | 16 x 31,5                        | ECR0JGC682M $\diamond\diamond\Delta\Delta$ 1631                                            |
|                                      |                            | 0,063                                       | 0,027                          | 0,054                           | 0,32                               | 857                           | 2120                              | 18 x 25                          | ECR0JGC682M $\diamond\diamond\Delta\Delta$ 1825                                            |
|                                      | 8 200                      | 0,059                                       | 0,022                          | 0,044                           | 0,36                               | 1034                          | 2550                              | 16 x 35,5                        | ECR0JGC822M $\diamond\diamond\Delta\Delta$ 1635                                            |
|                                      | 10 000                     | 0,054                                       | 0,023                          | 0,046                           | 0,40                               | 1260                          | 2410                              | 18 x 31,5                        | ECR0JGC103M $\diamond\diamond\Delta\Delta$ 1831                                            |
|                                      | 12 000                     | 0,049                                       | 0,020                          | 0,040                           | 0,44                               | 1512                          | 2970                              | 16 x 40                          | ECR0JGC123M $\diamond\diamond\Delta\Delta$ 1640                                            |
|                                      |                            | 0,049                                       | 0,020                          | 0,040                           | 0,44                               | 1512                          | 2680                              | 18 x 35,5                        | ECR0JGC123M $\diamond\diamond\Delta\Delta$ 1835                                            |
|                                      | 15 000                     | 0,045                                       | 0,019                          | 0,038                           | 0,50                               | 1890                          | 3010                              | 18 x 40                          | ECR0JGC153M $\diamond\diamond\Delta\Delta$ 1840                                            |
| 10<br>(13)<br>1A                     | 82                         | 3,08                                        | 0,650                          | 1,30                            | 0,19                               | 17                            | 175                               | 5 x 11,5                         | ECR1AGC820M $\diamond\diamond\Delta\Delta$ 0511                                            |
|                                      | 100                        | 2,53                                        | 0,460                          | 0,920                           | 0,19                               | 20                            | 235                               | 5 x 15                           | ECR1AGC101M $\diamond\diamond\Delta\Delta$ 0515                                            |
|                                      | 180                        | 1,41                                        | 0,300                          | 0,600                           | 0,19                               | 36                            | 290                               | 6,3 x 11,5                       | ECR1AGC181M $\diamond\diamond\Delta\Delta$ 0611                                            |
|                                      | 220                        | 1,15                                        | 0,200                          | 0,400                           | 0,19                               | 44                            | 400                               | 6,3 x 15                         | ECR1AGC221M $\diamond\diamond\Delta\Delta$ 0615                                            |
|                                      | 330                        | 0,764                                       | 0,170                          | 0,340                           | 0,19                               | 66                            | 488                               | 8 x 11,5                         | ECR1AGC331M $\diamond\diamond\Delta\Delta$ 0811                                            |
|                                      | 470                        | 0,537                                       | 0,130                          | 0,260                           | 0,19                               | 94                            | 617                               | 8 x 16                           | ECR1AGC471M $\diamond\diamond\Delta\Delta$ 0816                                            |
|                                      |                            | 0,537                                       | 0,120                          | 0,240                           | 0,19                               | 94                            | 613                               | 10 x 12,5                        | ECR1AGC471M $\diamond\diamond\Delta\Delta$ 1012                                            |
|                                      | 560                        | 0,450                                       | 0,095                          | 0,190                           | 0,19                               | 112                           | 734                               | 10 x 16                          | ECR1AGC561M $\diamond\diamond\Delta\Delta$ 1016                                            |
|                                      | 680                        | 0,371                                       | 0,095                          | 0,190                           | 0,19                               | 136                           | 800                               | 8 x 20                           | ECR1AGC681M $\diamond\diamond\Delta\Delta$ 0820                                            |
|                                      | 1 000                      | 0,252                                       | 0,065                          | 0,130                           | 0,19                               | 200                           | 1010                              | 10 x 20                          | ECR1AGC102M $\diamond\diamond\Delta\Delta$ 1020                                            |
|                                      |                            | 0,252                                       | 0,065                          | 0,130                           | 0,19                               | 200                           | 1010                              | 12,5 x 15                        | ECR1AGC102M $\diamond\diamond\Delta\Delta$ 1215                                            |
|                                      | 1 200                      | 0,210                                       | 0,055                          | 0,110                           | 0,19                               | 240                           | 1190                              | 10 x 25                          | ECR1AGC122M $\diamond\diamond\Delta\Delta$ 1025                                            |
|                                      | 1 500                      | 0,168                                       | 0,045                          | 0,090                           | 0,19                               | 300                           | 1440                              | 10 x 30                          | ECR1AGC152M $\diamond\diamond\Delta\Delta$ 1030                                            |
|                                      | 1 800                      | 0,140                                       | 0,042                          | 0,084                           | 0,19                               | 360                           | 1400                              | 12,5 x 20                        | ECR1AGC182M $\diamond\diamond\Delta\Delta$ 1220                                            |
|                                      |                            | 0,140                                       | 0,046                          | 0,092                           | 0,19                               | 360                           | 1310                              | 16 x 15                          | ECR1AGC182M $\diamond\diamond\Delta\Delta$ 1615                                            |
|                                      | 2 200                      | 0,127                                       | 0,038                          | 0,076                           | 0,21                               | 440                           | 1690                              | 12,5 x 25                        | ECR1AGC222M $\diamond\diamond\Delta\Delta$ 1225                                            |
|                                      |                            | 0,127                                       | 0,043                          | 0,086                           | 0,21                               | 440                           | 1460                              | 18 x 15                          | ECR1AGC222M $\diamond\diamond\Delta\Delta$ 1815                                            |
|                                      | 2 700                      | 0,104                                       | 0,032                          | 0,064                           | 0,21                               | 540                           | 1950                              | 12,5 x 30                        | ECR1AGC272M $\diamond\diamond\Delta\Delta$ 1230                                            |
|                                      | 3 300                      | 0,093                                       | 0,028                          | 0,056                           | 0,23                               | 660                           | 2220                              | 12,5 x 35                        | ECR1AGC332M $\diamond\diamond\Delta\Delta$ 1235                                            |
|                                      |                            | 0,093                                       | 0,034                          | 0,068                           | 0,23                               | 660                           | 1660                              | 16 x 20                          | ECR1AGC332M $\diamond\diamond\Delta\Delta$ 1620                                            |
|                                      | 3 900                      | 0,079                                       | 0,026                          | 0,052                           | 0,23                               | 780                           | 2390                              | 12,5 x 40                        | ECR1AGC392M $\diamond\diamond\Delta\Delta$ 1240                                            |
|                                      |                            | 0,079                                       | 0,028                          | 0,056                           | 0,23                               | 780                           | 2070                              | 16 x 25                          | ECR1AGC392M $\diamond\diamond\Delta\Delta$ 1625                                            |
|                                      |                            | 0,079                                       | 0,030                          | 0,060                           | 0,23                               | 780                           | 1850                              | 18 x 20                          | ECR1AGC392M $\diamond\diamond\Delta\Delta$ 1820                                            |
|                                      | 4 700                      | 0,071                                       | 0,027                          | 0,054                           | 0,25                               | 940                           | 2120                              | 18 x 25                          | ECR1AGC472M $\diamond\diamond\Delta\Delta$ 1825                                            |
|                                      | 5 600                      | 0,064                                       | 0,025                          | 0,050                           | 0,27                               | 1120                          | 2350                              | 16 x 31,5                        | ECR1AGC562M $\diamond\diamond\Delta\Delta$ 1631                                            |
|                                      | 6 800                      | 0,057                                       | 0,022                          | 0,044                           | 0,29                               | 1360                          | 2550                              | 16 x 35,5                        | ECR1AGC682M $\diamond\diamond\Delta\Delta$ 1635                                            |
|                                      |                            | 0,057                                       | 0,023                          | 0,046                           | 0,29                               | 1360                          | 2410                              | 18 x 31,5                        | ECR1AGC682M $\diamond\diamond\Delta\Delta$ 1831                                            |
|                                      | 8 200                      | 0,054                                       | 0,020                          | 0,040                           | 0,33                               | 1640                          | 2970                              | 16 x 40                          | ECR1AGC822M $\diamond\diamond\Delta\Delta$ 1640                                            |
|                                      |                            | 0,054                                       | 0,020                          | 0,040                           | 0,33                               | 1640                          | 2680                              | 18 x 35,5                        | ECR1AGC822M $\diamond\diamond\Delta\Delta$ 1835                                            |
|                                      | 10 000                     | 0,050                                       | 0,019                          | 0,038                           | 0,37                               | 2000                          | 3010                              | 18 x 40                          | ECR1AGC103M $\diamond\diamond\Delta\Delta$ 1840                                            |
| 16<br>(20)<br>1C                     | 56                         | 3,80                                        | 0,650                          | 1,30                            | 0,16                               | 18                            | 175                               | 5 x 11,5                         | ECR1CGC560M $\diamond\diamond\Delta\Delta$ 0511                                            |
|                                      | 82                         | 2,59                                        | 0,460                          | 0,920                           | 0,16                               | 27                            | 235                               | 5 x 15                           | ECR1CGC820M $\diamond\diamond\Delta\Delta$ 0515                                            |
|                                      | 120                        | 1,77                                        | 0,300                          | 0,600                           | 0,16                               | 39                            | 290                               | 6,3 x 11,5                       | ECR1CGC121M $\diamond\diamond\Delta\Delta$ 0611                                            |
|                                      | 180                        | 1,18                                        | 0,200                          | 0,400                           | 0,16                               | 58                            | 400                               | 6,3 x 15                         | ECR1CGC181M $\diamond\diamond\Delta\Delta$ 0615                                            |
|                                      | 270                        | 0,786                                       | 0,170                          | 0,340                           | 0,16                               | 87                            | 501                               | 8 x 11,5                         | ECR1CGC271M $\diamond\diamond\Delta\Delta$ 0811                                            |



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance | Z <sub>max</sub><br>Max Impedance | Z <sub>max</sub><br>Max Impedance | tanδ<br>Dissipation Factor | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current | Size<br>øD x L | ORDER CODE           |
|---------------------------------------------|-------------------------------------|----------------------------------------------------|-----------------------------------|-----------------------------------|----------------------------|--------------------------------------|------------------------------------------|----------------|----------------------|
| (V)                                         | (µF)                                | 20°C<br>120Hz<br>(Ω)                               | 20°C<br>100kHz<br>(Ω)             | -10°C<br>100kHz<br>(Ω)            | 20°C<br>120Hz              | (µA)                                 | 105°C<br>100kHz<br>(mArms)               | (mm)           | Details: Page 33     |
| 16<br>(20)<br>1C                            | 330                                 | 0,644                                              | 0,130                             | 0,260                             | 0,16                       | 106                                  | 575                                      | 8 x 16         | ECR1CGC331M00000816  |
|                                             |                                     | 0,644                                              | 0,120                             | 0,240                             | 0,16                       | 106                                  | 625                                      | 10 x 12,5      | ECR1CGC331M000001012 |
|                                             | 390                                 | 0,545                                              | 0,095                             | 0,190                             | 0,16                       | 125                                  | 795                                      | 10 x 16        | ECR1CGC391M000001016 |
|                                             | 470                                 | 0,452                                              | 0,095                             | 0,190                             | 0,16                       | 151                                  | 760                                      | 8 x 20         | ECR1CGC471M000008020 |
|                                             | 680                                 | 0,313                                              | 0,065                             | 0,130                             | 0,16                       | 218                                  | 1010                                     | 10 x 20        | ECR1CGC681M000001020 |
|                                             |                                     | 0,313                                              | 0,065                             | 0,130                             | 0,16                       | 218                                  | 1010                                     | 12,5 x 15      | ECR1CGC681M000001215 |
|                                             | 820                                 | 0,259                                              | 0,055                             | 0,110                             | 0,16                       | 263                                  | 1190                                     | 10 x 25        | ECR1CGC821M000001025 |
|                                             | 1 200                               | 0,177                                              | 0,045                             | 0,090                             | 0,16                       | 384                                  | 1430                                     | 10 x 30        | ECR1CGC122M000001030 |
|                                             |                                     | 0,177                                              | 0,042                             | 0,084                             | 0,16                       | 384                                  | 1400                                     | 12,5 x 20      | ECR1CGC122M000001220 |
|                                             | 1 500                               | 0,142                                              | 0,038                             | 0,076                             | 0,16                       | 480                                  | 1690                                     | 12,5 x 25      | ECR1CGC152M000001225 |
|                                             |                                     | 0,142                                              | 0,046                             | 0,092                             | 0,16                       | 480                                  | 1340                                     | 16 x 15        | ECR1CGC152M000001615 |
|                                             | 2 200                               | 0,142                                              | 0,043                             | 0,086                             | 0,16                       | 480                                  | 1490                                     | 18 x 15        | ECR1CGC152M000001815 |
|                                             |                                     | 0,109                                              | 0,032                             | 0,064                             | 0,18                       | 704                                  | 1950                                     | 12,5 x 30      | ECR1CGC222M000001230 |
|                                             | 2 700                               | 0,109                                              | 0,034                             | 0,068                             | 0,18                       | 704                                  | 1730                                     | 16 x 20        | ECR1CGC222M000001620 |
|                                             |                                     | 0,089                                              | 0,028                             | 0,056                             | 0,18                       | 864                                  | 2200                                     | 12,5 x 35      | ECR1CGC272M000001235 |
|                                             | 3 300                               | 0,089                                              | 0,028                             | 0,056                             | 0,18                       | 864                                  | 2070                                     | 16 x 25        | ECR1CGC272M000001625 |
|                                             |                                     | 0,089                                              | 0,030                             | 0,060                             | 0,18                       | 864                                  | 1870                                     | 18 x 20        | ECR1CGC272M000001820 |
|                                             | 3 900                               | 0,081                                              | 0,026                             | 0,052                             | 0,20                       | 1056                                 | 2390                                     | 12,5 x 40      | ECR1CGC332M000001240 |
|                                             |                                     | 0,069                                              | 0,025                             | 0,050                             | 0,20                       | 1248                                 | 2350                                     | 16 x 31,5      | ECR1CGC392M000001631 |
|                                             | 4 700                               | 0,069                                              | 0,027                             | 0,054                             | 0,20                       | 1248                                 | 2160                                     | 18 x 25        | ECR1CGC392M000001825 |
|                                             |                                     | 0,063                                              | 0,022                             | 0,044                             | 0,22                       | 1504                                 | 2550                                     | 16 x 35,5      | ECR1CGC472M000001635 |
| 25<br>(32)<br>1E                            | 39                                  | 4,77                                               | 0,650                             | 1,30                              | 0,14                       | 20                                   | 175                                      | 5 x 11,5       | ECR1EGC390M000000511 |
|                                             | 56                                  | 3,32                                               | 0,460                             | 0,920                             | 0,14                       | 28                                   | 235                                      | 5 x 15         | ECR1EGC560M000000515 |
|                                             | 82                                  | 2,27                                               | 0,300                             | 0,600                             | 0,14                       | 41                                   | 290                                      | 6,3 x 11,5     | ECR1EGC820M000000611 |
|                                             | 120                                 | 1,55                                               | 0,200                             | 0,400                             | 0,14                       | 60                                   | 400                                      | 6,3 x 15       | ECR1EGC121M000000615 |
|                                             | 180                                 | 1,04                                               | 0,170                             | 0,340                             | 0,14                       | 90                                   | 503                                      | 8 x 11,5       | ECR1EGC181M000000811 |
|                                             | 220                                 | 0,845                                              | 0,130                             | 0,260                             | 0,14                       | 110                                  | 575                                      | 8 x 16         | ECR1EGC221M000000816 |
|                                             |                                     | 0,845                                              | 0,120                             | 0,240                             | 0,14                       | 110                                  | 629                                      | 10 x 12,5      | ECR1EGC221M000001012 |
|                                             | 270                                 | 0,688                                              | 0,095                             | 0,190                             | 0,14                       | 135                                  | 795                                      | 10 x 16        | ECR1EGC271M000001016 |
|                                             | 330                                 | 0,563                                              | 0,095                             | 0,190                             | 0,14                       | 165                                  | 751                                      | 8 x 20         | ECR1EGC331M000008020 |
|                                             | 470                                 | 0,396                                              | 0,065                             | 0,130                             | 0,14                       | 235                                  | 1010                                     | 10 x 20        | ECR1EGC471M000001020 |
|                                             |                                     | 0,396                                              | 0,065                             | 0,130                             | 0,14                       | 235                                  | 1010                                     | 12,5 x 15      | ECR1EGC471M000001215 |
|                                             | 560                                 | 0,332                                              | 0,055                             | 0,110                             | 0,14                       | 280                                  | 1190                                     | 10 x 25        | ECR1EGC561M000001025 |
|                                             | 820                                 | 0,227                                              | 0,045                             | 0,090                             | 0,14                       | 410                                  | 1440                                     | 10 x 30        | ECR1EGC821M000001030 |
|                                             |                                     | 0,227                                              | 0,042                             | 0,084                             | 0,14                       | 410                                  | 1400                                     | 12,5 x 20      | ECR1EGC821M000001220 |
|                                             | 1 000                               | 0,227                                              | 0,046                             | 0,092                             | 0,14                       | 410                                  | 1360                                     | 16 x 15        | ECR1EGC821M000001615 |
|                                             |                                     | 0,186                                              | 0,038                             | 0,076                             | 0,14                       | 500                                  | 1690                                     | 12,5 x 25      | ECR1EGC102M000001225 |
|                                             | 1 200                               | 0,155                                              | 0,043                             | 0,086                             | 0,14                       | 600                                  | 1500                                     | 18 x 15        | ECR1EGC122M000001815 |
|                                             | 1 500                               | 0,124                                              | 0,032                             | 0,064                             | 0,14                       | 750                                  | 1950                                     | 12,5 x 30      | ECR1EGC152M000001230 |
|                                             |                                     | 0,124                                              | 0,034                             | 0,068                             | 0,14                       | 750                                  | 1730                                     | 16 x 20        | ECR1EGC152M000001620 |
|                                             | 1 800                               | 0,104                                              | 0,028                             | 0,056                             | 0,14                       | 900                                  | 2200                                     | 12,5 x 35      | ECR1EGC182M000001235 |
|                                             |                                     | 0,104                                              | 0,028                             | 0,056                             | 0,14                       | 900                                  | 2070                                     | 16 x 25        | ECR1EGC182M000001625 |
| 35<br>(44)<br>1V                            | 27                                  | 5,90                                               | 0,650                             | 1,30                              | 0,12                       | 19                                   | 175                                      | 5 x 11,5       | ECR1VGC270M000000511 |
|                                             |                                     | 4,09                                               | 0,460                             | 0,920                             | 0,12                       | 28                                   | 235                                      | 5 x 15         | ECR1VGC390M000000515 |
|                                             | 56                                  | 2,85                                               | 0,300                             | 0,600                             | 0,12                       | 40                                   | 290                                      | 6,3 x 11,5     | ECR1VGC560M000000611 |
|                                             | 82                                  | 1,95                                               | 0,200                             | 0,400                             | 0,12                       | 58                                   | 400                                      | 6,3 x 15       | ECR1VGC820M000000615 |
|                                             | 120                                 | 1,33                                               | 0,170                             | 0,340                             | 0,12                       | 84                                   | 501                                      | 8 x 11,5       | ECR1VGC121M000000811 |
|                                             | 150                                 | 1,07                                               | 0,120                             | 0,240                             | 0,12                       | 105                                  | 625                                      | 10 x 12,5      | ECR1VGC151M000001012 |
|                                             | 180                                 | 0,885                                              | 0,130                             | 0,260                             | 0,12                       | 126                                  | 575                                      | 8 x 16         | ECR1VGC181M000000816 |
|                                             |                                     | 0,885                                              | 0,095                             | 0,190                             | 0,12                       | 126                                  | 795                                      | 10 x 16        | ECR1VGC181M000001016 |
|                                             | 220                                 | 0,724                                              | 0,095                             | 0,190                             | 0,12                       | 154                                  | 760                                      | 8 x 20         | ECR1VGC221M000008020 |
|                                             | 330                                 | 0,483                                              | 0,065                             | 0,130                             | 0,12                       | 231                                  | 1010                                     | 10 x 20        | ECR1VGC331M000001020 |
|                                             |                                     | 0,483                                              | 0,065                             | 0,130                             | 0,12                       | 231                                  | 1010                                     | 12,5 x 15      | ECR1VGC331M000001215 |

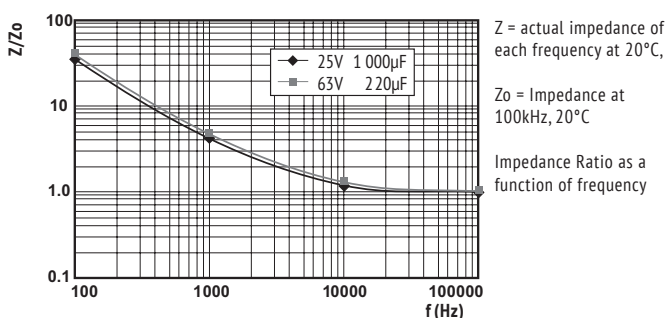


| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current | Size       | ORDER CODE                                                                                 |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------|------------|--------------------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120kHz<br>( $\Omega$ )              | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120kHz                     | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA rms)       | (mm)       | $\diamond\diamond$ = pin style & length<br>$\Delta\Delta$ = pitch code<br>Details: Page 33 |
| 35<br>(44)<br>1V                     | 390                        | 0,409                                       | 0,055                          | 0,110                           | 0,12                               | 273                           | 1190                              | 10 x 25    | ECR1VGC391M $\diamond\Delta\Delta$ 1025                                                    |
|                                      |                            | 0,285                                       | 0,045                          | 0,090                           | 0,12                               | 392                           | 1450                              | 10 x 30    | ECR1VGC561M $\diamond\Delta\Delta$ 1030                                                    |
|                                      | 560                        | 0,285                                       | 0,042                          | 0,084                           | 0,12                               | 392                           | 1400                              | 12,5 x 20  | ECR1VGC561M $\diamond\Delta\Delta$ 1220                                                    |
|                                      |                            | 0,285                                       | 0,046                          | 0,092                           | 0,12                               | 392                           | 1360                              | 16 x 15    | ECR1VGC561M $\diamond\Delta\Delta$ 1615                                                    |
|                                      | 680                        | 0,235                                       | 0,038                          | 0,076                           | 0,12                               | 476                           | 1690                              | 12,5 x 25  | ECR1VGC681M $\diamond\Delta\Delta$ 1225                                                    |
|                                      |                            | 0,235                                       | 0,043                          | 0,086                           | 0,12                               | 476                           | 1520                              | 18 x 15    | ECR1VGC681M $\diamond\Delta\Delta$ 1815                                                    |
|                                      | 1 000                      | 0,160                                       | 0,032                          | 0,064                           | 0,12                               | 700                           | 1950                              | 12,5 x 30  | ECR1VGC102M $\diamond\Delta\Delta$ 1230                                                    |
|                                      |                            | 0,160                                       | 0,034                          | 0,068                           | 0,12                               | 700                           | 1730                              | 16 x 20    | ECR1VGC102M $\diamond\Delta\Delta$ 1620                                                    |
|                                      | 1 200                      | 0,133                                       | 0,028                          | 0,056                           | 0,12                               | 840                           | 2200                              | 12,5 x 35  | ECR1VGC122M $\diamond\Delta\Delta$ 1235                                                    |
|                                      |                            | 0,133                                       | 0,028                          | 0,056                           | 0,12                               | 840                           | 2070                              | 16 x 25    | ECR1VGC122M $\diamond\Delta\Delta$ 1625                                                    |
|                                      | 1 500                      | 0,133                                       | 0,030                          | 0,060                           | 0,12                               | 840                           | 1900                              | 18 x 20    | ECR1VGC122M $\diamond\Delta\Delta$ 1820                                                    |
|                                      |                            | 0,107                                       | 0,026                          | 0,052                           | 0,12                               | 1050                          | 2390                              | 12,5 x 40  | ECR1VGC152M $\diamond\Delta\Delta$ 1240                                                    |
|                                      | 1 800                      | 0,089                                       | 0,025                          | 0,050                           | 0,12                               | 1260                          | 2350                              | 16 x 31,5  | ECR1VGC182M $\diamond\Delta\Delta$ 1631                                                    |
|                                      |                            | 0,089                                       | 0,027                          | 0,054                           | 0,12                               | 1260                          | 2200                              | 18 x 25    | ECR1VGC182M $\diamond\Delta\Delta$ 1825                                                    |
|                                      | 2 200                      | 0,085                                       | 0,022                          | 0,044                           | 0,14                               | 1540                          | 2550                              | 16 x 35,5  | ECR1VGC222M $\diamond\Delta\Delta$ 1635                                                    |
|                                      |                            | 0,085                                       | 0,023                          | 0,046                           | 0,14                               | 1540                          | 2490                              | 18 x 31,5  | ECR1VGC222M $\diamond\Delta\Delta$ 1831                                                    |
|                                      | 2 700                      | 0,069                                       | 0,020                          | 0,040                           | 0,14                               | 1890                          | 2900                              | 16 x 40    | ECR1VGC272M $\diamond\Delta\Delta$ 1640                                                    |
|                                      |                            | 0,069                                       | 0,020                          | 0,040                           | 0,14                               | 1890                          | 2770                              | 18 x 35,5  | ECR1VGC272M $\diamond\Delta\Delta$ 1835                                                    |
|                                      | 3 300                      | 0,065                                       | 0,019                          | 0,038                           | 0,16                               | 2310                          | 3110                              | 18 x 40    | ECR1VGC332M $\diamond\Delta\Delta$ 1840                                                    |
| 50<br>(63)<br>1H                     | 0,47                       | 283                                         | 3,90                           | 7,80                            | 0,10                               | 3                             | 22                                | 5 x 11,5   | ECR1HGC47M $\diamond\Delta\Delta$ 0511                                                     |
|                                      | 1,0                        | 133                                         | 3,50                           | 7,00                            | 0,10                               | 3                             | 36                                | 5 x 11,5   | ECR1HGC010M $\diamond\Delta\Delta$ 0511                                                    |
|                                      | 2,2                        | 60,4                                        | 3,00                           | 6,00                            | 0,10                               | 3                             | 54                                | 5 x 11,5   | ECR1HGC2R2M $\diamond\Delta\Delta$ 0511                                                    |
|                                      | 3,3                        | 40,3                                        | 2,60                           | 5,20                            | 0,10                               | 4                             | 63                                | 5 x 11,5   | ECR1HGC3R3M $\diamond\Delta\Delta$ 0511                                                    |
|                                      | 4,7                        | 28,3                                        | 2,20                           | 4,40                            | 0,10                               | 5                             | 75                                | 5 x 11,5   | ECR1HGC4R7M $\diamond\Delta\Delta$ 0511                                                    |
|                                      | 10                         | 13,3                                        | 1,40                           | 2,80                            | 0,10                               | 10                            | 110                               | 5 x 11,5   | ECR1HGC100M $\diamond\Delta\Delta$ 0511                                                    |
|                                      | 18                         | 7,38                                        | 0,950                          | 1,90                            | 0,10                               | 18                            | 120                               | 5 x 11,5   | ECR1HGC180M $\diamond\Delta\Delta$ 0511                                                    |
|                                      | 27                         | 4,92                                        | 0,550                          | 1,10                            | 0,10                               | 27                            | 135                               | 5 x 15     | ECR1HGC270M $\diamond\Delta\Delta$ 0515                                                    |
|                                      | 39                         | 3,41                                        | 0,360                          | 0,720                           | 0,10                               | 39                            | 148                               | 6,3 x 11,5 | ECR1HGC390M $\diamond\Delta\Delta$ 0611                                                    |
|                                      | 56                         | 2,37                                        | 0,280                          | 0,560                           | 0,10                               | 56                            | 153                               | 6,3 x 15   | ECR1HGC560M $\diamond\Delta\Delta$ 0615                                                    |
|                                      | 68                         | 1,96                                        | 0,200                          | 0,400                           | 0,10                               | 68                            | 360                               | 8 x 11,5   | ECR1HGC680M $\diamond\Delta\Delta$ 0811                                                    |
|                                      | 82                         | 1,62                                        | 0,180                          | 0,360                           | 0,10                               | 82                            | 460                               | 8 x 16     | ECR1HGC820M $\diamond\Delta\Delta$ 0816                                                    |
|                                      |                            | 1,62                                        | 0,180                          | 0,360                           | 0,10                               | 82                            | 443                               | 10 x 12,5  | ECR1HGC820M $\diamond\Delta\Delta$ 1012                                                    |
|                                      | 100                        | 1,33                                        | 0,150                          | 0,300                           | 0,10                               | 100                           | 553                               | 10 x 16    | ECR1HGC101M $\diamond\Delta\Delta$ 1016                                                    |
|                                      | 120                        | 1,11                                        | 0,130                          | 0,260                           | 0,10                               | 120                           | 670                               | 8 x 20     | ECR1HGC121M $\diamond\Delta\Delta$ 0820                                                    |
|                                      | 180                        | 0,737                                       | 0,095                          | 0,190                           | 0,10                               | 180                           | 676                               | 10 x 20    | ECR1HGC181M $\diamond\Delta\Delta$ 1020                                                    |
|                                      |                            | 0,737                                       | 0,105                          | 0,210                           | 0,10                               | 180                           | 745                               | 12,5 x 15  | ECR1HGC181M $\diamond\Delta\Delta$ 1215                                                    |
|                                      | 220                        | 0,603                                       | 0,080                          | 0,160                           | 0,10                               | 220                           | 876                               | 10 x 25    | ECR1HGC221M $\diamond\Delta\Delta$ 1025                                                    |
|                                      | 330                        | 0,402                                       | 0,065                          | 0,130                           | 0,10                               | 330                           | 1010                              | 10 x 30    | ECR1HGC331M $\diamond\Delta\Delta$ 1030                                                    |
|                                      |                            | 0,402                                       | 0,070                          | 0,140                           | 0,10                               | 330                           | 979                               | 12,5 x 20  | ECR1HGC331M $\diamond\Delta\Delta$ 1220                                                    |
|                                      |                            | 0,402                                       | 0,075                          | 0,150                           | 0,10                               | 330                           | 982                               | 16 x 15    | ECR1HGC331M $\diamond\Delta\Delta$ 1615                                                    |
|                                      | 470                        | 0,283                                       | 0,054                          | 0,108                           | 0,10                               | 470                           | 1180                              | 12,5 x 25  | ECR1HGC471M $\diamond\Delta\Delta$ 1225                                                    |
|                                      |                            | 0,283                                       | 0,058                          | 0,116                           | 0,10                               | 470                           | 1180                              | 18 x 15    | ECR1HGC471M $\diamond\Delta\Delta$ 1815                                                    |
|                                      | 560                        | 0,237                                       | 0,050                          | 0,100                           | 0,10                               | 560                           | 1310                              | 12,5 x 30  | ECR1HGC561M $\diamond\Delta\Delta$ 1230                                                    |
|                                      | 680                        | 0,196                                       | 0,046                          | 0,092                           | 0,10                               | 680                           | 1470                              | 12,5 x 35  | ECR1HGC681M $\diamond\Delta\Delta$ 1235                                                    |
|                                      |                            | 0,196                                       | 0,050                          | 0,100                           | 0,10                               | 680                           | 1210                              | 16 x 20    | ECR1HGC681M $\diamond\Delta\Delta$ 1620                                                    |
|                                      | 820                        | 0,162                                       | 0,044                          | 0,088                           | 0,10                               | 820                           | 1590                              | 12,5 x 40  | ECR1HGC821M $\diamond\Delta\Delta$ 1240                                                    |
|                                      |                            | 0,162                                       | 0,048                          | 0,096                           | 0,10                               | 820                           | 1490                              | 16 x 25    | ECR1HGC821M $\diamond\Delta\Delta$ 1625                                                    |
|                                      |                            | 0,162                                       | 0,046                          | 0,092                           | 0,10                               | 820                           | 1450                              | 18 x 20    | ECR1HGC821M $\diamond\Delta\Delta$ 1820                                                    |
|                                      | 1 000                      | 0,133                                       | 0,040                          | 0,080                           | 0,10                               | 1000                          | 1890                              | 16 x 31,5  | ECR1HGC102M $\diamond\Delta\Delta$ 1631                                                    |
|                                      |                            | 0,133                                       | 0,040                          | 0,080                           | 0,10                               | 1000                          | 1720                              | 18 x 25    | ECR1HGC102M $\diamond\Delta\Delta$ 1825                                                    |
|                                      | 1 200                      | 0,111                                       | 0,032                          | 0,064                           | 0,10                               | 1200                          | 2140                              | 16 x 35,5  | ECR1HGC122M $\diamond\Delta\Delta$ 1635                                                    |
|                                      | 1 500                      | 0,089                                       | 0,026                          | 0,052                           | 0,10                               | 1500                          | 2410                              | 16 x 40    | ECR1HGC152M $\diamond\Delta\Delta$ 1640                                                    |
|                                      |                            | 0,089                                       | 0,026                          | 0,052                           | 0,10                               | 1500                          | 1970                              | 18 x 31,5  | ECR1HGC152M $\diamond\Delta\Delta$ 1831                                                    |
|                                      | 1 800                      | 0,074                                       | 0,025                          | 0,050                           | 0,10                               | 1800                          | 2310                              | 18 x 35,5  | ECR1HGC182M $\diamond\Delta\Delta$ 1835                                                    |
|                                      | 2 200                      | 0,073                                       | 0,024                          | 0,048                           | 0,12                               | 2200                          | 2530                              | 18 x 40    | ECR1HGC222M $\diamond\Delta\Delta$ 1840                                                    |
| 63<br>(79)<br>1J                     | 12                         | 9,96                                        | 1,20                           | 3,60                            | 0,09                               | 16                            | 120                               | 5 x 11,5   | ECR1JGC120M $\diamond\Delta\Delta$ 0511                                                    |
|                                      | 18                         | 6,64                                        | 0,850                          | 2,60                            | 0,09                               | 23                            | 135                               | 5 x 15     | ECR1JGC180M $\diamond\Delta\Delta$ 0515                                                    |
|                                      | 27                         | 4,43                                        | 0,550                          | 1,70                            | 0,09                               | 34                            | 148                               | 6,3 x 11,5 | ECR1JGC270M $\diamond\Delta\Delta$ 0611                                                    |
|                                      | 39                         | 3,07                                        | 0,380                          | 1,10                            | 0,09                               | 50                            | 153                               | 6,3 x 15   | ECR1JGC390M $\diamond\Delta\Delta$ 0615                                                    |
|                                      | 47                         | 2,55                                        | 0,320                          | 0,960                           | 0,09                               | 60                            | 360                               | 8 x 11,5   | ECR1JGC470M $\diamond\Delta\Delta$ 0811                                                    |
|                                      | 56                         | 2,14                                        | 0,230                          | 0,690                           | 0,09                               | 71                            | 448                               | 10 x 12,5  | ECR1JGC560M $\diamond\Delta\Delta$ 1012                                                    |
|                                      | 68                         | 1,76                                        | 0,240                          | 0,720                           | 0,09                               | 86                            | 469                               | 8 x 16     | ECR1JGC680M $\diamond\Delta\Delta$ 0816                                                    |
|                                      |                            | 1,76                                        | 0,170                          | 0,510                           | 0,09                               | 86                            | 553                               | 10 x 16    | ECR1JGC680M $\diamond\Delta\Delta$ 1016                                                    |
|                                      | 82                         | 1,46                                        | 0,170                          | 0,510                           | 0,09                               | 104                           | 682                               | 8 x 20     | ECR1JGC820M $\diamond\Delta\Delta$ 0820                                                    |
|                                      | 120                        | 0,995                                       | 0,120                          | 0,360                           | 0,09                               | 152                           | 676                               | 10 x 20    | ECR1JGC121M $\diamond\Delta\Delta$ 1020                                                    |

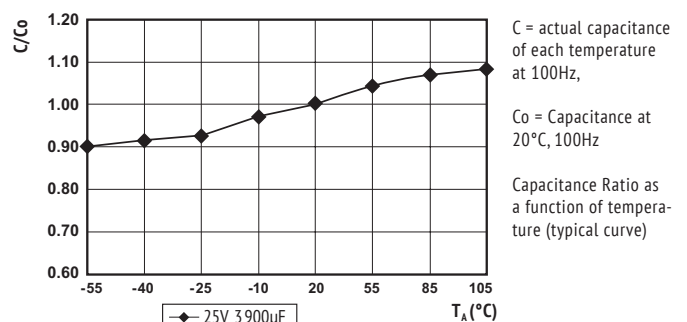


| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current       | Size<br>$\phi D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br><br>△△ = pitch code |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------------|---------------------------|------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | ( $\Omega$ )<br>20°C<br>120Hz               | ( $\Omega$ )<br>20°C<br>100kHz | ( $\Omega$ )<br>-10°C<br>100kHz | 20°C<br>120Hz                      | ( $\mu A$ )                   | (mA <sub>rms</sub> )<br>105°C<br>100kHz | (mm)                      | Details: Page 33                                                 |
| 63<br>(79)<br>1J                     | 150                        | 0,796                                       | 0,100                          | 0,300                           | 0,09                               | 189                           | 876                                     | 10 x 25                   | ECR1JGC151M◇◇△△1025                                              |
|                                      |                            | 0,796                                       | 0,110                          | 0,330                           | 0,09                               | 189                           | 745                                     | 12,5 x 15                 | ECR1JGC151M◇◇△△1215                                              |
|                                      | 180                        | 0,664                                       | 0,085                          | 0,260                           | 0,09                               | 227                           | 1020                                    | 10 x 30                   | ECR1JGC181M◇◇△△1030                                              |
|                                      | 220                        | 0,543                                       | 0,075                          | 0,230                           | 0,09                               | 278                           | 979                                     | 12,5 x 20                 | ECR1JGC221M◇◇△△1220                                              |
|                                      |                            | 0,543                                       | 0,080                          | 0,240                           | 0,09                               | 278                           | 982                                     | 16 x 15                   | ECR1JGC221M◇◇△△1615                                              |
|                                      | 270                        | 0,443                                       | 0,065                          | 0,200                           | 0,09                               | 341                           | 1180                                    | 12,5 x 25                 | ECR1JGC271M◇◇△△1225                                              |
|                                      | 330                        | 0,362                                       | 0,065                          | 0,200                           | 0,09                               | 416                           | 1200                                    | 18 x 15                   | ECR1JGC331M◇◇△△1815                                              |
|                                      | 390                        | 0,307                                       | 0,055                          | 0,170                           | 0,09                               | 492                           | 1310                                    | 12,5 x 30                 | ECR1JGC391M◇◇△△1230                                              |
|                                      |                            | 0,307                                       | 0,057                          | 0,170                           | 0,09                               | 492                           | 1210                                    | 16 x 20                   | ECR1JGC391M◇◇△△1620                                              |
|                                      | 470                        | 0,254                                       | 0,048                          | 0,140                           | 0,09                               | 593                           | 1470                                    | 12,5 x 35                 | ECR1JGC471M◇◇△△1235                                              |
|                                      |                            | 0,254                                       | 0,052                          | 0,160                           | 0,09                               | 593                           | 1490                                    | 16 x 25                   | ECR1JGC471M◇◇△△1625                                              |
|                                      |                            | 0,254                                       | 0,058                          | 0,170                           | 0,09                               | 593                           | 1460                                    | 18 x 20                   | ECR1JGC471M◇◇△△1820                                              |
|                                      | 560                        | 0,214                                       | 0,042                          | 0,130                           | 0,09                               | 706                           | 1590                                    | 12,5 x 40                 | ECR1JGC561M◇◇△△1240                                              |
|                                      | 680                        | 0,176                                       | 0,042                          | 0,130                           | 0,09                               | 857                           | 1890                                    | 16 x 31,5                 | ECR1JGC681M◇◇△△1631                                              |
|                                      |                            | 0,176                                       | 0,050                          | 0,150                           | 0,09                               | 857                           | 1740                                    | 18 x 25                   | ECR1JGC681M◇◇△△1825                                              |
|                                      | 820                        | 0,146                                       | 0,036                          | 0,110                           | 0,09                               | 1034                          | 2140                                    | 16 x 35,5                 | ECR1JGC821M◇◇△△1635                                              |
|                                      |                            | 0,146                                       | 0,042                          | 0,130                           | 0,09                               | 1034                          | 1990                                    | 18 x 31,5                 | ECR1JGC821M◇◇△△1831                                              |
|                                      | 1 000                      | 0,120                                       | 0,032                          | 0,096                           | 0,09                               | 1260                          | 2410                                    | 16 x 40                   | ECR1JGC102M◇◇△△1640                                              |
|                                      |                            | 0,120                                       | 0,035                          | 0,110                           | 0,09                               | 1260                          | 2340                                    | 18 x 35,5                 | ECR1JGC102M◇◇△△1835                                              |
| 1 200                                | 0,100                      | 0,032                                       | 0,096                          | 0,09                            | 1512                               | 2560                          | 18 x 40                                 | ECR1JGC122M◇◇△△1840       |                                                                  |
| 100<br>(125)<br>2A                   | 5,6                        | 19,0                                        | 1,90                           | 7,60                            | 0,08                               | 12                            | 57                                      | 5 x 11,5                  | ECR2AGC5R6M◇◇△△0511                                              |
|                                      | 8,2                        | 13,0                                        | 1,30                           | 5,20                            | 0,08                               | 17                            | 74                                      | 5 x 15                    | ECR2AGC8R2M◇◇△△0515                                              |
|                                      | 12                         | 8,85                                        | 1,10                           | 4,40                            | 0,08                               | 24                            | 78                                      | 6,3 x 11,5                | ECR2AGC120M◇◇△△0611                                              |
|                                      | 18                         | 5,90                                        | 0,620                          | 2,50                            | 0,08                               | 36                            | 85                                      | 6,3 x 15                  | ECR2AGC180M◇◇△△0615                                              |
|                                      | 22                         | 4,83                                        | 0,530                          | 2,10                            | 0,08                               | 44                            | 275                                     | 8 x 11,5                  | ECR2AGC220M◇◇△△0811                                              |
|                                      | 27                         | 3,94                                        | 0,470                          | 1,90                            | 0,08                               | 54                            | 319                                     | 10 x 12,5                 | ECR2AGC270M◇◇△△1012                                              |
|                                      | 33                         | 3,22                                        | 0,350                          | 1,40                            | 0,08                               | 66                            | 360                                     | 8 x 16                    | ECR2AGC330M◇◇△△0816                                              |
|                                      |                            | 3,22                                        | 0,320                          | 1,30                            | 0,08                               | 66                            | 424                                     | 10 x 16                   | ECR2AGC330M◇◇△△1016                                              |
|                                      | 39                         | 2,73                                        | 0,270                          | 1,10                            | 0,08                               | 78                            | 490                                     | 8 x 20                    | ECR2AGC390M◇◇△△0820                                              |
|                                      | 56                         | 1,90                                        | 0,250                          | 1,00                            | 0,08                               | 112                           | 499                                     | 10 x 20                   | ECR2AGC560M◇◇△△1020                                              |
|                                      | 68                         | 1,57                                        | 0,180                          | 0,720                           | 0,08                               | 136                           | 634                                     | 10 x 25                   | ECR2AGC680M◇◇△△1025                                              |
|                                      |                            | 1,57                                        | 0,200                          | 0,800                           | 0,08                               | 136                           | 613                                     | 12,5 x 15                 | ECR2AGC680M◇◇△△1215                                              |
|                                      | 100                        | 1,07                                        | 0,150                          | 0,600                           | 0,08                               | 200                           | 739                                     | 10 x 30                   | ECR2AGC101M◇◇△△1030                                              |
|                                      |                            | 1,07                                        | 0,130                          | 0,520                           | 0,08                               | 200                           | 805                                     | 12,5 x 20                 | ECR2AGC101M◇◇△△1220                                              |
|                                      | 120                        | 0,885                                       | 0,110                          | 0,440                           | 0,08                               | 240                           | 857                                     | 12,5 x 25                 | ECR2AGC121M◇◇△△1225                                              |
|                                      |                            | 0,885                                       | 0,130                          | 0,500                           | 0,08                               | 240                           | 706                                     | 16 x 15                   | ECR2AGC121M◇◇△△1615                                              |
|                                      | 150                        | 0,708                                       | 0,120                          | 0,480                           | 0,08                               | 300                           | 871                                     | 18 x 15                   | ECR2AGC151M◇◇△△1815                                              |
|                                      | 180                        | 0,590                                       | 0,090                          | 0,360                           | 0,08                               | 360                           | 1120                                    | 12,5 x 30                 | ECR2AGC181M◇◇△△1230                                              |
|                                      |                            | 0,590                                       | 0,110                          | 0,440                           | 0,08                               | 360                           | 916                                     | 16 x 20                   | ECR2AGC181M◇◇△△1620                                              |
|                                      | 220                        | 0,483                                       | 0,075                          | 0,300                           | 0,08                               | 440                           | 1240                                    | 12,5 x 35                 | ECR2AGC221M◇◇△△1235                                              |
|                                      |                            | 0,483                                       | 0,081                          | 0,320                           | 0,08                               | 440                           | 1290                                    | 16 x 25                   | ECR2AGC221M◇◇△△1625                                              |
|                                      | 270                        | 0,393                                       | 0,060                          | 0,240                           | 0,08                               | 540                           | 1330                                    | 12,5 x 40                 | ECR2AGC271M◇◇△△1240                                              |
|                                      |                            | 0,393                                       | 0,085                          | 0,340                           | 0,08                               | 540                           | 1170                                    | 18 x 20                   | ECR2AGC271M◇◇△△1820                                              |
|                                      | 330                        | 0,322                                       | 0,059                          | 0,230                           | 0,08                               | 660                           | 1630                                    | 16 x 31,5                 | ECR2AGC331M◇◇△△1631                                              |
|                                      |                            | 0,322                                       | 0,071                          | 0,280                           | 0,08                               | 660                           | 1500                                    | 18 x 25                   | ECR2AGC331M◇◇△△1825                                              |
|                                      | 390                        | 0,273                                       | 0,052                          | 0,210                           | 0,08                               | 780                           | 1750                                    | 16 x 35,5                 | ECR2AGC391M◇◇△△1635                                              |
|                                      |                            | 0,273                                       | 0,058                          | 0,230                           | 0,08                               | 780                           | 1630                                    | 18 x 31,5                 | ECR2AGC391M◇◇△△1831                                              |
|                                      | 470                        | 0,226                                       | 0,045                          | 0,180                           | 0,08                               | 940                           | 1920                                    | 16 x 40                   | ECR2AGC471M◇◇△△1640                                              |
|                                      | 560                        | 0,190                                       | 0,054                          | 0,220                           | 0,08                               | 1120                          | 1920                                    | 18 x 35,5                 | ECR2AGC561M◇◇△△1835                                              |
|                                      | 680                        | 0,157                                       | 0,041                          | 0,160                           | 0,08                               | 1360                          | 2100                                    | 18 x 40                   | ECR2AGC681M◇◇△△1840                                              |

## IMPEDANCE RATIO

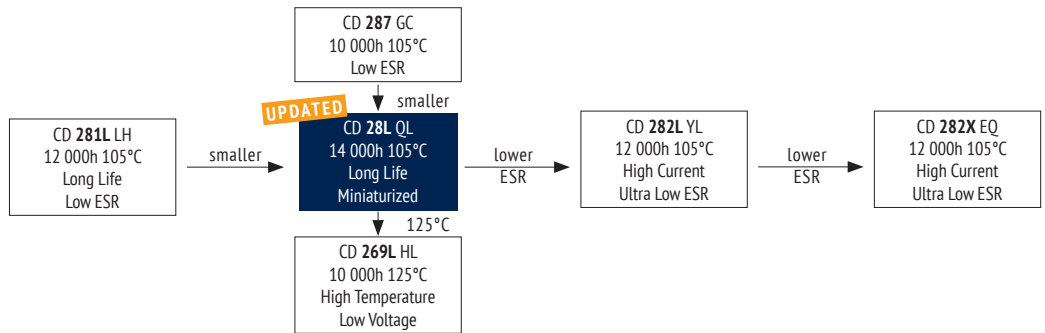


## CAPACITANCE RATIO



**4 000 - 14 000h  
at 105°C**

- Miniaturized
- Low Impedance,  
High Current
- Switching Power Supply
- Standard 85°C

**ITEM CHARACTERISTICS**

|                                     |             |
|-------------------------------------|-------------|
| Operating Temperature Range (°C)    | -55 ~ +105  |
| Voltage Range (V)                   | 6,3 ~ 63    |
| Capacitance Range (μF)              | 12 ~ 18 000 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%       |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current (μA) After 2 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

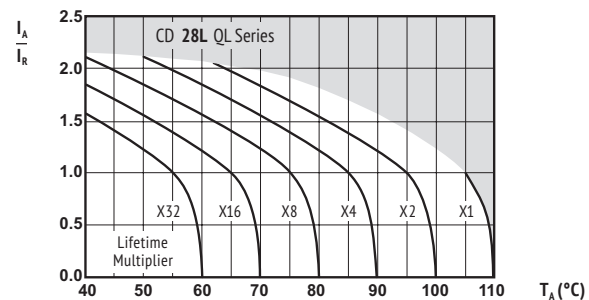
|                                                         |                                                     |          |
|---------------------------------------------------------|-----------------------------------------------------|----------|
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)                                   | 6,3 ~ 63 |
|                                                         | $Z_{-55^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 3        |

| ITEM                                                                    | USEFUL LIFE                                                                                                                                        |                                   | LOAD LIFE                                                                                                                                       | ENDURANCE TEST                                                                                                                                   | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | $\emptyset \leq 6,3$ : 4 000h<br>$\emptyset 8$ : 6 000h<br>$\emptyset 10$ : 10 000h<br>$\emptyset 12,5$ : 12 000h<br>$\emptyset \geq 16$ : 14 000h | $\emptyset \geq 8$ : > 250 000h   | $\emptyset \leq 6,3$ : 2 000h<br>$\emptyset 8$ : 3 000h<br>$\emptyset 10$ : 5 000h<br>$\emptyset 12,5$ : 7 000h<br>$\emptyset \geq 16$ : 8 000h | $\emptyset \leq 6,3$ : 3 000h<br>$\emptyset 8$ : 5 000h<br>$\emptyset 10$ : 7 000h<br>$\emptyset 12,5$ : 9 000h<br>$\emptyset \geq 16$ : 10 000h | 1 000h                                |                                                                              |
| Leakage Current                                                         | Not more than specified value                                                                                                                      |                                   | Not more than specified value                                                                                                                   | Not more than specified value                                                                                                                    | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 30% of initial value                                                                                                                      |                                   | Within ± 20% of initial value                                                                                                                   | Within ± 20% of initial value                                                                                                                    | Within ± 20% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value                                                                                                              |                                   | Not more than 200% of specified value                                                                                                           | Not more than 200% of specified value                                                                                                            | Not more than 200% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C                                                                                                                            | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C                                                                                                                         | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384                                                                                                         | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for<br>30 min > 24h before<br>measurement |

**MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)**

| Capacitance (μF) \ Frequency | 120Hz | 1kHz | 10kHz | 100kHz |
|------------------------------|-------|------|-------|--------|
| 12 ~ 180                     | 0,40  | 0,75 | 0,90  | 1,00   |
| 220 ~ 560                    | 0,50  | 0,83 | 0,93  | 1,00   |
| 680 ~ 1 800                  | 0,60  | 0,86 | 0,95  | 1,00   |
| 2 200 ~ 3 900                | 0,75  | 0,90 | 0,97  | 1,00   |
| 4 700 ~ 18 000               | 0,85  | 0,95 | 0,98  | 1,00   |

Multipliers for typical operating conditions.

**MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)**

$I_A$  = actual ripple current at 100kHz,  
 $I_R$  = rated ripple current at 100kHz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

**ENVIRONMENTAL**

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

**! SAFETY FACTOR**

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current               | Size<br>$\varnothing D \times L$ | ORDER CODE          |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-------------------------------------------------|----------------------------------|---------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120Hz<br>( $\Omega$ )               | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120Hz                      | ( $\mu A$ )                   | 105°C<br>20°C<br>100kHz<br>(mA <sub>rms</sub> ) | (mm)                             | Details: Page 33    |
| 6,3<br>(7,2)<br>0J                   | 150                        | 1,95                                        | 0,500                          | 1,00                            | 0,22                               | 10                            | 175                                             | 5 x 11,5                         | ECR0JQL151M◇◇△△0511 |
|                                      | 330                        | 0,885                                       | 0,250                          | 0,500                           | 0,22                               | 21                            | 290                                             | 6,3 x 11,5                       | ECR0JQL331M◇◇△△0611 |
|                                      | 470                        | 0,621                                       | 0,180                          | 0,360                           | 0,22                               | 30                            | 400                                             | 6,3 x 15                         | ECR0JQL471M◇◇△△0615 |
|                                      | 680                        | 0,430                                       | 0,120                          | 0,240                           | 0,22                               | 43                            | 555                                             | 8 x 11,5                         | ECR0JQL681M◇◇△△0811 |
|                                      | 820                        | 0,356                                       | 0,090                          | 0,180                           | 0,22                               | 52                            | 760                                             | 10 x 12,5                        | ECR0JQL821M◇◇△△1012 |
|                                      | 1 000                      | 0,292                                       | 0,090                          | 0,180                           | 0,22                               | 63                            | 730                                             | 8 x 16                           | ECR0JQL102M◇◇△△0816 |
|                                      | 1 200                      | 0,244                                       | 0,080                          | 0,160                           | 0,22                               | 76                            | 810                                             | 8 x 20                           | ECR0JQL122M◇◇△△0820 |
|                                      |                            | 0,244                                       | 0,068                          | 0,136                           | 0,22                               | 76                            | 1050                                            | 10 x 16                          | ECR0JQL122M◇◇△△1016 |
|                                      | 1 500                      | 0,195                                       | 0,052                          | 0,104                           | 0,22                               | 95                            | 1220                                            | 10 x 20                          | ECR0JQL152M◇◇△△1020 |
|                                      | 2 200                      | 0,145                                       | 0,045                          | 0,090                           | 0,24                               | 139                           | 1440                                            | 10 x 25                          | ECR0JQL222M◇◇△△1025 |
|                                      | 2 700                      | 0,118                                       | 0,037                          | 0,074                           | 0,24                               | 171                           | 1690                                            | 10 x 30                          | ECR0JQL272M◇◇△△1030 |
|                                      | 3 300                      | 0,105                                       | 0,038                          | 0,076                           | 0,26                               | 208                           | 1660                                            | 12,5 x 20                        | ECR0JQL332M◇◇△△1220 |
|                                      | 3 900                      | 0,089                                       | 0,030                          | 0,060                           | 0,26                               | 246                           | 1950                                            | 12,5 x 25                        | ECR0JQL392M◇◇△△1225 |
|                                      | 4 700                      | 0,080                                       | 0,025                          | 0,050                           | 0,28                               | 297                           | 2310                                            | 12,5 x 30                        | ECR0JQL472M◇◇△△1230 |
|                                      | 5 600                      | 0,072                                       | 0,022                          | 0,044                           | 0,30                               | 353                           | 2510                                            | 12,5 x 35                        | ECR0JQL562M◇◇△△1235 |
|                                      |                            | 0,072                                       | 0,029                          | 0,058                           | 0,30                               | 353                           | 2210                                            | 16 x 20                          | ECR0JQL562M◇◇△△1620 |
|                                      | 6 800                      | 0,063                                       | 0,017                          | 0,034                           | 0,32                               | 429                           | 2870                                            | 12,5 x 40                        | ECR0JQL682M◇◇△△1240 |
|                                      |                            | 0,063                                       | 0,022                          | 0,044                           | 0,32                               | 429                           | 2560                                            | 16 x 25                          | ECR0JQL682M◇◇△△1625 |
|                                      |                            | 0,063                                       | 0,028                          | 0,056                           | 0,32                               | 429                           | 2490                                            | 18 x 20                          | ECR0JQL682M◇◇△△1820 |
|                                      | 8 200                      | 0,059                                       | 0,019                          | 0,038                           | 0,36                               | 517                           | 3010                                            | 16 x 31,5                        | ECR0JQL822M◇◇△△1631 |
|                                      | 10 000                     | 0,054                                       | 0,017                          | 0,034                           | 0,40                               | 630                           | 3150                                            | 16 x 35,5                        | ECR0JQL103M◇◇△△1635 |
|                                      |                            | 0,054                                       | 0,020                          | 0,040                           | 0,40                               | 630                           | 2740                                            | 18 x 25                          | ECR0JQL103M◇◇△△1825 |
|                                      | 12 000                     | 0,049                                       | 0,015                          | 0,030                           | 0,44                               | 756                           | 3710                                            | 16 x 40                          | ECR0JQL123M◇◇△△1640 |
|                                      |                            | 0,049                                       | 0,018                          | 0,036                           | 0,44                               | 756                           | 3330                                            | 18 x 31,5                        | ECR0JQL123M◇◇△△1831 |
|                                      | 15 000                     | 0,045                                       | 0,016                          | 0,032                           | 0,50                               | 945                           | 3680                                            | 18 x 35,5                        | ECR0JQL153M◇◇△△1835 |
|                                      | 18 000                     | 0,042                                       | 0,015                          | 0,030                           | 0,56                               | 1134                          | 3800                                            | 18 x 40                          | ECR0JQL183M◇◇△△1840 |
| 10<br>(13)<br>1A                     | 100                        | 2,53                                        | 0,500                          | 1,00                            | 0,19                               | 10                            | 175                                             | 5 x 11,5                         | ECR1AQL101M◇◇△△0511 |
|                                      | 220                        | 1,15                                        | 0,250                          | 0,500                           | 0,19                               | 22                            | 290                                             | 6,3 x 11,5                       | ECR1AQL221M◇◇△△0611 |
|                                      | 330                        | 0,764                                       | 0,180                          | 0,360                           | 0,19                               | 33                            | 400                                             | 6,3 x 15                         | ECR1AQL331M◇◇△△0615 |
|                                      | 470                        | 0,537                                       | 0,120                          | 0,240                           | 0,19                               | 47                            | 555                                             | 8 x 11,5                         | ECR1AQL471M◇◇△△0811 |
|                                      | 680                        | 0,371                                       | 0,090                          | 0,180                           | 0,19                               | 68                            | 730                                             | 8 x 16                           | ECR1AQL681M◇◇△△0816 |
|                                      |                            | 0,371                                       | 0,090                          | 0,180                           | 0,19                               | 68                            | 760                                             | 10 x 12,5                        | ECR1AQL681M◇◇△△1012 |
|                                      | 1 000                      | 0,252                                       | 0,080                          | 0,160                           | 0,19                               | 100                           | 810                                             | 8 x 20                           | ECR1AQL102M◇◇△△0820 |
|                                      |                            | 0,252                                       | 0,068                          | 0,136                           | 0,19                               | 100                           | 1050                                            | 10 x 16                          | ECR1AQL102M◇◇△△1016 |
|                                      | 1 200                      | 0,210                                       | 0,052                          | 0,104                           | 0,19                               | 120                           | 1220                                            | 10 x 20                          | ECR1AQL122M◇◇△△1020 |
|                                      | 1 500                      | 0,168                                       | 0,045                          | 0,090                           | 0,19                               | 150                           | 1440                                            | 10 x 25                          | ECR1AQL152M◇◇△△1025 |
|                                      | 1 800                      | 0,140                                       | 0,037                          | 0,074                           | 0,19                               | 180                           | 1690                                            | 10 x 30                          | ECR1AQL182M◇◇△△1030 |
|                                      | 2 200                      | 0,127                                       | 0,038                          | 0,076                           | 0,21                               | 220                           | 1660                                            | 12,5 x 20                        | ECR1AQL222M◇◇△△1220 |
|                                      | 3 300                      | 0,093                                       | 0,030                          | 0,060                           | 0,23                               | 330                           | 1950                                            | 12,5 x 25                        | ECR1AQL332M◇◇△△1225 |
|                                      | 3 900                      | 0,079                                       | 0,025                          | 0,050                           | 0,23                               | 390                           | 2310                                            | 12,5 x 30                        | ECR1AQL392M◇◇△△1230 |
|                                      |                            | 0,079                                       | 0,029                          | 0,058                           | 0,23                               | 390                           | 2210                                            | 16 x 20                          | ECR1AQL392M◇◇△△1620 |
|                                      | 4 700                      | 0,071                                       | 0,022                          | 0,044                           | 0,25                               | 470                           | 2510                                            | 12,5 x 35                        | ECR1AQL472M◇◇△△1235 |
|                                      | 5 600                      | 0,064                                       | 0,017                          | 0,034                           | 0,27                               | 560                           | 2870                                            | 12,5 x 40                        | ECR1AQL562M◇◇△△1240 |
|                                      |                            | 0,064                                       | 0,022                          | 0,044                           | 0,27                               | 560                           | 2560                                            | 16 x 25                          | ECR1AQL562M◇◇△△1625 |
|                                      |                            | 0,064                                       | 0,028                          | 0,056                           | 0,27                               | 560                           | 2490                                            | 18 x 20                          | ECR1AQL562M◇◇△△1820 |
|                                      | 6 800                      | 0,057                                       | 0,019                          | 0,038                           | 0,29                               | 680                           | 3010                                            | 16 x 31,5                        | ECR1AQL682M◇◇△△1631 |
|                                      |                            | 0,057                                       | 0,020                          | 0,040                           | 0,29                               | 680                           | 2740                                            | 18 x 25                          | ECR1AQL682M◇◇△△1825 |
|                                      | 8 200                      | 0,054                                       | 0,017                          | 0,034                           | 0,33                               | 820                           | 3150                                            | 16 x 35,5                        | ECR1AQL822M◇◇△△1635 |
|                                      |                            | 0,054                                       | 0,018                          | 0,036                           | 0,33                               | 820                           | 3330                                            | 18 x 31,5                        | ECR1AQL822M◇◇△△1831 |
|                                      | 10 000                     | 0,050                                       | 0,015                          | 0,030                           | 0,37                               | 1000                          | 3710                                            | 16 x 40                          | ECR1AQL103M◇◇△△1640 |
|                                      |                            | 0,050                                       | 0,016                          | 0,032                           | 0,37                               | 1000                          | 3680                                            | 18 x 35,5                        | ECR1AQL103M◇◇△△1835 |
|                                      | 12 000                     | 0,046                                       | 0,015                          | 0,030                           | 0,41                               | 1200                          | 3800                                            | 18 x 40                          | ECR1AQL123M◇◇△△1840 |
| 16<br>(20)<br>1C                     | 47                         | 4,52                                        | 0,500                          | 1,00                            | 0,16                               | 8                             | 175                                             | 5 x 11,5                         | ECR1CQL470M◇◇△△0511 |
|                                      | 100                        | 2,13                                        | 0,250                          | 0,500                           | 0,16                               | 16                            | 290                                             | 6,3 x 11,5                       | ECR1CQL101M◇◇△△0611 |
|                                      | 220                        | 0,965                                       | 0,180                          | 0,360                           | 0,16                               | 36                            | 400                                             | 6,3 x 15                         | ECR1CQL221M◇◇△△0615 |
|                                      | 330                        | 0,644                                       | 0,120                          | 0,240                           | 0,16                               | 53                            | 555                                             | 8 x 11,5                         | ECR1CQL331M◇◇△△0811 |
|                                      | 470                        | 0,452                                       | 0,090                          | 0,180                           | 0,16                               | 76                            | 730                                             | 8 x 16                           | ECR1CQL471M◇◇△△0816 |
|                                      |                            | 0,452                                       | 0,090                          | 0,180                           | 0,16                               | 76                            | 760                                             | 10 x 12,5                        | ECR1CQL471M◇◇△△1012 |
|                                      | 560                        | 0,379                                       | 0,080                          | 0,160                           | 0,16                               | 90                            | 810                                             | 8 x 20                           | ECR1CQL561M◇◇△△0820 |
|                                      | 680                        | 0,313                                       | 0,068                          | 0,136                           | 0,16                               | 109                           | 1050                                            | 10 x 16                          | ECR1CQL681M◇◇△△1016 |
|                                      | 1 000                      | 0,213                                       | 0,052                          | 0,104                           | 0,16                               | 160                           | 1220                                            | 10 x 20                          | ECR1CQL102M◇◇△△1020 |
|                                      | 1 200                      | 0,177                                       | 0,045                          | 0,090                           | 0,16                               | 192                           | 1440                                            | 10 x 25                          | ECR1CQL122M◇◇△△1025 |
|                                      | 1 500                      | 0,142                                       | 0,037                          | 0,074                           | 0,16                               | 240                           | 1690                                            | 10 x 30                          | ECR1CQL152M◇◇△△1030 |
|                                      |                            | 0,142                                       | 0,038                          | 0,076                           | 0,16                               | 240                           | 1660                                            | 12,5 x 20                        | ECR1CQL152M◇◇△△1220 |

&gt;&gt;

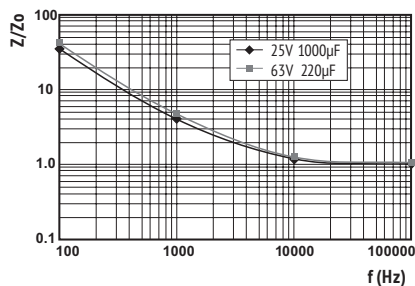


| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance | $Z_{max}$<br>Max Impedance | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current | Size<br>$\varnothing D \times L$ | ORDER CODE                                 |
|--------------------------------------|----------------------------|---------------------------------------------|----------------------------|----------------------------|------------------------------------|-------------------------------|-----------------------------------|----------------------------------|--------------------------------------------|
|                                      |                            | 20°C<br>120kHz                              | 20°C<br>100kHz             | -10°C<br>100kHz            | 20°C<br>120kHz                     |                               | 105°C<br>100kHz                   |                                  | ◇◇ = pin style & length<br>△△ = pitch code |
| (V)                                  | (μF)                       | (Ω)                                         | (Ω)                        | (Ω)                        |                                    | (μA)                          | (mA rms)                          | (mm)                             | Details: Page 33                           |
| 16<br>(20)<br>1C                     | 2 200                      | 0,109                                       | 0,030                      | 0,060                      | 0,18                               | 352                           | 1950                              | 12,5 x 25                        | ECR1CQL222M◇◇△△1225                        |
|                                      | 2 700                      | 0,089                                       | 0,025                      | 0,050                      | 0,18                               | 432                           | 2310                              | 12,5 x 30                        | ECR1CQL272M◇◇△△1230                        |
|                                      |                            | 0,089                                       | 0,029                      | 0,058                      | 0,18                               | 432                           | 2210                              | 16 x 20                          | ECR1CQL272M◇◇△△1620                        |
|                                      | 3 300                      | 0,081                                       | 0,022                      | 0,044                      | 0,20                               | 528                           | 2510                              | 12,5 x 35                        | ECR1CQL332M◇◇△△1235                        |
|                                      | 3 900                      | 0,069                                       | 0,017                      | 0,034                      | 0,20                               | 624                           | 2870                              | 12,5 x 40                        | ECR1CQL392M◇◇△△1240                        |
|                                      |                            | 0,069                                       | 0,022                      | 0,044                      | 0,20                               | 624                           | 2560                              | 16 x 25                          | ECR1CQL392M◇◇△△1625                        |
|                                      |                            | 0,069                                       | 0,028                      | 0,056                      | 0,20                               | 624                           | 2490                              | 18 x 20                          | ECR1CQL392M◇◇△△1820                        |
|                                      | 4 700                      | 0,063                                       | 0,019                      | 0,038                      | 0,22                               | 752                           | 3010                              | 16 x 31,5                        | ECR1CQL472M◇◇△△1631                        |
|                                      |                            | 0,063                                       | 0,020                      | 0,040                      | 0,22                               | 752                           | 2740                              | 18 x 25                          | ECR1CQL472M◇◇△△1825                        |
|                                      | 5 600                      | 0,057                                       | 0,017                      | 0,034                      | 0,24                               | 896                           | 3150                              | 16 x 35,5                        | ECR1CQL562M◇◇△△1635                        |
|                                      |                            | 0,057                                       | 0,018                      | 0,036                      | 0,24                               | 896                           | 3330                              | 18 x 31,5                        | ECR1CQL562M◇◇△△1831                        |
|                                      | 6 800                      | 0,051                                       | 0,015                      | 0,030                      | 0,26                               | 1088                          | 3710                              | 16 x 40                          | ECR1CQL682M◇◇△△1640                        |
|                                      | 8 200                      | 0,049                                       | 0,016                      | 0,032                      | 0,30                               | 1312                          | 3680                              | 18 x 35,5                        | ECR1CQL822M◇◇△△1835                        |
|                                      | 10 000                     | 0,046                                       | 0,015                      | 0,030                      | 0,34                               | 1600                          | 3800                              | 18 x 40                          | ECR1CQL103M◇◇△△1840                        |
| 25<br>(32)<br>1E                     | 47                         | 3,96                                        | 0,500                      | 1,00                       | 0,14                               | 12                            | 175                               | 5 x 11,5                         | ECR1EQL470M◇◇△△0511                        |
|                                      | 100                        | 1,86                                        | 0,250                      | 0,500                      | 0,14                               | 25                            | 290                               | 6,3 x 11,5                       | ECR1EQL101M◇◇△△0611                        |
|                                      | 150                        | 1,24                                        | 0,180                      | 0,360                      | 0,14                               | 38                            | 400                               | 6,3 x 15                         | ECR1EQL151M◇◇△△0615                        |
|                                      | 220                        | 0,845                                       | 0,120                      | 0,240                      | 0,14                               | 55                            | 555                               | 8 x 11,5                         | ECR1EQL221M◇◇△△0811                        |
|                                      | 330                        | 0,563                                       | 0,090                      | 0,180                      | 0,14                               | 83                            | 730                               | 8 x 16                           | ECR1EQL331M◇◇△△0816                        |
|                                      |                            | 0,563                                       | 0,090                      | 0,180                      | 0,14                               | 83                            | 760                               | 10 x 12,5                        | ECR1EQL331M◇◇△△1012                        |
|                                      | 390                        | 0,477                                       | 0,080                      | 0,160                      | 0,14                               | 98                            | 810                               | 8 x 20                           | ECR1EQL391M◇◇△△0820                        |
|                                      | 470                        | 0,396                                       | 0,068                      | 0,136                      | 0,14                               | 118                           | 1050                              | 10 x 16                          | ECR1EQL471M◇◇△△1016                        |
|                                      | 680                        | 0,274                                       | 0,052                      | 0,104                      | 0,14                               | 170                           | 1220                              | 10 x 20                          | ECR1EQL681M◇◇△△1020                        |
|                                      | 820                        | 0,227                                       | 0,045                      | 0,090                      | 0,14                               | 205                           | 1440                              | 10 x 25                          | ECR1EQL821M◇◇△△1025                        |
|                                      | 1 000                      | 0,186                                       | 0,037                      | 0,074                      | 0,14                               | 250                           | 1690                              | 10 x 30                          | ECR1EQL102M◇◇△△1030                        |
|                                      |                            | 0,186                                       | 0,038                      | 0,076                      | 0,14                               | 250                           | 1660                              | 12,5 x 20                        | ECR1EQL102M◇◇△△1220                        |
|                                      | 1 500                      | 0,124                                       | 0,030                      | 0,060                      | 0,14                               | 375                           | 1950                              | 12,5 x 25                        | ECR1EQL152M◇◇△△1225                        |
|                                      | 1 800                      | 0,104                                       | 0,025                      | 0,050                      | 0,14                               | 450                           | 2310                              | 12,5 x 30                        | ECR1EQL182M◇◇△△1230                        |
|                                      |                            | 0,104                                       | 0,029                      | 0,058                      | 0,14                               | 450                           | 2210                              | 16 x 20                          | ECR1EQL182M◇◇△△1620                        |
|                                      | 2 200                      | 0,097                                       | 0,025                      | 0,050                      | 0,16                               | 550                           | 2310                              | 12,5 x 30                        | ECR1EQL222M◇◇△△1230                        |
|                                      |                            | 0,097                                       | 0,022                      | 0,044                      | 0,16                               | 550                           | 2510                              | 12,5 x 35                        | ECR1EQL222M◇◇△△1235                        |
|                                      |                            | 0,097                                       | 0,028                      | 0,056                      | 0,16                               | 550                           | 2490                              | 18 x 20                          | ECR1EQL222M◇◇△△1820                        |
|                                      | 2 700                      | 0,079                                       | 0,017                      | 0,034                      | 0,16                               | 675                           | 2870                              | 12,5 x 40                        | ECR1EQL272M◇◇△△1240                        |
|                                      |                            | 0,079                                       | 0,022                      | 0,044                      | 0,16                               | 675                           | 2560                              | 16 x 25                          | ECR1EQL272M◇◇△△1625                        |
|                                      | 3 300                      | 0,072                                       | 0,022                      | 0,044                      | 0,18                               | 825                           | 2560                              | 16 x 25                          | ECR1EQL332M◇◇△△1625                        |
|                                      |                            | 0,073                                       | 0,019                      | 0,038                      | 0,18                               | 825                           | 3010                              | 16 x 31,5                        | ECR1EQL332M◇◇△△1631                        |
|                                      |                            | 0,072                                       | 0,028                      | 0,056                      | 0,18                               | 825                           | 2490                              | 18 x 20                          | ECR1EQL332M◇◇△△1820                        |
|                                      |                            | 0,073                                       | 0,020                      | 0,040                      | 0,18                               | 825                           | 2740                              | 18 x 25                          | ECR1EQL332M◇◇△△1825                        |
|                                      | 3 900                      | 0,062                                       | 0,017                      | 0,034                      | 0,18                               | 975                           | 3150                              | 16 x 35,5                        | ECR1EQL392M◇◇△△1635                        |
|                                      |                            | 0,062                                       | 0,018                      | 0,036                      | 0,18                               | 975                           | 3330                              | 18 x 31,5                        | ECR1EQL392M◇◇△△1831                        |
|                                      | 4 700                      | 0,057                                       | 0,015                      | 0,030                      | 0,20                               | 1175                          | 3710                              | 16 x 40                          | ECR1EQL472M◇◇△△1640                        |
|                                      |                            | 0,057                                       | 0,016                      | 0,032                      | 0,20                               | 1175                          | 3680                              | 18 x 35,5                        | ECR1EQL472M◇◇△△1835                        |
|                                      | 5 600                      | 0,053                                       | 0,015                      | 0,030                      | 0,22                               | 1400                          | 3800                              | 18 x 40                          | ECR1EQL562M◇◇△△1840                        |
| 35<br>(44)<br>1V                     | 33                         | 4,83                                        | 0,500                      | 1,00                       | 0,12                               | 12                            | 175                               | 5 x 11,5                         | ECR1VQL330M◇◇△△0511                        |
|                                      | 56                         | 2,85                                        | 0,250                      | 0,500                      | 0,12                               | 20                            | 290                               | 6,3 x 11,5                       | ECR1VQL560M◇◇△△0611                        |
|                                      | 100                        | 1,60                                        | 0,180                      | 0,360                      | 0,12                               | 35                            | 400                               | 6,3 x 15                         | ECR1VQL101M◇◇△△0615                        |
|                                      | 150                        | 1,07                                        | 0,120                      | 0,240                      | 0,12                               | 53                            | 555                               | 8 x 11,5                         | ECR1VQL151M◇◇△△0811                        |
|                                      | 220                        | 0,724                                       | 0,090                      | 0,180                      | 0,12                               | 77                            | 730                               | 8 x 16                           | ECR1VQL221M◇◇△△0816                        |
|                                      |                            | 0,724                                       | 0,090                      | 0,180                      | 0,12                               | 77                            | 760                               | 10 x 12,5                        | ECR1VQL221M◇◇△△1012                        |
|                                      | 270                        | 0,590                                       | 0,080                      | 0,160                      | 0,12                               | 95                            | 810                               | 8 x 20                           | ECR1VQL271M◇◇△△0820                        |
|                                      | 330                        | 0,483                                       | 0,068                      | 0,136                      | 0,12                               | 116                           | 1050                              | 10 x 16                          | ECR1VQL331M◇◇△△1016                        |
|                                      | 470                        | 0,339                                       | 0,052                      | 0,104                      | 0,12                               | 165                           | 1220                              | 10 x 20                          | ECR1VQL471M◇◇△△1020                        |
|                                      | 560                        | 0,284                                       | 0,052                      | 0,104                      | 0,12                               | 196                           | 1220                              | 10 x 20                          | ECR1VQL561M◇◇△△1020                        |
|                                      |                            | 0,285                                       | 0,045                      | 0,090                      | 0,12                               | 196                           | 1440                              | 10 x 25                          | ECR1VQL561M◇◇△△1025                        |
|                                      | 680                        | 0,235                                       | 0,037                      | 0,074                      | 0,12                               | 238                           | 1690                              | 10 x 30                          | ECR1VQL681M◇◇△△1030                        |
|                                      |                            | 0,235                                       | 0,038                      | 0,076                      | 0,12                               | 238                           | 1660                              | 12,5 x 20                        | ECR1VQL681M◇◇△△1220                        |
|                                      | 1 000                      | 0,159                                       | 0,039                      | 0,076                      | 0,12                               | 350                           | 1660                              | 12,5 x 20                        | ECR1VQL102M◇◇△△1220                        |
|                                      |                            | 0,160                                       | 0,030                      | 0,060                      | 0,12                               | 350                           | 1950                              | 12,5 x 25                        | ECR1VQL102M◇◇△△1225                        |
|                                      | 1 200                      | 0,133                                       | 0,025                      | 0,050                      | 0,12                               | 420                           | 2310                              | 12,5 x 30                        | ECR1VQL122M◇◇△△1230                        |
|                                      |                            | 0,133                                       | 0,029                      | 0,058                      | 0,12                               | 420                           | 2210                              | 16 x 20                          | ECR1VQL122M◇◇△△1620                        |
|                                      | 1 500                      | 0,107                                       | 0,022                      | 0,044                      | 0,12                               | 525                           | 2510                              | 12,5 x 35                        | ECR1VQL152M◇◇△△1235                        |
|                                      | 1 800                      | 0,089                                       | 0,017                      | 0,034                      | 0,12                               | 630                           | 2870                              | 12,5 x 40                        | ECR1VQL182M◇◇△△1240                        |
|                                      |                            | 0,089                                       | 0,022                      | 0,044                      | 0,12                               | 630                           | 2560                              | 16 x 25                          | ECR1VQL182M◇◇△△1625                        |
|                                      |                            | 0,089                                       | 0,028                      | 0,056                      | 0,12                               | 630                           | 2490                              | 18 x 20                          | ECR1VQL182M◇◇△△1820                        |



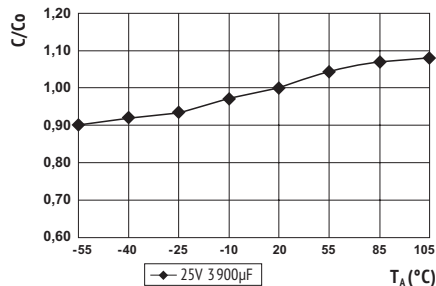
| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance | $Z_{max}$<br>Max Impedance     | $Z_{max}$<br>Max Impedance      | $\tan\delta$<br>Dissipation Factor | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current       | Size       | ORDER CODE                                                                     |
|--------------------------------------|----------------------------|---------------------------------------------|--------------------------------|---------------------------------|------------------------------------|-------------------------------|-----------------------------------------|------------|--------------------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | 20°C<br>120Hz<br>( $\Omega$ )               | 20°C<br>100kHz<br>( $\Omega$ ) | -10°C<br>100kHz<br>( $\Omega$ ) | 20°C<br>120Hz                      | ( $\mu A$ )                   | 105°C<br>100kHz<br>(mA <sub>RMS</sub> ) | (mm)       | <div> <div>◇◇</div> = pin style &amp; length <div>△△</div> = pitch code </div> |
| Details: Page 33                     |                            |                                             |                                |                                 |                                    |                               |                                         |            |                                                                                |
| 35<br>(44)<br>1V                     | 2 200                      | 0,084                                       | 0,022                          | 0,044                           | 0,14                               | 770                           | 2560                                    | 16 x 25    | ECR1VQL222M◇◇△△1625                                                            |
|                                      |                            | 0,085                                       | 0,019                          | 0,038                           | 0,14                               | 770                           | 3010                                    | 16 x 31,5  | ECR1VQL222M◇◇△△1631                                                            |
|                                      |                            | 0,084                                       | 0,028                          | 0,056                           | 0,14                               | 770                           | 2490                                    | 18 x 20    | ECR1VQL222M◇◇△△1820                                                            |
|                                      |                            | 0,085                                       | 0,020                          | 0,040                           | 0,14                               | 770                           | 2740                                    | 18 x 25    | ECR1VQL222M◇◇△△1825                                                            |
|                                      | 2 700                      | 0,069                                       | 0,017                          | 0,034                           | 0,14                               | 945                           | 3150                                    | 16 x 35,5  | ECR1VQL272M◇◇△△1635                                                            |
|                                      |                            | 0,069                                       | 0,018                          | 0,036                           | 0,14                               | 945                           | 3330                                    | 18 x 31,5  | ECR1VQL272M◇◇△△1831                                                            |
|                                      | 3 300                      | 0,065                                       | 0,015                          | 0,030                           | 0,16                               | 1155                          | 3710                                    | 16 x 40    | ECR1VQL332M◇◇△△1640                                                            |
|                                      |                            | 0,065                                       | 0,016                          | 0,032                           | 0,16                               | 1155                          | 3680                                    | 18 x 35,5  | ECR1VQL332M◇◇△△1835                                                            |
|                                      | 3 900                      | 0,055                                       | 0,015                          | 0,030                           | 0,16                               | 1365                          | 3800                                    | 18 x 40    | ECR1VQL392M◇◇△△1840                                                            |
|                                      | 4 700                      | 0,051                                       | 0,015                          | 0,015                           | 0,18                               | 1645                          | 3800                                    | 18 x 40    | ECR1VQL472M◇◇△△1840                                                            |
| 50<br>(63)<br>1H                     | 22                         | 6,04                                        | 0,900                          | 1,80                            | 0,10                               | 11                            | 155                                     | 5 x 11,5   | ECR1HQL220M◇◇△△0511                                                            |
|                                      | 47                         | 2,83                                        | 0,450                          | 0,900                           | 0,10                               | 24                            | 260                                     | 6,3 x 11,5 | ECR1HQL470M◇◇△△0611                                                            |
|                                      | 68                         | 1,96                                        | 0,310                          | 0,620                           | 0,10                               | 34                            | 360                                     | 6,3 x 15   | ECR1HQL680M◇◇△△0615                                                            |
|                                      | 100                        | 1,33                                        | 0,220                          | 0,440                           | 0,10                               | 50                            | 485                                     | 8 x 11,5   | ECR1HQL101M◇◇△△0811                                                            |
|                                      | 120                        | 1,11                                        | 0,160                          | 0,320                           | 0,10                               | 60                            | 635                                     | 8 x 16     | ECR1HQL121M◇◇△△0816                                                            |
|                                      |                            | 1,11                                        | 0,160                          | 0,320                           | 0,10                               | 60                            | 620                                     | 10 x 12,5  | ECR1HQL121M◇◇△△1012                                                            |
|                                      | 180                        | 0,737                                       | 0,120                          | 0,240                           | 0,10                               | 90                            | 730                                     | 8 x 20     | ECR1HQL181M◇◇△△0820                                                            |
|                                      |                            | 0,737                                       | 0,130                          | 0,260                           | 0,10                               | 90                            | 850                                     | 10 x 16    | ECR1HQL181M◇◇△△1016                                                            |
|                                      | 220                        | 0,603                                       | 0,088                          | 0,180                           | 0,10                               | 110                           | 1050                                    | 10 x 20    | ECR1HQL221M◇◇△△1020                                                            |
|                                      | 330                        | 0,402                                       | 0,080                          | 0,160                           | 0,10                               | 165                           | 1250                                    | 10 x 25    | ECR1HQL331M◇◇△△1025                                                            |
|                                      | 390                        | 0,341                                       | 0,065                          | 0,130                           | 0,10                               | 195                           | 1500                                    | 10 x 30    | ECR1HQL391M◇◇△△1030                                                            |
|                                      |                            | 0,341                                       | 0,070                          | 0,140                           | 0,10                               | 195                           | 1480                                    | 12,5 x 20  | ECR1HQL391M◇◇△△1220                                                            |
|                                      | 470                        | 0,280                                       | 0,070                          | 0,140                           | 0,10                               | 235                           | 1480                                    | 12,5 x 20  | ECR1HQL471◇◇△△1220                                                             |
|                                      | 560                        | 0,237                                       | 0,054                          | 0,108                           | 0,10                               | 280                           | 1840                                    | 12,5 x 25  | ECR1HQL561M◇◇△△1225                                                            |
|                                      | 680                        | 0,196                                       | 0,044                          | 0,088                           | 0,10                               | 340                           | 2220                                    | 12,5 x 30  | ECR1HQL681M◇◇△△1230                                                            |
|                                      |                            | 0,196                                       | 0,048                          | 0,096                           | 0,10                               | 340                           | 1840                                    | 16 x 20    | ECR1HQL681M◇◇△△1620                                                            |
|                                      | 820                        | 0,162                                       | 0,033                          | 0,066                           | 0,10                               | 410                           | 2290                                    | 12,5 x 35  | ECR1HQL821M◇◇△△1235                                                            |
|                                      |                            | 0,162                                       | 0,042                          | 0,084                           | 0,10                               | 410                           | 1980                                    | 18 x 20    | ECR1HQL821M◇◇△△1820                                                            |
|                                      | 1 000                      | 0,133                                       | 0,029                          | 0,058                           | 0,10                               | 500                           | 2500                                    | 12,5 x 40  | ECR1HQL102M◇◇△△1240                                                            |
|                                      |                            | 0,133                                       | 0,034                          | 0,068                           | 0,10                               | 500                           | 2240                                    | 16 x 25    | ECR1HQL102M◇◇△△1625                                                            |
|                                      |                            | 0,106                                       | 0,043                          | 0,086                           | 0,08                               | 630                           | 2670                                    | 16 x 31,5  | ECR1JQL102M◇◇△△1631                                                            |
|                                      | 1 200                      | 0,111                                       | 0,028                          | 0,056                           | 0,10                               | 600                           | 2700                                    | 16 x 31,5  | ECR1HQL122M◇◇△△1631                                                            |
|                                      |                            | 0,111                                       | 0,029                          | 0,058                           | 0,10                               | 600                           | 2610                                    | 18 x 25    | ECR1HQL122M◇◇△△1825                                                            |
|                                      | 1 500                      | 0,089                                       | 0,025                          | 0,050                           | 0,10                               | 750                           | 2800                                    | 16 x 35,5  | ECR1HQL152M◇◇△△1635                                                            |
|                                      | 1 800                      | 0,074                                       | 0,021                          | 0,042                           | 0,10                               | 900                           | 3200                                    | 16 x 40    | ECR1HQL182M◇◇△△1640                                                            |
|                                      |                            | 0,074                                       | 0,025                          | 0,050                           | 0,10                               | 900                           | 3000                                    | 18 x 31,5  | ECR1HQL182M◇◇△△1831                                                            |
|                                      | 2 200                      | 0,073                                       | 0,023                          | 0,046                           | 0,12                               | 1100                          | 3100                                    | 18 x 35,5  | ECR1HQL222M◇◇△△1835                                                            |
|                                      | 2 700                      | 0,059                                       | 0,022                          | 0,044                           | 0,12                               | 1350                          | 3400                                    | 18 x 40    | ECR1HQL272M◇◇△△1840                                                            |
| 63<br>(79)<br>1J                     | 12                         | 8,85                                        | 1,90                           | 4,000                           | 0,08                               | 8                             | 145                                     | 5 x 11,5   | ECR1JQL120M◇◇△△0511                                                            |
|                                      | 22                         | 4,83                                        | 1,00                           | 2,000                           | 0,08                               | 14                            | 240                                     | 6,3 x 11,5 | ECR1JQL220M◇◇△△0611                                                            |
|                                      | 39                         | 2,73                                        | 0,610                          | 1,400                           | 0,08                               | 25                            | 330                                     | 6,3 x 15   | ECR1JQL390M◇◇△△0615                                                            |
|                                      | 68                         | 1,57                                        | 0,340                          | 0,750                           | 0,08                               | 43                            | 405                                     | 8 x 11,5   | ECR1JQL680M◇◇△△0811                                                            |
|                                      | 100                        | 1,07                                        | 0,270                          | 0,650                           | 0,08                               | 63                            | 535                                     | 8 x 16     | ECR1JQL101M◇◇△△0816                                                            |
|                                      |                            | 1,07                                        | 0,255                          | 0,510                           | 0,08                               | 63                            | 540                                     | 10 x 12,5  | ECR1JQL101M◇◇△△1012                                                            |
|                                      | 120                        | 0,885                                       | 0,190                          | 0,380                           | 0,08                               | 76                            | 600                                     | 10 x 16    | ECR1JQL121M◇◇△△1016                                                            |
|                                      | 150                        | 0,708                                       | 0,210                          | 0,520                           | 0,08                               | 95                            | 690                                     | 8 x 20     | ECR1JQL151M◇◇△△0820                                                            |
|                                      | 180                        | 0,590                                       | 0,145                          | 0,290                           | 0,08                               | 114                           | 890                                     | 10 x 20    | ECR1JQL181M◇◇△△1020                                                            |
|                                      | 220                        | 0,483                                       | 0,130                          | 0,260                           | 0,08                               | 139                           | 1050                                    | 10 x 25    | ECR1JQL221M◇◇△△1025                                                            |
|                                      | 330                        | 0,322                                       | 0,090                          | 0,180                           | 0,08                               | 208                           | 1300                                    | 10 x 30    | ECR1JQL331M◇◇△△1030                                                            |
|                                      |                            | 0,322                                       | 0,085                          | 0,170                           | 0,08                               | 208                           | 1290                                    | 12,5 x 20  | ECR1JQL331M◇◇△△1220                                                            |
|                                      | 390                        | 0,273                                       | 0,070                          | 0,140                           | 0,08                               | 246                           | 1720                                    | 12,5 x 25  | ECR1JQL391M◇◇△△1225                                                            |
|                                      | 470                        | 0,226                                       | 0,055                          | 0,110                           | 0,08                               | 297                           | 2090                                    | 12,5 x 30  | ECR1JQL471M◇◇△△1230                                                            |
|                                      |                            | 0,226                                       | 0,059                          | 0,120                           | 0,08                               | 297                           | 1770                                    | 16 x 20    | ECR1JQL471M◇◇△△1620                                                            |
|                                      | 680                        | 0,157                                       | 0,047                          | 0,094                           | 0,08                               | 429                           | 2270                                    | 12,5 x 35  | ECR1JQL681M◇◇△△1235                                                            |
|                                      |                            | 0,157                                       | 0,050                          | 0,100                           | 0,08                               | 429                           | 2160                                    | 16 x 25    | ECR1JQL681M◇◇△△1625                                                            |
|                                      |                            | 0,157                                       | 0,055                          | 0,110                           | 0,08                               | 429                           | 2290                                    | 18 x 20    | ECR1JQL681M◇◇△△1820                                                            |
|                                      | 820                        | 0,130                                       | 0,042                          | 0,084                           | 0,08                               | 517                           | 2560                                    | 12,5 x 40  | ECR1JQL821M◇◇△△1240                                                            |
|                                      |                            | 0,130                                       | 0,043                          | 0,086                           | 0,08                               | 517                           | 2670                                    | 16 x 31,5  | ECR1JQL821M◇◇△△1631                                                            |
|                                      |                            | 0,130                                       | 0,043                          | 0,086                           | 0,08                               | 517                           | 2590                                    | 18 x 25    | ECR1JQL821M◇◇△△1825                                                            |
|                                      | 1 000                      | 0,107                                       | 0,043                          | 0,086                           | 0,08                               | 630                           | 2670                                    | 16 x 31,5  | ECR1JQL102M◇◇△△1631                                                            |
|                                      |                            | 0,107                                       | 0,036                          | 0,072                           | 0,08                               | 630                           | 2770                                    | 16 x 35,5  | ECR1JQL102M◇◇△△1635                                                            |
|                                      | 1 200                      | 0,089                                       | 0,030                          | 0,060                           | 0,08                               | 756                           | 2850                                    | 16 x 40    | ECR1JQL122M◇◇△△1640                                                            |
|                                      |                            | 0,089                                       | 0,032                          | 0,064                           | 0,08                               | 756                           | 2950                                    | 18 x 31,5  | ECR1JQL122M◇◇△△1831                                                            |
|                                      | 1 500                      | 0,071                                       | 0,030                          | 0,060                           | 0,08                               | 945                           | 3100                                    | 18 x 35,5  | ECR1JQL152M◇◇△△1835                                                            |
|                                      | 1 800                      | 0,059                                       | 0,025                          | 0,050                           | 0,08                               | 1134                          | 3210                                    | 18 x 40    | ECR1JQL182M◇◇△△1840                                                            |
|                                      | 2 200                      | 0,048                                       | 0,025                          | 0,050                           | 0,08                               | 1386                          | 3210                                    | 18 x 40    | ECR1JQL222M◇◇△△1840                                                            |

## IMPEDANCE RATIO



$Z$  = actual impedance of each frequency at 20°C,  
 $Z_o$  = Impedance at 100kHz, 20°C  
Impedance Ratio as a function of frequency

## CAPACITANCE RATIO



$C$  = actual capacitance of each temperature at 100Hz,  
 $C_o$  = Capacitance at 20°C, 100Hz  
Capacitance Ratio as a function of temperature (typical curve)



# ELECTROLYTIC CAPACITORS

*Snap-In Type*

## OVERVIEW SNAP-IN

103

Portfolio: All Snap-In Type at a glance

104

Order Code

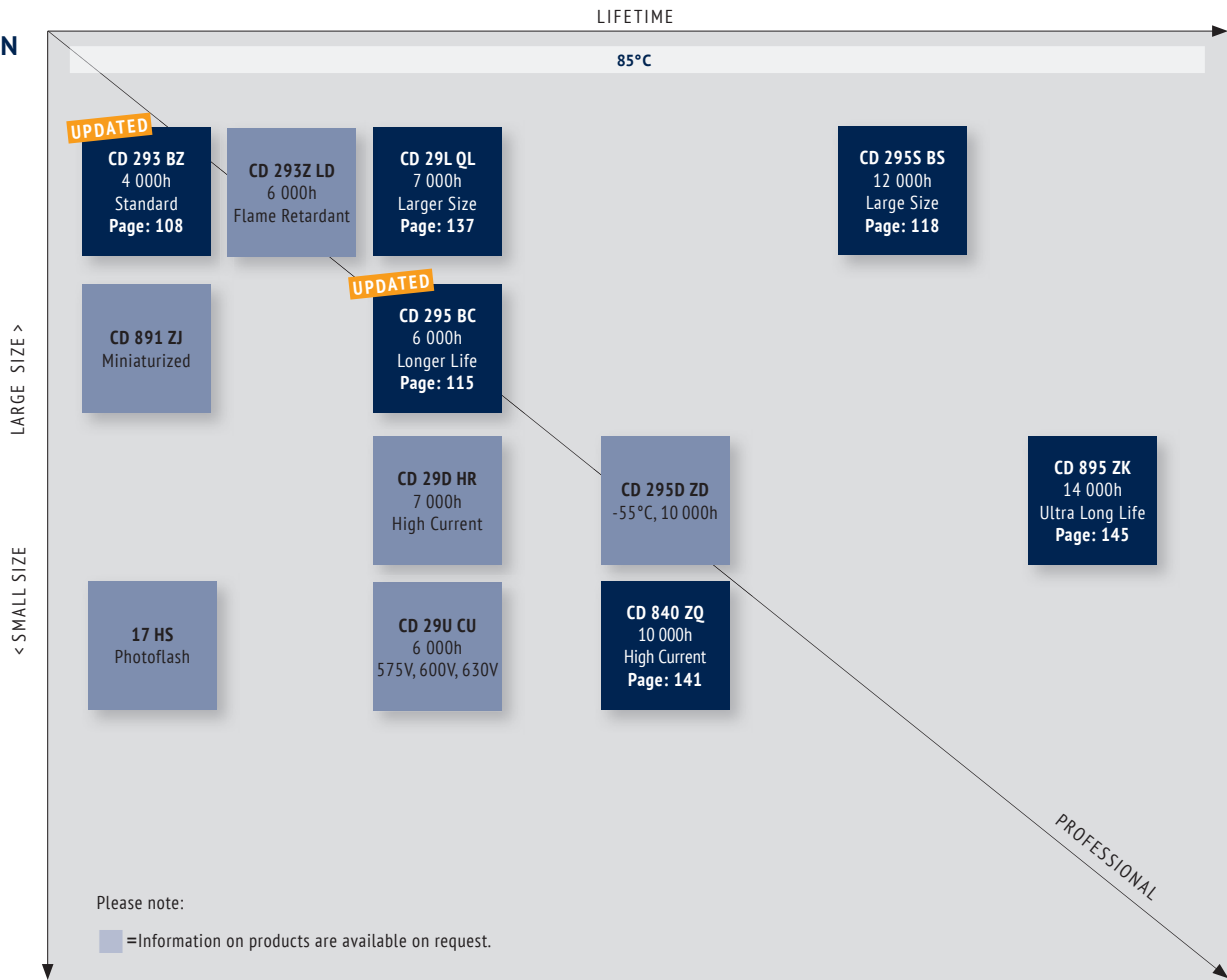
105

Technical Specifications

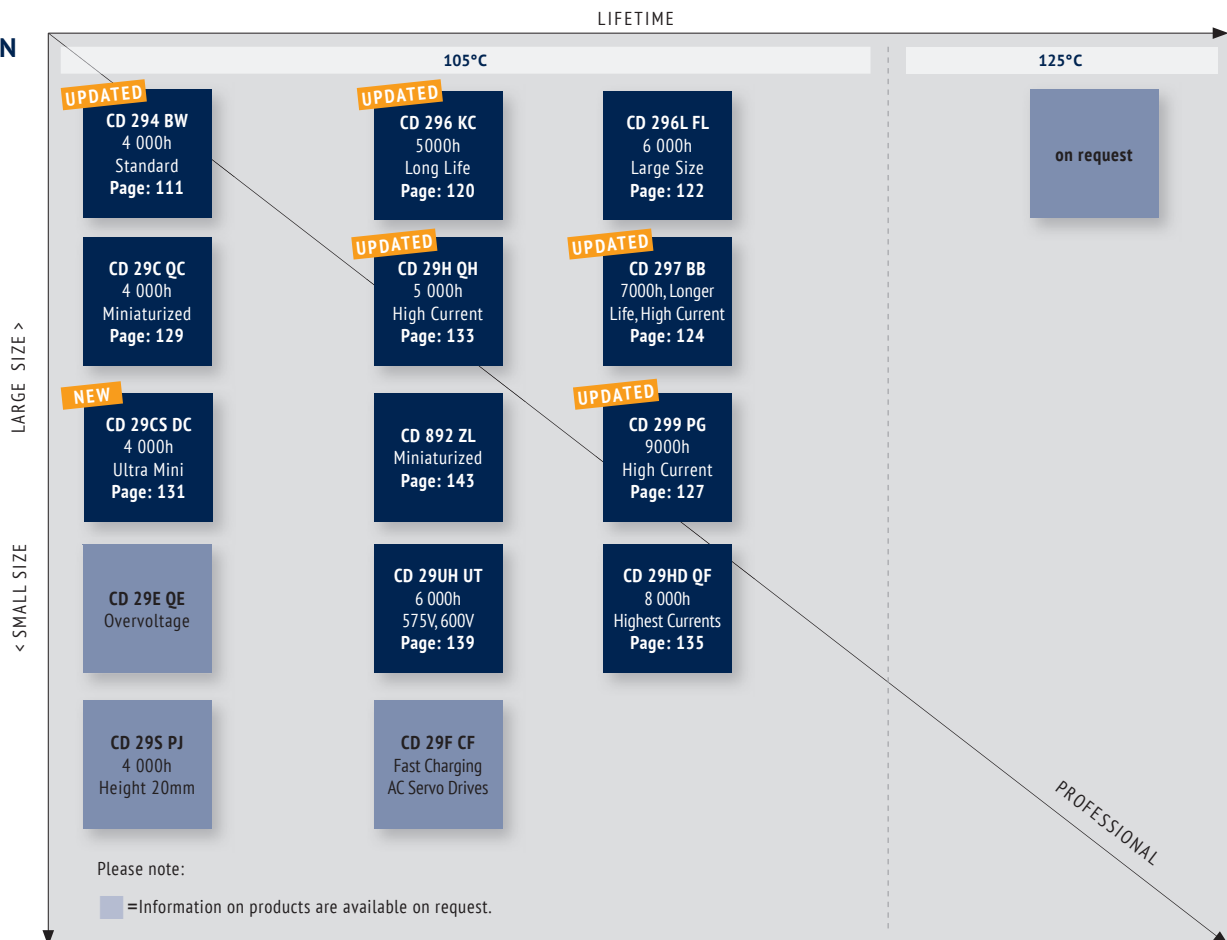
106

| SERIES  | SNAP-IN | CODE | TYPE    | TEMPERATURE  | VOLTAGE    | LIFETIME | INFO                          |     |
|---------|---------|------|---------|--------------|------------|----------|-------------------------------|-----|
| CD 293  | UPDATED | BZ   | Snap-In | 85°C         | 10~500V    | 4 000h   | Standard                      | 108 |
| CD 294  | UPDATED | BW   | Snap-In | 105°C        | 16~550V    | 4 000h   | Standard                      | 111 |
| CD 295  | UPDATED | BC   | Snap-In | 85°C         | 10~500V    | 6 000h   | Long Life                     | 115 |
| CD 295S |         | BS   | Snap-In | 85°C (105°C) | 160~500V   | 12 000h  | 12 000h, Enlarged Temperature | 118 |
| CD 296  | UPDATED | KC   | Snap-In | 105°C        | 16~550V    | 5 000h   | Long Life                     | 120 |
| CD 296L |         | FL   | Snap-In | 105°C        | 350~500V   | 6 000h   | Large Size 105°C              | 122 |
| CD 297  | UPDATED | BB   | Snap-In | 105°C        | 10~500V    | 7000h    | Longer Life, High Current     | 124 |
| CD 299  | UPDATED | PG   | Snap-In | 105°C        | 160~500V   | 9 000h   | High Current                  | 127 |
| CD 29C  |         | QC   | Snap-In | 105°C        | 200~450V   | 4 000h   | Miniaturized 105°C            | 129 |
| CD 29CS | NEW     | DS   | Snap-In | 105°C        | 400~450V   | 4 000h   | Ultra Mini                    | 131 |
| CD 29H  | UPDATED | QH   | Snap-In | 105°C        | 160~450V   | 5 000h   | Long Life, Highest Currents   | 133 |
| CD 29HD |         | QF   | Snap-In | 105°C        | 200~450V   | 8 000h   | Outstanding Ripple Current    | 135 |
| CD 29L  |         | QL   | Snap-In | 85°C         | 16~500V    | 7 000h   | Long Life, Large Size         | 137 |
| CD 29UH |         | UT   | Snap-In | 105°C        | 575V, 600V | 6 000h   | 575V, 600V at 105°C           | 139 |
| CD 840  |         | ZQ   | Snap-In | 85°C         | 200~450V   | 10 000h  | 10 000h High Current          | 141 |
| CD 892  |         | ZL   | Snap-In | 105°C        | 400~500V   | 5 000h   | Miniaturized, Long Life       | 143 |
| CD 895  |         | ZK   | Snap-In | 85°C         | 16~500V    | 14 000h  | Ultra Long Life               | 145 |

## SNAP-IN 85°C



## SNAP-IN 105°C/ 125°C

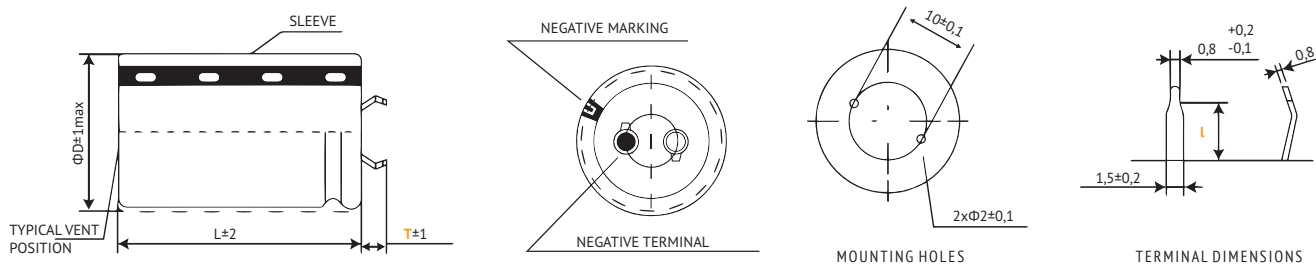


## ORDER CODE SNAP-IN TYPE

| EC                                | S                | 2G                       | QC             | 221                 | M                        | T6                                                        | P2                  | 2535              | -                | JExxxxx                 |
|-----------------------------------|------------------|--------------------------|----------------|---------------------|--------------------------|-----------------------------------------------------------|---------------------|-------------------|------------------|-------------------------|
| Techno-<br>logy                   | Terminal<br>Type | Rated<br>Voltage<br>Code | Series<br>Code | Capacitance<br>Code | Capacitance<br>Tolerance | Terminal<br>Style                                         | Terminal /<br>Pitch | Dimension<br>(mm) | Material<br>Code | for<br>Specials<br>only |
| EC<br>= Electrolytic<br>Capacitor | Snap-In S        | 6,3V 0J                  | CD 293 BZ      | 0,1 0R1             | ±20% M                   | 4,0mm Pin Length T/L4                                     | 2 Pin P2            | 22x40 2240        | Standard -       |                         |
|                                   |                  | 10V 1A                   | CD 294 BW      | 0,47 R47            | ±10% K                   | 6,3mm Pin Length T/L6                                     | 3 Pin P3            | 30x45 3045        | PVC V            |                         |
|                                   |                  | 16V 1C                   | CD 295 BC      | 1,0 010             | +30/-10% Q               | Soldering Pin S4                                          | 4 Pin P4            | 35x80 3580        | PET E            |                         |
|                                   |                  | 20V 1D                   | CD 295S BS     | 2,2 2R2             | +20/-0% R                | on request:<br>alternative pin types<br><br>■ = preferred | 5 Pin P5            | 45x100 45100      |                  |                         |
|                                   |                  | 25V 1E                   | CD 296 KC      | 100 101             | ±15% L                   |                                                           | 6 Pin P6            | 50x105 50105      |                  |                         |
|                                   |                  | 35V 1V                   | CD 296L FL     | 1 000 102           | +20/-10% V               |                                                           |                     |                   |                  |                         |
|                                   |                  | 40V 1G                   | CD 297 BB      | 10 000 103          |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 50V 1H                   | CD 299 PG      |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 63V 1J                   | CD 29C QC      |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 80V 1K                   | CD 29CS DS     |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 100V 2A                  | CD 29H QH      |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 125V 2B                  | CD 29HD QF     |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 160V 2C                  | CD 29L QL      |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 180V 2K                  | CD 29U CU      |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 200V 2D                  | CD 29UH UT     |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 250V 2E                  | CD 840 ZQ      |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 315V 2F                  | CD 891 ZJ      |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 350V 2V                  | CD 892 ZL      |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 385V 2J                  | CD 895 ZK      |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 400V 2G                  |                |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 415V 2P                  |                |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 420V 2X                  |                |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 450V 2W                  |                |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 500V 2H                  |                |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 550V 2Y                  |                |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 575V 2Z                  |                |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 600V 2S                  |                |                     |                          |                                                           |                     |                   |                  |                         |
|                                   |                  | 630V J2                  |                |                     |                          |                                                           |                     |                   |                  |                         |



## 2 PIN TYPE: T6P2 / T4P2 STANDARD



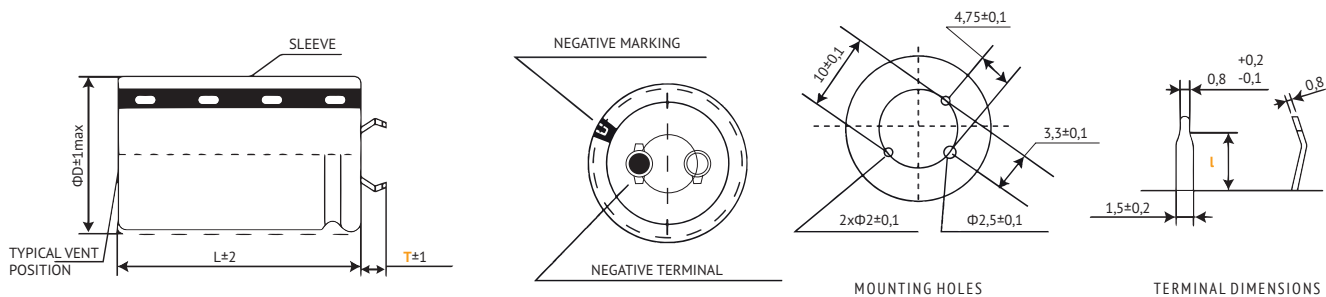
Standard Version: Self-Lock Terminal. Other terminal types and styles on request.  
For diameter  $\phi D \geq 45$  mm the safety vent is typically placed at the side of the housing.

| Terminal       | T6 (preferred) | T4     |
|----------------|----------------|--------|
| Pin Length $T$ | 6,3 mm         | 4,0 mm |
| Pin Detail $L$ | 3,5 mm         | 2,5 mm |

❗ Max. Current Snap-In Terminal: 15A  
For more current please ask for Lug-Terminals.

in mm

## 3 PIN TYPE: T4P3



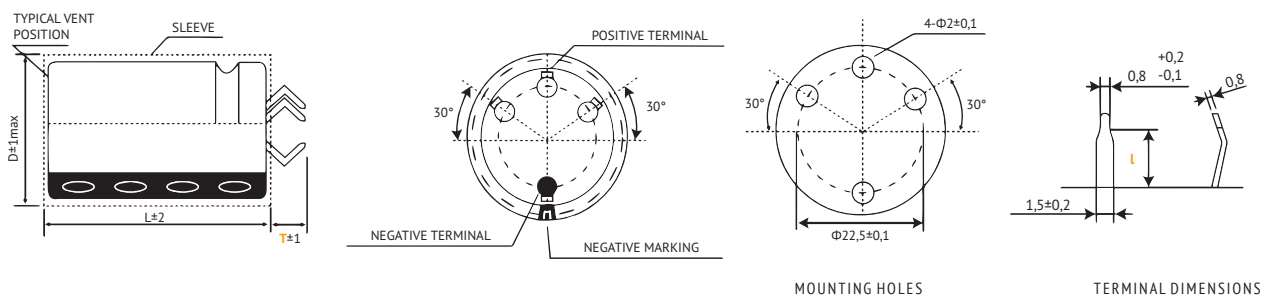
For diameter  $\phi D \geq 45$  mm the safety vent is typically placed at the side of the housing.

| Terminal       | T6 | T4     |
|----------------|----|--------|
| Pin Length $T$ | -  | 4,0 mm |
| Pin Detail $L$ | -  | 2,5 mm |

❗ Max. Current Snap-In Terminal: 15A  
For more current please ask for Lug-Terminals.

in mm

## 4 PIN TYPE: T6P4/T4P4 STANDARD



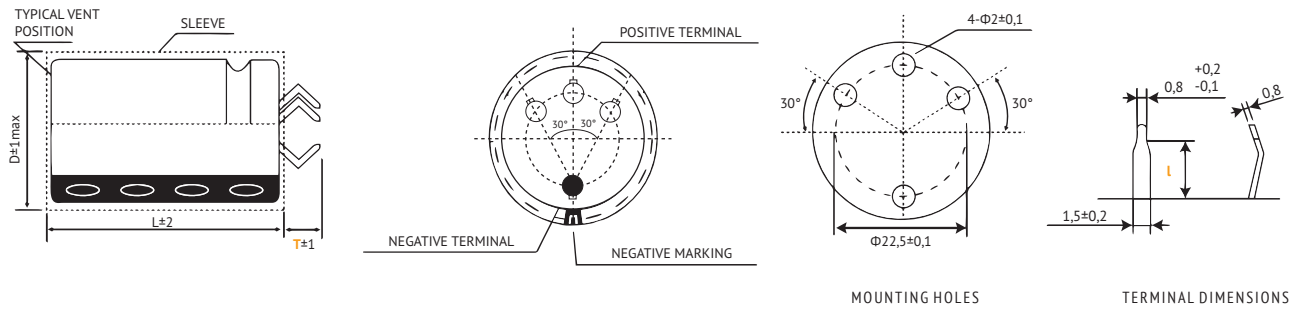
Standard Version: Non-Lock-Terminal. Other terminal types and styles on request.  
For  $\phi D \geq 30$  mm only.  
For diameter  $\phi D \geq 45$  mm the safety vent is typically placed at the side of the housing.

| Terminal       | T6 (preferred) | T4     |
|----------------|----------------|--------|
| Pin Length $T$ | 6,3 mm         | 4,0 mm |
| Pin Detail $L$ | 3,5 mm         | 2,5 mm |

❗ Max. Current Snap-In Terminal: 15A  
For more current please ask for Lug-Terminals.

in mm

## 4 PIN TYPE: L6P4/L4P4 SELF-LOCK TERMINAL



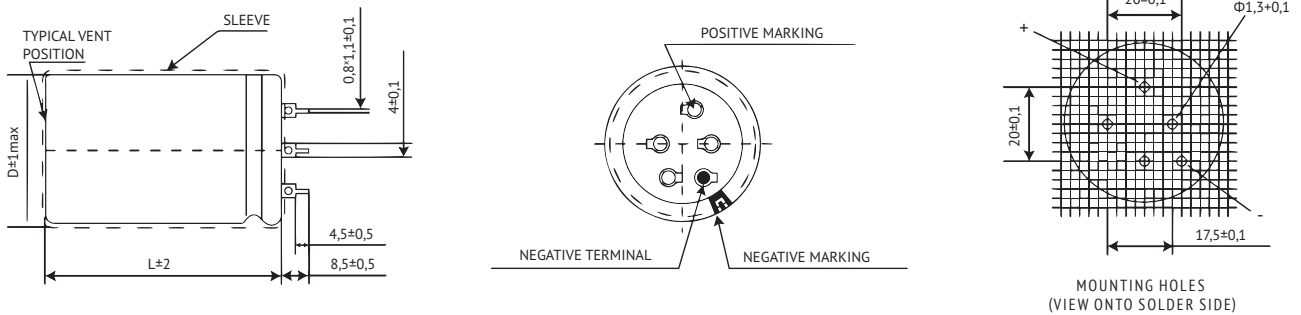
For  $\varnothing D \geq 30\text{mm}$  only. Other terminal types and styles on request.  
For diameter  $\varnothing D \geq 45\text{mm}$  the safety vent is typically placed at the side of the housing.

| Terminal       | T6 (preferred) | T4     |
|----------------|----------------|--------|
| Pin Length $T$ | 6,3 mm         | 4,0 mm |
| Pin Detail $l$ | 3,5 mm         | 2,5 mm |

⚠ Max. Current Snap-In Terminal: 15A  
For more current please ask for Lug-Terminals.

in mm

## 5 PIN TYPE: S4P5 SOLDERING PIN

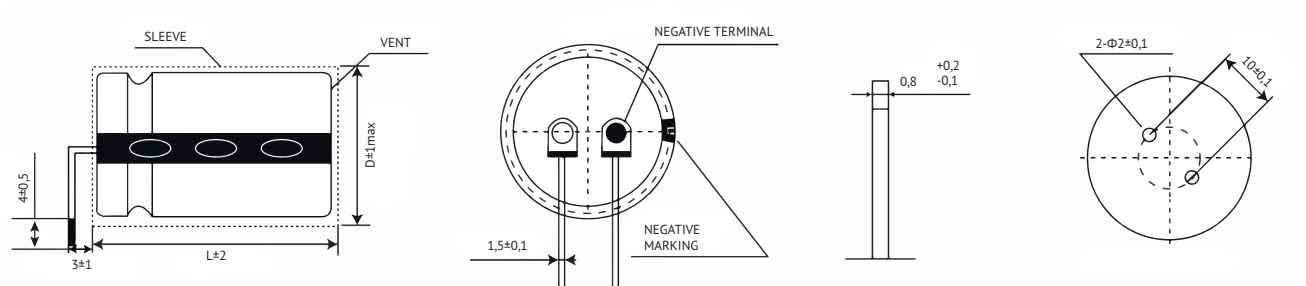


For  $\varnothing D \geq 30\text{mm}$  only.  
For diameter  $\varnothing D \geq 45\text{mm}$  the safety vent is typically placed at the side of the housing.

⚠ Max. Current Snap-In Terminal: 15A  
For more current please ask for Lug-Terminals.

in mm

## EXAMPLE: AXIAL MOUNTING



For  $\varnothing D \geq 25\text{mm}$  only.  
Available also for high vibration usage.

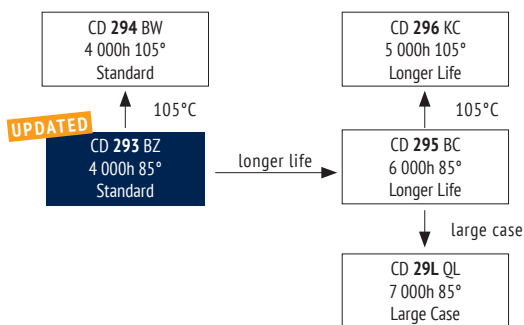
⚠ Max. Current Snap-In Terminal: 15A  
For more current please ask for Lug-Terminals.

in mm

Other Terminal Styles on request.

4 000h at 85°C

· Standard 85°C



## ITEM CHARACTERISTICS

|                                     |             |           |
|-------------------------------------|-------------|-----------|
| Operating Temperature Range (°C)    | -40 ~ +85   | -25 ~ +85 |
| Voltage Range (V)                   | 10 ~ 400    | 420 ~ 500 |
| Capacitance Range (μF)              | 68 ~ 82 000 |           |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%       |           |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V) | 10 | 16-35 | 50-100 | 160-200 | 250-400 | 420-500 |
|---------------------------------------------------------|-------------------|----|-------|--------|---------|---------|---------|
| $Z_{-25°C} / Z_{+20°C}$                                 |                   | 5  | 4     | 3      |         | 4       |         |
| $Z_{-40°C} / Z_{+20°C}$                                 |                   | 18 | 15    | 10     | 6       | 8       | -       |

Fast Charge-Discharge Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

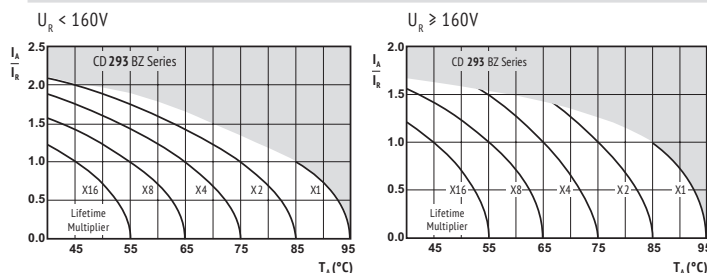
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                          | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | 4 000h                                | > 65 000h                         | 2 000h                                | 3 000h                                  | 1 000h                                |                                                                              |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value           | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 15% of initial value         | Within ± 20% of initial value           | Within ± 15% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 150% of specified value | Not more than 200% of specified value   | Not more than 150% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$1,2 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$I_R = 0$<br>85°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>85°C        | After test:<br>$U_R$ to be applied<br>for 30 min > 24h<br>before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency<br>Rated Voltage (V) | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | 100kHz |
|--------------------------------|------|-------|-------|------|-------|--------|
| ≤ 50                           | 0,88 | 1,00  | 1,07  | 1,15 | 1,15  | 1,15   |
| 63 ~ 100                       | 0,80 | 1,00  | 1,17  | 1,32 | 1,45  | 1,50   |
| ≥ 160                          | 0,80 | 1,00  | 1,16  | 1,30 | 1,41  | 1,43   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 85°C  
Multiplier of Useful Life as a function of  
ambient temperature & ripple current load

$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 85°C  
Multiplier of Useful Life as a function of  
ambient temperature & ripple current load

Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)



## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                 | (mm)           |                                                                               |
| <b>10</b><br><b>(13)</b><br><b>1A</b>       | 18 000                              | 30                                                               | 24                                                               | 0,40                                     | 1,5                                  | 3,60                                                   | 25x30          | ECS1ABZ183M◇◇△△2530                                                           |
|                                             | 22 000                              | 25                                                               | 20                                                               | 0,40                                     | 1,5                                  | 4,00                                                   | 22x40          | ECS1ABZ223M◇◇△△2240                                                           |
|                                             |                                     | 25                                                               | 20                                                               | 0,40                                     | 1,5                                  | 4,10                                                   | 25x35          | ECS1ABZ223M◇◇△△2535                                                           |
|                                             | 33 000                              | 17                                                               | 13                                                               | 0,40                                     | 1,5                                  | 4,60                                                   | 25x40          | ECS1ABZ333M◇◇△△2540                                                           |
|                                             |                                     | 17                                                               | 13                                                               | 0,40                                     | 1,5                                  | 4,80                                                   | 30x30          | ECS1ABZ333M◇◇△△3030                                                           |
|                                             | 39 000                              | 14                                                               | 10,9                                                             | 0,40                                     | 1,5                                  | 5,20                                                   | 25x45          | ECS1ABZ393M◇◇△△2545                                                           |
|                                             |                                     | 14                                                               | 10,9                                                             | 0,40                                     | 1,5                                  | 5,30                                                   | 30x35          | ECS1ABZ393M◇◇△△3035                                                           |
|                                             | 47 000                              | 12                                                               | 9,1                                                              | 0,40                                     | 1,5                                  | 6,00                                                   | 30x40          | ECS1ABZ473M◇◇△△3040                                                           |
|                                             |                                     | 12                                                               | 9,1                                                              | 0,40                                     | 1,5                                  | 6,00                                                   | 35x30          | ECS1ABZ473M◇◇△△3530                                                           |
|                                             | 56 000                              | 9,5                                                              | 7,6                                                              | 0,40                                     | 1,5                                  | 6,80                                                   | 35x35          | ECS1ABZ563M◇◇△△3535                                                           |
|                                             | 68 000                              | 7,9                                                              | 6,3                                                              | 0,40                                     | 1,5                                  | 7,70                                                   | 35x40          | ECS1ABZ683M◇◇△△3540                                                           |
|                                             | 82 000                              | 6,5                                                              | 5,2                                                              | 0,40                                     | 1,5                                  | 8,70                                                   | 35x45          | ECS1ABZ823M◇◇△△3545                                                           |

|                                       |        |     |     |      |     |      |       |                     |
|---------------------------------------|--------|-----|-----|------|-----|------|-------|---------------------|
| <b>16</b><br><b>(20)</b><br><b>1C</b> | 15 000 | 36  | 29  | 0,40 | 1,5 | 3,30 | 22x40 | ECS1CBZ153M◇◇△△2240 |
|                                       |        | 36  | 29  | 0,40 | 1,5 | 3,30 | 25x30 | ECS1CBZ153M◇◇△△2530 |
|                                       | 18 000 | 30  | 24  | 0,40 | 1,5 | 3,80 | 22x45 | ECS1CBZ183M◇◇△△2245 |
|                                       |        | 30  | 24  | 0,40 | 1,5 | 3,70 | 25x35 | ECS1CBZ183M◇◇△△2535 |
|                                       | 22 000 | 25  | 20  | 0,40 | 1,5 | 4,20 | 25x40 | ECS1CBZ223M◇◇△△2540 |
|                                       |        | 25  | 20  | 0,40 | 1,5 | 4,20 | 30x30 | ECS1CBZ223M◇◇△△3030 |
|                                       | 27 000 | 20  | 16  | 0,40 | 1,5 | 5,00 | 25x45 | ECS1CBZ273M◇◇△△2545 |
|                                       |        | 20  | 16  | 0,40 | 1,5 | 5,00 | 30x35 | ECS1CBZ273M◇◇△△3035 |
|                                       | 33 000 | 17  | 13  | 0,40 | 1,5 | 5,60 | 35x30 | ECS1CBZ333M◇◇△△3530 |
|                                       | 39 000 | 14  | 11  | 0,40 | 1,5 | 6,30 | 35x35 | ECS1CBZ393M◇◇△△3535 |
|                                       | 47 000 | 12  | 9,1 | 0,40 | 1,5 | 7,20 | 35x40 | ECS1CBZ473M◇◇△△3540 |
|                                       | 56 000 | 9,5 | 7,6 | 0,40 | 1,5 | 8,00 | 35x45 | ECS1CBZ563M◇◇△△3545 |

|                                       |        |    |    |      |     |      |       |                     |
|---------------------------------------|--------|----|----|------|-----|------|-------|---------------------|
| <b>25</b><br><b>(32)</b><br><b>1E</b> | 10 000 | 47 | 38 | 0,35 | 1,5 | 2,90 | 22x40 | ECS1EBZ103M◇◇△△2240 |
|                                       |        | 47 | 38 | 0,35 | 1,5 | 2,80 | 25x30 | ECS1EBZ103M◇◇△△2530 |
|                                       | 12 000 | 39 | 31 | 0,35 | 1,5 | 3,20 | 25x35 | ECS1EBZ123M◇◇△△2535 |
|                                       |        | 39 | 31 | 0,35 | 1,5 | 3,40 | 30x30 | ECS1EBZ123M◇◇△△3030 |
|                                       | 15 000 | 31 | 25 | 0,35 | 1,5 | 3,70 | 25x40 | ECS1EBZ153M◇◇△△2540 |
|                                       |        | 31 | 25 | 0,35 | 1,5 | 3,90 | 35x25 | ECS1EBZ153M◇◇△△3525 |
|                                       | 18 000 | 26 | 21 | 0,35 | 1,5 | 4,20 | 30x35 | ECS1EBZ183M◇◇△△3035 |
|                                       |        | 26 | 21 | 0,35 | 1,5 | 4,40 | 35x30 | ECS1EBZ183M◇◇△△3530 |
|                                       | 22 000 | 22 | 17 | 0,35 | 1,5 | 5,00 | 35x35 | ECS1EBZ223M◇◇△△3535 |
|                                       | 33 000 | 15 | 12 | 0,35 | 1,5 | 6,50 | 35x40 | ECS1EBZ333M◇◇△△3540 |
|                                       | 39 000 | 12 | 10 | 0,35 | 1,5 | 7,50 | 35x45 | ECS1EBZ393M◇◇△△3545 |
|                                       | 47 000 | 10 | 8  | 0,35 | 1,5 | 8,80 | 35x50 | ECS1EBZ473M◇◇△△3550 |

|                                       |        |    |    |      |     |      |       |                     |
|---------------------------------------|--------|----|----|------|-----|------|-------|---------------------|
| <b>35</b><br><b>(44)</b><br><b>1V</b> | 5 600  | 72 | 57 | 0,30 | 1,5 | 2,30 | 22x35 | ECS1VBZ562M◇◇△△2235 |
|                                       |        | 72 | 57 | 0,30 | 1,5 | 2,30 | 25x30 | ECS1VBZ562M◇◇△△2530 |
|                                       | 6 800  | 59 | 47 | 0,30 | 1,5 | 2,90 | 22x40 | ECS1VBZ682M◇◇△△2240 |
|                                       |        | 59 | 47 | 0,30 | 1,5 | 2,60 | 25x35 | ECS1VBZ682M◇◇△△2535 |
|                                       | 8 200  | 57 | 46 | 0,35 | 1,5 | 2,80 | 25x40 | ECS1VBZ822M◇◇△△2540 |
|                                       |        | 57 | 46 | 0,35 | 1,5 | 2,80 | 30x30 | ECS1VBZ822M◇◇△△3030 |
|                                       | 10 000 | 47 | 38 | 0,35 | 1,5 | 3,20 | 30x35 | ECS1VBZ103M◇◇△△3035 |
|                                       | 12 000 | 39 | 31 | 0,35 | 1,5 | 3,60 | 35x30 | ECS1VBZ123M◇◇△△3530 |
|                                       | 15 000 | 31 | 25 | 0,35 | 1,5 | 4,10 | 35x35 | ECS1VBZ153M◇◇△△3535 |
|                                       | 18 000 | 26 | 21 | 0,35 | 1,5 | 4,70 | 35x40 | ECS1VBZ183M◇◇△△3540 |
|                                       | 22 000 | 22 | 17 | 0,35 | 1,5 | 5,30 | 35x45 | ECS1VBZ223M◇◇△△3545 |
|                                       | 27 000 | 18 | 14 | 0,35 | 1,5 | 7,00 | 35x50 | ECS1VBZ273M◇◇△△3550 |

|                                       |        |     |    |      |     |      |       |                     |
|---------------------------------------|--------|-----|----|------|-----|------|-------|---------------------|
| <b>50</b><br><b>(63)</b><br><b>1H</b> | 2 200  | 120 | 97 | 0,25 | 1,5 | 1,70 | 22x25 | ECS1HBZ222M◇◇△△2225 |
|                                       | 3 900  | 86  | 69 | 0,25 | 1,5 | 2,10 | 25x30 | ECS1HBZ392M◇◇△△2530 |
|                                       | 4 700  | 71  | 57 | 0,25 | 1,5 | 2,40 | 22x40 | ECS1HBZ472M◇◇△△2240 |
|                                       |        | 71  | 57 | 0,25 | 1,5 | 2,40 | 25x35 | ECS1HBZ472M◇◇△△2535 |
|                                       | 5 600  | 72  | 57 | 0,30 | 1,5 | 2,50 | 25x40 | ECS1HBZ562M◇◇△△2540 |
|                                       |        | 72  | 57 | 0,30 | 1,5 | 2,50 | 30x30 | ECS1HBZ562M◇◇△△3030 |
|                                       | 6 800  | 59  | 47 | 0,30 | 1,5 | 2,80 | 25x45 | ECS1HBZ682M◇◇△△2545 |
|                                       |        | 59  | 47 | 0,30 | 1,5 | 2,80 | 30x35 | ECS1HBZ682M◇◇△△3035 |
|                                       | 8 200  | 57  | 46 | 0,35 | 1,5 | 3,00 | 30x40 | ECS1HBZ822M◇◇△△3040 |
|                                       |        | 57  | 46 | 0,35 | 1,5 | 3,00 | 35x30 | ECS1HBZ822M◇◇△△3530 |
|                                       | 10 000 | 47  | 38 | 0,35 | 1,5 | 3,40 | 35x35 | ECS1HBZ103M◇◇△△3535 |
|                                       | 12 000 | 39  | 31 | 0,35 | 1,5 | 3,80 | 35x40 | ECS1HBZ123M◇◇△△3540 |
|                                       | 15 000 | 31  | 25 | 0,35 | 1,5 | 4,50 | 35x50 | ECS1HBZ153M◇◇△△3550 |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                 | (mm)           |                                                                               |
| <b>63</b><br><b>(79)</b><br><b>1I</b>       | 2 700                               | 74                                                               | 59                                                               | 0,15                                     | 1,5                                  | 2,30                                                   | 25x30          | ECS1JBZ272M◇◇△△2530                                                           |
|                                             | 3 300                               | 81                                                               | 65                                                               | 0,20                                     | 1,5                                  | 2,30                                                   | 22x40          | ECS1JBZ332M◇◇△△2240                                                           |
|                                             |                                     | 81                                                               | 65                                                               | 0,20                                     | 1,5                                  | 2,30                                                   | 25x35          | ECS1JBZ332M◇◇△△2535                                                           |
|                                             | 3 900                               | 69                                                               | 55                                                               | 0,20                                     | 1,5                                  | 2,60                                                   | 25x40          | ECS1JBZ392M◇◇△△2540                                                           |
|                                             |                                     | 69                                                               | 55                                                               | 0,20                                     | 1,5                                  | 2,60                                                   | 30x30          | ECS1JBZ392M◇◇△△3030                                                           |
|                                             | 4 700                               | 56                                                               | 45                                                               | 0,20                                     | 1,5                                  | 3,00                                                   | 25x45          | ECS1JBZ472M◇◇△△2545                                                           |
|                                             |                                     | 57                                                               | 45                                                               | 0,20                                     | 1,5                                  | 3,00                                                   | 30x30          | ECS1JBZ472M◇◇△△3030                                                           |
|                                             | 5 600                               | 48                                                               | 38                                                               | 0,20                                     | 1,5                                  | 3,30                                                   | 35x30          | ECS1JBZ562M◇◇△△3530                                                           |
|                                             | 6 800                               | 40                                                               | 32                                                               | 0,20                                     | 1,5                                  | 3,70                                                   | 35x35          | ECS1JBZ682M◇◇△△3535                                                           |
|                                             | 8 200                               | 41                                                               | 33                                                               | 0,25                                     | 1,5                                  | 3,80                                                   | 35x40          | ECS1JBZ822M◇◇△△3540                                                           |
|                                             | 10 000                              | 34                                                               | 27                                                               | 0,25                                     | 1,5                                  | 4,30                                                   | 35x45          | ECS1JBZ103M◇◇△△3545                                                           |
|                                             | 12 000                              | 28                                                               | 23                                                               | 0,25                                     | 1,5                                  | 4,80                                                   | 35x50          | ECS1JBZ123M◇◇△△3550                                                           |

|                                        |        |     |    |      |     |      |       |                     |
|----------------------------------------|--------|-----|----|------|-----|------|-------|---------------------|
| <b>80</b><br><b>(100)</b><br><b>1K</b> | 1 800  | 111 | 89 | 0,15 | 1,4 | 1,90 | 25x30 | ECS1KBZ182M◇◇△△2530 |
|                                        | 2 200  | 91  | 73 | 0,15 | 1,5 | 2,20 | 25x35 | ECS1KBZ222M◇◇△△2535 |
|                                        |        | 91  | 73 | 0,15 | 1,5 | 2,20 | 30x25 | ECS1KBZ222M◇◇△△3025 |
|                                        | 2 700  | 74  | 59 | 0,15 | 1,5 | 2,50 | 25x40 | ECS1KBZ272M◇◇△△2540 |
|                                        |        | 74  | 59 | 0,15 | 1,5 | 2,50 | 30x30 | ECS1KBZ272M◇◇△△3030 |
|                                        | 3 300  | 61  | 49 | 0,15 | 1,5 | 2,80 | 25x45 | ECS1KBZ332M◇◇△△2545 |
|                                        |        | 61  | 49 | 0,15 | 1,5 | 2,80 | 30x35 | ECS1KBZ332M◇◇△△3035 |
|                                        | 3 900  | 52  | 41 | 0,15 | 1,5 | 3,10 | 25x50 | ECS1KBZ392M◇◇△△2550 |
|                                        |        | 52  | 41 | 0,15 | 1,5 | 3,20 | 35x30 | ECS1KBZ392M◇◇△△3530 |
|                                        | 4 700  | 43  | 34 | 0,15 | 1,5 | 3,60 | 35x35 | ECS1KBZ472M◇◇△△3535 |
|                                        | 5 600  | 48  | 38 | 0,20 | 1,5 | 4,10 | 35x40 | ECS1KBZ562M◇◇△△3540 |
|                                        | 6 800  | 40  | 32 | 0,20 | 1,5 | 4,10 | 35x45 | ECS1KBZ682M◇◇△△3545 |
|                                        | 8 200  | 41  | 33 | 0,20 | 1,5 | 4,70 | 35x50 | ECS1KBZ822M◇◇△△3550 |
|                                        | 10 000 | 34  | 27 | 0,25 | 1,5 | 5,20 | 35x50 | ECS1KBZ103M◇◇△△3550 |
|                                        | 12 000 | 28  | 23 | 0,25 | 1,5 | 5,80 | 35x55 | ECS1KBZ123M◇◇△△3555 |

|                                         |       |     |     |      |     |      |       |                     |
|-----------------------------------------|-------|-----|-----|------|-----|------|-------|---------------------|
| <b>100</b><br><b>(125)</b><br><b>2A</b> | 1 200 | 166 | 133 | 0,15 | 1,2 | 1,60 | 25x30 | ECS2ABZ122M◇◇△△2530 |
|                                         | 1 500 | 133 | 107 | 0,15 | 1,5 | 1,80 | 22x40 | ECS2ABZ152M◇◇△△2240 |
|                                         |       | 133 | 107 | 0,15 | 1,5 | 1,70 | 25x35 | ECS2ABZ152M◇◇△△2535 |
|                                         | 1 800 | 111 | 89  | 0,15 | 1,5 | 2,00 | 25x40 | ECS2ABZ182M◇◇△△2540 |
|                                         |       | 111 | 89  | 0,15 | 1,5 | 2,10 | 30x30 | ECS2ABZ182M◇◇△△3030 |
|                                         | 2 200 | 91  | 73  | 0,15 | 1,5 | 2,30 | 30x35 | ECS2ABZ222M◇◇△△3035 |
|                                         |       | 91  | 73  | 0,15 | 1,5 | 2,50 | 35x30 | ECS2ABZ222M◇◇△△3530 |
|                                         | 2 700 | 74  | 59  | 0,15 | 1,5 | 2,60 | 25x50 | ECS2ABZ272M◇◇△△2550 |
|                                         |       | 74  | 59  | 0,15 | 1,5 | 2,70 | 30x40 | ECS2ABZ272M◇◇△△3040 |
|                                         | 3 300 | 61  | 49  | 0,15 | 1,5 | 3,10 | 35x35 | ECS2ABZ332M◇◇△△3535 |
|                                         | 3 900 | 52  | 41  | 0,15 | 1,5 | 3,40 | 35x40 | ECS2ABZ392M◇◇△△3540 |
|                                         | 4 700 | 43  | 34  | 0,15 | 1,5 | 4,00 | 35x50 | ECS2ABZ472M◇◇△△3550 |

|                                         |       |     |     |      |     |      |       |                     |
|-----------------------------------------|-------|-----|-----|------|-----|------|-------|---------------------|
| <b>160</b><br><b>(200)</b><br><b>2C</b> | 470   | 283 | 226 | 0,10 | 0,8 | 1,60 | 25x30 | ECS2CBZ471M◇◇△△2530 |
|                                         | 560   | 237 | 190 | 0,10 | 0,9 | 1,90 | 22x35 | ECS2CBZ561M◇◇△△2235 |
|                                         |       | 237 | 190 | 0,10 | 0,9 | 1,90 | 25x30 | ECS2CBZ561M◇◇△△2530 |
|                                         | 680   | 196 | 157 | 0,10 | 1,1 | 2,10 | 22x40 | ECS2CBZ681M◇◇△△2240 |
|                                         |       | 196 | 157 | 0,10 | 1,1 | 2,20 | 25x35 | ECS2CBZ681M◇◇△△2535 |
|                                         | 820   | 162 | 130 | 0,10 | 1,3 | 2,40 | 25x40 | ECS2CBZ821M◇◇△△2540 |
|                                         |       | 162 | 130 | 0,10 | 1,3 | 2,50 | 30x30 | ECS2CBZ821M◇◇△△3030 |
|                                         | 1 000 | 133 | 107 | 0,10 | 1,5 | 2,80 | 30x35 | ECS2CBZ102M◇◇△△3035 |
|                                         |       | 160 | 128 | 0,12 | 1,5 | 2,70 | 35x30 | ECS2CBZ102M◇◇△△3530 |
|                                         | 1 200 | 133 | 107 | 0,12 | 1,5 | 3,00 | 35x35 | ECS2CBZ122M◇◇△△3535 |
|                                         | 1 500 | 107 | 85  | 0,12 | 1,5 | 3,50 | 35x40 | ECS2CBZ152M◇◇△△3540 |
|                                         | 1 800 | 89  | 71  | 0,12 | 1,5 | 3,90 | 35x45 | ECS2CBZ182M◇◇△△3545 |
|                                         | 2 200 | 73  | 58  | 0,12 | 1,5 | 4,50 | 35x50 | ECS2CBZ222M◇◇△△3550 |

||
||
||



| U <sub>RDC</sub><br>(Surge<br>Voltage)<br>Code | C <sub>R</sub><br>Rated<br>Capacitance | ESR <sub>max</sub><br>Equivalent<br>Series<br>Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent<br>Series<br>Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation<br>Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage<br>Current | I <sub>RAC</sub><br>Rated<br>Ripple<br>Current<br>85°C<br>120Hz | Size<br>øD x L<br>(mm) | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|------------------------------------------------|----------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------|-----------------------------------------|-----------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------|
| (V)                                            | (μF)                                   | (mΩ)                                                                      | (mΩ)                                                                      |                                                | (mA)                                    | (Arms)                                                          |                        |                                                                               |
| 200<br>(250)<br>2D                             | 390                                    | 341                                                                       | 273                                                                       | 0,10                                           | 0,8                                     | 1,60                                                            | 25x30                  | ECS2DBZ391M◇◇△△2530                                                           |
|                                                |                                        | 283                                                                       | 226                                                                       | 0,10                                           | 0,9                                     | 1,70                                                            | 22x35                  | ECS2DBZ471M◇◇△△2235                                                           |
|                                                |                                        | 283                                                                       | 226                                                                       | 0,10                                           | 0,9                                     | 1,90                                                            | 30x25                  | ECS2DBZ471M◇◇△△3025                                                           |
|                                                | 470                                    | 237                                                                       | 190                                                                       | 0,10                                           | 1,1                                     | 2,00                                                            | 25x35                  | ECS2DBZ561M◇◇△△2535                                                           |
|                                                |                                        | 237                                                                       | 190                                                                       | 0,10                                           | 1,1                                     | 2,10                                                            | 30x30                  | ECS2DBZ561M◇◇△△3030                                                           |
|                                                | 560                                    | 196                                                                       | 157                                                                       | 0,10                                           | 1,4                                     | 2,30                                                            | 25x40                  | ECS2DBZ681M◇◇△△2540                                                           |
|                                                |                                        | 196                                                                       | 157                                                                       | 0,10                                           | 1,4                                     | 2,40                                                            | 30x35                  | ECS2DBZ681M◇◇△△3035                                                           |
|                                                |                                        | 162                                                                       | 130                                                                       | 0,10                                           | 1,5                                     | 2,70                                                            | 30x40                  | ECS2DBZ821M◇◇△△3040                                                           |
|                                                | 680                                    | 195                                                                       | 156                                                                       | 0,12                                           | 1,5                                     | 2,50                                                            | 35x30                  | ECS2DBZ821M◇◇△△3530                                                           |
|                                                |                                        | 160                                                                       | 128                                                                       | 0,12                                           | 1,5                                     | 2,80                                                            | 35x35                  | ECS2DBZ102M◇◇△△3535                                                           |
|                                                | 1 000                                  | 133                                                                       | 107                                                                       | 0,12                                           | 1,5                                     | 3,20                                                            | 35x40                  | ECS2DBZ122M◇◇△△3540                                                           |
|                                                | 1 200                                  | 107                                                                       | 85                                                                        | 0,12                                           | 1,5                                     | 3,80                                                            | 35x50                  | ECS2DBZ152M◇◇△△3550                                                           |

|                    |       |       |     |      |     |      |       |                     |
|--------------------|-------|-------|-----|------|-----|------|-------|---------------------|
| 250<br>(300)<br>2E | 330   | 603   | 483 | 0,15 | 0,8 | 1,40 | 22x40 | ECS2EBZ331M◇◇△△2240 |
|                    |       | 603   | 483 | 0,15 | 0,8 | 1,40 | 25x30 | ECS2EBZ331M◇◇△△2530 |
|                    |       | 511   | 409 | 0,15 | 1,0 | 1,60 | 22x45 | ECS2EBZ391M◇◇△△2245 |
|                    | 390   | 511   | 409 | 0,15 | 1,0 | 1,60 | 25x35 | ECS2EBZ391M◇◇△△2535 |
|                    |       | 424   | 339 | 0,15 | 1,2 | 1,80 | 25x40 | ECS2EBZ471M◇◇△△2540 |
|                    | 470   | 424   | 339 | 0,15 | 1,2 | 1,80 | 30x30 | ECS2EBZ471M◇◇△△3030 |
|                    |       | 356   | 285 | 0,15 | 1,4 | 2,00 | 25x45 | ECS2EBZ561M◇◇△△2545 |
|                    | 560   | 356   | 285 | 0,15 | 1,4 | 2,00 | 30x35 | ECS2EBZ561M◇◇△△3035 |
|                    |       | 293   | 235 | 0,15 | 1,5 | 2,30 | 30x40 | ECS2EBZ681M◇◇△△3040 |
|                    | 680   | 293   | 235 | 0,15 | 1,5 | 2,30 | 35x30 | ECS2EBZ681M◇◇△△3530 |
|                    |       | 243   | 195 | 0,15 | 1,5 | 2,60 | 30x45 | ECS2EBZ821M◇◇△△3045 |
|                    | 820   | 243   | 195 | 0,15 | 1,5 | 2,60 | 35x35 | ECS2EBZ821M◇◇△△3535 |
|                    |       | 1 000 | 199 | 0,15 | 1,5 | 3,00 | 35x40 | ECS2EBZ102M◇◇△△3540 |
|                    | 1 200 | 166   | 133 | 0,15 | 1,5 | 3,40 | 35x45 | ECS2EBZ122M◇◇△△3545 |

|                    |     |      |     |      |     |      |       |                     |
|--------------------|-----|------|-----|------|-----|------|-------|---------------------|
| 315<br>(365)<br>2F | 180 | 1106 | 885 | 0,15 | 0,6 | 0,96 | 25x30 | ECS2FBZ181M◇◇△△2530 |
|                    |     | 905  | 724 | 0,15 | 0,7 | 1,10 | 22x40 | ECS2FBZ221M◇◇△△2240 |
|                    |     | 905  | 724 | 0,15 | 0,7 | 1,10 | 25x35 | ECS2FBZ221M◇◇△△2535 |
|                    | 220 | 737  | 590 | 0,15 | 0,9 | 1,20 | 22x45 | ECS2FBZ271M◇◇△△2245 |
|                    |     | 737  | 590 | 0,15 | 0,9 | 1,30 | 25x40 | ECS2FBZ271M◇◇△△2540 |
|                    | 270 | 737  | 590 | 0,15 | 0,9 | 1,30 | 30x30 | ECS2FBZ271M◇◇△△3030 |
|                    |     | 603  | 483 | 0,15 | 1,0 | 1,40 | 25x45 | ECS2FBZ331M◇◇△△2545 |
|                    | 330 | 603  | 483 | 0,15 | 1,0 | 1,40 | 30x35 | ECS2FBZ331M◇◇△△3035 |
|                    |     | 511  | 409 | 0,15 | 1,2 | 1,60 | 30x40 | ECS2FBZ391M◇◇△△3040 |
|                    | 390 | 511  | 409 | 0,15 | 1,2 | 1,60 | 35x30 | ECS2FBZ391M◇◇△△3530 |
|                    |     | 424  | 339 | 0,15 | 1,5 | 1,80 | 30x45 | ECS2FBZ471M◇◇△△3045 |
|                    | 470 | 424  | 339 | 0,15 | 1,5 | 1,80 | 35x35 | ECS2FBZ471M◇◇△△3535 |
|                    |     | 356  | 285 | 0,15 | 1,5 | 2,00 | 30x50 | ECS2FBZ561M◇◇△△3050 |
|                    | 560 | 356  | 285 | 0,15 | 1,5 | 2,00 | 35x40 | ECS2FBZ561M◇◇△△3540 |
|                    | 680 | 293  | 235 | 0,15 | 1,5 | 2,30 | 35x45 | ECS2FBZ681M◇◇△△3545 |

|                    |     |      |      |      |     |      |       |                     |
|--------------------|-----|------|------|------|-----|------|-------|---------------------|
| 350<br>(400)<br>2V | 150 | 1327 | 1062 | 0,15 | 0,5 | 0,94 | 25x30 | ECS2VBZ151M◇◇△△2530 |
|                    |     | 1106 | 885  | 0,15 | 0,6 | 1,10 | 22x40 | ECS2VBZ181M◇◇△△2240 |
|                    |     | 1106 | 885  | 0,15 | 0,6 | 1,10 | 30x25 | ECS2VBZ181M◇◇△△3025 |
|                    | 180 | 905  | 724  | 0,15 | 0,8 | 1,20 | 25x35 | ECS2VBZ221M◇◇△△2535 |
|                    |     | 905  | 724  | 0,15 | 0,8 | 1,20 | 30x30 | ECS2VBZ221M◇◇△△3030 |
|                    | 220 | 737  | 590  | 0,15 | 0,9 | 1,40 | 25x45 | ECS2VBZ271M◇◇△△2545 |
|                    |     | 737  | 590  | 0,15 | 0,9 | 1,40 | 30x35 | ECS2VBZ271M◇◇△△3035 |
|                    | 270 | 603  | 483  | 0,15 | 1,2 | 1,60 | 25x50 | ECS2VBZ331M◇◇△△2550 |
|                    |     | 603  | 483  | 0,15 | 1,2 | 1,60 | 35x30 | ECS2VBZ331M◇◇△△3530 |
|                    | 330 | 511  | 409  | 0,15 | 1,4 | 1,70 | 30x40 | ECS2VBZ391M◇◇△△3040 |
|                    |     | 511  | 409  | 0,15 | 1,4 | 1,80 | 35x35 | ECS2VBZ391M◇◇△△3535 |
|                    | 390 | 424  | 339  | 0,15 | 1,5 | 2,00 | 30x45 | ECS2VBZ471M◇◇△△3045 |
|                    |     | 424  | 339  | 0,15 | 1,5 | 2,00 | 35x40 | ECS2VBZ471M◇◇△△3540 |
|                    | 560 | 356  | 285  | 0,15 | 1,5 | 2,30 | 35x45 | ECS2VBZ561M◇◇△△3545 |
|                    | 680 | 293  | 235  | 0,15 | 1,5 | 2,60 | 35x50 | ECS2VBZ681M◇◇△△3550 |
|                    | 820 | 243  | 195  | 0,15 | 1,5 | 2,80 | 35x60 | ECS2VBZ821M◇◇△△3560 |

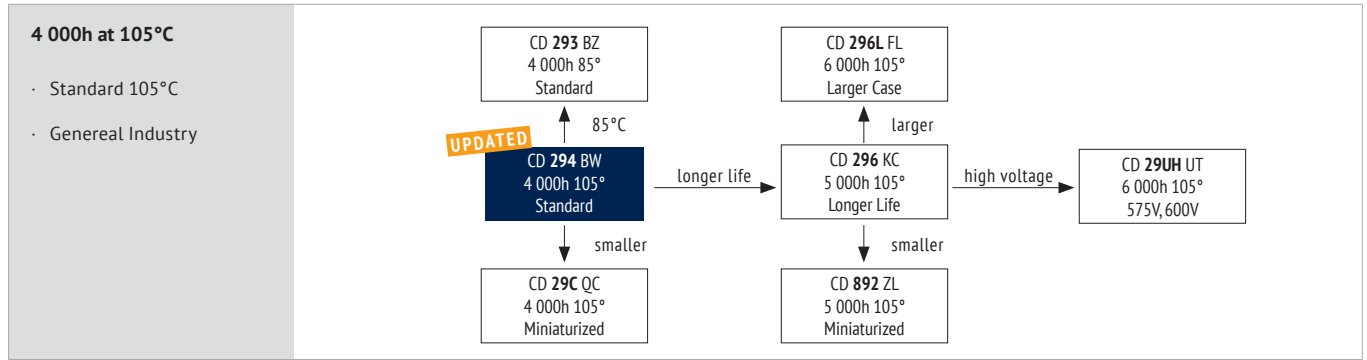
|                    |     |      |      |      |     |      |       |                     |
|--------------------|-----|------|------|------|-----|------|-------|---------------------|
| 400<br>(450)<br>2G | 150 | 1327 | 1062 | 0,15 | 0,6 | 0,89 | 25x30 | ECS2GBZ151M◇◇△△2530 |
|                    |     | 1106 | 885  | 0,15 | 0,7 | 1,00 | 22x40 | ECS2GBZ181M◇◇△△2240 |
|                    |     | 1106 | 885  | 0,15 | 0,7 | 1,00 | 25x30 | ECS2GBZ181M◇◇△△2530 |
|                    | 180 | 905  | 724  | 0,15 | 0,9 | 1,10 | 22x45 | ECS2GBZ221M◇◇△△2245 |
|                    |     | 905  | 724  | 0,15 | 0,9 | 1,20 | 25x40 | ECS2GBZ221M◇◇△△2540 |
|                    | 220 | 737  | 590  | 0,15 | 1,1 | 1,30 | 25x45 | ECS2GBZ271M◇◇△△2545 |
|                    |     | 737  | 590  | 0,15 | 1,1 | 1,50 | 30x30 | ECS2GBZ271M◇◇△△3030 |
|                    | 270 | 603  | 483  | 0,15 | 1,5 | 1,60 | 35x35 | ECS2GBZ331M◇◇△△3535 |

| U <sub>RDC</sub><br>(Surge<br>Voltage)<br>Code | C <sub>R</sub><br>Rated<br>Capacitance | ESR <sub>max</sub><br>Equivalent<br>Series<br>Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent<br>Series<br>Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation<br>Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage<br>Current | I <sub>RAC</sub><br>Rated<br>Ripple<br>Current<br>85°C<br>120Hz | Size<br>øD x L<br>(mm) | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|------------------------------------------------|----------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------|-----------------------------------------|-----------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------|
| (V)                                            | (μF)                                   | (mΩ)                                                                      | (mΩ)                                                                      |                                                | (mA)                                    | (Arms)                                                          |                        |                                                                               |
| 400<br>(450)<br>2G                             | 330                                    | 603                                                                       | 483                                                                       | 0,15                                           | 1,3                                     | 1,60                                                            | 22x50                  | ECS2GBZ331M◇◇△△2250                                                           |
|                                                |                                        | 603                                                                       | 483                                                                       | 0,15                                           | 1,3                                     | 1,60                                                            | 25x45                  | ECS2GBZ331M◇◇△△2545                                                           |
|                                                |                                        | 603                                                                       | 483                                                                       | 0,15                                           | 1,3                                     | 1,70                                                            | 30x35                  | ECS2GBZ331M◇◇△△3035                                                           |
|                                                | 390                                    | 511                                                                       | 409                                                                       | 0,15                                           | 1,5                                     | 1,80                                                            | 25x45                  | ECS2GBZ391M◇◇△△2545                                                           |
|                                                |                                        | 511                                                                       | 409                                                                       | 0,15                                           | 1,5                                     | 1,90                                                            | 30x40                  | ECS2GBZ391M◇◇△△3040                                                           |
|                                                | 470                                    | 511                                                                       | 409                                                                       | 0,15                                           | 1,5                                     | 1,80                                                            | 35x30                  | ECS2GBZ391M◇◇△△3530                                                           |
|                                                |                                        | 424                                                                       | 339                                                                       | 0,15                                           | 1,5                                     | 2,10                                                            | 35x35                  | ECS2GBZ471M◇◇△△3535                                                           |
|                                                | 560                                    | 356                                                                       | 285                                                                       | 0,15                                           | 1,5                                     | 2,30                                                            | 35x40                  | ECS2GBZ561M◇◇△△3540                                                           |
|                                                | 680                                    | 293                                                                       | 235                                                                       | 0,15                                           | 1,5                                     | 2,70                                                            | 35x45                  | ECS2GBZ681M◇◇△△3545                                                           |
|                                                | 820                                    | 243                                                                       | 194                                                                       | 0,15                                           | 1,5                                     | 3,10                                                            | 35x50                  | ECS2GBZ821M◇◇△△3550                                                           |
|                                                | 1 000                                  | 133                                                                       | 107                                                                       | 0,15                                           | 1,5                                     | 3,70                                                            | 35x60                  | ECS2GBZ102M◇◇△△3560                                                           |
|                                                | 1 200                                  | 166                                                                       | 89                                                                        | 0,15                                           | 1,5                                     | 4,20                                                            | 40x60                  | ECS2GBZ122M◇◇△△4060                                                           |
|                                                | 1 500                                  | 133                                                                       | 71                                                                        | 0,15                                           | 1,5                                     | 5,00                                                            | 40x70                  | ECS2GBZ152M◇◇△△4070                                                           |
|                                                | 1 800                                  | 111                                                                       | 59                                                                        | 0,15                                           | 1,5                                     | 5,80                                                            | 40x80                  | ECS2GBZ182M◇◇△△4080                                                           |

|                    |       |      |      |      |     |      |       |                     |
|--------------------|-------|------|------|------|-----|------|-------|---------------------|
| 420<br>(470)<br>2X | 120   | 1658 | 1327 | 0,15 | 0,5 | 0,82 | 25x30 | ECS2XBZ121M◇◇△△2530 |
|                    |       | 1327 | 1062 | 0,15 | 0,6 | 0,96 | 25x30 | ECS2XBZ151M◇◇△△2530 |
|                    | 150   | 1106 | 885  | 0,15 | 0,8 | 1,10 | 25x35 | ECS2XBZ181M◇◇△△2535 |
|                    |       | 1106 | 885  | 0,15 | 0,8 | 1,20 | 30x30 | ECS2XBZ181M◇◇△△3030 |
|                    | 180   | 905  | 724  | 0,15 | 0,9 | 1,20 | 25x40 | ECS2XBZ221M◇◇△△2540 |
|                    |       | 905  | 724  | 0,15 | 0,9 | 1,30 | 30x30 | ECS2XBZ221M◇◇△△3030 |
|                    | 220   | 737  | 590  | 0,15 | 1,1 | 1,30 | 25x45 | ECS2XBZ271M◇◇△△2545 |
|                    |       | 737  | 590  | 0,15 | 1,1 | 1,40 | 30x35 | ECS2XBZ271M◇◇△△3035 |
|                    | 270   | 603  | 483  | 0,15 | 1,4 | 1,70 | 30x40 | ECS2XBZ331M◇◇△△3040 |
|                    |       | 511  | 409  | 0,15 | 1,5 | 1,80 | 30x45 | ECS2XBZ391M◇◇△△3045 |
|                    | 330   | 511  | 409  | 0,15 | 1,5 | 1,90 | 35x35 | ECS2XBZ391M◇◇△△3535 |
|                    |       | 424  | 339  | 0,15 | 1,5 | 2,00 | 30x45 | ECS2XBZ471M◇◇△△3045 |
|                    | 390   | 424  | 339  | 0,15 | 1,5 | 2,20 | 35x40 | ECS2XBZ471M◇◇△△3540 |
|                    |       | 560  | 356  | 0,15 | 1,5 | 2,40 | 35x45 | ECS2XBZ561M◇◇△△3545 |
|                    | 470   | 680  | 293  | 0,15 | 1,5 | 2,80 | 35x50 | ECS2XBZ681M◇◇△△3550 |
|                    | 820   | 243  | 194  | 0,15 | 1,5 | 3,20 | 35x60 | ECS2XBZ821M◇◇△△3560 |
|                    | 1 000 | 199  | 107  | 0,15 | 1,5 | 4,00 | 40x60 | ECS2XBZ102M◇◇△△4060 |

|                    |       |      |      |      |     |      |        |                      |
|--------------------|-------|------|------|------|-----|------|--------|----------------------|
| 450<br>(500)<br>2W | 120   | 1658 | 1327 | 0,15 | 0,5 | 0,83 | 25x30  | ECS2WBZ121M◇◇△△2530  |
|                    |       | 1327 | 1062 | 0,15 | 0,7 | 0,95 | 22x45  | ECS2WBZ151M◇◇△△2245  |
|                    | 150   | 1327 | 1062 | 0,15 | 0,7 | 0,95 | 25x35  | ECS2WBZ151M◇◇△△2535  |
|                    |       | 1106 | 885  | 0,15 | 0,8 | 1,10 | 25x40  | ECS2WBZ181M◇◇△△2540  |
|                    | 180   | 1106 | 885  | 0,15 | 0,8 | 1,10 | 30x30  | ECS2WBZ181M◇◇△△3030  |
|                    |       | 905  | 724  | 0,15 | 1,0 | 1,20 | 22x50  | ECS2WBZ221M◇◇△△2250  |
|                    | 220   | 905  | 724  | 0,15 | 1,0 | 1,20 | 25x40  | ECS2WBZ221M◇◇△△2540  |
|                    |       | 905  | 724  | 0,15 | 1,0 | 1,20 | 30x30  | ECS2WBZ221M◇◇△△3030  |
|                    | 270   | 737  | 590  | 0,15 | 1,2 | 1,40 | 30x30  | ECS2WBZ271M◇◇△△3030  |
|                    |       | 330  | 603  | 0,15 | 1,5 | 1,60 | 30x40  | ECS2WBZ331M◇◇△△3040  |
|                    | 390   | 511  | 409  | 0,15 | 1,5 | 1,70 | 30x40  | ECS2WBZ391M◇◇△△3040  |
|                    |       | 511  | 409  | 0,15 | 1,5 | 1,80 | 35x35  | ECS2WBZ391M◇◇△△3535  |
|                    | 470   | 424  | 339  | 0,15 | 1,5 | 2,10 | 30x45  | ECS2WBZ471M◇◇△△3045  |
|                    | 560   | 356  | 285  | 0,15 | 1,5 | 2,30 | 35x45  | ECS2WBZ561M◇◇△△3545  |
|                    | 680   | 293  | 235  | 0,15 | 1,5 | 2,70 | 35x50  | ECS2WBZ681M◇◇△△3550  |
|                    | 820   | 243  | 194  | 0,15 | 1,5 | 3,20 | 35x60  | ECS2WBZ821M◇◇△△3560  |
|                    | 1 000 | 133  | 107  | 0,15 | 1,5 | 4,20 | 35x70  | ECS2WBZ102M◇◇△△3570  |
|                    | 1 200 | 166  | 89   | 0,15 | 1,5 | 4,40 | 40x70  | ECS2WBZ122M◇◇△△4070  |
|                    | 1 500 | 133  | 71   | 0,15 | 1,5 | 5,20 | 40x80  | ECS2WBZ152M◇◇△△4080  |
|                    | 1 800 | 111  | 59   | 0,15 | 1,5 | 6,30 | 40x100 | ECS2WBZ182M◇◇△△40100 |

</



## ITEM CHARACTERISTICS

|                                     |              |            |
|-------------------------------------|--------------|------------|
| Operating Temperature Range (°C)    | -40 ~ +105   | -25 ~ +105 |
| Voltage Range (V)                   | 16 ~ 100     | 160 ~ 550  |
| Capacitance Range (µF)              | 100 ~ 47 000 |            |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%        |            |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

**Leakage Current** After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V) | 16 ~ 100 | 160 ~ 200 | 250 ~ 550 |
|---------------------------------------------------------|-------------------|----------|-----------|-----------|
| $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 4        |           |           |
| $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 15       | -         |           |

**Fast Charge-Discharge** **!** Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

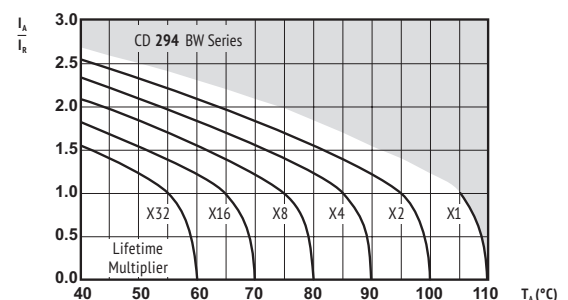
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                        |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------|
| Lifetime                                                                | 4 000h                                | > 180 000h                        | 2 000h                                | 3 000h                                   | 1 000h                                |                                                                        |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                        |
| Capacitance Change                                                      | Within ± 20% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value            | Within ± 20% of initial value         |                                                                        |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value    | Not more than 200% of specified value |                                                                        |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for 30 min > 24h before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency<br>Rated Voltage (V) | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | ≥ 50 kHz |
|--------------------------------|------|-------|-------|------|-------|----------|
| ≤ 100                          | 0,95 | 1,00  | 1,07  | 1,13 | 1,19  | 1,20     |
| 160 ~ 250                      | 0,87 | 1,00  | 1,17  | 1,32 | 1,45  | 1,50     |
| ≥ 315                          | 0,80 | 1,00  | 1,16  | 1,30 | 1,41  | 1,43     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

**!** Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| U <sub>RDC</sub><br>(Surge<br>Voltage)<br>Code | C <sub>R</sub><br>Rated<br>Capacitance | ESR <sub>max</sub><br>Equivalent<br>Series<br>Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent<br>Series<br>Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation<br>Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage<br>Current | I <sub>RAC</sub><br>Rated<br>Ripple<br>Current<br>105°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|------------------------------------------------|----------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------|-----------------------------------------|------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                            | (μF)                                   | (mΩ)                                                                      | (mΩ)                                                                      |                                                | (mA)                                    | (Arms)                                                           | (mm)           |                                                                               |
| 16<br>(20)<br>1C                               | 12 000                                 | 56                                                                        | 39                                                                        | 0,50                                           | 1,5                                     | 2,30                                                             | 25x30          | ECS1CBW123M◇◇△△2530                                                           |
|                                                | 15 000                                 | 45                                                                        | 31                                                                        | 0,50                                           | 1,5                                     | 2,68                                                             | 25x35          | ECS1CBW153M◇◇△△2535                                                           |
|                                                | 18 000                                 | 37                                                                        | 26                                                                        | 0,50                                           | 1,5                                     | 3,04                                                             | 25x40          | ECS1CBW183M◇◇△△2540                                                           |
|                                                |                                        | 37                                                                        | 26                                                                        | 0,50                                           | 1,5                                     | 3,00                                                             | 30x30          | ECS1CBW183M◇◇△△3030                                                           |
|                                                | 22 000                                 | 31                                                                        | 21                                                                        | 0,50                                           | 1,5                                     | 3,40                                                             | 25x45          | ECS1CBW223M◇◇△△2545                                                           |
|                                                |                                        | 31                                                                        | 21                                                                        | 0,50                                           | 1,5                                     | 3,39                                                             | 30x35          | ECS1CBW223M◇◇△△3035                                                           |
|                                                | 27 000                                 | 25                                                                        | 17                                                                        | 0,50                                           | 1,5                                     | 3,83                                                             | 30x40          | ECS1CBW273M◇◇△△3040                                                           |
|                                                |                                        | 25                                                                        | 17                                                                        | 0,50                                           | 1,5                                     | 3,74                                                             | 35x30          | ECS1CBW273M◇◇△△3530                                                           |
|                                                | 33 000                                 | 21                                                                        | 14                                                                        | 0,50                                           | 1,5                                     | 4,30                                                             | 30x45          | ECS1CBW333M◇◇△△3045                                                           |
|                                                |                                        | 21                                                                        | 14                                                                        | 0,50                                           | 1,5                                     | 4,24                                                             | 35x35          | ECS1CBW333M◇◇△△3535                                                           |
|                                                | 39 000                                 | 18                                                                        | 12                                                                        | 0,50                                           | 1,5                                     | 4,74                                                             | 30x50          | ECS1CBW393M◇◇△△3050                                                           |
|                                                |                                        | 18                                                                        | 12                                                                        | 0,50                                           | 1,5                                     | 4,72                                                             | 35x40          | ECS1CBW393M◇◇△△3540                                                           |
|                                                | 47 000                                 | 15                                                                        | 10                                                                        | 0,50                                           | 1,5                                     | 5,27                                                             | 35x45          | ECS1CBW473M◇◇△△3545                                                           |

|                  |        |    |    |      |     |      |       |                     |
|------------------|--------|----|----|------|-----|------|-------|---------------------|
| 25<br>(32)<br>1E | 8 200  | 65 | 45 | 0,40 | 1,5 | 2,16 | 25x30 | ECS1EBW822M◇◇△△2530 |
|                  | 10 000 | 54 | 37 | 0,40 | 1,5 | 2,44 | 25x35 | ECS1EBW103M◇◇△△2535 |
|                  |        | 45 | 31 | 0,40 | 1,5 | 2,74 | 25x40 | ECS1EBW123M◇◇△△2540 |
|                  | 12 000 | 45 | 31 | 0,40 | 1,5 | 2,70 | 30x30 | ECS1EBW123M◇◇△△3030 |
|                  |        | 36 | 25 | 0,40 | 1,5 | 3,15 | 25x45 | ECS1EBW153M◇◇△△2545 |
|                  | 15 000 | 36 | 25 | 0,40 | 1,5 | 3,13 | 30x35 | ECS1EBW153M◇◇△△3035 |
|                  |        | 30 | 21 | 0,40 | 1,5 | 3,54 | 25x50 | ECS1EBW183M◇◇△△2550 |
|                  | 18 000 | 30 | 21 | 0,40 | 1,5 | 3,54 | 30x40 | ECS1EBW183M◇◇△△3040 |
|                  |        | 25 | 17 | 0,40 | 1,5 | 4,24 | 30x45 | ECS1EBW223M◇◇△△3045 |
|                  | 22 000 | 25 | 17 | 0,40 | 1,5 | 3,96 | 35x35 | ECS1EBW223M◇◇△△3535 |
|                  |        | 20 | 14 | 0,40 | 1,5 | 4,75 | 35x45 | ECS1EBW273M◇◇△△3545 |
|                  | 33 000 | 17 | 11 | 0,40 | 1,5 | 5,39 | 35x50 | ECS1EBW333M◇◇△△3550 |

|                  |        |    |    |      |     |      |       |                     |
|------------------|--------|----|----|------|-----|------|-------|---------------------|
| 35<br>(44)<br>1V | 5 600  | 83 | 58 | 0,35 | 1,5 | 2,04 | 25x30 | ECS1VBW562M◇◇△△2530 |
|                  | 6 800  | 69 | 48 | 0,35 | 1,5 | 2,31 | 25x35 | ECS1VBW682M◇◇△△2535 |
|                  |        | 57 | 40 | 0,35 | 1,5 | 2,60 | 25x40 | ECS1VBW822M◇◇△△2540 |
|                  | 8 200  | 57 | 40 | 0,35 | 1,5 | 2,56 | 30x30 | ECS1VBW822M◇◇△△3030 |
|                  |        | 47 | 33 | 0,35 | 1,5 | 2,92 | 25x45 | ECS1VBW103M◇◇△△2545 |
|                  | 10 000 | 47 | 33 | 0,35 | 1,5 | 2,92 | 30x35 | ECS1VBW103M◇◇△△3035 |
|                  |        | 39 | 27 | 0,35 | 1,5 | 3,28 | 30x40 | ECS1VBW123M◇◇△△3040 |
|                  | 12 000 | 39 | 27 | 0,35 | 1,5 | 3,20 | 35x30 | ECS1VBW123M◇◇△△3530 |
|                  |        | 31 | 22 | 0,35 | 1,5 | 3,74 | 30x45 | ECS1VBW153M◇◇△△3045 |
|                  | 15 000 | 31 | 22 | 0,35 | 1,5 | 3,69 | 35x35 | ECS1VBW153M◇◇△△3535 |
|                  |        | 26 | 18 | 0,35 | 1,5 | 4,16 | 35x40 | ECS1VBW183M◇◇△△3540 |
|                  | 22 000 | 22 | 15 | 0,35 | 1,5 | 4,92 | 35x50 | ECS1VBW223M◇◇△△3550 |

|                  |        |     |    |      |     |      |       |                     |
|------------------|--------|-----|----|------|-----|------|-------|---------------------|
| 50<br>(63)<br>1H | 3 300  | 121 | 84 | 0,30 | 1,5 | 2,00 | 25x25 | ECS1HBW332M◇◇△△2525 |
|                  | 3 900  | 103 | 72 | 0,30 | 1,5 | 2,28 | 25x30 | ECS1HBW392M◇◇△△2530 |
|                  |        | 85  | 59 | 0,30 | 1,5 | 2,58 | 25x30 | ECS1HBW472M◇◇△△2530 |
|                  | 5 600  | 72  | 50 | 0,30 | 1,5 | 2,81 | 25x35 | ECS1HBW562M◇◇△△2535 |
|                  |        | 59  | 41 | 0,30 | 1,5 | 3,37 | 25x40 | ECS1HBW682M◇◇△△2540 |
|                  | 6 800  | 59  | 41 | 0,30 | 1,5 | 3,39 | 30x35 | ECS1HBW682M◇◇△△3035 |
|                  |        | 49  | 34 | 0,30 | 1,5 | 3,71 | 30x40 | ECS1HBW822M◇◇△△3040 |
|                  | 8 200  | 49  | 34 | 0,30 | 1,5 | 3,66 | 35x35 | ECS1HBW822M◇◇△△3535 |
|                  |        | 40  | 28 | 0,30 | 1,5 | 4,09 | 30x45 | ECS1HBW103M◇◇△△3045 |
|                  | 10 000 | 40  | 28 | 0,30 | 1,5 | 4,07 | 35x40 | ECS1HBW103M◇◇△△3540 |
|                  |        | 34  | 23 | 0,30 | 1,5 | 4,50 | 35x45 | ECS1HBW123M◇◇△△3545 |

|                  |        |       |    |      |     |      |       |                     |
|------------------|--------|-------|----|------|-----|------|-------|---------------------|
| 63<br>(79)<br>1J | 2 200  | 121   | 84 | 0,20 | 1,4 | 1,75 | 25x30 | ECS1JBW222M◇◇△△2530 |
|                  | 2 700  | 99    | 69 | 0,20 | 1,5 | 1,99 | 25x35 | ECS1JBW272M◇◇△△2535 |
|                  |        | 81    | 56 | 0,20 | 1,5 | 2,27 | 25x40 | ECS1JBW332M◇◇△△2540 |
|                  | 3 300  | 81    | 56 | 0,20 | 1,5 | 2,24 | 30x30 | ECS1JBW332M◇◇△△3030 |
|                  |        | 69    | 48 | 0,20 | 1,5 | 2,54 | 25x45 | ECS1JBW392M◇◇△△2545 |
|                  | 3 900  | 69    | 48 | 0,20 | 1,5 | 2,55 | 30x35 | ECS1JBW392M◇◇△△3035 |
|                  |        | 57    | 40 | 0,20 | 1,5 | 2,88 | 25x50 | ECS1JBW472M◇◇△△2550 |
|                  | 4 700  | 57    | 40 | 0,20 | 1,5 | 2,90 | 30x40 | ECS1JBW472M◇◇△△3040 |
|                  |        | 48    | 33 | 0,20 | 1,5 | 3,28 | 30x45 | ECS1JBW562M◇◇△△3045 |
|                  | 5 600  | 48    | 33 | 0,20 | 1,5 | 3,24 | 35x35 | ECS1JBW562M◇◇△△3535 |
|                  |        | 40    | 27 | 0,20 | 1,5 | 3,73 | 30x50 | ECS1JBW682M◇◇△△3050 |
|                  | 6 800  | 40    | 27 | 0,20 | 1,5 | 3,71 | 35x40 | ECS1JBW682M◇◇△△3540 |
|                  |        | 8 200 | 33 | 0,20 | 1,5 | 4,16 | 35x45 | ECS1JBW822M◇◇△△3545 |
|                  | 10 000 | 27    | 19 | 0,20 | 1,5 | 4,69 | 35x50 | ECS1JBW103M◇◇△△3550 |

| U <sub>RDC</sub><br>(Surge<br>Voltage)<br>Code | C <sub>R</sub><br>Rated<br>Capacitance | ESR <sub>max</sub><br>Equivalent<br>Series<br>Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent<br>Series<br>Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation<br>Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage<br>Current | I <sub>RAC</sub><br>Rated<br>Ripple<br>Current<br>105°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|------------------------------------------------|----------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------|-----------------------------------------|------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                            | (μF)                                   | (mΩ)                                                                      | (mΩ)                                                                      |                                                | (mA)                                    | (Arms)                                                           | (mm)           |                                                                               |
| 80<br>(100)<br>1K                              | 1 500                                  | 177                                                                       | 124                                                                       | 0,20                                           | 1,2                                     | 1,62                                                             | 25x30          | ECS1KBW152M◇◇△△2530                                                           |
|                                                | 1 800                                  | 148                                                                       | 103                                                                       | 0,20                                           | 1,4                                     | 1,81                                                             | 25x30          | ECS1KBW182M◇◇△△2530                                                           |
|                                                |                                        | 121                                                                       | 84                                                                        | 0,20                                           | 1,5                                     | 2,09                                                             | 22x45          | ECS1KBW222M◇◇△△2245                                                           |
|                                                | 2 200                                  | 121                                                                       | 84                                                                        | 0,20                                           | 1,5                                     | 2,01                                                             | 25x35          | ECS1KBW222M◇◇△△2535                                                           |
|                                                |                                        | 99                                                                        | 69                                                                        | 0,20                                           | 1,5                                     | 2,43                                                             | 30x35          | ECS1KBW272M◇◇△△3035                                                           |
|                                                | 2 700                                  | 81                                                                        | 56                                                                        | 0,20                                           | 1,5                                     | 2,78                                                             | 30x40          | ECS1KBW332M◇◇△△3040                                                           |
|                                                |                                        | 69                                                                        | 48                                                                        | 0,20                                           | 1,5                                     | 3,12                                                             | 30x45          | ECS1KBW392M◇◇△△3045                                                           |
|                                                | 3 300                                  | 57                                                                        | 40                                                                        | 0,20                                           | 1,5                                     | 3,50                                                             | 35x40          | ECS1KBW472M◇◇△△3540                                                           |
|                                                |                                        | 48                                                                        | 33                                                                        | 0,20                                           | 1,5                                     | 3,87                                                             | 35x45          | ECS1KBW562M◇◇△△3545                                                           |
|                                                | 6 800                                  | 40                                                                        | 27                                                                        | 0,20                                           | 1,5                                     | 4,19                                                             | 35x50          | ECS1KBW682M◇◇△△3550                                                           |

|                    |       |     |     |      |     |      |       |                     |
|--------------------|-------|-----|-----|------|-----|------|-------|---------------------|
| 100<br>(125)<br>2A | 1 000 | 266 | 186 | 0,20 | 1,0 | 1,56 | 25x30 | ECS2ABW102M◇◇△△2530 |
|                    | 1 200 | 222 | 155 | 0,20 | 1,2 | 1,76 | 25x35 | ECS2ABW122M◇◇△△2535 |
|                    |       | 177 | 124 | 0,20 | 1,5 | 2,03 | 25x40 | ECS2ABW152M◇◇△△2540 |
|                    | 1 500 | 177 | 124 | 0,20 | 1,5 | 2,00 | 30x30 | ECS2ABW152M◇◇△△3030 |
|                    |       | 148 | 103 | 0,20 | 1,5 | 2,28 | 25x45 | ECS2ABW182M◇◇△△2545 |
|                    | 1 800 | 148 | 103 | 0,20 | 1,5 | 2,27 | 30x35 | ECS2ABW182M◇◇△△3035 |
|                    |       | 121 | 84  | 0,20 | 1,5 | 2,57 | 25x50 | ECS2ABW222M◇◇△△2550 |
|                    | 2 200 | 121 | 84  | 0,20 | 1,5 | 2,59 | 30x40 | ECS2ABW222M◇◇△△3040 |
|                    |       | 99  | 69  | 0,20 | 1,5 | 2,94 | 30x45 | ECS2ABW272M◇◇△△3045 |
|                    | 2 700 | 81  | 56  | 0,20 | 1,5 | 3,32 | 30x50 | ECS2ABW332M◇◇△△3050 |
|                    |       | 81  | 56  | 0,20 | 1,5 | 3,31 | 35x40 | ECS2ABW392M◇◇△△3540 |
|                    | 3 900 | 69  | 48  | 0,20 | 1,5 | 3,69 | 35x45 | ECS2ABW392M◇◇△△3545 |
|                    | 4 700 | 57  | 40  | 0,20 | 1,5 | 4,14 | 35x50 | ECS2ABW472M◇◇△△3550 |

|                    |       |     |     |      |     |      |       |                     |
|--------------------|-------|-----|-----|------|-----|------|-------|---------------------|
| 160<br>(200)<br>2C | 560   | 356 | 249 | 0,15 | 0,9 | 1,62 | 22x40 | ECS2CBW561M◇◇△△2240 |
|                    |       | 356 | 249 | 0,15 | 0,9 | 1,73 | 25x30 | ECS2CBW561M◇◇△△2530 |
|                    |       | 293 | 205 | 0,15 | 1,1 | 1,70 | 22x45 | ECS2CBW681M◇◇△△2245 |
|                    | 680   | 293 | 205 | 0,15 | 1,1 | 1,81 | 25x35 | ECS2CBW681M◇◇△△2535 |
|                    |       | 243 | 170 | 0,15 | 1,3 | 1,98 | 25x40 | ECS2CBW821M◇◇△△2540 |
|                    |       | 243 | 170 | 0,15 | 1,3 | 1,98 | 30x30 | ECS2CBW821M◇◇△△3030 |
|                    | 820   | 199 | 139 | 0,15 | 1,5 | 2,04 | 25x45 | ECS2CBW102M◇◇△△2545 |
|                    |       | 199 | 139 | 0,15 | 1,5 | 2,14 | 30x35 | ECS2CBW102M◇◇△△3035 |
|                    |       | 166 | 116 | 0,15 | 1,5 | 2,12 | 25x50 | ECS2CBW122M◇◇△△2550 |
|                    | 1 200 | 166 | 116 | 0,15 | 1,5 | 2,22 | 30x40 | ECS2CBW122M◇◇△△3040 |
|                    |       | 133 | 93  | 0,15 | 1,5 | 2,46 | 30x45 | ECS2CBW152M◇◇△△3045 |
|                    |       | 133 | 93  | 0,15 | 1,5 | 2,53 | 35x35 | ECS2CBW152M◇◇△△3535 |
|                    | 1 500 | 133 | 93  | 0,15 | 1,5 | 2,53 | 35x35 | ECS2CBW152M◇◇△△3535 |
|                    |       | 111 | 77  | 0,15 | 1,5 | 2,98 | 35x45 | ECS2CBW182M◇◇△△3545 |
|                    |       | 91  | 63  | 0,15 | 1,5 | 3,10 | 35x50 | ECS2CBW222M◇◇△△3550 |
|                    | 2 200 | 74  | 51  | 0,15 | 1,5 | 3,77 | 35x55 | ECS2CBW272M◇◇△△3555 |
|                    |       | 61  | 42  | 0,15 | 1,5 | 4,33 | 35x60 | ECS2CBW332M◇◇△△3560 |

|                    |       |       |      |      |      |       |                     |                     |
|--------------------|-------|-------|------|------|------|-------|---------------------|---------------------|
| 180<br>(225)<br>2K | 470   | 424   | 296  | 0,15 | 0,8  | 1,50  | 22x35               | ECS2KBW471M◇◇△△2235 |
|                    |       | 424   | 296  | 0,15 | 0,8  | 1,62  | 25x30               | ECS2KBW471M◇◇△△2530 |
|                    |       | 356   | 249  | 0,15 | 1,0  | 1,62  | 22x40               | ECS2KBW561M◇◇△△2240 |
|                    | 560   | 356   | 249  | 0,15 | 1,0  | 1,69  | 25x35               | ECS2KBW561M◇◇△△2535 |
|                    |       | 293   | 205  | 0,15 | 1,2  | 1,72  | 25x40               | ECS2KBW681M◇◇△△2540 |
|                    |       | 293   | 205  | 0,15 | 1,2  | 1,74  | 30x30               | ECS2KBW681M◇◇△△3030 |
|                    | 820   | 243   | 170  | 0,15 | 1,5  | 1,78  | 25x45               | ECS2KBW821M◇◇△△2545 |
|                    |       | 243   | 170  | 0,15 | 1,5  | 1,85  | 30x35               | ECS2KBW821M◇◇△△3035 |
|                    |       | 199   | 139  | 0,15 | 1,5  | 1,91  | 25x50               | ECS2KBW102M◇◇△△2550 |
|                    | 1 000 | 199   | 139  | 0,15 | 1,5  | 2,01  | 30x40               | ECS2KBW102M◇◇△△3040 |
|                    |       | 1 200 | 166  | 116  | 0,15 | 1,5   | 2,19                | 30x45               |
|                    | 1 500 | 133   | 93   | 0,15 | 1,5  | 2,36  | 30x50               | ECS2KBW152M◇◇△△3050 |
|                    | 1 800 | 111   | 77   | 0,15 | 1,5  | 2,67  | 35x45               | ECS2KBW182M◇◇△△3545 |
|                    | 2 200 | 91    | 63   | 0,15 | 1,5  | 3,27  | 35x50               | ECS2KBW222M◇◇△△3550 |
| 2 700              | 74    | 52    | 0,15 | 1,5  | 3,92 | 35x60 | ECS2KBW272M◇◇△△3560 |                     |

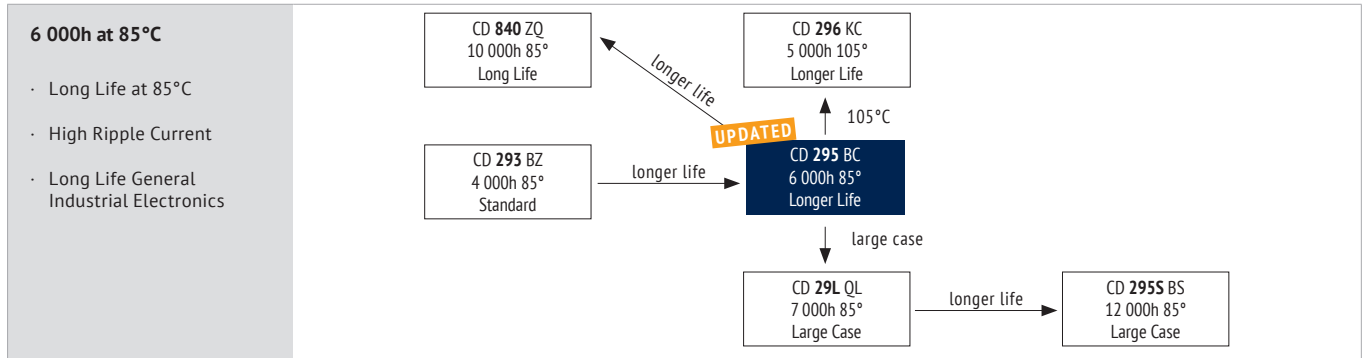
| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance<br>(μF) | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz<br>(mΩ) | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz<br>(mΩ) | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current<br>(mA) | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 120Hz<br>(Arms) | Size<br>øD x L<br>(mm) | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|---------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|------------------------------------------|----------------------------------------------|-------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------|
| <b>200<br/>(250)<br/>2D</b>                 | 1 200                                       | 166                                                                      | 116                                                                      | 0,15                                     | 1,5                                          | 2,22                                                              | 25x45                  | ECS2DBW122M◇◇△△2545                                                           |
|                                             |                                             | 166                                                                      | 116                                                                      | 0,15                                     | 1,5                                          | 2,28                                                              | 30x40                  | ECS2DBW122M◇◇△△3040                                                           |
|                                             | 1 500                                       | 133                                                                      | 93                                                                       | 0,15                                     | 1,5                                          | 2,59                                                              | 30x50                  | ECS2DBW152M◇◇△△3050                                                           |
|                                             |                                             | 133                                                                      | 93                                                                       | 0,15                                     | 1,5                                          | 2,64                                                              | 35x40                  | ECS2DBW152M◇◇△△3540                                                           |
|                                             | 1 800                                       | 111                                                                      | 77                                                                       | 0,15                                     | 1,5                                          | 2,70                                                              | 35x45                  | ECS2DBW182M◇◇△△3545                                                           |
|                                             | 2 200                                       | 91                                                                       | 63                                                                       | 0,15                                     | 1,5                                          | 3,23                                                              | 35x50                  | ECS2DBW222M◇◇△△3550                                                           |
| <b>250<br/>(300)<br/>2E</b>                 | 330                                         | 603                                                                      | 422                                                                      | 0,15                                     | 0,8                                          | 1,20                                                              | 22x40                  | ECS2EBW331M◇◇△△2240                                                           |
|                                             |                                             | 603                                                                      | 422                                                                      | 0,15                                     | 0,8                                          | 1,30                                                              | 25x30                  | ECS2EBW331M◇◇△△2530                                                           |
|                                             | 390                                         | 511                                                                      | 357                                                                      | 0,15                                     | 1,0                                          | 1,41                                                              | 25x35                  | ECS2EBW391M◇◇△△2535                                                           |
|                                             |                                             | 424                                                                      | 296                                                                      | 0,15                                     | 1,2                                          | 1,52                                                              | 25x40                  | ECS2EBW471M◇◇△△2540                                                           |
|                                             | 470                                         | 424                                                                      | 296                                                                      | 0,15                                     | 1,2                                          | 1,56                                                              | 30x30                  | ECS2EBW471M◇◇△△3030                                                           |
|                                             |                                             | 356                                                                      | 249                                                                      | 0,15                                     | 1,4                                          | 1,59                                                              | 25x45                  | ECS2EBW561M◇◇△△2545                                                           |
|                                             | 560                                         | 356                                                                      | 249                                                                      | 0,15                                     | 1,4                                          | 1,61                                                              | 30x30                  | ECS2EBW561M◇◇△△3030                                                           |
|                                             |                                             | 293                                                                      | 205                                                                      | 0,15                                     | 1,5                                          | 1,66                                                              | 25x50                  | ECS2EBW681M◇◇△△2550                                                           |
|                                             | 680                                         | 293                                                                      | 205                                                                      | 0,15                                     | 1,5                                          | 1,76                                                              | 30x35                  | ECS2EBW681M◇◇△△3035                                                           |
|                                             |                                             | 243                                                                      | 170                                                                      | 0,15                                     | 1,5                                          | 1,83                                                              | 30x40                  | ECS2EBW821M◇◇△△3040                                                           |
|                                             | 820                                         | 243                                                                      | 170                                                                      | 0,15                                     | 1,5                                          | 1,82                                                              | 35x35                  | ECS2EBW821M◇◇△△3535                                                           |
|                                             |                                             | 199                                                                      | 139                                                                      | 0,15                                     | 1,5                                          | 1,87                                                              | 30x50                  | ECS2EBW102M◇◇△△3050                                                           |
|                                             | 1 000                                       | 199                                                                      | 139                                                                      | 0,15                                     | 1,5                                          | 1,99                                                              | 35x40                  | ECS2EBW102M◇◇△△3540                                                           |
|                                             |                                             | 166                                                                      | 116                                                                      | 0,15                                     | 1,5                                          | 2,10                                                              | 35x45                  | ECS2EBW122M◇◇△△3545                                                           |
|                                             | 1 500                                       | 133                                                                      | 93                                                                       | 0,15                                     | 1,5                                          | 2,70                                                              | 35x50                  | ECS2EBW152M◇◇△△3550                                                           |
|                                             | 1 800                                       | 111                                                                      | 77                                                                       | 0,15                                     | 1,5                                          | 2,90                                                              | 35x55                  | ECS2EBW182M◇◇△△3555                                                           |
|                                             |                                             | 111                                                                      | 77                                                                       | 0,15                                     | 1,5                                          | 2,92                                                              | 35x60                  | ECS2EBW182M◇◇△△3560                                                           |
| <b>315<br/>(365)<br/>2F</b>                 | 180                                         | 1106                                                                     | 608                                                                      | 0,15                                     | 0,6                                          | 0,78                                                              | 22x40                  | ECS2FBW181M◇◇△△2240                                                           |
|                                             |                                             | 1106                                                                     | 608                                                                      | 0,15                                     | 0,6                                          | 0,85                                                              | 25x25                  | ECS2FBW181M◇◇△△2525                                                           |
|                                             | 220                                         | 905                                                                      | 498                                                                      | 0,15                                     | 0,7                                          | 0,91                                                              | 22x45                  | ECS2FBW221M◇◇△△2245                                                           |
|                                             |                                             | 905                                                                      | 498                                                                      | 0,15                                     | 0,7                                          | 0,94                                                              | 25x30                  | ECS2FBW221M◇◇△△2530                                                           |
|                                             | 270                                         | 737                                                                      | 406                                                                      | 0,15                                     | 0,9                                          | 1,00                                                              | 25x35                  | ECS2FBW271M◇◇△△2535                                                           |
|                                             |                                             | 737                                                                      | 406                                                                      | 0,15                                     | 0,9                                          | 0,98                                                              | 30x25                  | ECS2FBW271M◇◇△△3025                                                           |
|                                             | 330                                         | 603                                                                      | 332                                                                      | 0,15                                     | 1,0                                          | 1,13                                                              | 30x30                  | ECS2FBW331M◇◇△△3030                                                           |
|                                             | 390                                         | 511                                                                      | 281                                                                      | 0,15                                     | 1,2                                          | 1,20                                                              | 30x35                  | ECS2FBW391M◇◇△△3035                                                           |
|                                             | 470                                         | 424                                                                      | 233                                                                      | 0,15                                     | 1,5                                          | 1,28                                                              | 30x35                  | ECS2FBW471M◇◇△△3035                                                           |
|                                             | 560                                         | 355                                                                      | 196                                                                      | 0,15                                     | 1,5                                          | 1,46                                                              | 30x40                  | ECS2FBW561M◇◇△△3040                                                           |
|                                             | 680                                         | 293                                                                      | 161                                                                      | 0,15                                     | 1,5                                          | 1,85                                                              | 30x45                  | ECS2FBW681M◇◇△△3045                                                           |
|                                             |                                             | 293                                                                      | 161                                                                      | 0,15                                     | 1,5                                          | 1,88                                                              | 35x35                  | ECS2FBW681M◇◇△△3535                                                           |
|                                             | 820                                         | 242                                                                      | 133                                                                      | 0,15                                     | 1,5                                          | 2,10                                                              | 30x50                  | ECS2FBW821M◇◇△△3050                                                           |
|                                             |                                             | 242                                                                      | 133                                                                      | 0,15                                     | 1,5                                          | 2,15                                                              | 35x40                  | ECS2FBW821M◇◇△△3540                                                           |
|                                             | 1 000                                       | 199                                                                      | 109                                                                      | 0,20                                     | 1,5                                          | 2,42                                                              | 30x55                  | ECS2FBW102M◇◇△△3055                                                           |
|                                             |                                             | 199                                                                      | 109                                                                      | 0,15                                     | 1,5                                          | 2,47                                                              | 35x45                  | ECS2FBW102M◇◇△△3545                                                           |
|                                             | 1 200                                       | 166                                                                      | 91                                                                       | 0,15                                     | 1,5                                          | 2,60                                                              | 35x50                  | ECS2FBW122M◇◇△△3550                                                           |
| <b>350<br/>(400)<br/>2V</b>                 | 150                                         | 1327                                                                     | 730                                                                      | 0,15                                     | 0,5                                          | 0,82                                                              | 25x30                  | ECS2VBW151M◇◇△△2530                                                           |
|                                             | 180                                         | 1106                                                                     | 608                                                                      | 0,15                                     | 0,6                                          | 0,89                                                              | 25x35                  | ECS2VBW181M◇◇△△2535                                                           |
|                                             |                                             | 905                                                                      | 498                                                                      | 0,15                                     | 0,8                                          | 0,97                                                              | 25x40                  | ECS2VBW221M◇◇△△2540                                                           |
|                                             | 220                                         | 905                                                                      | 498                                                                      | 0,15                                     | 0,8                                          | 0,98                                                              | 30x30                  | ECS2VBW221M◇◇△△3030                                                           |
|                                             |                                             | 737                                                                      | 406                                                                      | 0,15                                     | 1,0                                          | 1,01                                                              | 25x45                  | ECS2VBW271M◇◇△△2545                                                           |
|                                             | 270                                         | 737                                                                      | 406                                                                      | 0,15                                     | 0,9                                          | 1,05                                                              | 30x30                  | ECS2VBW271M◇◇△△3030                                                           |
|                                             |                                             | 603                                                                      | 332                                                                      | 0,15                                     | 1,2                                          | 1,16                                                              | 25x45                  | ECS2VBW331M◇◇△△2545                                                           |
|                                             | 330                                         | 603                                                                      | 332                                                                      | 0,15                                     | 1,5                                          | 1,19                                                              | 30x40                  | ECS2VBW331M◇◇△△3040                                                           |
|                                             | 390                                         | 511                                                                      | 281                                                                      | 0,15                                     | 1,4                                          | 1,26                                                              | 25x45                  | ECS2VBW391M◇◇△△2545                                                           |
|                                             |                                             | 511                                                                      | 281                                                                      | 0,15                                     | 1,4                                          | 1,29                                                              | 30x40                  | ECS2VBW391M◇◇△△3040                                                           |
|                                             | 470                                         | 424                                                                      | 233                                                                      | 0,15                                     | 1,5                                          | 1,35                                                              | 30x50                  | ECS2VBW471M◇◇△△3050                                                           |
|                                             |                                             | 424                                                                      | 233                                                                      | 0,15                                     | 1,5                                          | 1,41                                                              | 35x40                  | ECS2VBW471M◇◇△△3540                                                           |
|                                             | 560                                         | 356                                                                      | 196                                                                      | 0,15                                     | 1,5                                          | 1,47                                                              | 30x50                  | ECS2VBW561M◇◇△△3050                                                           |
|                                             |                                             | 356                                                                      | 196                                                                      | 0,15                                     | 1,5                                          | 1,51                                                              | 35x50                  | ECS2VBW561M◇◇△△3550                                                           |
|                                             | 680                                         | 293                                                                      | 161                                                                      | 0,15                                     | 1,5                                          | 1,92                                                              | 30x55                  | ECS2VBW681M◇◇△△3055                                                           |
|                                             |                                             | 293                                                                      | 161                                                                      | 0,15                                     | 1,5                                          | 1,97                                                              | 35x50                  | ECS2VBW681M◇◇△△3550                                                           |
|                                             | 820                                         | 243                                                                      | 133                                                                      | 0,15                                     | 1,5                                          | 2,25                                                              | 35x60                  | ECS2VBW821M◇◇△△3560                                                           |
|                                             | 1 000                                       | 199                                                                      | 139                                                                      | 0,15                                     | 1,5                                          | 2,50                                                              | 35x60                  | ECS2VBW102M◇◇△△3560                                                           |
| <b>400<br/>(450)<br/>2G</b>                 | 120                                         | 1658                                                                     | 863                                                                      | 0,15                                     | 0,5                                          | 0,64                                                              | 22x30                  | ECS2GBW121M◇◇△△2230                                                           |
|                                             |                                             | 1658                                                                     | 863                                                                      | 0,15                                     | 0,5                                          | 0,70                                                              | 25x25                  | ECS2GBW121M◇◇△△2525                                                           |
|                                             | 150                                         | 1327                                                                     | 690                                                                      | 0,15                                     | 0,6                                          | 0,73                                                              | 25x30                  | ECS2GBW151M◇◇△△2530                                                           |
|                                             |                                             | 1327                                                                     | 690                                                                      | 0,15                                     | 0,6                                          | 0,75                                                              | 30x25                  | ECS2GBW151M◇◇△△3025                                                           |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>Leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 120Hz | Size<br>øD x L      | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------------------------------------|---------------------|----------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                  | (mm)                | Details: Page 105                                        |
| 400<br>(450)<br>2G                          | 180                                 | 1106                                                             | 575                                                              | 0,15                                     | 0,7                                  | 0,82                                                    | 25x35               | ECS2GBW181M◇◇△△2535                                      |
|                                             |                                     | 1106                                                             | 575                                                              | 0,15                                     | 0,7                                  | 0,85                                                    | 30x25               | ECS2GBW181M◇◇△△3025                                      |
|                                             | 220                                 | 905                                                              | 471                                                              | 0,15                                     | 0,9                                  | 0,87                                                    | 25x40               | ECS2GBW221M◇◇△△2540                                      |
|                                             |                                     | 905                                                              | 471                                                              | 0,15                                     | 0,9                                  | 0,86                                                    | 30x30               | ECS2GBW221M◇◇△△3030                                      |
|                                             | 270                                 | 737                                                              | 383                                                              | 0,15                                     | 1,1                                  | 0,94                                                    | 22x40               | ECS2GBW271M◇◇△△2240                                      |
|                                             |                                     | 737                                                              | 383                                                              | 0,15                                     | 1,1                                  | 0,99                                                    | 30x35               | ECS2GBW271M◇◇△△3035                                      |
|                                             | 330                                 | 603                                                              | 314                                                              | 0,15                                     | 1,3                                  | 1,08                                                    | 25x50               | ECS2GBW331M◇◇△△2550                                      |
|                                             |                                     | 603                                                              | 314                                                              | 0,15                                     | 1,3                                  | 1,11                                                    | 30x40               | ECS2GBW331M◇◇△△3040                                      |
|                                             | 390                                 | 511                                                              | 265                                                              | 0,15                                     | 1,5                                  | 1,15                                                    | 30x45               | ECS2GBW391M◇◇△△3045                                      |
|                                             | 470                                 | 424                                                              | 220                                                              | 0,15                                     | 1,5                                  | 1,28                                                    | 30x50               | ECS2GBW471M◇◇△△3050                                      |
|                                             |                                     | 424                                                              | 220                                                              | 0,15                                     | 1,5                                  | 1,31                                                    | 35x35               | ECS2GBW471M◇◇△△3535                                      |
|                                             | 560                                 | 355                                                              | 185                                                              | 0,15                                     | 1,5                                  | 1,50                                                    | 30x50               | ECS2GBW561M◇◇△△3050                                      |
|                                             |                                     | 356                                                              | 185                                                              | 0,15                                     | 1,5                                  | 1,65                                                    | 35x40               | ECS2GBW561M◇◇△△3540                                      |
|                                             | 680                                 | 293                                                              | 153                                                              | 0,15                                     | 1,5                                  | 1,90                                                    | 35x50               | ECS2GBW681M◇◇△△3550                                      |
|                                             | 820                                 | 243                                                              | 126                                                              | 0,15                                     | 1,5                                  | 2,10                                                    | 35x50               | ECS2GBW821M◇◇△△3550                                      |
|                                             |                                     | 243                                                              | 126                                                              | 0,15                                     | 1,5                                  | 2,20                                                    | 35x60               | ECS2GBW821M◇◇△△3560                                      |
|                                             | 1 000                               | 199                                                              | 139                                                              | 0,15                                     | 1,5                                  | 2,50                                                    | 30x70               | ECS2GBW102M◇◇△△3070                                      |
|                                             |                                     | 199                                                              | 139                                                              | 0,15                                     | 1,5                                  | 2,60                                                    | 35x60               | ECS2GBW102M◇◇△△3560                                      |
| 420<br>(470)<br>2X                          | 120                                 | 2211                                                             | 1106                                                             | 0,20                                     | 0,5                                  | 0,72                                                    | 25x30               | ECS2XBW121M◇◇△△2530                                      |
|                                             | 150                                 | 1769                                                             | 885                                                              | 0,20                                     | 0,6                                  | 0,80                                                    | 25x30               | ECS2XBW151M◇◇△△2530                                      |
|                                             | 180                                 | 1474                                                             | 737                                                              | 0,20                                     | 0,8                                  | 0,85                                                    | 30x30               | ECS2XBW181M◇◇△△3030                                      |
|                                             | 220                                 | 1206                                                             | 603                                                              | 0,20                                     | 0,9                                  | 0,96                                                    | 30x30               | ECS2XBW221M◇◇△△3030                                      |
|                                             | 270                                 | 983                                                              | 492                                                              | 0,15                                     | 1,1                                  | 1,06                                                    | 30x35               | ECS2XBW271M◇◇△△3035                                      |
|                                             | 330                                 | 804                                                              | 402                                                              | 0,20                                     | 1,4                                  | 1,14                                                    | 30x40               | ECS2XBW331M◇◇△△3040                                      |
|                                             |                                     | 804                                                              | 402                                                              | 0,20                                     | 1,4                                  | 1,20                                                    | 35x30               | ECS2XBW331M◇◇△△3530                                      |
|                                             | 390                                 | 681                                                              | 340                                                              | 0,20                                     | 1,5                                  | 1,25                                                    | 30x45               | ECS2XBW391M◇◇△△3045                                      |
|                                             | 470                                 | 565                                                              | 282                                                              | 0,20                                     | 1,5                                  | 1,28                                                    | 30x50               | ECS2XBW471M◇◇△△3050                                      |
|                                             |                                     | 565                                                              | 282                                                              | 0,20                                     | 1,5                                  | 1,31                                                    | 35x40               | ECS2XBW471M◇◇△△3540                                      |
|                                             | 560                                 | 474                                                              | 237                                                              | 0,20                                     | 1,5                                  | 1,45                                                    | 30x50               | ECS2XBW561M◇◇△△3050                                      |
|                                             |                                     | 474                                                              | 237                                                              | 0,20                                     | 1,5                                  | 1,50                                                    | 35x45               | ECS2XBW561M◇◇△△3545                                      |
|                                             | 680                                 | 391                                                              | 196                                                              | 0,20                                     | 1,5                                  | 1,90                                                    | 35x50               | ECS2XBW681M◇◇△△3550                                      |
|                                             | 820                                 | 324                                                              | 162                                                              | 0,20                                     | 1,5                                  | 2,20                                                    | 35x60               | ECS2XBW821M◇◇△△3560                                      |
|                                             | 1 000                               | 265                                                              | 139                                                              | 0,15                                     | 1,5                                  | 2,60                                                    | 35x65               | ECS2XBW102M◇◇△△3565                                      |
| 450<br>(500)<br>2W                          | 120                                 | 2211                                                             | 1106                                                             | 0,20                                     | 0,5                                  | 0,73                                                    | 22x35               | ECS2WBW121M◇◇△△2235                                      |
|                                             |                                     | 2211                                                             | 1106                                                             | 0,20                                     | 0,5                                  | 0,75                                                    | 25x25               | ECS2WBW121M◇◇△△2525                                      |
|                                             | 150                                 | 1769                                                             | 885                                                              | 0,20                                     | 0,7                                  | 0,82                                                    | 25x30               | ECS2WBW151M◇◇△△2530                                      |
|                                             |                                     | 1474                                                             | 737                                                              | 0,20                                     | 0,8                                  | 0,86                                                    | 30x30               | ECS2WBW181M◇◇△△3030                                      |
|                                             | 220                                 | 1206                                                             | 603                                                              | 0,20                                     | 1,0                                  | 0,94                                                    | 22x50               | ECS2WBW221M◇◇△△2250                                      |
|                                             |                                     | 1206                                                             | 603                                                              | 0,20                                     | 1,0                                  | 0,95                                                    | 30x30               | ECS2WBW221M◇◇△△3030                                      |
|                                             | 270                                 | 983                                                              | 492                                                              | 0,20                                     | 1,2                                  | 1,11                                                    | 30x30               | ECS2WBW271M◇◇△△3030                                      |
|                                             |                                     | 983                                                              | 492                                                              | 0,20                                     | 1,2                                  | 1,15                                                    | 30x35               | ECS2WBW271M◇◇△△3035                                      |
|                                             | 330                                 | 804                                                              | 402                                                              | 0,20                                     | 1,5                                  | 1,25                                                    | 30x40               | ECS2WBW331M◇◇△△3040                                      |
|                                             |                                     | 804                                                              | 402                                                              | 0,20                                     | 1,5                                  | 1,26                                                    | 35x30               | ECS2WBW331T◇◇△△530                                       |
|                                             | 390                                 | 681                                                              | 340                                                              | 0,20                                     | 1,5                                  | 1,31                                                    | 30x40               | ECS2WBW391M◇◇△△3040                                      |
|                                             |                                     | 681                                                              | 340                                                              | 0,20                                     | 1,5                                  | 1,36                                                    | 35x35               | ECS2WBW391M◇◇△△3535                                      |
|                                             | 470                                 | 565                                                              | 282                                                              | 0,20                                     | 1,5                                  | 1,50                                                    | 30x45               | ECS2WBW471M◇◇△△3045                                      |
|                                             |                                     | 565                                                              | 282                                                              | 0,20                                     | 1,5                                  | 1,55                                                    | 35x45               | ECS2WBW471M◇◇△△3545                                      |
|                                             | 560                                 | 565                                                              | 282                                                              | 0,20                                     | 1,5                                  | 1,50                                                    | 35x50               | ECS2WBW471M◇◇△△3550                                      |
|                                             |                                     | 474                                                              | 237                                                              | 0,20                                     | 1,5                                  | 1,65                                                    | 30x50               | ECS2WBW561M◇◇△△3050                                      |
|                                             | 680                                 | 474                                                              | 237                                                              | 0,20                                     | 1,5                                  | 1,70                                                    | 35x50               | ECS2WBW561M◇◇△△3550                                      |
|                                             |                                     | 391                                                              | 196                                                              | 0,20                                     | 1,5                                  | 1,95                                                    | 35x50               | ECS2WBW681M◇◇△△3550                                      |
| 820                                         | 391                                 | 196                                                              | 0,20                                                             | 1,5                                      | 2,00                                 | 35x60                                                   | ECS2WBW681M◇◇△△3560 |                                                          |
|                                             | 324                                 | 162                                                              | 0,20                                                             | 1,5                                      | 2,15                                 | 35x60                                                   | ECS2WBW821M◇◇△△3560 |                                                          |
|                                             | 324                                 | 162                                                              | 0,20                                                             | 1,5                                      | 2,20                                 | 35x65                                                   | ECS2WBW821M◇◇△△3565 |                                                          |
| 1 000                                       | 265                                 | 139                                                              | 0,20                                                             | 1,5                                      | 2,60                                 | 35x70                                                   | ECS2WBW102M◇◇△△3570 |                                                          |
| 500<br>(550)<br>2H                          | 100                                 | 2653                                                             | 1327                                                             | 0,20                                     | 0,1                                  | 0,67                                                    | 22x35               | ECS2HBW101M◇◇△△2235                                      |
|                                             | 120                                 | 2211                                                             | 1106                                                             | 0,20                                     | 0,6                                  | 0,77                                                    | 22x50               | ECS2HBW121M◇◇△△2250                                      |
|                                             |                                     | 2211                                                             | 1106                                                             | 0,20                                     | 0,6                                  | 0,81                                                    | 25x35               | ECS2HBW121M◇◇△△2535                                      |
|                                             | 150                                 | 1769                                                             | 885                                                              | 0,20                                     | 0,8                                  | 0,85                                                    | 25x40               | ECS2HBW151M◇◇△△2540                                      |
|                                             |                                     | 1769                                                             | 885                                                              | 0,20                                     | 0,8                                  | 0,88                                                    | 30x30               | ECS2HBW151M◇◇△△3030                                      |
|                                             | 180                                 | 1474                                                             | 737                                                              | 0,20                                     | 0,9                                  | 1,01                                                    | 25x50               | ECS2HBW181M◇◇△△2550                                      |
|                                             |                                     | 1474                                                             | 737                                                              | 0,20                                     | 0,9                                  | 1,06                                                    | 30x35               | ECS2HBW181M◇◇△△3035                                      |
|                                             | 220                                 | 1206                                                             | 603                                                              | 0,20                                     | 1,1                                  | 1,12                                                    | 30x35               | ECS2HBW221M◇◇△△3035                                      |
| 1206                                        |                                     | 603                                                              | 0,20                                                             | 1,1                                      | 1,17                                 | 35x30                                                   | ECS2HBW221M◇◇△△3530 |                                                          |



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>øD x L | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pin number |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|--------------------------------------|------------------------------------------------------------|----------------|--------------------------------------------------------------|
| (V)                                         | (µF)                                | (mΩ)                                                                | (mΩ)                                                                |                                             | (mA)                                 | (Arms)                                                     | (mm)           | Details: Page 105                                            |
| 500<br>(550)<br>2H                          | 270                                 | 983                                                                 | 472                                                                 | 0,20                                        | 1,4                                  | 1,29                                                       | 30x40          | ECS2HBW271M◇◇△△3040                                          |
|                                             |                                     | 983                                                                 | 472                                                                 | 0,20                                        | 1,4                                  | 1,34                                                       | 35x35          | ECS2HBW271M◇◇△△3535                                          |
|                                             | 330                                 | 804                                                                 | 402                                                                 | 0,20                                        | 1,5                                  | 1,40                                                       | 35x45          | ECS2HBW331M◇◇△△3545                                          |
|                                             | 390                                 | 681                                                                 | 340                                                                 | 0,20                                        | 1,5                                  | 1,60                                                       | 35x50          | ECS2HBW391M◇◇△△3550                                          |
|                                             | 470                                 | 565                                                                 | 282                                                                 | 0,20                                        | 1,5                                  | 1,80                                                       | 35x50          | ECS2HBW471M◇◇△△3550                                          |
|                                             |                                     | 565                                                                 | 282                                                                 | 0,20                                        | 1,5                                  | 1,80                                                       | 35x60          | ECS2HBW471M◇◇△△3560                                          |
|                                             | 560                                 | 474                                                                 | 237                                                                 | 0,20                                        | 1,5                                  | 1,90                                                       | 35x60          | ECS2HBW561M◇◇△△3560                                          |
|                                             | 680                                 | 391                                                                 | 196                                                                 | 0,20                                        | 1,5                                  | 2,20                                                       | 35x70          | ECS2HBW681M◇◇△△3570                                          |
|                                             |                                     |                                                                     |                                                                     |                                             |                                      |                                                            |                |                                                              |
| 550<br>(600)<br>2Y                          | 150                                 | 1769                                                                | 885                                                                 | 0,20                                        | 1,5                                  | 0,86                                                       | 30x35          | ECS2YBW151M◇◇△△3035                                          |
|                                             | 180                                 | 1474                                                                | 737                                                                 | 0,20                                        | 1,5                                  | 1,06                                                       | 30x40          | ECS2YBW181M◇◇△△3040                                          |
|                                             |                                     | 1474                                                                | 737                                                                 | 0,20                                        | 1,5                                  | 1,11                                                       | 35x30          | ECS2YBW181M◇◇△△3530                                          |
|                                             | 220                                 | 1206                                                                | 603                                                                 | 0,20                                        | 1,5                                  | 1,18                                                       | 30x50          | ECS2YBW221M◇◇△△3050                                          |
|                                             |                                     | 1206                                                                | 603                                                                 | 0,20                                        | 1,5                                  | 1,23                                                       | 35x35          | ECS2YBW221M◇◇△△3535                                          |
|                                             | 270                                 | 983                                                                 | 492                                                                 | 0,20                                        | 1,5                                  | 1,31                                                       | 35x45          | ECS2YBW271M◇◇△△3545                                          |
|                                             | 330                                 | 804                                                                 | 402                                                                 | 0,20                                        | 1,5                                  | 1,50                                                       | 35x50          | ECS2YBW331M◇◇△△3550                                          |
|                                             | 390                                 | 681                                                                 | 340                                                                 | 0,20                                        | 1,5                                  | 1,67                                                       | 35x60          | ECS2YBW391M◇◇△△3560                                          |
|                                             | 470                                 | 565                                                                 | 282                                                                 | 0,20                                        | 1,5                                  | 1,90                                                       | 35x60          | ECS2YBW471M◇◇△△3560                                          |
|                                             |                                     | 565                                                                 | 282                                                                 | 0,20                                        | 1,5                                  | 1,95                                                       | 35x70          | ECS2YBW471M◇◇△△3570                                          |
|                                             | 560                                 | 474                                                                 | 237                                                                 | 0,20                                        | 1,5                                  | 2,10                                                       | 35x80          | ECS2YBW561M◇◇△△3580                                          |
|                                             |                                     |                                                                     |                                                                     |                                             |                                      |                                                            |                |                                                              |
|                                             |                                     |                                                                     |                                                                     |                                             |                                      |                                                            |                |                                                              |





| ITEM | CHARACTERISTICS |  |  |
|------|-----------------|--|--|
|------|-----------------|--|--|

|                                     |             |           |                            |
|-------------------------------------|-------------|-----------|----------------------------|
| Operating Temperature Range (°C)    | -40 ~ +85   | -25 ~ +85 |                            |
| Voltage Range (V)                   | 160 ~ 400   | 420 ~ 500 | Lower voltages on request. |
| Capacitance Range (µF)              | 100 ~ 2 200 |           |                            |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%       |           |                            |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval. Additionally please ask for series CD 295D ZD with temperature range -55°C ~ +85°C and 10 000h useful life.

Leakage Current: After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

|                                                            |                                                     |           |           |           |
|------------------------------------------------------------|-----------------------------------------------------|-----------|-----------|-----------|
| Stability at Low Temperature<br>(Impedance Ratio at 120Hz) | Rated Voltage (V)                                   | 160 ~ 200 | 250 ~ 400 | 420 ~ 500 |
|                                                            | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 3         | 4         |           |
|                                                            | $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 6         | 8         | -         |

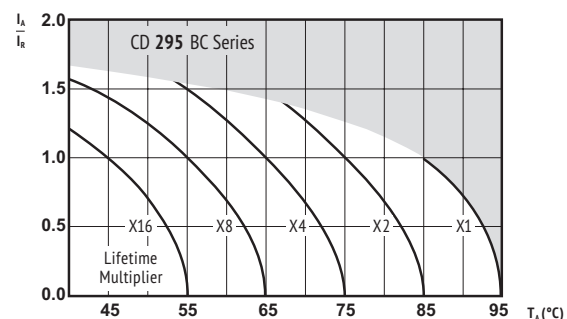
**!** Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                          | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | 6 000h                                | > 100 000h                        | 5 000h                                | 5 000h                                  | 1 000h                                |                                                                              |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value           | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value           | Within ± 20% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value   | Not more than 200% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$1,2 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$I_R = 0$<br>85°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>85°C        | After test:<br>$U_R$ to be applied<br>for 30 min > 24h<br>before measurement |

**MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)**

| Frequency         | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | 100kHz |
|-------------------|------|-------|-------|------|-------|--------|
| Rated Voltage (V) |      |       |       |      |       |        |
| ≥ 160             | 0,80 | 1,00  | 1,16  | 1,30 | 1,41  | 1,43   |

Multipliers for typical operating conditions.

**MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)**


$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 85°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

**!** Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

**ENVIRONMENTAL**

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

**! SAFETY FACTOR**

This diagram includes a safety margin. In many cases the allowed current capability/ lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|--------------------------------------|-----------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                                | (mΩ)                                                                |                                             | (mA)                                 | (Arms)                                                    | (mm)           |                                                                               |
| 160<br>(200)<br>2C                          | 220                                 | 905                                                                 | 633                                                                 | 0,15                                        | 0,4                                  | 1,0                                                       | 22 x 25        | ECS2CBC221M◇◇△△2225                                                           |
|                                             | 270                                 | 737                                                                 | 516                                                                 | 0,15                                        | 0,4                                  | 1,1                                                       | 22 x 25        | ECS2CBC271M◇◇△△2225                                                           |
|                                             | 330                                 | 603                                                                 | 422                                                                 | 0,15                                        | 0,5                                  | 1,3                                                       | 22 x 25        | ECS2CBC331M◇◇△△2225                                                           |
|                                             | 390                                 | 511                                                                 | 357                                                                 | 0,15                                        | 0,6                                  | 1,5                                                       | 22 x 30        | ECS2CBC391M◇◇△△2230                                                           |
|                                             |                                     | 511                                                                 | 357                                                                 | 0,15                                        | 0,6                                  | 1,5                                                       | 25 x 25        | ECS2CBC391M◇◇△△2525                                                           |
|                                             | 470                                 | 424                                                                 | 297                                                                 | 0,15                                        | 0,8                                  | 1,7                                                       | 25 x 25        | ECS2CBC471M◇◇△△2525                                                           |
|                                             |                                     | 424                                                                 | 297                                                                 | 0,15                                        | 0,8                                  | 1,7                                                       | 25 x 25        | ECS2CBC471M◇◇△△2525                                                           |
|                                             | 560                                 | 356                                                                 | 249                                                                 | 0,15                                        | 0,9                                  | 1,9                                                       | 22 x 35        | ECS2CBC561M◇◇△△2235                                                           |
|                                             |                                     | 356                                                                 | 249                                                                 | 0,15                                        | 0,9                                  | 1,9                                                       | 25 x 30        | ECS2CBC561M◇◇△△2530                                                           |
|                                             | 680                                 | 293                                                                 | 205                                                                 | 0,15                                        | 1,1                                  | 2,1                                                       | 22 x 40        | ECS2CBC681M◇◇△△2240                                                           |
|                                             |                                     | 293                                                                 | 205                                                                 | 0,15                                        | 1,1                                  | 2,2                                                       | 25 x 35        | ECS2CBC681M◇◇△△2535                                                           |
|                                             | 820                                 | 243                                                                 | 170                                                                 | 0,15                                        | 1,3                                  | 2,4                                                       | 25 x 40        | ECS2CBC821M◇◇△△2540                                                           |
|                                             |                                     | 243                                                                 | 170                                                                 | 0,15                                        | 1,3                                  | 2,5                                                       | 30 x 30        | ECS2CBC821M◇◇△△3030                                                           |
|                                             | 1 000                               | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 2,7                                                       | 25 x 45        | ECS2CBC102M◇◇△△2545                                                           |
|                                             |                                     | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 2,8                                                       | 30 x 35        | ECS2CBC102M◇◇△△3035                                                           |
|                                             |                                     | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 2,7                                                       | 35 x 30        | ECS2CBC102M◇◇△△3530                                                           |
|                                             | 1 200                               | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 3,1                                                       | 25 x 50        | ECS2CBC122M◇◇△△2550                                                           |
|                                             |                                     | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 3,2                                                       | 30 x 40        | ECS2CBC122M◇◇△△3040                                                           |
|                                             |                                     | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 3,0                                                       | 35 x 35        | ECS2CBC122M◇◇△△3535                                                           |
|                                             | 1 500                               | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 3,7                                                       | 30 x 45        | ECS2CBC152M◇◇△△3045                                                           |
|                                             |                                     | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 3,5                                                       | 35 x 40        | ECS2CBC152M◇◇△△3540                                                           |
|                                             | 1 800                               | 111                                                                 | 77                                                                  | 0,15                                        | 1,5                                  | 3,9                                                       | 35 x 45        | ECS2CBC182M◇◇△△3545                                                           |
|                                             | 2 200                               | 91                                                                  | 63                                                                  | 0,15                                        | 1,5                                  | 4,5                                                       | 35 x 50        | ECS2CBC222M◇◇△△3550                                                           |

|                    |       |     |     |      |     |     |         |                     |
|--------------------|-------|-----|-----|------|-----|-----|---------|---------------------|
| 180<br>(225)<br>2K | 270   | 737 | 516 | 0,15 | 0,5 | 1,2 | 22 x 25 | ECS2KBC271M◇◇△△2225 |
|                    | 330   | 603 | 422 | 0,15 | 0,6 | 1,4 | 22 x 30 | ECS2KBC331M◇◇△△2230 |
|                    | 390   | 511 | 357 | 0,15 | 0,7 | 1,5 | 25 x 25 | ECS2KBC391M◇◇△△2525 |
|                    | 470   | 424 | 296 | 0,15 | 0,8 | 1,7 | 22 x 35 | ECS2KBC471M◇◇△△2235 |
|                    |       | 424 | 296 | 0,15 | 0,8 | 1,7 | 25 x 30 | ECS2KBC471M◇◇△△2530 |
|                    |       | 424 | 296 | 0,15 | 0,8 | 1,8 | 30 x 25 | ECS2KBC471M◇◇△△3025 |
|                    | 560   | 356 | 249 | 0,15 | 1,0 | 1,9 | 22 x 40 | ECS2KBC561M◇◇△△2240 |
|                    |       | 356 | 249 | 0,15 | 1,0 | 2,0 | 25 x 35 | ECS2KBC561M◇◇△△2535 |
|                    | 680   | 293 | 205 | 0,15 | 1,2 | 2,2 | 25 x 40 | ECS2KBC681M◇◇△△2540 |
|                    |       | 293 | 205 | 0,15 | 1,2 | 2,3 | 30 x 30 | ECS2KBC681M◇◇△△3030 |
|                    | 820   | 243 | 170 | 0,15 | 1,5 | 2,5 | 25 x 45 | ECS2KBC821M◇◇△△2545 |
|                    |       | 243 | 170 | 0,15 | 1,5 | 2,6 | 30 x 35 | ECS2KBC821M◇◇△△3035 |
|                    | 1 000 | 243 | 170 | 0,15 | 1,5 | 2,5 | 35 x 30 | ECS2KBC821M◇◇△△3530 |
|                    |       | 199 | 139 | 0,15 | 1,5 | 2,9 | 25 x 50 | ECS2KBC102M◇◇△△2550 |
|                    |       | 199 | 139 | 0,15 | 1,5 | 2,9 | 30 x 40 | ECS2KBC102M◇◇△△3040 |
|                    | 1 200 | 166 | 116 | 0,15 | 1,5 | 3,3 | 30 x 45 | ECS2KBC122M◇◇△△3045 |
|                    |       | 166 | 116 | 0,15 | 1,5 | 3,1 | 35 x 35 | ECS2KBC122M◇◇△△3535 |
|                    | 1 500 | 133 | 93  | 0,15 | 1,5 | 3,6 | 35 x 45 | ECS2KBC152M◇◇△△3545 |
|                    | 1 800 | 111 | 77  | 0,15 | 1,5 | 4,1 | 35 x 50 | ECS2KBC182M◇◇△△3550 |

|                    |       |     |     |      |     |     |         |                     |
|--------------------|-------|-----|-----|------|-----|-----|---------|---------------------|
| 200<br>(250)<br>2D | 220   | 905 | 633 | 0,15 | 0,4 | 1,1 | 22 x 25 | ECS2DBC221M◇◇△△2225 |
|                    | 270   | 737 | 516 | 0,15 | 0,5 | 1,2 | 22 x 25 | ECS2DBC271M◇◇△△2225 |
|                    | 330   | 603 | 422 | 0,15 | 0,7 | 1,4 | 22 x 30 | ECS2DBC331M◇◇△△2230 |
|                    |       | 603 | 422 | 0,15 | 0,7 | 1,4 | 25 x 25 | ECS2DBC331M◇◇△△2525 |
|                    | 390   | 511 | 357 | 0,15 | 0,8 | 1,6 | 22 x 35 | ECS2DBC391M◇◇△△2235 |
|                    |       | 511 | 357 | 0,15 | 0,8 | 1,6 | 25 x 30 | ECS2DBC391M◇◇△△2530 |
|                    | 470   | 424 | 296 | 0,15 | 0,9 | 1,8 | 22 x 40 | ECS2DBC471M◇◇△△2240 |
|                    |       | 424 | 296 | 0,15 | 0,9 | 1,9 | 30 x 25 | ECS2DBC471M◇◇△△3025 |
|                    | 560   | 356 | 249 | 0,15 | 1,1 | 2,0 | 25 x 35 | ECS2DBC561M◇◇△△2535 |
|                    |       | 356 | 249 | 0,15 | 1,1 | 2,1 | 30 x 30 | ECS2DBC561M◇◇△△3030 |
|                    | 680   | 293 | 205 | 0,15 | 1,4 | 2,3 | 25 x 40 | ECS2DBC681M◇◇△△2540 |
|                    |       | 293 | 205 | 0,15 | 1,4 | 2,4 | 30 x 35 | ECS2DBC681M◇◇△△3035 |
|                    | 820   | 243 | 170 | 0,15 | 1,5 | 2,6 | 25 x 50 | ECS2DBC821M◇◇△△2550 |
|                    |       | 243 | 170 | 0,15 | 1,5 | 2,7 | 30 x 40 | ECS2DBC821M◇◇△△3040 |
|                    |       | 243 | 170 | 0,15 | 1,5 | 2,5 | 35 x 30 | ECS2DBC821M◇◇△△3530 |
|                    | 1 000 | 199 | 139 | 0,15 | 1,5 | 3,1 | 30 x 45 | ECS2DBC102M◇◇△△3045 |
|                    |       | 199 | 139 | 0,15 | 1,5 | 2,8 | 35 x 35 | ECS2DBC102M◇◇△△3535 |
|                    | 1 200 | 166 | 116 | 0,15 | 1,5 | 3,4 | 30 x 50 | ECS2DBC122M◇◇△△3050 |
|                    |       | 166 | 116 | 0,15 | 1,5 | 3,2 | 35 x 40 | ECS2DBC122M◇◇△△3540 |
|                    | 1 500 | 133 | 93  | 0,15 | 1,5 | 3,8 | 35 x 50 | ECS2DBC152M◇◇△△3550 |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|--------------------------------------|-----------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                                | (mΩ)                                                                |                                             | (mA)                                 | (Arms)                                                    | (mm)           |                                                                               |
| 250<br>(300)<br>2E                          | 330                                 | 603                                                                 | 422                                                                 | 0,15                                        | 0,8                                  | 1,4                                                       | 22 x 40        | ECS2EBC331M◇◇△△2240                                                           |
|                                             |                                     | 603                                                                 | 422                                                                 | 0,15                                        | 0,8                                  | 1,4                                                       | 25 x 30        | ECS2EBC331M◇◇△△2530                                                           |
|                                             | 390                                 | 511                                                                 | 357                                                                 | 0,15                                        | 1,0                                  | 1,6                                                       | 22 x 45        | ECS2EBC391M◇◇△△2245                                                           |
|                                             |                                     | 511                                                                 | 357                                                                 | 0,15                                        | 1,0                                  | 1,6                                                       | 25 x 35        | ECS2EBC391M◇◇△△2535                                                           |
|                                             | 470                                 | 424                                                                 | 296                                                                 | 0,15                                        | 1,2                                  | 1,8                                                       | 25 x 40        | ECS2EBC471M◇◇△△2540                                                           |
|                                             |                                     | 424                                                                 | 296                                                                 | 0,15                                        | 1,2                                  | 1,8                                                       | 30 x 30        | ECS2EBC471M◇◇△△3030                                                           |
|                                             | 560                                 | 356                                                                 | 249                                                                 | 0,15                                        | 1,4                                  | 2,0                                                       | 25 x 45        | ECS2EBC561M◇◇△△2545                                                           |
|                                             |                                     | 356                                                                 | 249                                                                 | 0,15                                        | 1,4                                  | 2,0                                                       | 30 x 35        | ECS2EBC561M◇◇△△3035                                                           |
|                                             | 680                                 | 293                                                                 | 205                                                                 | 0,15                                        | 1,5                                  | 2,3                                                       | 30 x 40        | ECS2EBC681M◇◇△△3040                                                           |
|                                             |                                     | 293                                                                 | 205                                                                 | 0,15                                        | 1,5                                  | 2,4                                                       | 35 x 30        | ECS2EBC681M◇◇△△3530                                                           |
|                                             | 820                                 | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 2,6                                                       | 30 x 45        | ECS2EBC821M◇◇△△3045                                                           |
|                                             |                                     | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 2,6                                                       | 35 x 35        | ECS2EBC821M◇◇△△3535                                                           |
|                                             | 1 000                               | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 3,0                                                       | 35 x 40        | ECS2EBC102M◇◇△△3540                                                           |
|                                             | 1 200                               | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 3,4                                                       | 35 x 45        | ECS2EBC122M◇◇△△3545                                                           |

|                    |     |       |     |      |     |      |         |                     |
|--------------------|-----|-------|-----|------|-----|------|---------|---------------------|
| 315<br>(365)<br>2F | 180 | 1 106 | 774 | 0,15 | 0,6 | 0,96 | 22 x 35 | ECS2FBC181M◇◇△△2235 |
|                    |     | 1 106 | 774 | 0,15 | 0,6 | 0,96 | 25 x 30 | ECS2FBC181M◇◇△△2530 |
|                    | 220 | 905   | 633 | 0,15 | 0,7 | 1,1  | 22 x 40 | ECS2FBC221M◇◇△△2240 |
|                    |     | 905   | 633 | 0,15 | 0,7 | 1,1  | 25 x 35 | ECS2FBC221M◇◇△△2535 |
|                    | 270 | 737   | 516 | 0,15 | 0,9 | 1,3  | 25 x 40 | ECS2FBC271M◇◇△△2540 |
|                    |     | 737   | 516 | 0,15 | 0,9 | 1,3  | 30 x 30 | ECS2FBC271M◇◇△△3030 |
|                    | 330 | 603   | 422 | 0,15 | 1,0 | 1,4  | 25 x 45 | ECS2FBC331M◇◇△△2545 |
|                    |     | 603   | 422 | 0,15 | 1,0 | 1,4  | 30 x 35 | ECS2FBC331M◇◇△△3035 |
|                    | 390 | 511   | 357 | 0,15 | 1,2 | 1,6  | 25 x 50 | ECS2FBC391M◇◇△△2550 |
|                    |     | 511   | 357 | 0,15 | 1,2 | 1,6  | 30 x 40 | ECS2FBC391M◇◇△△3040 |
|                    |     | 511   | 357 | 0,15 | 1,2 | 1,6  | 35 x 30 | ECS2FBC391M◇◇△△3530 |
|                    | 470 | 424   | 296 | 0,15 | 1,5 | 1,8  | 30 x 45 | ECS2FBC471M◇◇△△3045 |
|                    |     | 424   | 296 | 0,15 | 1,5 | 1,8  | 35 x 35 | ECS2FBC471M◇◇△△3535 |
|                    | 560 | 356   | 249 | 0,15 | 1,5 | 2,0  | 30 x 50 | ECS2FBC561M◇◇△△3050 |
|                    |     | 356   | 249 | 0,15 | 1,5 | 2,0  | 35 x 40 | ECS2FBC561M◇◇△△3540 |
|                    | 680 | 293   | 205 | 0,15 | 1,5 | 2,3  | 35 x 45 | ECS2FBC681M◇◇△△3545 |

|                    |     |       |     |      |     |      |         |                     |
|--------------------|-----|-------|-----|------|-----|------|---------|---------------------|
| 350<br>(400)<br>2V | 150 | 1 327 | 929 | 0,15 | 0,5 | 0,94 | 22 x 35 | ECS2VBC151M◇◇△△2235 |
|                    |     | 1 327 | 929 | 0,15 | 0,5 | 0,94 | 25 x 30 | ECS2VBC151M◇◇△△2530 |
|                    | 180 | 1 106 | 774 | 0,15 | 0,6 | 1,1  | 22 x 40 | ECS2VBC181M◇◇△△2240 |
|                    |     | 1 106 | 774 | 0,15 | 0,6 | 1,1  | 30 x 25 | ECS2VBC181M◇◇△△3025 |
|                    | 220 | 905   | 633 | 0,15 | 0,8 | 1,2  | 22 x 45 | ECS2VBC221M◇◇△△2245 |
|                    |     | 905   | 633 | 0,15 | 0,8 | 1,2  | 25 x 35 | ECS2VBC221M◇◇△△2535 |
|                    | 270 | 737   | 516 | 0,15 | 0,9 | 1,4  | 25 x 45 | ECS2VBC271M◇◇△△2545 |
|                    |     | 737   | 516 | 0,15 | 0,9 | 1,4  | 30 x 35 | ECS2VBC271M◇◇△△3035 |
|                    | 330 | 603   | 422 | 0,15 | 1,2 | 1,6  | 25 x 50 | ECS2VBC331M◇◇△△2550 |
|                    |     | 603   | 422 | 0,15 | 1,2 | 1,6  | 35 x 30 | ECS2VBC331M◇◇△△3530 |
|                    | 390 | 511   | 357 | 0,15 | 1,4 | 1,7  | 30 x 40 | ECS2VBC391M◇◇△△3040 |
|                    |     | 511   | 357 | 0,15 | 1,4 | 1,8  | 35 x 35 | ECS2VBC391M◇◇△△3535 |
|                    | 470 | 424   | 296 | 0,15 | 1,5 | 2,0  | 30 x 45 | ECS2VBC471M◇◇△△3045 |
|                    |     | 424   | 296 | 0,15 | 1,5 | 2,0  | 35 x 40 | ECS2VBC471M◇◇△△3540 |
|                    | 560 | 356   | 249 | 0,15 | 1,5 | 2,3  | 35 x 45 | ECS2VBC561M◇◇△△3545 |
|                    | 680 | 293   | 205 | 0,15 | 1,5 | 2,6  | 35 x 50 | ECS2VBC681M◇◇△△3550 |

|                    |     |       |     |      |     |      |         |                     |
|--------------------|-----|-------|-----|------|-----|------|---------|---------------------|
| 400<br>(450)<br>2G | 150 | 1 327 | 929 | 0,15 | 0,6 | 0,90 | 22 x 35 | ECS2GBC151M◇◇△△2235 |
|                    |     | 1 327 | 929 | 0,15 | 0,6 | 0,89 | 25 x 30 | ECS2GBC151M◇◇△△2530 |
|                    | 180 | 1 106 | 774 | 0,15 | 0,7 | 1,0  | 22 x 40 | ECS2GBC181M◇◇△△2240 |
|                    |     | 1 106 | 774 | 0,15 | 0,7 | 1,0  | 25 x 35 | ECS2GBC181M◇◇△△2535 |
|                    | 220 | 905   | 633 | 0,15 | 0,9 | 1,1  | 30 x 25 | ECS2GBC181M◇◇△△3025 |
|                    |     | 905   | 633 | 0,15 | 0,9 | 1,2  | 25 x 40 | ECS2GBC221M◇◇△△2540 |
|                    | 270 | 737   | 516 | 0,15 | 1,1 | 1,3  | 25 x 45 | ECS2GBC271M◇◇△△2545 |
|                    |     | 737   | 516 | 0,15 | 1,1 | 1,4  | 30 x 35 | ECS2GBC271M◇◇△△3035 |
|                    | 330 | 603   | 422 | 0,15 | 1,3 | 1,6  | 30 x 40 | ECS2GBC331          |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C 120Hz | Size<br>øD x L | ORDER CODE          |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------------------------|----------------|---------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                 | (mm)           | Details: Page 105   |
| <b>400<br/>(450)<br/>2G</b>                 | 470                                 | 424                                                              | 296                                                              | 0,15                                     | 1,5                                  | 2,1                                                    | 30 x 50        | ECS2GBC471M◇◇△△3050 |
|                                             |                                     | 424                                                              | 296                                                              | 0,15                                     | 1,5                                  | 2,1                                                    | 35 x 45        | ECS2GBC471M◇◇△△3545 |
|                                             | 560                                 | 356                                                              | 249                                                              | 0,15                                     | 1,5                                  | 2,3                                                    | 30 x 55        | ECS2GBC561M◇◇△△3055 |
|                                             |                                     | 356                                                              | 249                                                              | 0,15                                     | 1,5                                  | 2,3                                                    | 35 x 50        | ECS2GBC561M◇◇△△3550 |
|                                             | 680                                 | 293                                                              | 235                                                              | 0,15                                     | 1,5                                  | 2,7                                                    | 35 x 50        | ECS2GBC681M◇◇△△3550 |
|                                             | 820                                 | 243                                                              | 194                                                              | 0,15                                     | 1,5                                  | 3,1                                                    | 35 x 55        | ECS2GBC821M◇◇△△3555 |
|                                             | 1 000                               | 199                                                              | 139                                                              | 0,15                                     | 1,5                                  | 3,8                                                    | 35 x 65        | ECS2GBC102M◇◇△△3565 |
| <b>420<br/>(470)<br/>2X</b>                 | 120                                 | 1 658                                                            | 863                                                              | 0,15                                     | 0,5                                  | 0,80                                                   | 22 x 35        | ECS2XBC121M◇◇△△2235 |
|                                             |                                     | 1 658                                                            | 863                                                              | 0,15                                     | 0,5                                  | 0,81                                                   | 25 x 30        | ECS2XBC121M◇◇△△2530 |
|                                             |                                     | 1 327                                                            | 690                                                              | 0,15                                     | 0,6                                  | 0,92                                                   | 22 x 35        | ECS2XBC151M◇◇△△2235 |
|                                             | 150                                 | 1 327                                                            | 690                                                              | 0,15                                     | 0,6                                  | 0,93                                                   | 25 x 30        | ECS2XBC151M◇◇△△2530 |
|                                             |                                     | 1 106                                                            | 575                                                              | 0,15                                     | 0,8                                  | 1,1                                                    | 25 x 35        | ECS2XBC181M◇◇△△2535 |
|                                             | 220                                 | 905                                                              | 471                                                              | 0,15                                     | 0,9                                  | 1,2                                                    | 25 x 40        | ECS2XBC221M◇◇△△2540 |
|                                             |                                     | 905                                                              | 471                                                              | 0,15                                     | 0,9                                  | 1,3                                                    | 30 x 30        | ECS2XBC221M◇◇△△3030 |
|                                             | 270                                 | 737                                                              | 383                                                              | 0,15                                     | 1,1                                  | 1,3                                                    | 25 x 45        | ECS2XBC271M◇◇△△2545 |
|                                             |                                     | 737                                                              | 383                                                              | 0,15                                     | 1,1                                  | 1,4                                                    | 30 x 35        | ECS2XBC271M◇◇△△3035 |
|                                             | 330                                 | 603                                                              | 314                                                              | 0,15                                     | 1,4                                  | 1,6                                                    | 30 x 40        | ECS2XBC331M◇◇△△3040 |
|                                             | 390                                 | 511                                                              | 265                                                              | 0,15                                     | 1,5                                  | 1,9                                                    | 30 x 45        | ECS2XBC391M◇◇△△3045 |
|                                             | 470                                 | 424                                                              | 220                                                              | 0,15                                     | 1,5                                  | 2,1                                                    | 30 x 50        | ECS2XBC471M◇◇△△3050 |
|                                             |                                     | 424                                                              | 220                                                              | 0,15                                     | 1,5                                  | 2,2                                                    | 35 x 40        | ECS2XBC471M◇◇△△3540 |
|                                             | 560                                 | 356                                                              | 185                                                              | 0,15                                     | 1,5                                  | 2,4                                                    | 35 x 45        | ECS2XBC561M◇◇△△3545 |
|                                             | 680                                 | 293                                                              | 153                                                              | 0,15                                     | 1,5                                  | 2,8                                                    | 35 x 50        | ECS2XBC681M◇◇△△3550 |
|                                             | 820                                 | 243                                                              | 126                                                              | 0,15                                     | 1,5                                  | 3,2                                                    | 35 x 55        | ECS2XBC821M◇◇△△3555 |
| <b>450<br/>(470)<br/>2W</b>                 | 120                                 | 1 658                                                            | 1 161                                                            | 0,15                                     | 0,5                                  | 0,80                                                   | 22 x 35        | ECS2WBC121M◇◇△△2235 |
|                                             |                                     | 1 658                                                            | 1 161                                                            | 0,15                                     | 0,5                                  | 0,83                                                   | 25 x 30        | ECS2WBC121M◇◇△△2530 |
|                                             |                                     | 1 327                                                            | 929                                                              | 0,15                                     | 0,7                                  | 0,95                                                   | 22 x 40        | ECS2WBC151M◇◇△△2240 |
|                                             | 150                                 | 1 327                                                            | 929                                                              | 0,15                                     | 0,7                                  | 0,95                                                   | 25 x 35        | ECS2WBC151M◇◇△△2535 |
|                                             |                                     | 1 106                                                            | 774                                                              | 0,15                                     | 0,8                                  | 1,1                                                    | 25 x 35        | ECS2WBC181M◇◇△△2535 |
|                                             | 180                                 | 1 106                                                            | 774                                                              | 0,15                                     | 0,8                                  | 1,1                                                    | 30 x 25        | ECS2WBC181M◇◇△△3025 |
|                                             |                                     | 905                                                              | 633                                                              | 0,15                                     | 1,0                                  | 1,2                                                    | 25 x 40        | ECS2WBC221M◇◇△△2540 |
|                                             | 220                                 | 905                                                              | 633                                                              | 0,15                                     | 1,0                                  | 1,3                                                    | 30 x 30        | ECS2WBC221M◇◇△△3030 |
|                                             |                                     | 737                                                              | 516                                                              | 0,15                                     | 1,2                                  | 1,4                                                    | 30 x 35        | ECS2WBC271M◇◇△△3035 |
|                                             | 270                                 | 737                                                              | 516                                                              | 0,15                                     | 1,2                                  | 1,5                                                    | 35 x 30        | ECS2WBC271M◇◇△△3530 |
|                                             |                                     | 603                                                              | 423                                                              | 0,15                                     | 1,5                                  | 1,7                                                    | 30 x 40        | ECS2WBC331M◇◇△△3040 |
|                                             | 330                                 | 603                                                              | 423                                                              | 0,15                                     | 1,5                                  | 1,8                                                    | 35 x 30        | ECS2WBC331M◇◇△△3530 |
|                                             |                                     | 390                                                              | 551                                                              | 0,15                                     | 1,5                                  | 1,9                                                    | 35 x 35        | ECS2WBC391M◇◇△△3535 |
|                                             | 470                                 | 424                                                              | 296                                                              | 0,15                                     | 1,5                                  | 2,2                                                    | 35 x 40        | ECS2WBC471M◇◇△△3540 |
|                                             | 560                                 | 356                                                              | 285                                                              | 0,15                                     | 1,5                                  | 2,4                                                    | 35 x 45        | ECS2WBC561M◇◇△△3545 |
|                                             | 680                                 | 293                                                              | 235                                                              | 0,15                                     | 1,5                                  | 2,8                                                    | 35 x 50        | ECS2WBC681M◇◇△△3550 |
|                                             | 820                                 | 243                                                              | 194                                                              | 0,15                                     | 1,5                                  | 3,2                                                    | 35 x 60        | ECS2WBC821M◇◇△△3560 |
|                                             | 1 000                               | 199                                                              | 139                                                              | 0,15                                     | 1,5                                  | 3,9                                                    | 35 x 70        | ECS2WBC102M◇◇△△3570 |
| <b>500<br/>(550)<br/>2H</b>                 | 100                                 | 1 990                                                            | 1 592                                                            | 0,15                                     | 0,5                                  | 0,90                                                   | 25 x 30        | ECS2HBC101M◇◇△△2530 |
|                                             | 120                                 | 1 658                                                            | 1 327                                                            | 0,15                                     | 0,6                                  | 1,0                                                    | 25 x 35        | ECS2HBC121M◇◇△△2535 |
|                                             |                                     | 1 327                                                            | 1 062                                                            | 0,15                                     | 0,8                                  | 1,2                                                    | 25 x 35        | ECS2HBC151M◇◇△△2535 |
|                                             | 150                                 | 1 327                                                            | 1 062                                                            | 0,15                                     | 0,8                                  | 1,2                                                    | 30 x 30        | ECS2HBC151M◇◇△△3030 |
|                                             |                                     | 1 106                                                            | 885                                                              | 0,15                                     | 0,9                                  | 1,4                                                    | 30 x 30        | ECS2HBC181M◇◇△△3030 |
|                                             | 220                                 | 905                                                              | 724                                                              | 0,15                                     | 1,1                                  | 1,6                                                    | 30 x 35        | ECS2HBC221M◇◇△△3035 |
|                                             |                                     | 737                                                              | 590                                                              | 0,15                                     | 1,4                                  | 1,8                                                    | 30 x 40        | ECS2HBC271M◇◇△△3040 |
|                                             | 270                                 | 737                                                              | 590                                                              | 0,15                                     | 1,4                                  | 1,7                                                    | 35 x 30        | ECS2HBC271M◇◇△△3530 |
|                                             |                                     | 603                                                              | 483                                                              | 0,15                                     | 1,5                                  | 2,0                                                    | 30 x 45        | ECS2HBC331M◇◇△△3045 |
|                                             | 330                                 | 603                                                              | 483                                                              | 0,15                                     | 1,5                                  | 1,9                                                    | 35 x 35        | ECS2HBC331M◇◇△△3535 |
|                                             |                                     | 390                                                              | 511                                                              | 0,15                                     | 1,5                                  | 2,3                                                    | 35 x 40        | ECS2HBC391M◇◇△△3540 |
|                                             | 470                                 | 424                                                              | 339                                                              | 0,15                                     | 1,5                                  | 2,4                                                    | 30 x 50        | ECS2HBC471M◇◇△△3050 |
|                                             |                                     | 511                                                              | 409                                                              | 0,15                                     | 1,5                                  | 2,3                                                    | 35 x 45        | ECS2HBC471M◇◇△△3545 |
|                                             | 560                                 | 356                                                              | 285                                                              | 0,15                                     | 1,5                                  | 2,8                                                    | 35 x 50        | ECS2HBC561M◇◇△△3550 |
|                                             | 680                                 | 293                                                              | 235                                                              | 0,15                                     | 1,5                                  | 3,2                                                    | 35 x 55        | ECS2HBC681M◇◇△△3555 |
|                                             | 820                                 | 242                                                              | 194                                                              | 0,15                                     | 1,5                                  | 3,5                                                    | 35 x 60        | ECS2HBC821M◇◇△△3560 |

### 12 000h at 85°C (105°C)

- Extreme Long Useful Life at 85°C
- Large Case Size
- High Currents

• Enlarged Temperature (105°C) Range during Voltage Derating

CD 296 KC  
5 000h 105°  
Longer Life

↑ 105°C

CD 295 BC  
6 000h 85°  
Longer Life

↓ large case

CD 29L QL  
7 000h 85°  
Large Case

→ longer life

CD 295S BS  
12 000h 85°  
Large Case

→ 105°C

CD 296L FL  
6 000h 105°  
Large Case

## ITEM CHARACTERISTICS

|                                     |             |           |                            |
|-------------------------------------|-------------|-----------|----------------------------|
| Operating Temperature Range (°C)    | -40 ~ +85   | -25 ~ +85 | Lower voltages on request. |
| Voltage Range (V)                   | 160 ~ 400   | 450 ~ 500 |                            |
| Capacitance Range (µF)              | 390 ~ 4 700 |           |                            |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%       |           |                            |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval. Additionally please ask for series CD 295D ZD with temperature range -55°C ~ +85°C and 10 000h useful life.

Leakage Current After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

Enlarged Temperature Range **!** The maximum temperature at hotspot of 105°C is allowed, if the maximum voltage is limited to 0,93\*U<sub>R</sub> (Voltage Derating)

| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V) | 160 ~ 200 | 250 ~ 400 | 450 ~ 500 |
|---------------------------------------------------------|-------------------|-----------|-----------|-----------|
| $Z_{-25°C} / Z_{+20°C}$                                 |                   | 3         | 4         |           |
| $Z_{-40°C} / Z_{+20°C}$                                 |                   | 6         | 8         | -         |

Fast Charge-Discharge **!** Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

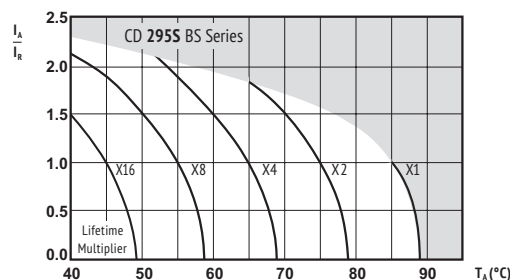
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                          | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | 12 000h                               | > 100 000h                        | 5 000h                                | 7 000h                                  | 1 000h                                |                                                                              |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value           | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value           | Within ± 20% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value   | Not more than 200% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$1,2 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$I_R = 0$<br>85°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>85°C        | After test:<br>$U_R$ to be applied<br>for 30 min > 24h<br>before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | ≥ 50 kHz |
|-----------|------|-------|-------|------|-------|----------|
| Factor    | 0,80 | 1,00  | 1,16  | 1,30 | 1,41  | 1,43     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 85°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

**!** Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

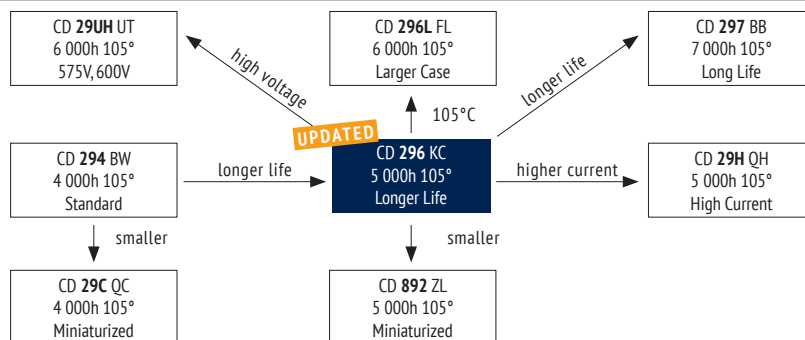
This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br><br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|--------------------------------------|-----------------------------------------------------------|----------------|-----------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                                | (mΩ)                                                                |                                             | (mA)                                 | (Arms)                                                    | (mm)           |                                                                                   |
| <b>160<br/>(200)<br/>2C</b>                 | 2 200                               | 91                                                                  | 63                                                                  | 0,15                                        | 1,5                                  | 4,9                                                       | 35 x 45        | ECS2CBS222M◇◇△△3545                                                               |
|                                             | 2 700                               | 74                                                                  | 52                                                                  | 0,15                                        | 1,5                                  | 5,3                                                       | 35 x 50        | ECS2CBS272M◇◇△△3550                                                               |
|                                             | 3 300                               | 61                                                                  | 42                                                                  | 0,15                                        | 1,5                                  | 5,5                                                       | 35 x 70        | ECS2CBS332M◇◇△△3570                                                               |
|                                             |                                     | 61                                                                  | 42                                                                  | 0,15                                        | 1,5                                  | 5,5                                                       | 40 x 60        | ECS2CBS332M◇◇△△4060                                                               |
|                                             | 3 900                               | 52                                                                  | 36                                                                  | 0,15                                        | 1,5                                  | 5,9                                                       | 35 x 80        | ECS2CBS392M◇◇△△3580                                                               |
|                                             | 4 700                               | 43                                                                  | 30                                                                  | 0,15                                        | 1,5                                  | 7,3                                                       | 40 x 80        | ECS2CBS472M◇◇△△4080                                                               |
| <b>200<br/>(250)<br/>2D</b>                 | 1 500                               | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 4,3                                                       | 35 x 40        | ECS2DBS152M◇◇△△3540                                                               |
|                                             | 1 800                               | 111                                                                 | 77                                                                  | 0,15                                        | 1,5                                  | 4,7                                                       | 35 x 45        | ECS2DBS182M◇◇△△3545                                                               |
|                                             | 2 200                               | 91                                                                  | 63                                                                  | 0,15                                        | 1,5                                  | 5,4                                                       | 35 x 50        | ECS2DBS222M◇◇△△3550                                                               |
|                                             |                                     | 91                                                                  | 63                                                                  | 0,15                                        | 1,5                                  | 5,4                                                       | 40 x 40        | ECS2DBS222M◇◇△△4040                                                               |
|                                             | 2 700                               | 74                                                                  | 52                                                                  | 0,15                                        | 1,5                                  | 5,9                                                       | 35 x 60        | ECS2DBS272M◇◇△△3560                                                               |
|                                             |                                     | 74                                                                  | 52                                                                  | 0,15                                        | 1,5                                  | 5,9                                                       | 40 x 50        | ECS2DBS272M◇◇△△4050                                                               |
|                                             | 3 300                               | 61                                                                  | 42                                                                  | 0,15                                        | 1,5                                  | 6,5                                                       | 35 x 80        | ECS2DBS332M◇◇△△3580                                                               |
|                                             |                                     | 61                                                                  | 42                                                                  | 0,15                                        | 1,5                                  | 6,5                                                       | 40 x 60        | ECS2DBS332M◇◇△△4060                                                               |
|                                             | 3 900                               | 52                                                                  | 36                                                                  | 0,15                                        | 1,5                                  | 7,0                                                       | 40 x 80        | ECS2DBS392M◇◇△△4080                                                               |
|                                             | 4 700                               | 43                                                                  | 30                                                                  | 0,15                                        | 1,5                                  | 9,2                                                       | 40 x 90        | ECS2DBS472M◇◇△△4090                                                               |
| <b>250<br/>(300)<br/>2E</b>                 | 1 000                               | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 3,7                                                       | 35 x 40        | ECS2EBS102M◇◇△△3540                                                               |
|                                             | 1 200                               | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 3,8                                                       | 35 x 45        | ECS2EBS122M◇◇△△3545                                                               |
|                                             | 1 500                               | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 4,4                                                       | 35 x 50        | ECS2EBS152M◇◇△△3550                                                               |
|                                             |                                     | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 4,5                                                       | 40 x 40        | ECS2EBS152M◇◇△△4040                                                               |
|                                             | 1 800                               | 111                                                                 | 77                                                                  | 0,15                                        | 1,5                                  | 5,0                                                       | 35 x 70        | ECS2EBS182M◇◇△△3570                                                               |
|                                             |                                     | 111                                                                 | 77                                                                  | 0,15                                        | 1,5                                  | 5,0                                                       | 40 x 50        | ECS2EBS182M◇◇△△4050                                                               |
|                                             | 2 200                               | 91                                                                  | 63                                                                  | 0,15                                        | 1,5                                  | 5,4                                                       | 35 x 70        | ECS2EBS222M◇◇△△3570                                                               |
|                                             | 2 700                               | 74                                                                  | 52                                                                  | 0,15                                        | 1,5                                  | 6,9                                                       | 40 x 80        | ECS2EBS272M◇◇△△4080                                                               |
| <b>350<br/>(400)<br/>2V</b>                 | 680                                 | 293                                                                 | 205                                                                 | 0,15                                        | 1,5                                  | 3,6                                                       | 35 x 45        | ECS2VBS681M◇◇△△3545                                                               |
|                                             |                                     | 293                                                                 | 205                                                                 | 0,15                                        | 1,5                                  | 3,6                                                       | 40 x 40        | ECS2VBS681M◇◇△△4040                                                               |
|                                             | 820                                 | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 4,5                                                       | 35 x 60        | ECS2VBS821M◇◇△△3560                                                               |
|                                             |                                     | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 4,5                                                       | 40 x 50        | ECS2VBS821M◇◇△△4050                                                               |
|                                             | 1 000                               | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 5,2                                                       | 35 x 70        | ECS2VBS102M◇◇△△3570                                                               |
|                                             |                                     | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 4,9                                                       | 40 x 60        | ECS2VBS102M◇◇△△4060                                                               |
|                                             | 1 200                               | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 5,5                                                       | 35 x 80        | ECS2VBS122M◇◇△△3580                                                               |
|                                             |                                     | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 5,6                                                       | 40 x 70        | ECS2VBS122M◇◇△△4070                                                               |
|                                             | 1 500                               | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 6,5                                                       | 40 x 80        | ECS2VBS152M◇◇△△4080                                                               |
|                                             |                                     | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 6,2                                                       | 45 x 70        | ECS2VBS152M◇◇△△4570                                                               |
|                                             | 1 800                               | 111                                                                 | 77                                                                  | 0,15                                        | 1,5                                  | 7,9                                                       | 40 x 100       | ECS2VBS182M◇◇△△40100                                                              |
|                                             |                                     | 111                                                                 | 77                                                                  | 0,15                                        | 1,5                                  | 7,1                                                       | 45 x 70        | ECS2VBS182M◇◇△△4570                                                               |
|                                             | 2 200                               | 91                                                                  | 63                                                                  | 0,15                                        | 1,5                                  | 8,7                                                       | 40 x 100       | ECS2VBS222M◇◇△△40100                                                              |
| <b>400<br/>(450)<br/>2G</b>                 | 560                                 | 356                                                                 | 249                                                                 | 0,15                                        | 1,5                                  | 3,2                                                       | 35 x 50        | ECS2GBS561M◇◇△△3550                                                               |
|                                             |                                     | 356                                                                 | 249                                                                 | 0,15                                        | 1,5                                  | 2,8                                                       | 40 x 40        | ECS2GBS561M◇◇△△4040                                                               |
|                                             | 680                                 | 293                                                                 | 205                                                                 | 0,15                                        | 1,5                                  | 3,7                                                       | 35 x 60        | ECS2GBS681M◇◇△△3560                                                               |
|                                             |                                     | 293                                                                 | 205                                                                 | 0,15                                        | 1,5                                  | 3,8                                                       | 40 x 50        | ECS2GBS681M◇◇△△4050                                                               |
|                                             | 820                                 | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 4,2                                                       | 35 x 60        | ECS2GBS821M◇◇△△3560                                                               |
|                                             |                                     | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 4,1                                                       | 40 x 50        | ECS2GBS821M◇◇△△4050                                                               |
|                                             | 1 000                               | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 4,9                                                       | 35 x 70        | ECS2GBS102M◇◇△△3570                                                               |
|                                             |                                     | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 4,8                                                       | 40 x 60        | ECS2GBS102M◇◇△△4060                                                               |
|                                             | 1 200                               | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 5,8                                                       | 35 x 80        | ECS2GBS122M◇◇△△3580                                                               |
|                                             |                                     | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 5,5                                                       | 40 x 70        | ECS2GBS122M◇◇△△4070                                                               |
|                                             | 1 500                               | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 6,9                                                       | 40 x 80        | ECS2GBS152M◇◇△△4080                                                               |
|                                             |                                     | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 6,6                                                       | 45 x 70        | ECS2GBS152M◇◇△△4570                                                               |
|                                             | 1 800                               | 111                                                                 | 77                                                                  | 0,15                                        | 1,5                                  | 7,9                                                       | 40 x 90        | ECS2GBS182M◇◇△△4090                                                               |
|                                             |                                     | 111                                                                 | 77                                                                  | 0,15                                        | 1,5                                  | 7,3                                                       | 45 x 80        | ECS2GBS182M◇◇△△4580                                                               |
| <b>450<br/>(500)<br/>2W</b>                 | 470                                 | 424                                                                 | 296                                                                 | 0,15                                        | 1,5                                  | 3,0                                                       | 35 x 50        | ECS2WBS471M◇◇△△3550                                                               |
|                                             |                                     | 424                                                                 | 296                                                                 | 0,15                                        | 1,5                                  | 3,0                                                       | 40 x 40        | ECS2WBS471M◇◇△△4040                                                               |
|                                             | 560                                 | 356                                                                 | 249                                                                 | 0,15                                        | 1,5                                  | 3,1                                                       | 35 x 50        | ECS2WBS561M◇◇△△3550                                                               |
|                                             |                                     | 356                                                                 | 249                                                                 | 0,15                                        | 1,5                                  | 3,3                                                       | 35 x 60        | ECS2WBS561M◇◇△△3560                                                               |
|                                             | 680                                 | 293                                                                 | 205                                                                 | 0,15                                        | 1,5                                  | 3,5                                                       | 35 x 60        | ECS2WBS681M◇◇△△3560                                                               |
|                                             |                                     | 293                                                                 | 205                                                                 | 0,15                                        | 1,5                                  | 3,8                                                       | 35 x 70        | ECS2WBS681M◇◇△△3570                                                               |
|                                             | 820                                 | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 4,6                                                       | 35 x 80        | ECS2WBS821M◇◇△△3580                                                               |
|                                             |                                     | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 4,4                                                       | 40 x 60        | ECS2WBS821M◇◇△△4060                                                               |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br><br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|--------------------------------------|-----------------------------------------------------------|----------------|-----------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                                | (mΩ)                                                                |                                             | (mA)                                 | (Arms)                                                    | (mm)           |                                                                                   |
| <b>450<br/>(500)<br/>2W</b>                 | 1 000                               | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 5,7                                                       | 35 x 80        | ECS2WBS102M◇◇△△3580                                                               |
|                                             |                                     | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 5,2                                                       | 40 x 60        | ECS2WBS102M◇◇△△4060                                                               |
|                                             | 1 200                               | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 5,9                                                       | 40 x 70        | ECS2WBS122M◇◇△△4070                                                               |
|                                             |                                     | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 6,2                                                       | 45 x 70        | ECS2WBS122M◇◇△△4570                                                               |
|                                             | 1 500                               | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 7,3                                                       | 40 x 100       | ECS2WBS152M◇◇△△40100                                                              |
|                                             |                                     | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 7,0                                                       | 45 x 80        | ECS2WBS152M◇◇△△4580                                                               |
|                                             | 1 800                               | 111                                                                 | 77                                                                  | 0,15                                        | 1,5                                  | 7,9                                                       | 45 x 100       | ECS2WBS182M◇◇△△45100                                                              |
| <b>500<br/>(550)<br/>2H</b>                 | 390                                 | 511                                                                 | 357                                                                 | 0,15                                        | 1,5                                  | 1,9                                                       | 35 x 50        | ECS2HBS391M◇◇△△3550                                                               |
|                                             | 470                                 | 424                                                                 | 296                                                                 | 0,15                                        | 1,5                                  | 2,3                                                       | 35 x 60        | ECS2HBS471M◇◇△△3560                                                               |
|                                             | 560                                 | 356                                                                 | 249                                                                 | 0,15                                        | 1,5                                  | 2,5                                                       | 35 x 60        | ECS2HBS561M◇◇△△3560                                                               |
|                                             |                                     | 356                                                                 | 249                                                                 | 0,15                                        | 1,5                                  | 2,7                                                       | 40 x 60        | ECS2HBS561M◇◇△△4060                                                               |
|                                             | 680                                 | 293                                                                 | 205                                                                 | 0,15                                        | 1,5                                  | 3,1                                                       | 35 x 80        | ECS2HBS681M◇◇△△3580                                                               |
|                                             |                                     | 293                                                                 | 205                                                                 | 0,15                                        | 1,5                                  | 2,8                                                       | 40 x 70        | ECS2HBS681M◇◇△△4070                                                               |
|                                             | 820                                 | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 3,4                                                       | 35 x 90        | ECS2HBS821M◇◇△△3590                                                               |
|                                             |                                     | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 3,3                                                       | 40 x 70        | ECS2HBS821M◇◇△△4070                                                               |
|                                             | 1 000                               | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 3,9                                                       | 40 x 80        | ECS2HBS102M◇◇△△4080                                                               |
|                                             |                                     | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 3,9                                                       | 45 x 70        | ECS2HBS102M◇◇△△4570                                                               |
|                                             | 1 200                               | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 4,3                                                       | 40 x 90        | ECS2HBS122M◇◇△△4090                                                               |
|                                             | 1 500                               | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 4,8                                                       | 45 x 100       | ECS2HBS152M◇◇△△45100                                                              |

**5 000h at 105°C**

- Long Life at High Temperature
- High Ripple Currents
- Professional Power Supplies

**ITEM CHARACTERISTICS**

|                                     |             |                            |
|-------------------------------------|-------------|----------------------------|
| Operating Temperature Range (°C)    | -25 ~ +105  | Lower voltages on request. |
| Voltage Range (V)                   | 200 ~ 550   |                            |
| Capacitance Range (µF)              | 100 ~ 2 200 |                            |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%       |                            |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current: After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

|                                                         |                                                     |           |
|---------------------------------------------------------|-----------------------------------------------------|-----------|
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)                                   | 200 ~ 550 |
|                                                         | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 4         |

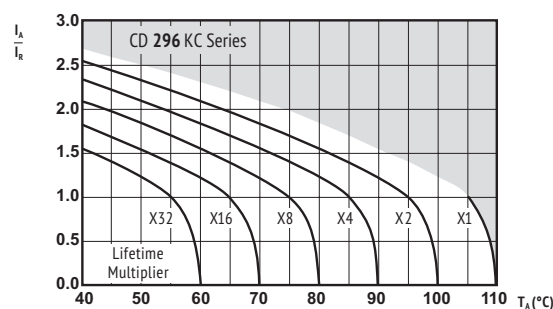
Fast Charge-Discharge: Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                        |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------|
| Lifetime                                                                | 5 000h                                | > 200 000h                        | 3 000h                                | 4 000h                                   | 1 000h                                |                                                                        |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                        |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value            | Within ± 20% of initial value         |                                                                        |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value    | Not more than 200% of specified value |                                                                        |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for 30 min > 24h before measurement |

**MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)**

| Frequency<br>Rated Voltage (V) | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | ≥ 50 kHz |
|--------------------------------|------|-------|-------|------|-------|----------|
| 200 ~ 250                      | 0,87 | 1,00  | 1,17  | 1,32 | 1,45  | 1,50     |
| ≥ 315                          | 0,80 | 1,00  | 1,16  | 1,30 | 1,41  | 1,43     |

Multipliers for typical operating conditions.

**MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)**

$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

**ENVIRONMENTAL**

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

**SAFETY FACTOR**

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

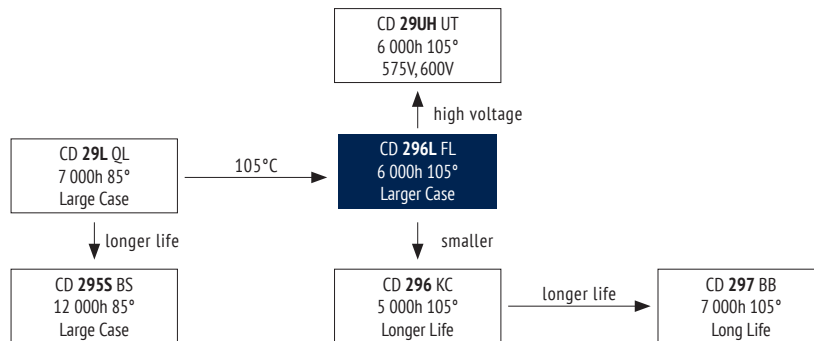


| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                  | (mm)           |                                                                               |
| <b>200<br/>(250)<br/>2D</b>                 | 470                                 | 424                                                              | 296                                                              | 0,15                                     | 0,9                                  | 1,47                                                    | 25 x 30        | ECS2DKC471M◇◇△△2530                                                           |
|                                             |                                     | 424                                                              | 296                                                              | 0,15                                     | 0,9                                  | 1,56                                                    | 30 x 25        | ECS2DKC471M◇◇△△3025                                                           |
|                                             | 560                                 | 356                                                              | 249                                                              | 0,15                                     | 1,1                                  | 1,60                                                    | 25 x 35        | ECS2DKC561M◇◇△△2535                                                           |
|                                             |                                     | 356                                                              | 249                                                              | 0,15                                     | 1,1                                  | 1,65                                                    | 30 x 30        | ECS2DKC561M◇◇△△3030                                                           |
|                                             | 680                                 | 293                                                              | 205                                                              | 0,15                                     | 1,4                                  | 1,80                                                    | 25 x 40        | ECS2DKC681M◇◇△△2540                                                           |
|                                             |                                     | 293                                                              | 205                                                              | 0,15                                     | 1,4                                  | 1,82                                                    | 30 x 30        | ECS2DKC681M◇◇△△3030                                                           |
|                                             | 820                                 | 243                                                              | 170                                                              | 0,15                                     | 1,5                                  | 1,99                                                    | 30 x 35        | ECS2DKC821M◇◇△△3035                                                           |
|                                             |                                     | 199                                                              | 139                                                              | 0,15                                     | 1,5                                  | 2,17                                                    | 22 x 50        | ECS2DKC102M◇◇△△2250                                                           |
|                                             | 1 000                               | 199                                                              | 139                                                              | 0,15                                     | 1,5                                  | 2,17                                                    | 30 x 40        | ECS2DKC102M◇◇△△3040                                                           |
|                                             |                                     | 166                                                              | 116                                                              | 0,15                                     | 1,5                                  | 2,28                                                    | 25 x 40        | ECS2DKC122M◇◇△△2540                                                           |
|                                             | 1 200                               | 166                                                              | 116                                                              | 0,15                                     | 1,5                                  | 2,32                                                    | 30 x 40        | ECS2DKC122M◇◇△△3040                                                           |
|                                             |                                     | 133                                                              | 93                                                               | 0,15                                     | 1,5                                  | 2,59                                                    | 30 x 50        | ECS2DKC152M◇◇△△3050                                                           |
|                                             | 1 500                               | 133                                                              | 93                                                               | 0,15                                     | 1,5                                  | 2,59                                                    | 35 x 40        | ECS2DKC152M◇◇△△3540                                                           |
|                                             |                                     | 111                                                              | 77                                                               | 0,15                                     | 1,5                                  | 2,70                                                    | 35 x 45        | ECS2DKC182M◇◇△△3545                                                           |
|                                             | 2 200                               | 91                                                               | 63                                                               | 0,15                                     | 1,5                                  | 3,23                                                    | 35 x 50        | ECS2DKC222M◇◇△△3550                                                           |
| <b>250<br/>(300)<br/>2E</b>                 | 330                                 | 603                                                              | 422                                                              | 0,15                                     | 0,8                                  | 1,20                                                    | 22 x 40        | ECS2EKC331M◇◇△△2240                                                           |
|                                             |                                     | 603                                                              | 422                                                              | 0,15                                     | 0,8                                  | 1,30                                                    | 25 x 30        | ECS2EKC331M◇◇△△2530                                                           |
|                                             | 390                                 | 511                                                              | 357                                                              | 0,15                                     | 1,0                                  | 1,42                                                    | 25 x 35        | ECS2EKC391M◇◇△△2535                                                           |
|                                             |                                     | 424                                                              | 296                                                              | 0,15                                     | 1,2                                  | 1,47                                                    | 25 x 40        | ECS2EKC471M◇◇△△2540                                                           |
|                                             | 470                                 | 424                                                              | 296                                                              | 0,15                                     | 1,2                                  | 1,51                                                    | 30 x 30        | ECS2EKC471M◇◇△△3030                                                           |
|                                             |                                     | 356                                                              | 249                                                              | 0,15                                     | 1,4                                  | 1,59                                                    | 25 x 45        | ECS2EKC561M◇◇△△2545                                                           |
|                                             | 560                                 | 356                                                              | 249                                                              | 0,15                                     | 1,4                                  | 1,61                                                    | 30 x 30        | ECS2EKC561M◇◇△△3030                                                           |
|                                             |                                     | 293                                                              | 205                                                              | 0,15                                     | 1,5                                  | 1,66                                                    | 25 x 50        | ECS2EKC681M◇◇△△2550                                                           |
|                                             | 680                                 | 293                                                              | 205                                                              | 0,15                                     | 1,5                                  | 1,76                                                    | 30 x 35        | ECS2EKC681M◇◇△△3035                                                           |
|                                             |                                     | 243                                                              | 170                                                              | 0,15                                     | 1,5                                  | 1,83                                                    | 30 x 40        | ECS2EKC821M◇◇△△3040                                                           |
|                                             | 820                                 | 243                                                              | 170                                                              | 0,15                                     | 1,5                                  | 1,82                                                    | 35 x 35        | ECS2EKC821M◇◇△△3535                                                           |
|                                             |                                     | 199                                                              | 139                                                              | 0,15                                     | 1,5                                  | 1,87                                                    | 30 x 50        | ECS2EKC102M◇◇△△3050                                                           |
|                                             | 1 000                               | 199                                                              | 139                                                              | 0,15                                     | 1,5                                  | 1,99                                                    | 35 x 40        | ECS2EKC102M◇◇△△3540                                                           |
|                                             |                                     | 166                                                              | 116                                                              | 0,15                                     | 1,5                                  | 2,10                                                    | 35 x 45        | ECS2EKC122M◇◇△△3545                                                           |
|                                             | 1 200                               | 133                                                              | 93                                                               | 0,15                                     | 1,5                                  | 2,70                                                    | 35 x 50        | ECS2EKC152M◇◇△△3550                                                           |
|                                             | 1 500                               | 111                                                              | 77                                                               | 0,15                                     | 1,5                                  | 2,90                                                    | 35 x 55        | ECS2EKC182M◇◇△△3555                                                           |
|                                             |                                     | 111                                                              | 77                                                               | 0,15                                     | 1,5                                  | 2,92                                                    | 35 x 60        | ECS2EKC182M◇◇△△3560                                                           |
| <b>315<br/>(365)<br/>2F</b>                 | 180                                 | 1 106                                                            | 608                                                              | 0,15                                     | 0,6                                  | 0,78                                                    | 22 x 40        | ECS2FKC181M◇◇△△2240                                                           |
|                                             |                                     | 1 106                                                            | 608                                                              | 0,15                                     | 0,6                                  | 0,85                                                    | 25 x 25        | ECS2FKC181M◇◇△△2525                                                           |
|                                             | 220                                 | 905                                                              | 498                                                              | 0,15                                     | 0,7                                  | 0,91                                                    | 22 x 45        | ECS2FKC221M◇◇△△2245                                                           |
|                                             |                                     | 905                                                              | 498                                                              | 0,15                                     | 0,7                                  | 0,94                                                    | 25 x 30        | ECS2FKC221M◇◇△△2530                                                           |
|                                             | 270                                 | 737                                                              | 406                                                              | 0,15                                     | 0,9                                  | 1,00                                                    | 25 x 35        | ECS2FKC271M◇◇△△2535                                                           |
|                                             |                                     | 737                                                              | 406                                                              | 0,15                                     | 0,9                                  | 0,98                                                    | 30 x 25        | ECS2FKC271M◇◇△△3025                                                           |
|                                             | 330                                 | 603                                                              | 332                                                              | 0,15                                     | 1,0                                  | 1,13                                                    | 30 x 30        | ECS2FKC331M◇◇△△3030                                                           |
|                                             | 390                                 | 510                                                              | 281                                                              | 0,15                                     | 1,2                                  | 1,20                                                    | 30 x 35        | ECS2FKC391M◇◇△△3035                                                           |
|                                             | 470                                 | 424                                                              | 233                                                              | 0,15                                     | 1,5                                  | 1,28                                                    | 30 x 35        | ECS2FKC471M◇◇△△3035                                                           |
|                                             | 560                                 | 355                                                              | 196                                                              | 0,15                                     | 1,5                                  | 1,46                                                    | 30 x 40        | ECS2FKC561M◇◇△△3040                                                           |
|                                             | 680                                 | 293                                                              | 161                                                              | 0,15                                     | 1,5                                  | 1,85                                                    | 30 x 45        | ECS2FKC681M◇◇△△3045                                                           |
|                                             |                                     | 293                                                              | 161                                                              | 0,15                                     | 1,5                                  | 1,88                                                    | 35 x 35        | ECS2FKC681M◇◇△△3535                                                           |
|                                             | 820                                 | 242                                                              | 133                                                              | 0,15                                     | 1,5                                  | 2,10                                                    | 30 x 50        | ECS2FKC821M◇◇△△3050                                                           |
|                                             |                                     | 242                                                              | 133                                                              | 0,15                                     | 1,5                                  | 2,15                                                    | 35 x 40        | ECS2FKC821M◇◇△△3540                                                           |
|                                             | 1 000                               | 199                                                              | 109                                                              | 0,15                                     | 1,5                                  | 2,42                                                    | 30 x 55        | ECS2FKC102M◇◇△△3055                                                           |
|                                             |                                     | 199                                                              | 109                                                              | 0,15                                     | 1,5                                  | 2,47                                                    | 35 x 45        | ECS2FKC102M◇◇△△3545                                                           |
|                                             | 1 200                               | 166                                                              | 91                                                               | 0,15                                     | 1,5                                  | 2,60                                                    | 35 x 50        | ECS2FKC122M◇◇△△3550                                                           |
| <b>400<br/>(450)<br/>2G</b>                 | 120                                 | 1 658                                                            | 863                                                              | 0,15                                     | 0,7                                  | 0,66                                                    | 22 x 30        | ECS2GKC121M◇◇△△2230                                                           |
|                                             |                                     | 1 658                                                            | 863                                                              | 0,15                                     | 0,5                                  | 0,68                                                    | 25 x 25        | ECS2GKC121M◇◇△△2525                                                           |
|                                             | 150                                 | 1 327                                                            | 690                                                              | 0,15                                     | 0,6                                  | 0,73                                                    | 25 x 30        | ECS2GKC151M◇◇△△2530                                                           |
|                                             |                                     | 1 327                                                            | 690                                                              | 0,15                                     | 0,7                                  | 0,75                                                    | 30 x 25        | ECS2GKC151M◇◇△△3025                                                           |
|                                             | 180                                 | 1 106                                                            | 575                                                              | 0,15                                     | 0,7                                  | 0,78                                                    | 22 x 35        | ECS2GKC181M◇◇△△2235                                                           |
|                                             |                                     | 1 106                                                            | 575                                                              | 0,15                                     | 0,7                                  | 0,83                                                    | 30 x 30        | ECS2GKC181M◇◇△△3030                                                           |
|                                             | 220                                 | 905                                                              | 471                                                              | 0,15                                     | 0,9                                  | 0,87                                                    | 25 x 40        | ECS2GKC221M◇◇△△2540                                                           |
|                                             |                                     | 905                                                              | 471                                                              | 0,15                                     | 0,9                                  | 0,96                                                    | 30 x 30        | ECS2GKC221M◇◇△△3030                                                           |
|                                             | 270                                 | 737                                                              | 383                                                              | 0,15                                     | 1,1                                  | 0,94                                                    | 22 x 50        | ECS2GKC271M◇◇△△2250                                                           |
|                                             |                                     | 737                                                              | 383                                                              | 0,15                                     | 1,1                                  | 0,95                                                    | 30 x 35        | ECS2GKC271M◇◇△△3035                                                           |
|                                             | 330                                 | 603                                                              | 314                                                              | 0,15                                     | 1,3                                  | 1,11                                                    | 25 x 50        | ECS2GKC331M◇◇△△2550                                                           |
|                                             |                                     | 603                                                              | 314                                                              | 0,15                                     | 1,3                                  | 1,06                                                    | 30 x 35        | ECS2GKC331M◇◇△△3035                                                           |
|                                             | 390                                 | 603                                                              | 314                                                              | 0,15                                     | 1,3                                  | 1,09                                                    | 35 x 30        | ECS2GKC331M◇◇△△3530                                                           |
|                                             |                                     | 511                                                              | 265                                                              | 0,15                                     | 1,5                                  | 1,15                                                    | 30 x 40        | ECS2GKC391M◇◇△△3040                                                           |
|                                             |                                     | 511                                                              | 265                                                              | 0,15                                     | 1,5                                  | 1,26                                                    | 35 x 35        | ECS2GKC391M◇◇△△3535                                                           |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 120Hz | Size<br>øD x L      | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------------------------------------|---------------------|----------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                  | (mm)                | Details: Page 105                                        |
| 400<br>(450)<br>2G                          | 470                                 | 424                                                              | 220                                                              | 0,15                                     | 1,5                                  | 1,28                                                    | 30 x 50             | ECS2GKC471M◇◇△△3050                                      |
|                                             |                                     | 424                                                              | 220                                                              | 0,15                                     | 1,5                                  | 1,31                                                    | 35 x 40             | ECS2GKC471M◇◇△△3540                                      |
|                                             | 560                                 | 356                                                              | 185                                                              | 0,15                                     | 1,5                                  | 1,50                                                    | 30 x 50             | ECS2GKC561M◇◇△△3050                                      |
|                                             |                                     | 356                                                              | 185                                                              | 0,15                                     | 1,5                                  | 1,65                                                    | 35 x 45             | ECS2GKC561M◇◇△△3545                                      |
|                                             | 680                                 | 293                                                              | 153                                                              | 0,15                                     | 1,5                                  | 1,90                                                    | 35 x 50             | ECS2GKC681M◇◇△△3550                                      |
|                                             | 820                                 | 243                                                              | 126                                                              | 0,15                                     | 1,5                                  | 2,20                                                    | 35 x 60             | ECS2GKC821M◇◇△△3560                                      |
|                                             | 1 000                               | 199                                                              | 139                                                              | 0,15                                     | 1,5                                  | 2,50                                                    | 30 x 70             | ECS2GKC102M◇◇△△3070                                      |
|                                             |                                     | 199                                                              | 139                                                              | 0,15                                     | 1,5                                  | 2,60                                                    | 35 x 65             | ECS2GKC102M◇◇△△3565                                      |
| 450<br>(500)<br>2W                          | 120                                 | 2 211                                                            | 1.106                                                            | 0,20                                     | 0,5                                  | 0,73                                                    | 25 x 25             | ECS2WKC121M◇◇△△2525                                      |
|                                             | 150                                 | 1 769                                                            | 885                                                              | 0,20                                     | 0,7                                  | 0,82                                                    | 25 x 30             | ECS2WKC151M◇◇△△2530                                      |
|                                             | 180                                 | 1 474                                                            | 737                                                              | 0,20                                     | 0,8                                  | 0,86                                                    | 30 x 30             | ECS2WKC181M◇◇△△3030                                      |
|                                             | 220                                 | 1 206                                                            | 603                                                              | 0,20                                     | 1,0                                  | 0,94                                                    | 25 x 45             | ECS2WKC221M◇◇△△2545                                      |
|                                             |                                     | 1 206                                                            | 603                                                              | 0,20                                     | 1,0                                  | 0,95                                                    | 30 x 30             | ECS2WKC221M◇◇△△3030                                      |
|                                             | 270                                 | 983                                                              | 492                                                              | 0,20                                     | 1,2                                  | 1,11                                                    | 30 x 30             | ECS2WKC271M◇◇△△3030                                      |
|                                             |                                     | 983                                                              | 492                                                              | 0,20                                     | 1,2                                  | 1,15                                                    | 30 x 35             | ECS2WKC271M◇◇△△3035                                      |
|                                             | 330                                 | 804                                                              | 402                                                              | 0,20                                     | 1,5                                  | 1,25                                                    | 30 x 40             | ECS2WKC331M◇◇△△3040                                      |
|                                             |                                     | 804                                                              | 402                                                              | 0,20                                     | 1,5                                  | 1,26                                                    | 35 x 30             | ECS2WKC331M◇◇△△3530                                      |
|                                             | 390                                 | 681                                                              | 340                                                              | 0,20                                     | 1,5                                  | 1,31                                                    | 30 x 40             | ECS2WKC391M◇◇△△3040                                      |
|                                             |                                     | 681                                                              | 340                                                              | 0,20                                     | 1,5                                  | 1,35                                                    | 30 x 45             | ECS2WKC391M◇◇△△3045                                      |
|                                             | 470                                 | 565                                                              | 282                                                              | 0,20                                     | 1,5                                  | 1,50                                                    | 30 x 50             | ECS2WKC471M◇◇△△3050                                      |
|                                             |                                     | 565                                                              | 282                                                              | 0,20                                     | 1,5                                  | 1,55                                                    | 35 x 45             | ECS2WKC471M◇◇△△3545                                      |
|                                             | 560                                 | 474                                                              | 237                                                              | 0,20                                     | 1,5                                  | 1,65                                                    | 30 x 50             | ECS2WKC561M◇◇△△3050                                      |
|                                             |                                     | 474                                                              | 237                                                              | 0,20                                     | 1,5                                  | 1,70                                                    | 35 x 50             | ECS2WKC561M◇◇△△3550                                      |
|                                             | 680                                 | 391                                                              | 196                                                              | 0,20                                     | 1,5                                  | 1,95                                                    | 35 x 50             | ECS2WKC681M◇◇△△3550                                      |
|                                             |                                     | 391                                                              | 196                                                              | 0,20                                     | 1,5                                  | 2,00                                                    | 35 x 60             | ECS2WKC681M◇◇△△3560                                      |
|                                             | 820                                 | 324                                                              | 162                                                              | 0,20                                     | 1,5                                  | 2,15                                                    | 35 x 60             | ECS2WKC821M◇◇△△3560                                      |
|                                             |                                     | 324                                                              | 162                                                              | 0,20                                     | 1,5                                  | 2,20                                                    | 35 x 65             | ECS2WKC821M◇◇△△3565                                      |
|                                             | 1 000                               | 265                                                              | 139                                                              | 0,20                                     | 1,5                                  | 2,60                                                    | 35 x 70             | ECS2WKC102M◇◇△△3570                                      |
|                                             | 500<br>(550)<br>2H                  | 100                                                              | 2 653                                                            | 1.327                                    | 0,20                                 | 0,5                                                     | 0,67                | 22 x 35                                                  |
| 120                                         |                                     | 2 211                                                            | 1.106                                                            | 0,20                                     | 0,6                                  | 0,77                                                    | 22 x 50             | ECS2HKC121M◇◇△△2250                                      |
|                                             |                                     | 2 211                                                            | 1.106                                                            | 0,20                                     | 0,6                                  | 0,81                                                    | 25 x 35             | ECS2HKC121M◇◇△△2535                                      |
| 150                                         |                                     | 1 769                                                            | 885                                                              | 0,20                                     | 0,8                                  | 0,82                                                    | 25 x 40             | ECS2HKC151M◇◇△△2540                                      |
|                                             |                                     | 1 769                                                            | 885                                                              | 0,20                                     | 0,8                                  | 0,85                                                    | 30 x 30             | ECS2HKC151M◇◇△△3030                                      |
| 180                                         |                                     | 1 474                                                            | 737                                                              | 0,20                                     | 0,9                                  | 0,98                                                    | 25 x 50             | ECS2HKC181M◇◇△△2550                                      |
|                                             |                                     | 1 474                                                            | 737                                                              | 0,20                                     | 0,9                                  | 1,01                                                    | 30 x 35             | ECS2HKC181M◇◇△△3035                                      |
| 220                                         |                                     | 1 206                                                            | 603                                                              | 0,20                                     | 1,1                                  | 1,12                                                    | 30 x 35             | ECS2HKC221M◇◇△△3035                                      |
|                                             |                                     | 1 206                                                            | 603                                                              | 0,20                                     | 1,1                                  | 1,18                                                    | 35 x 30             | ECS2HKC221M◇◇△△3530                                      |
| 270                                         |                                     | 983                                                              | 492                                                              | 0,20                                     | 1,4                                  | 1,25                                                    | 30 x 40             | ECS2HKC271M◇◇△△3040                                      |
|                                             |                                     | 983                                                              | 492                                                              | 0,20                                     | 1,4                                  | 1,29                                                    | 35 x 35             | ECS2HKC271M◇◇△△3535                                      |
| 330                                         |                                     | 804                                                              | 402                                                              | 0,20                                     | 1,5                                  | 1,36                                                    | 35 x 45             | ECS2HKC331M◇◇△△3545                                      |
| 390                                         |                                     | 681                                                              | 340                                                              | 0,20                                     | 1,5                                  | 1,54                                                    | 35 x 50             | ECS2HKC391M◇◇△△3550                                      |
| 470                                         |                                     | 565                                                              | 282                                                              | 0,20                                     | 1,5                                  | 1,69                                                    | 35 x 60             | ECS2HKC471M◇◇△△3560                                      |
| 560                                         |                                     | 474                                                              | 237                                                              | 0,20                                     | 1,5                                  | 1,90                                                    | 35 x 65             | ECS2HKC561M◇◇△△3565                                      |
| 680                                         |                                     | 391                                                              | 196                                                              | 0,20                                     | 1,5                                  | 2,20                                                    | 35 x 70             | ECS2HKC681M◇◇△△3570                                      |
| 550<br>(600)<br>2Y                          | 150                                 | 1 769                                                            | 885                                                              | 0,20                                     | 0,9                                  | 0,86                                                    | 30 x 35             | ECS2YKC151M◇◇△△3035                                      |
|                                             | 180                                 | 1 474                                                            | 737                                                              | 0,20                                     | 1,0                                  | 1,06                                                    | 30 x 40             | ECS2YKC181M◇◇△△3040                                      |
|                                             |                                     | 1 474                                                            | 737                                                              | 0,20                                     | 1,0                                  | 1,06                                                    | 35 x 30             | ECS2YKC181M◇◇△△3530                                      |
|                                             | 220                                 | 1 206                                                            | 603                                                              | 0,20                                     | 1,2                                  | 1,18                                                    | 30 x 50             | ECS2YKC221M◇◇△△3050                                      |
|                                             |                                     | 1 206                                                            | 603                                                              | 0,20                                     | 1,2                                  | 1,23                                                    | 35 x 35             | ECS2YKC221M◇◇△△3535                                      |
|                                             | 270                                 | 983                                                              | 492                                                              | 0,20                                     | 1,5                                  | 1,31                                                    | 35 x 45             | ECS2YKC271M◇◇△△3545                                      |
|                                             | 330                                 | 804                                                              | 402                                                              | 0,20                                     | 1,5                                  | 1,50                                                    | 35 x 50             | ECS2YKC331M◇◇△△3550                                      |
|                                             | 390                                 | 681                                                              | 340                                                              | 0,20                                     | 1,5                                  | 1,67                                                    | 35 x 60             | ECS2YKC391M◇◇△△3560                                      |
|                                             | 470                                 | 565                                                              | 282                                                              | 0,20                                     | 1,5                                  | 1,90                                                    | 35 x 60             | ECS2YKC471M◇◇△△3560                                      |
|                                             |                                     | 565                                                              | 282                                                              | 0,20                                     | 1,5                                  | 1,95                                                    | 35 x 70             | ECS2YKC471M◇◇△△3570                                      |
| 560                                         | 474                                 | 237                                                              | 0,20                                                             | 1,5                                      | 2,10                                 | 35 x 80                                                 | ECS2YKC561M◇◇△△3580 |                                                          |

### 6 000h at 105°C

- Long Life at High Temperature
- Large Case Sizes
- High Currents



## ITEM CHARACTERISTICS

|                                     |             |            |
|-------------------------------------|-------------|------------|
| Operating Temperature Range (°C)    | -40 ~ +105  | -25 ~ +105 |
| Voltage Range (V)                   | 350 ~ 420   | 450 ~ 550  |
| Capacitance Range (μF)              | 390 ~ 3 300 |            |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%       |            |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

|                                                         |                                                     |           |           |
|---------------------------------------------------------|-----------------------------------------------------|-----------|-----------|
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)                                   | 350 ~ 420 | 450 ~ 500 |
|                                                         | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 4         | 7         |
|                                                         | $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 7         | -         |

Fast Charge-Discharge Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

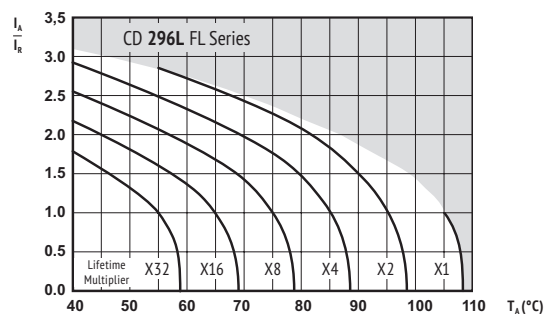
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                        |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------|
| Lifetime                                                                | 6 000h                                | > 200 000h                        | 3 000h                                | 4 000h                                   | 1 000h                                |                                                                        |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                        |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value            | Within ± 20% of initial value         |                                                                        |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value    | Not more than 200% of specified value |                                                                        |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,2 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for 30 min > 24h before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | ≥ 50 kHz |
|-----------|------|-------|-------|------|-------|----------|
| Factor    | 0,80 | 1,00  | 1,16  | 1,30 | 1,41  | 1,43     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 105°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                  | (mm)           |                                                                               |
| <b>350<br/>(400)<br/>2V</b>                 | 560                                 | 356                                                              | 178                                                              | 0,15                                     | 1,5                                  | 2,30                                                    | 30 x 55        | ECS2VFL561M◇◇△△3055                                                           |
|                                             |                                     | 356                                                              | 178                                                              | 0,15                                     | 1,5                                  | 2,33                                                    | 35 x 40        | ECS2VFL561M◇◇△△3540                                                           |
|                                             | 680                                 | 293                                                              | 146                                                              | 0,15                                     | 1,5                                  | 2,73                                                    | 35 x 50        | ECS2VFL681M◇◇△△3550                                                           |
|                                             |                                     | 293                                                              | 146                                                              | 0,15                                     | 1,5                                  | 2,68                                                    | 40 x 40        | ECS2VFL681M◇◇△△4040                                                           |
|                                             | 820                                 | 243                                                              | 121                                                              | 0,15                                     | 1,5                                  | 2,99                                                    | 35 x 60        | ECS2VFL821M◇◇△△3560                                                           |
|                                             |                                     | 243                                                              | 121                                                              | 0,15                                     | 1,5                                  | 3,05                                                    | 40 x 45        | ECS2VFL821M◇◇△△4045                                                           |
|                                             | 1 000                               | 243                                                              | 121                                                              | 0,15                                     | 1,5                                  | 2,85                                                    | 45 x 40        | ECS2VFL821M◇◇△△4540                                                           |
|                                             |                                     | 199                                                              | 100                                                              | 0,15                                     | 1,5                                  | 3,50                                                    | 35 x 65        | ECS2VFL102M◇◇△△3565                                                           |
|                                             | 1 200                               | 199                                                              | 100                                                              | 0,15                                     | 1,5                                  | 3,37                                                    | 40 x 55        | ECS2VFL102M◇◇△△4055                                                           |
|                                             |                                     | 199                                                              | 100                                                              | 0,15                                     | 1,5                                  | 3,06                                                    | 45 x 45        | ECS2VFL102M◇◇△△4545                                                           |
|                                             | 1 500                               | 166                                                              | 83                                                               | 0,15                                     | 1,5                                  | 3,81                                                    | 35 x 75        | ECS2VFL122M◇◇△△3575                                                           |
|                                             |                                     | 166                                                              | 83                                                               | 0,15                                     | 1,5                                  | 3,81                                                    | 40 x 65        | ECS2VFL122M◇◇△△4065                                                           |
|                                             | 1 800                               | 166                                                              | 83                                                               | 0,15                                     | 1,5                                  | 3,47                                                    | 45 x 50        | ECS2VFL122M◇◇△△4550                                                           |
|                                             |                                     | 133                                                              | 66                                                               | 0,15                                     | 1,5                                  | 4,62                                                    | 40 x 80        | ECS2VFL152M◇◇△△4080                                                           |
|                                             | 2 200                               | 133                                                              | 66                                                               | 0,15                                     | 1,5                                  | 4,27                                                    | 45 x 65        | ECS2VFL152M◇◇△△4565                                                           |
|                                             |                                     | 111                                                              | 55                                                               | 0,15                                     | 1,5                                  | 5,43                                                    | 40 x 95        | ECS2VFL182M◇◇△△4095                                                           |
|                                             | 2 700                               | 111                                                              | 55                                                               | 0,15                                     | 1,5                                  | 5,10                                                    | 45 x 75        | ECS2VFL182M◇◇△△4575                                                           |
|                                             |                                     | 91                                                               | 45                                                               | 0,15                                     | 1,5                                  | 5,86                                                    | 45 x 90        | ECS2VFL222M◇◇△△4590                                                           |
|                                             | 3 300                               | 91                                                               | 45                                                               | 0,15                                     | 1,5                                  | 5,86                                                    | 50 x 75        | ECS2VFL222M◇◇△△5075                                                           |
|                                             |                                     | 74                                                               | 37                                                               | 0,15                                     | 1,5                                  | 6,77                                                    | 45 x 100       | ECS2VFL272M◇◇△△45100                                                          |
|                                             |                                     | 74                                                               | 37                                                               | 0,15                                     | 1,5                                  | 6,77                                                    | 50 x 90        | ECS2VFL272M◇◇△△5090                                                           |
|                                             |                                     | 61                                                               | 30                                                               | 0,15                                     | 1,5                                  | 6,77                                                    | 50 x 105       | ECS2VFL332M◇◇△△50105                                                          |

|                             |       |     |     |      |     |      |          |                      |
|-----------------------------|-------|-----|-----|------|-----|------|----------|----------------------|
| <b>400<br/>(450)<br/>2G</b> | 470   | 424 | 169 | 0,15 | 1,5 | 2,11 | 35 x 45  | ECS2GFL471M◇◇△△3545  |
|                             |       | 424 | 169 | 0,15 | 1,5 | 2,14 | 40 x 40  | ECS2GFL471M◇◇△△4040  |
|                             | 560   | 356 | 142 | 0,15 | 1,5 | 2,48 | 35 x 50  | ECS2GFL561M◇◇△△3550  |
|                             |       | 356 | 142 | 0,15 | 1,5 | 2,43 | 40 x 45  | ECS2GFL561M◇◇△△4045  |
|                             | 680   | 356 | 142 | 0,15 | 1,5 | 2,35 | 45 x 40  | ECS2GFL561M◇◇△△4540  |
|                             |       | 293 | 117 | 0,15 | 1,5 | 2,73 | 35 x 60  | ECS2GFL681M◇◇△△3560  |
|                             | 820   | 293 | 117 | 0,15 | 1,5 | 2,78 | 40 x 50  | ECS2GFL681M◇◇△△4050  |
|                             |       | 293 | 117 | 0,15 | 1,5 | 2,59 | 45 x 40  | ECS2GFL681M◇◇△△4540  |
|                             | 1 000 | 243 | 97  | 0,15 | 1,5 | 3,17 | 35 x 65  | ECS2GFL821M◇◇△△3565  |
|                             |       | 243 | 97  | 0,15 | 1,5 | 3,05 | 40 x 55  | ECS2GFL821M◇◇△△4055  |
|                             | 1 200 | 243 | 97  | 0,15 | 1,5 | 2,90 | 45 x 45  | ECS2GFL821M◇◇△△4545  |
|                             |       | 199 | 80  | 0,15 | 1,5 | 3,48 | 35 x 80  | ECS2GFL102M◇◇△△3580  |
|                             | 1 500 | 199 | 80  | 0,15 | 1,5 | 3,48 | 40 x 65  | ECS2GFL102M◇◇△△4065  |
|                             |       | 199 | 80  | 0,15 | 1,5 | 3,17 | 45 x 55  | ECS2GFL102M◇◇△△4555  |
|                             | 1 800 | 166 | 66  | 0,15 | 1,5 | 4,13 | 35 x 90  | ECS2GFL122M◇◇△△3590  |
|                             |       | 166 | 66  | 0,15 | 1,5 | 4,13 | 40 x 80  | ECS2GFL122M◇◇△△4080  |
|                             | 2 200 | 166 | 66  | 0,15 | 1,5 | 4,00 | 45 x 60  | ECS2GFL122M◇◇△△4560  |
|                             |       | 133 | 53  | 0,15 | 1,5 | 4,39 | 40 x 90  | ECS2GFL152M◇◇△△4090  |
|                             | 2 700 | 133 | 53  | 0,15 | 1,5 | 4,39 | 45 x 75  | ECS2GFL152M◇◇△△4575  |
|                             |       | 133 | 53  | 0,15 | 1,5 | 4,39 | 50 x 70  | ECS2GFL152M◇◇△△5070  |
|                             |       | 111 | 44  | 0,15 | 1,5 | 5,30 | 45 x 90  | ECS2GFL182M◇◇△△4590  |
|                             |       | 111 | 44  | 0,15 | 1,5 | 5,30 | 50 x 80  | ECS2GFL182M◇◇△△5080  |
|                             |       | 91  | 36  | 0,15 | 1,5 | 5,90 | 50 x 90  | ECS2GFL222M◇◇△△5090  |
|                             |       | 74  | 29  | 0,15 | 1,5 | 6,50 | 50 x 105 | ECS2GFL272M◇◇△△50105 |

|                             |       |     |     |      |     |      |         |                     |
|-----------------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| <b>420<br/>(470)<br/>2X</b> | 390   | 511 | 203 | 0,15 | 1,5 | 1,92 | 35 x 40 | ECS2XFL391M◇◇△△3540 |
|                             |       | 511 | 203 | 0,15 | 1,5 | 1,95 | 40 x 35 | ECS2XFL391M◇◇△△4035 |
|                             | 470   | 424 | 169 | 0,15 | 1,5 | 2,27 | 35 x 45 | ECS2XFL471M◇◇△△3545 |
|                             |       | 424 | 169 | 0,15 | 1,5 | 2,23 | 40 x 40 | ECS2XFL471M◇◇△△4040 |
|                             | 560   | 356 | 142 | 0,15 | 1,5 | 2,56 | 35 x 50 | ECS2XFL561M◇◇△△3550 |
|                             |       | 356 | 142 | 0,15 | 1,5 | 2,52 | 40 x 45 | ECS2XFL561M◇◇△△4045 |
|                             | 680   | 356 | 142 | 0,15 | 1,5 | 2,35 | 45 x 40 | ECS2XFL561M◇◇△△4540 |
|                             |       | 293 | 117 | 0,15 | 1,5 | 2,81 | 35 x 60 | ECS2XFL681M◇◇△△3560 |
|                             | 820   | 293 | 117 | 0,15 | 1,5 | 2,78 | 40 x 50 | ECS2XFL681M◇◇△△4050 |
|                             |       | 293 | 117 | 0,15 | 1,5 | 2,52 | 45 x 45 | ECS2XFL681M◇◇△△4545 |
|                             | 1 000 | 243 | 97  | 0,15 | 1,5 | 3,26 | 35 x 70 | ECS2XFL821M◇◇△△3570 |
|                             |       | 243 | 97  | 0,15 | 1,5 | 3,05 | 40 x 60 | ECS2XFL821M◇◇△△4060 |
|                             | 1 200 | 243 | 97  | 0,15 | 1,5 | 2,87 | 45 x 50 | ECS2XFL821M◇◇△△4550 |
|                             |       | 199 | 80  | 0,15 | 1,5 | 3,67 | 35 x 80 | ECS2XFL102M◇◇△△3580 |
|                             | 1 500 | 199 | 80  | 0,15 | 1,5 | 3,67 | 40 x 70 | ECS2XFL102M◇◇△△4070 |
|                             |       | 199 | 80  | 0,15 | 1,5 | 3,38 | 45 x 60 | ECS2XFL102M◇◇△△4560 |
|                             |       | 166 | 66  | 0,15 | 1,5 | 4,33 | 40 x 80 | ECS2XFL122M◇◇△△4080 |
|                             |       | 166 | 66  | 0,15 | 1,5 | 3,92 | 45 x 65 | ECS2XFL122M◇◇△△4565 |
|                             |       | 133 | 53  | 0,15 | 1,5 | 4,62 | 45 x 80 | ECS2XFL152M◇◇△△4580 |
|                             |       | 133 | 53  | 0,15 | 1,5 | 4,62 | 50 x 75 | ECS2XFL152M◇◇△△5075 |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                  | (mm)           |                                                                               |
| <b>420<br/>(470)<br/>2X</b>                 | 1 800                               | 111                                                              | 44                                                               | 0,15                                     | 1,5                                  | 5,42                                                    | 45 x 95        | ECS2XFL182M◇◇△△4595                                                           |
|                                             |                                     | 111                                                              | 44                                                               | 0,15                                     | 1,5                                  | 5,42                                                    | 50 x 85        | ECS2XFL182M◇◇△△5085                                                           |
|                                             | 2 200                               | 91                                                               | 36                                                               | 0,15                                     | 1,5                                  | 6,00                                                    | 50 x 100       | ECS2XFL222M◇◇△△50100                                                          |

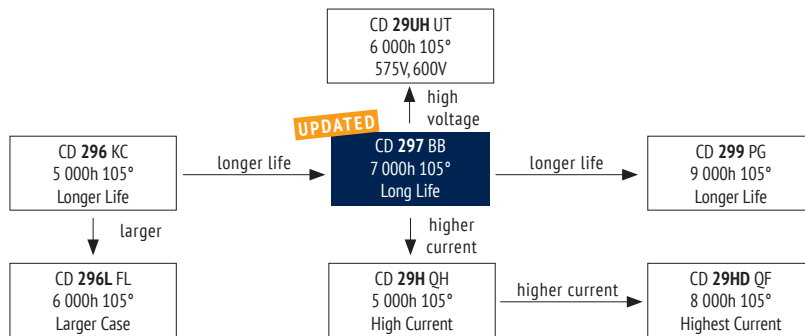
  

|                             |       |     |     |      |     |      |          |                      |
|-----------------------------|-------|-----|-----|------|-----|------|----------|----------------------|
| <b>450<br/>(500)<br/>2W</b> | 390   | 511 | 225 | 0,15 | 1,5 | 2,00 | 35 x 40  | ECS2WFL391M◇◇△△3540  |
|                             |       | 424 | 186 | 0,15 | 1,5 | 2,27 | 35 x 45  | ECS2WFL471M◇◇△△3545  |
|                             | 470   | 424 | 186 | 0,15 | 1,5 | 2,23 | 40 x 40  | ECS2WFL471M◇◇△△4040  |
|                             |       | 424 | 186 | 0,15 | 1,5 | 2,15 | 45 x 35  | ECS2WFL471M◇◇△△4535  |
|                             | 560   | 356 | 156 | 0,15 | 1,5 | 2,47 | 35 x 55  | ECS2WFL561M◇◇△△3555  |
|                             |       | 356 | 156 | 0,15 | 1,5 | 2,52 | 40 x 50  | ECS2WFL561M◇◇△△4050  |
|                             | 680   | 356 | 156 | 0,15 | 1,5 | 2,35 | 45 x 40  | ECS2WFL561M◇◇△△4540  |
|                             |       | 293 | 129 | 0,15 | 1,5 | 2,89 | 35 x 65  | ECS2WFL681M◇◇△△3565  |
|                             | 820   | 293 | 129 | 0,15 | 1,5 | 2,78 | 40 x 60  | ECS2WFL681M◇◇△△4060  |
|                             |       | 293 | 129 | 0,15 | 1,5 | 2,61 | 45 x 50  | ECS2WFL681M◇◇△△4550  |
|                             | 1 000 | 243 | 107 | 0,15 | 1,5 | 3,24 | 35 x 75  | ECS2WFL821M◇◇△△3575  |
|                             |       | 243 | 107 | 0,15 | 1,5 | 3,24 | 40 x 65  | ECS2WFL821M◇◇△△4065  |
|                             | 1 200 | 243 | 107 | 0,15 | 1,5 | 3,10 | 45 x 50  | ECS2WFL821M◇◇△△4550  |
|                             |       | 199 | 88  | 0,15 | 1,5 | 3,77 | 35 x 90  | ECS2WFL102M◇◇△△3590  |
|                             | 1 500 | 199 | 88  | 0,15 | 1,5 | 3,77 | 40 x 80  | ECS2WFL102M◇◇△△4080  |
|                             |       | 199 | 88  | 0,15 | 1,5 | 3,68 | 45 x 65  | ECS2WFL102M◇◇△△4565  |
|                             | 1 800 | 166 | 73  | 0,15 | 1,5 | 4,43 | 40 x 95  | ECS2WFL122M◇◇△△4095  |
|                             |       | 166 | 73  | 0,15 | 1,5 | 4,23 | 45 x 75  | ECS2WFL122M◇◇△△4575  |
|                             |       | 166 | 73  | 0,15 | 1,5 | 4,23 | 50 x 65  | ECS2WFL122M◇◇△△5065  |
|                             |       | 133 | 58  | 0,15 | 1,5 | 4,84 | 40 x 100 | ECS2WFL152M◇◇△△40100 |
|                             | 1 500 | 133 | 58  | 0,15 | 1,5 | 4,84 | 45 x 90  | ECS2WFL152M◇◇△△4590  |
|                             |       | 133 | 58  | 0,15 | 1,5 | 4,84 | 50 x 80  | ECS2WFL152M◇◇△△5080  |
|                             | 1 800 | 111 | 49  | 0,15 | 1,5 | 5,30 | 45 x 105 | ECS2WFL182M◇◇△△45105 |
|                             |       | 111 | 49  | 0,15 | 1,5 | 5,30 | 50 x 95  | ECS2WFL182M◇◇△△5095  |

|                             |       |     |     |      |     |      |          |                      |
|-----------------------------|-------|-----|-----|------|-----|------|----------|----------------------|
| <b>500<br/>(550)<br/>2H</b> | 390   | 511 | 225 | 0,15 | 1,5 | 1,80 | 35 x 50  | ECS2HFL391M◇◇△△3550  |
|                             |       | 511 | 225 | 0,15 | 1,5 | 1,80 | 40 x 45  | ECS2HFL391M◇◇△△4045  |
|                             | 470   | 424 | 186 | 0,15 | 1,5 | 2,00 | 35 x 55  | ECS2HFL471M◇◇△△3555  |
|                             |       | 424 | 186 | 0,15 | 1,5 | 2,00 | 40 x 50  | ECS2HFL471M◇◇△△4050  |
|                             | 560   | 424 | 186 | 0,15 | 1,5 | 2,00 | 45 x 40  | ECS2HFL471M◇◇△△4540  |
|                             |       | 356 | 156 | 0,15 | 1,5 | 2,25 | 35 x 65  | ECS2HFL561M◇◇△△3565  |
|                             | 680   | 356 | 156 | 0,15 | 1,5 | 2,25 | 40 x 55  | ECS2HFL561M◇◇△△4055  |
|                             |       | 356 | 156 | 0,15 | 1,5 | 2,25 | 45 x 50  | ECS2HFL561M◇◇△△4550  |
|                             | 820   | 293 | 129 | 0,15 | 1,5 | 2,60 | 35 x 75  | ECS2HFL681M◇◇△△3575  |
|                             |       | 293 | 129 | 0,15 | 1,5 | 2,60 | 40 x 70  | ECS2HFL681M◇◇△△4070  |
|                             | 1 000 | 293 | 129 | 0,15 | 1,5 | 2,60 | 45 x 55  | ECS2HFL681M◇◇△△4555  |
|                             |       | 243 | 107 | 0,15 | 1,5 | 2,85 | 40 x 75  | ECS2HFL821M◇◇△△4075  |
|                             | 1 200 | 243 | 107 | 0,15 | 1,5 | 2,85 | 45 x 60  | ECS2HFL821M◇◇△△4560  |
|                             |       | 199 | 88  | 0,15 | 1,5 | 3,30 | 40 x 90  | ECS2HFL102M◇◇△△4090  |
|                             | 1 500 | 199 | 88  | 0,15 | 1,5 | 3,30 | 45 x 75  | ECS2HFL102M◇◇△△4575  |
|                             |       | 166 | 73  | 0,15 | 1,5 | 4,00 | 40 x 100 | ECS2HFL122M◇◇△△40100 |
|                             | 1 800 | 166 | 73  | 0,15 | 1,5 | 4,00 | 45 x 85  | ECS2HFL122M◇◇△△4585  |
|                             |       | 166 | 73  | 0,15 | 1,5 | 4,00 | 50 x 80  | ECS2HFL122M◇◇△△5080  |
|                             |       | 133 | 58  | 0,15 | 1,5 | 4,45 | 45 x 100 | ECS2HFL152M◇◇△△45100 |
|                             |       | 133 | 58  | 0,15 | 1,5 | 4,45 | 50 x 95  | ECS2HFL152M◇◇△△5095  |

### 7 000h at 105°C

- Extended Lifetime at 105°C
- High Ripple Current
- High Professional Switch Mode Power Supplies
- Frequency Converters



## ITEM CHARACTERISTICS

|                                     |              |            |
|-------------------------------------|--------------|------------|
| Operating Temperature Range (°C)    | -40 ~ +105   | -25 ~ +105 |
| Voltage Range (V)                   | 25 ~ 100     | 160 ~ 550  |
| Capacitance Range (μF)              | 100 ~ 27 000 |            |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%        |            |

⚠ The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V) | 25 ~ 100 | 160 ~ 250 | 315 ~ 550 |
|---------------------------------------------------------|-------------------|----------|-----------|-----------|
| $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 4        | 3         | 8         |
| $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$     |                   | 15       | -         | -         |

Fast Charge-Discharge ⚠ Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

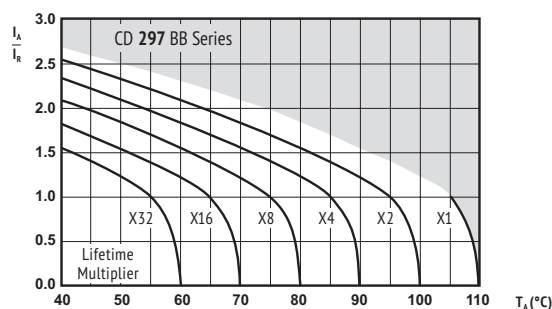
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                        |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------|
| Lifetime                                                                | 7 000h                                | > 200 000h                        | 5 000h                                | 5 000h                                   | 1 000h                                |                                                                        |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                        |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value            | Within ± 20% of initial value         |                                                                        |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value    | Not more than 200% of specified value |                                                                        |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,6 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for 30 min > 24h before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency<br>Rated Voltage (V) | 50Hz | 120Hz | 500Hz | 1kHz | 10kHz | ≥ 40 kHz |
|--------------------------------|------|-------|-------|------|-------|----------|
| 25 ~ 100                       | 0,90 | 1,00  | 1,10  | 1,15 | 1,15  | 1,15     |
| 160 ~ 250                      | 0,80 | 1,00  | 1,20  | 1,30 | 1,45  | 1,50     |
| ≥ 315                          | 0,80 | 1,00  | 1,20  | 1,30 | 1,42  | 1,45     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 105°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

⚠ Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                  | (mm)           |                                                                               |
| 25<br>(32)<br>1E                            | 8 200                               | 73                                                               | 51                                                               | 0,45                                     | 1,5                                  | 2,18                                                    | 25 x 35        | ECS1EBB822M◇◇△△2535                                                           |
|                                             |                                     | 73                                                               | 51                                                               | 0,45                                     | 1,5                                  | 2,19                                                    | 30 x 25        | ECS1EBB822M◇◇△△3025                                                           |
|                                             |                                     | 60                                                               | 42                                                               | 0,45                                     | 1,5                                  | 2,56                                                    | 22 x 50        | ECS1EBB103M◇◇△△2250                                                           |
|                                             | 10 000                              | 60                                                               | 42                                                               | 0,45                                     | 1,5                                  | 2,53                                                    | 25 x 40        | ECS1EBB103M◇◇△△2540                                                           |
|                                             |                                     | 60                                                               | 42                                                               | 0,45                                     | 1,5                                  | 2,38                                                    | 30 x 30        | ECS1EBB103M◇◇△△3030                                                           |
|                                             |                                     | 50                                                               | 35                                                               | 0,45                                     | 1,5                                  | 2,79                                                    | 25 x 45        | ECS1EBB123M◇◇△△2545                                                           |
|                                             | 12 000                              | 50                                                               | 35                                                               | 0,45                                     | 1,5                                  | 2,70                                                    | 30 x 35        | ECS1EBB123M◇◇△△3035                                                           |
|                                             |                                     | 50                                                               | 35                                                               | 0,45                                     | 1,5                                  | 2,76                                                    | 35 x 30        | ECS1EBB123M◇◇△△3530                                                           |
|                                             |                                     | 40                                                               | 28                                                               | 0,45                                     | 1,5                                  | 3,13                                                    | 30 x 40        | ECS1EBB153M◇◇△△3040                                                           |
|                                             | 18 000                              | 34                                                               | 23                                                               | 0,45                                     | 1,5                                  | 3,52                                                    | 30 x 45        | ECS1EBB183M◇◇△△3045                                                           |
|                                             |                                     | 34                                                               | 23                                                               | 0,45                                     | 1,5                                  | 3,50                                                    | 35 x 35        | ECS1EBB183M◇◇△△3535                                                           |
|                                             | 22 000                              | 28                                                               | 19                                                               | 0,45                                     | 1,5                                  | 3,92                                                    | 30 x 50        | ECS1EBB223M◇◇△△3050                                                           |
|                                             |                                     | 28                                                               | 19                                                               | 0,45                                     | 1,5                                  | 3,95                                                    | 35 x 40        | ECS1EBB223M◇◇△△3540                                                           |
|                                             | 27 000                              | 23                                                               | 16                                                               | 0,45                                     | 1,5                                  | 4,72                                                    | 35 x 50        | ECS1EBB273M◇◇△△3550                                                           |

|                  |        |    |    |      |     |      |         |                     |
|------------------|--------|----|----|------|-----|------|---------|---------------------|
| 35<br>(44)<br>1V | 6 800  | 79 | 55 | 0,40 | 1,5 | 2,49 | 22 x 50 | ECS1VBB682M◇◇△△2250 |
|                  |        | 79 | 55 | 0,40 | 1,5 | 2,45 | 25 x 40 | ECS1VBB682M◇◇△△2540 |
|                  |        | 79 | 55 | 0,40 | 1,5 | 2,28 | 30 x 30 | ECS1VBB682M◇◇△△3030 |
|                  | 8 200  | 65 | 45 | 0,40 | 1,5 | 2,80 | 25 x 45 | ECS1VBB822M◇◇△△2545 |
|                  |        | 65 | 45 | 0,40 | 1,5 | 2,69 | 30 x 30 | ECS1VBB822M◇◇△△3030 |
|                  |        | 54 | 37 | 0,40 | 1,5 | 3,04 | 30 x 40 | ECS1VBB103M◇◇△△3040 |
|                  | 10 000 | 54 | 37 | 0,40 | 1,5 | 2,78 | 35 x 30 | ECS1VBB103M◇◇△△3530 |
|                  |        | 45 | 31 | 0,40 | 1,5 | 3,38 | 30 x 45 | ECS1VBB123M◇◇△△3045 |
|                  |        | 45 | 31 | 0,40 | 1,5 | 3,30 | 35 x 35 | ECS1VBB123M◇◇△△3535 |
|                  | 15 000 | 36 | 25 | 0,40 | 1,5 | 3,98 | 30 x 45 | ECS1VBB153M◇◇△△3045 |
|                  | 18 000 | 30 | 21 | 0,40 | 1,5 | 4,40 | 35 x 45 | ECS1VBB183M◇◇△△3545 |

|                  |        |     |    |      |     |      |         |                     |
|------------------|--------|-----|----|------|-----|------|---------|---------------------|
| 50<br>(63)<br>1H | 3 900  | 120 | 83 | 0,35 | 1,5 | 2,20 | 25 x 35 | ECS1HBB392M◇◇△△2535 |
|                  |        | 120 | 83 | 0,35 | 1,5 | 2,19 | 30 x 30 | ECS1HBB392M◇◇△△3030 |
|                  |        | 99  | 69 | 0,35 | 1,5 | 2,43 | 25 x 40 | ECS1HBB472M◇◇△△2540 |
|                  | 5 600  | 83  | 58 | 0,35 | 1,5 | 2,72 | 25 x 45 | ECS1HBB562M◇◇△△2545 |
|                  |        | 83  | 58 | 0,35 | 1,5 | 2,58 | 30 x 35 | ECS1HBB562M◇◇△△3035 |
|                  |        | 83  | 58 | 0,35 | 1,5 | 2,35 | 35 x 30 | ECS1HBB562M◇◇△△3530 |
|                  | 6 800  | 69  | 48 | 0,35 | 1,5 | 3,01 | 30 x 40 | ECS1HBB682M◇◇△△3040 |
|                  |        | 69  | 48 | 0,35 | 1,5 | 2,91 | 35 x 35 | ECS1HBB682M◇◇△△3535 |
|                  |        | 57  | 40 | 0,35 | 1,5 | 3,63 | 30 x 50 | ECS1HBB822M◇◇△△3050 |
|                  | 8 200  | 57  | 40 | 0,35 | 1,5 | 3,36 | 35 x 40 | ECS1HBB822M◇◇△△3540 |
|                  |        | 47  | 33 | 0,35 | 1,5 | 3,79 | 35 x 45 | ECS1HBB103M◇◇△△3545 |
|                  | 12 000 | 39  | 27 | 0,35 | 1,5 | 4,06 | 35 x 50 | ECS1HBB123M◇◇△△3550 |

|                  |       |     |     |      |     |      |         |                     |
|------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 63<br>(79)<br>1J | 2 700 | 148 | 103 | 0,30 | 1,5 | 2,10 | 22 x 45 | ECS1JBB272M◇◇△△2245 |
|                  |       | 148 | 103 | 0,30 | 1,5 | 2,03 | 25 x 35 | ECS1JBB272M◇◇△△2535 |
|                  |       | 148 | 103 | 0,30 | 1,5 | 2,01 | 30 x 30 | ECS1JBB272M◇◇△△3030 |
|                  | 3 300 | 121 | 84  | 0,30 | 1,5 | 2,33 | 25 x 40 | ECS1JBB332M◇◇△△2540 |
|                  |       | 103 | 72  | 0,30 | 1,5 | 2,58 | 25 x 45 | ECS1JBB392M◇◇△△2545 |
|                  |       | 103 | 72  | 0,30 | 1,5 | 2,46 | 30 x 35 | ECS1JBB392M◇◇△△3035 |
|                  | 3 900 | 103 | 72  | 0,30 | 1,5 | 2,31 | 35 x 30 | ECS1JBB392M◇◇△△3530 |
|                  |       | 85  | 59  | 0,30 | 1,5 | 2,82 | 30 x 40 | ECS1JBB472M◇◇△△3040 |
|                  |       | 85  | 59  | 0,30 | 1,5 | 2,77 | 35 x 35 | ECS1JBB472M◇◇△△3535 |
|                  | 5 600 | 72  | 50  | 0,30 | 1,5 | 3,22 | 30 x 45 | ECS1JBB562M◇◇△△3045 |
|                  |       | 72  | 50  | 0,30 | 1,5 | 3,20 | 35 x 40 | ECS1JBB562M◇◇△△3540 |
|                  | 6 800 | 59  | 41  | 0,30 | 1,5 | 3,61 | 35 x 45 | ECS1JBB682M◇◇△△3545 |
|                  | 8 200 | 49  | 34  | 0,30 | 1,5 | 3,94 | 35 x 50 | ECS1JBB822M◇◇△△3550 |

|                   |       |     |     |      |     |      |         |                     |
|-------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 80<br>(100)<br>1K | 1 500 | 222 | 155 | 0,25 | 1,2 | 1,70 | 22 x 40 | ECS1KBB152M◇◇△△2240 |
|                   |       | 151 | 106 | 0,25 | 1,5 | 2,22 | 25 x 45 | ECS1KBB222M◇◇△△2545 |
|                   |       | 151 | 106 | 0,25 | 1,5 | 2,02 | 30 x 30 | ECS1KBB222M◇◇△△3030 |
|                   | 2 700 | 123 | 86  | 0,25 | 1,5 | 2,50 | 30 x 35 | ECS1KBB272M◇◇△△3035 |
|                   |       | 123 | 86  | 0,25 | 1,5 | 2,45 | 35 x 30 | ECS1KBB272M◇◇△△3530 |
|                   |       | 101 | 70  | 0,25 | 1,5 | 2,69 | 30 x 40 | ECS1KBB332M◇◇△△3040 |
|                   | 3 300 | 101 | 70  | 0,25 | 1,5 | 2,60 | 35 x 35 | ECS1KBB332M◇◇△△3535 |
|                   |       | 86  | 60  | 0,25 | 1,5 | 2,94 | 30 x 45 | ECS1KBB392M◇◇△△3045 |
|                   |       | 86  | 60  | 0,25 | 1,5 | 3,00 | 35 x 40 | ECS1KBB392M◇◇△△3540 |
|                   | 4 700 | 71  | 49  | 0,25 | 1,5 | 3,44 | 35 x 45 | ECS1KBB472M◇◇△△3545 |
|                   | 5 600 | 60  | 42  | 0,25 | 1,5 | 3,72 | 35 x 50 | ECS1KBB562M◇◇△△3550 |
|                   | 6 800 | 51  | 36  | 0,25 | 1,5 | 3,93 | 35 x 60 | ECS1KBB682M◇◇△△3560 |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                  | (mm)           |                                                                               |
| 100<br>(125)<br>2A                          | 1 200                               | 222                                                              | 155                                                              | 0,20                                     | 1,2                                  | 1,76                                                    | 25 x 35        | ECS2ABB122M◇◇△△2535                                                           |
|                                             |                                     | 222                                                              | 155                                                              | 0,20                                     | 1,2                                  | 1,76                                                    | 30 x 30        | ECS2ABB122M◇◇△△3030                                                           |
|                                             |                                     | 177                                                              | 124                                                              | 0,20                                     | 1,5                                  | 2,00                                                    | 22 x 50        | ECS2ABB152M◇◇△△2250                                                           |
|                                             | 1 500                               | 177                                                              | 124                                                              | 0,20                                     | 1,5                                  | 2,03                                                    | 25 x 40        | ECS2ABB152M◇◇△△2540                                                           |
|                                             |                                     | 148                                                              | 103                                                              | 0,20                                     | 1,5                                  | 2,29                                                    | 25 x 45        | ECS2ABB182M◇◇△△2545                                                           |
|                                             |                                     | 148                                                              | 103                                                              | 0,20                                     | 1,5                                  | 2,19                                                    | 30 x 35        | ECS2ABB182M◇◇△△3035                                                           |
|                                             | 1 800                               | 148                                                              | 103                                                              | 0,20                                     | 1,5                                  | 2,15                                                    | 35 x 30        | ECS2ABB182M◇◇△△3530                                                           |
|                                             |                                     | 121                                                              | 84                                                               | 0,20                                     | 1,5                                  | 2,52                                                    | 30 x 40        | ECS2ABB222M◇◇△△3040                                                           |
|                                             |                                     | 121                                                              | 84                                                               | 0,20                                     | 1,5                                  | 2,48                                                    | 35 x 35        | ECS2ABB222M◇◇△△3535                                                           |
|                                             | 2 200                               | 99                                                               | 69                                                               | 0,20                                     | 1,5                                  | 2,86                                                    | 30 x 45        | ECS2ABB272M◇◇△△3045                                                           |
|                                             |                                     | 99                                                               | 69                                                               | 0,20                                     | 1,5                                  | 2,87                                                    | 35 x 40        | ECS2ABB272M◇◇△△3540                                                           |
|                                             | 3 300                               | 81                                                               | 56                                                               | 0,20                                     | 1,5                                  | 3,25                                                    | 35 x 45        | ECS2ABB332M◇◇△△3545                                                           |
|                                             | 3 900                               | 69                                                               | 48                                                               | 0,20                                     | 1,5                                  | 3,56                                                    | 35 x 50        | ECS2ABB392M◇◇△△3550                                                           |
|                                             | 4 700                               | 57                                                               | 40                                                               | 0,20                                     | 1,5                                  | 3,72                                                    | 35 x 50        | ECS2ABB472M◇◇△△3550                                                           |

|                    |       |     |     |      |     |      |         |                     |
|--------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 160<br>(200)<br>2C | 560   | 356 | 249 | 0,15 | 0,9 | 1,26 | 22 x 45 | ECS2CBB561M◇◇△△2245 |
|                    |       | 293 | 205 | 0,15 | 1,1 | 1,44 | 22 x 45 | ECS2CBB681M◇◇△△2245 |
|                    |       | 293 | 205 | 0,15 | 1,1 | 1,43 | 25 x 40 | ECS2CBB681M◇◇△△2540 |
|                    | 680   | 293 | 205 | 0,15 | 1,1 | 1,50 | 30 x 35 | ECS2CBB681M◇◇△△3035 |
|                    |       | 243 | 170 | 0,15 | 1,3 | 1,63 | 25 x 45 | ECS2CBB821M◇◇△△2545 |
|                    |       | 243 | 170 | 0,15 | 1,3 | 1,66 | 30 x 40 | ECS2CBB821M◇◇△△3040 |
|                    | 1 000 | 199 | 139 | 0,15 | 1,5 | 1,89 | 30 x 45 | ECS2CBB102M◇◇△△3045 |
|                    |       | 199 | 139 | 0,15 | 1,5 | 1,89 | 35 x 35 | ECS2CBB102M◇◇△△3535 |
|                    |       | 166 | 116 | 0,15 | 1,5 | 2,16 | 30 x 50 | ECS2CBB122M◇◇△△3050 |
|                    | 1 200 | 166 | 116 | 0,15 | 1,5 | 2,23 | 35 x 40 | ECS2CBB122M◇◇△△3540 |
|                    |       | 133 | 93  | 0,15 | 1,5 | 2,61 | 35 x 45 | ECS2CBB152M◇◇△△3545 |
|                    |       | 111 | 77  | 0,15 | 1,5 | 2,97 | 35 x 50 | ECS2CBB182M◇◇△△3550 |
|                    | 2 200 | 90  | 62  | 0,15 | 1,5 | 3,22 | 30 x 55 | ECS2CBB222M◇◇△△3055 |
|                    | 3 300 | 61  | 42  | 0,15 | 1,5 | 3,51 | 35 x 60 | ECS2CBB332M◇◇△△3560 |

|                    |       |     |     |      |     |      |         |                     |
|--------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 200<br>(250)<br>2D | 470   | 424 | 296 | 0,15 | 0,9 | 1,17 | 22 x 45 | ECS2DBB471M◇◇△△2245 |
|                    |       | 424 | 296 | 0,15 | 0,9 | 1,22 | 25 x 40 | ECS2DBB471M◇◇△△2540 |
|                    |       | 424 | 296 | 0,15 | 0,9 | 1,17 | 30 x 30 | ECS2DBB471M◇◇△△3030 |
|                    | 560   | 356 | 249 | 0,15 | 1,1 | 1,39 | 25 x 45 | ECS2DBB561M◇◇△△2545 |
|                    |       | 356 | 249 | 0,15 | 1,1 | 1,38 | 30 x 35 | ECS2DBB561M◇◇△△3035 |
|                    |       | 293 | 205 | 0,15 | 1,4 | 1,58 | 25 x 50 | ECS2DBB681M◇◇△△2550 |
|                    | 680   | 293 | 205 | 0,15 | 1,4 | 1,61 | 30 x 40 | ECS2DBB681M◇◇△△3040 |
|                    |       | 293 | 205 | 0,15 | 1,4 | 1,49 | 35 x 30 | ECS2DBB681M◇◇△△3530 |
|                    |       | 243 | 170 | 0,15 | 1,5 | 1,85 | 30 x 45 | ECS2DBB821M◇◇△△3045 |
|                    | 820   | 243 | 170 | 0,15 | 1,5 | 1,75 | 35 x 35 | ECS2DBB821M◇◇△△3535 |
|                    |       | 199 | 139 | 0,15 | 1,5 | 2,11 | 30 x 50 | ECS2DBB102M◇◇△△3050 |
|                    |       | 199 | 139 | 0,15 | 1,5 | 2,07 | 35 x 40 | ECS2DBB102M◇◇△△3540 |
|                    | 1 200 | 166 | 116 | 0,15 | 1,5 | 2,38 | 30 x 50 | ECS2DBB122M◇◇△△3050 |
|                    | 1 500 | 133 | 93  | 0,15 | 1,5 | 2,76 | 35 x 50 | ECS2DBB152M◇◇△△3550 |

|                    |       |     |      |      |      |         |                     |                     |
|--------------------|-------|-----|------|------|------|---------|---------------------|---------------------|
| 250<br>(300)<br>2E | 330   | 603 | 422  | 0,15 | 0,8  | 1,01    | 22 x 45             | ECS2EBB331M◇◇△△2245 |
|                    |       | 603 | 422  | 0,15 | 0,8  | 1,00    | 30 x 30             | ECS2EBB331M◇◇△△3030 |
|                    | 390   | 511 | 357  | 0,15 | 1,0  | 1,13    | 22 x 50             | ECS2EBB391M◇◇△△2250 |
|                    |       | 511 | 357  | 0,15 | 1,0  | 1,13    | 25 x 40             | ECS2EBB391M◇◇△△2540 |
|                    |       | 511 | 357  | 0,15 | 1,0  | 1,15    | 30 x 35             | ECS2EBB391M◇◇△△3035 |
|                    |       | 470 | 424  | 296  | 0,15 | 1,2     | 1,29                | 25 x 45             |
|                    | 424   |     | 296  | 0,15 | 1,2  | 1,24    | 35 x 30             | ECS2EBB471M◇◇△△3530 |
|                    | 560   | 356 | 249  | 0,15 | 1,4  | 1,45    | 25 x 50             | ECS2EBB561M◇◇△△2550 |
|                    |       | 356 | 249  | 0,15 | 1,4  | 1,48    | 30 x 40             | ECS2EBB561M◇◇△△3040 |
|                    |       | 356 | 249  | 0,15 | 1,4  | 1,49    | 35 x 35             | ECS2EBB561M◇◇△△3535 |
|                    | 680   | 293 | 205  | 0,15 | 1,5  | 1,71    | 30 x 45             | ECS2EBB681M◇◇△△3045 |
|                    |       | 293 | 205  | 0,15 | 1,5  | 1,74    | 35 x 40             | ECS2EBB681M◇◇△△3540 |
|                    | 820   | 243 | 170  | 0,15 | 1,5  | 1,94    | 30 x 50             | ECS2EBB821M◇◇△△3050 |
|                    | 1 000 | 199 | 139  | 0,15 | 1,5  | 2,20    | 35 x 45             | ECS2EBB102M◇◇△△3545 |
| 1 200              | 166   | 111 | 0,15 | 1,5  | 2,45 | 35 x 45 | ECS2EBB122M◇◇△△3545 |                     |



| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pin number<br><br>Details: Page 105 |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                              | (mm)                             |                                                                                       |
| 315<br>(365)<br>2F                   | 560                        | 356                                                          | 196                                                          | 0,15                                                | 1,5                           | 1,34                                                | 25 x 50                          | ECS2FBB561M◇◇△△2550                                                                   |
|                                      |                            | 294                                                          | 162                                                          | 0,15                                                | 1,5                           | 1,72                                                | 30 x 50                          | ECS2FBB681M◇◇△△3050                                                                   |
|                                      |                            | 294                                                          | 162                                                          | 0,15                                                | 1,5                           | 1,78                                                | 35 x 40                          | ECS2FBB681M◇◇△△3540                                                                   |
|                                      | 820                        | 243                                                          | 134                                                          | 0,15                                                | 1,5                           | 1,95                                                | 30 x 50                          | ECS2FBB821M◇◇△△3050                                                                   |
|                                      |                            | 199                                                          | 109                                                          | 0,15                                                | 1,5                           | 2,35                                                | 35 x 45                          | ECS2FBB102M◇◇△△3545                                                                   |
|                                      | 1 000                      | 166                                                          | 91                                                           | 0,15                                                | 1,5                           | 2,70                                                | 35 x 50                          | ECS2FBB122M◇◇△△3550                                                                   |
|                                      | 1 200                      | 133                                                          | 73                                                           | 0,15                                                | 1,5                           | 3,15                                                | 35 x 60                          | ECS2FBB152M◇◇△△3560                                                                   |
|                                      |                            | 133                                                          | 73                                                           | 0,15                                                | 1,5                           | 3,46                                                | 35 x 75                          | ECS2FBB152M◇◇△△3575                                                                   |
|                                      |                            |                                                              |                                                              |                                                     |                               |                                                     |                                  |                                                                                       |
|                                      |                            |                                                              |                                                              |                                                     |                               |                                                     |                                  |                                                                                       |

|                    |     |       |     |      |     |      |         |                     |
|--------------------|-----|-------|-----|------|-----|------|---------|---------------------|
| 350<br>(400)<br>2V | 150 | 1 327 | 730 | 0,15 | 0,5 | 0,59 | 22 x 40 | ECS2VBB151M◇◇△△2240 |
|                    |     | 1 327 | 730 | 0,15 | 0,5 | 0,60 | 25 x 35 | ECS2VBB151M◇◇△△2535 |
|                    |     | 1 106 | 608 | 0,15 | 0,6 | 0,68 | 22 x 45 | ECS2VBB181M◇◇△△2245 |
|                    | 180 | 1 106 | 608 | 0,15 | 0,6 | 0,70 | 25 x 40 | ECS2VBB181M◇◇△△2540 |
|                    |     | 1 106 | 680 | 0,15 | 0,6 | 0,71 | 30 x 30 | ECS2VBB181M◇◇△△3030 |
|                    |     | 905   | 498 | 0,15 | 0,8 | 0,78 | 22 x 50 | ECS2VBB221M◇◇△△2250 |
|                    | 220 | 905   | 498 | 0,15 | 0,8 | 0,82 | 25 x 45 | ECS2VBB221M◇◇△△2545 |
|                    |     | 905   | 498 | 0,15 | 0,8 | 0,82 | 30 x 35 | ECS2VBB221M◇◇△△3035 |
|                    |     | 737   | 406 | 0,15 | 0,9 | 0,94 | 25 x 50 | ECS2VBB271M◇◇△△2550 |
|                    | 270 | 737   | 406 | 0,15 | 0,9 | 0,93 | 30 x 40 | ECS2VBB271M◇◇△△3040 |

■ = non-preferred

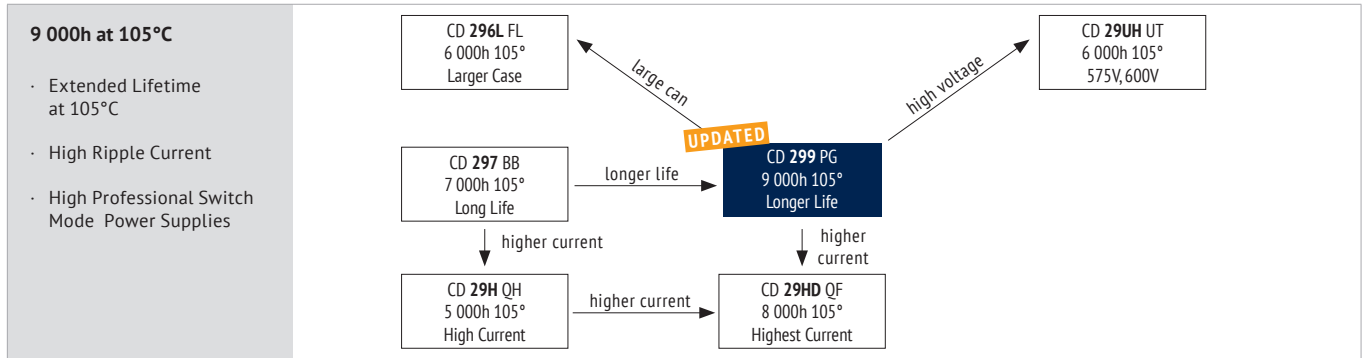
|                    |     |       |     |      |     |      |         |                     |
|--------------------|-----|-------|-----|------|-----|------|---------|---------------------|
| 400<br>(450)<br>2G | 150 | 1 327 | 690 | 0,15 | 0,6 | 0,65 | 25 x 30 | ECS2GBB151M◇◇△△2530 |
|                    |     | 905   | 471 | 0,15 | 0,9 | 0,79 | 22 x 50 | ECS2GBB221M◇◇△△2250 |
|                    |     | 905   | 471 | 0,15 | 0,9 | 0,85 | 25 x 35 | ECS2GBB221M◇◇△△2535 |
|                    | 220 | 905   | 471 | 0,15 | 0,9 | 0,89 | 35 x 20 | ECS2GBB221M◇◇△△3520 |
|                    |     | 737   | 383 | 0,15 | 1,1 | 0,96 | 35 x 25 | ECS2GBB271M◇◇△△3525 |
|                    |     | 603   | 314 | 0,15 | 1,3 | 1,07 | 30 x 35 | ECS2GBB331M◇◇△△3035 |
|                    | 330 | 603   | 314 | 0,15 | 1,3 | 1,12 | 30 x 50 | ECS2GBB331M◇◇△△3050 |
|                    |     | 603   | 314 | 0,15 | 1,3 | 1,18 | 35 x 30 | ECS2GBB331M◇◇△△3530 |
|                    |     | 511   | 265 | 0,15 | 1,5 | 1,21 | 30 x 35 | ECS2GBB391M◇◇△△3035 |
|                    | 390 | 511   | 265 | 0,15 | 1,3 | 1,27 | 30 x 50 | ECS2GBB391M◇◇△△3050 |

|                    |     |       |       |      |     |      |         |                     |
|--------------------|-----|-------|-------|------|-----|------|---------|---------------------|
| 450<br>(500)<br>2W | 120 | 2 211 | 1 106 | 0,20 | 0,6 | 0,58 | 22 x 30 | ECS2WBB121M◇◇△△2230 |
|                    |     | 1 769 | 884   | 0,20 | 0,7 | 0,66 | 22 x 35 | ECS2WBB151M◇◇△△2235 |
|                    |     | 1 769 | 884   | 0,20 | 0,7 | 0,68 | 25 x 40 | ECS2WBB151M◇◇△△2540 |
|                    | 150 | 1 474 | 737   | 0,20 | 0,7 | 0,74 | 25 x 45 | ECS2WBB181M◇◇△△2545 |
|                    |     | 1 474 | 737   | 0,20 | 0,8 | 0,77 | 30 x 30 | ECS2WBB181M◇◇△△3030 |
|                    |     | 1 206 | 603   | 0,20 | 1,0 | 0,88 | 30 x 30 | ECS2WBB221M◇◇△△3030 |
|                    | 220 | 983   | 491   | 0,20 | 1,2 | 0,99 | 25 x 50 | ECS2WBB271M◇◇△△2550 |
|                    |     | 983   | 491   | 0,20 | 1,2 | 1,01 | 30 x 30 | ECS2WBB271M◇◇△△3030 |
|                    |     | 804   | 402   | 0,20 | 1,5 | 1,12 | 30 x 35 | ECS2WBB331M◇◇△△3035 |
|                    | 330 | 804   | 402   | 0,20 | 1,5 | 1,15 | 35 x 30 | ECS2WBB331M◇◇△△3530 |

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pin number<br><br>Details: Page 105 |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                              | (mm)                             |                                                                                       |
| 500<br>(550)<br>2H                   | 1 000                      | 270                                                          | 135                                                          | 0,20                                                | 1,5                           | 2,56                                                | 35 x 70                          | ECS2WBB102M◇◇△△3570                                                                   |
|                                      |                            | 270                                                          | 135                                                          | 0,20                                                | 1,5                           | 2,66                                                | 35 x 75                          | ECS2WBB102M◇◇△△3575                                                                   |
|                                      | 100                        | 2 653                                                        | 1 327                                                        | 0,20                                                | 0,5                           | 0,67                                                | 25 x 30                          | ECS2HBB101M◇◇△△2530                                                                   |
|                                      |                            | 120                                                          | 2 211                                                        | 1 106                                               | 0,20                          | 0,7                                                 | 25 x 30                          | ECS2HBB121M◇◇△△2530                                                                   |
|                                      | 180                        | 1 474                                                        | 737                                                          | 0,20                                                | 0,9                           | 0,98                                                | 25 x 50                          | ECS2HBB181M◇◇△△2550                                                                   |
|                                      |                            | 220                                                          | 1 206                                                        | 603                                                 | 0,20                          | 1,1                                                 | 30 x 35                          | ECS2HBB221M◇◇△△3035                                                                   |
|                                      | 270                        | 983                                                          | 492                                                          | 0,20                                                | 1,4                           | 1,25                                                | 30 x 50                          | ECS2HBB271M◇◇△△3050                                                                   |
|                                      |                            | 330                                                          | 804                                                          | 402                                                 | 0,20                          | 1,5                                                 | 35 x 45                          | ECS2HBB331M◇◇△△3545                                                                   |
|                                      | 390                        | 681                                                          | 340                                                          | 0,20                                                | 1,5                           | 1,54                                                | 35 x 50                          | ECS2HBB391M◇◇△△3550                                                                   |
|                                      |                            | 470                                                          | 565                                                          | 282                                                 | 0,20                          | 1,5                                                 | 35 x 60                          | ECS2HBB471M◇◇△△3560                                                                   |

|                    |     |       |     |      |     |      |         |                     |
|--------------------|-----|-------|-----|------|-----|------|---------|---------------------|
| 550<br>(600)<br>2Y | 150 | 1 769 | 885 | 0,20 | 0,8 | 0,92 | 30 x 35 | ECS2YBB151M◇◇△△3035 |
|                    | 180 | 1 474 | 737 | 0,20 | 1,0 | 1,03 | 30 x 40 | ECS2YBB181M◇◇△△3040 |
|                    | 220 | 1 206 | 603 | 0,20 | 1,2 | 1,15 | 30 x 50 | ECS2YBB221M◇◇△△3050 |
|                    | 270 | 983   | 492 | 0,20 | 1,5 | 1,30 | 35 x 45 | ECS2YBB271M◇◇△△3545 |
|                    | 330 | 804   | 402 | 0,20 | 1,5 | 1,48 | 35 x 55 | ECS2YBB331M◇◇△△3555 |
|                    | 390 | 681   | 340 | 0,20 | 1,5 | 1,65 | 35 x 60 | ECS2YBB391M◇◇△△3560 |
|                    | 470 | 565   | 282 | 0,20 | 1,5 | 1,90 | 35 x 60 | ECS2YBB471M◇◇△△3560 |
|                    |     | 565   | 282 | 0,20 | 1,5 | 1,92 | 35 x 70 | ECS2YBB471M◇◇△△3570 |
|                    | 560 | 473   | 237 | 0,20 | 1,5 | 2,05 | 35 x 80 | ECS2YBB561M◇◇△△3580 |
|                    | 680 | 390   | 196 | 0,20 | 1,5 | 2,39 | 40 x 75 | ECS2YBB681M◇◇△△4075 |





## ITEM CHARACTERISTICS

|                                                            |                                                                                                                                                                                                                                                                         |            |                            |                                                                                                                                                                                                                                        |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature Range (°C)                           | -40 ~ +105                                                                                                                                                                                                                                                              | -25 ~ +105 | Lower Voltages on request. | <div><div>The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.</div></div> |
| Voltage Range (V)                                          | 160 ~ 250                                                                                                                                                                                                                                                               | 315 ~ 500  |                            |                                                                                                                                                                                                                                        |
| Capacitance Range (µF)                                     | 120 ~ 2 200                                                                                                                                                                                                                                                             |            |                            |                                                                                                                                                                                                                                        |
| Capacitance Tolerance (20°C, 120Hz)                        | ± 20%                                                                                                                                                                                                                                                                   |            |                            |                                                                                                                                                                                                                                        |
| Leakage Current                                            | After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.                                                                                                                                                              |            |                            |                                                                                                                                                                                                                                        |
| Stability at Low Temperature<br>(Impedance Ratio at 120Hz) | Rated Voltage<br>(V)                                                                                                                                                                                                                                                    | ≤ 250      | 315 ~ 500                  |                                                                                                                                                                                                                                        |
|                                                            | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$                                                                                                                                                                                                                     | 3          | 8                          |                                                                                                                                                                                                                                        |
|                                                            | $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$                                                                                                                                                                                                                     | 12         | -                          |                                                                                                                                                                                                                                        |
| Fast Charge-Discharge                                      | <div> Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray</div> |            |                            |                                                                                                                                                                                                                                        |

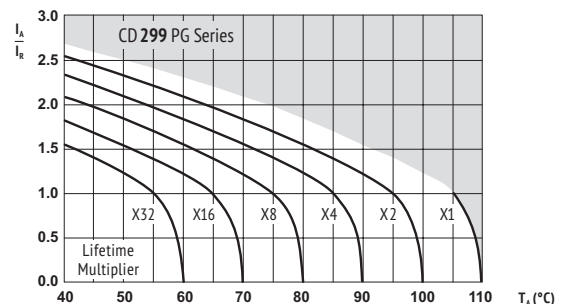
The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | 9 000h                                | > 200 000h                        | 7 000h                                | 7 000h                                   | 1 000h                                |                                                                              |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value            | Within ± 20% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value    | Not more than 200% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,4 \times I_R$<br>50°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied<br>for 30 min > 24h<br>before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT) MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)

| Frequency<br>Rated Voltage (V) | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | ≥ 40 kHz |
|--------------------------------|------|-------|-------|------|-------|----------|
| 160 ~ 250                      | 0,80 | 1,00  | 1,17  | 1,30 | 1,45  | 1,50     |
| ≥ 315                          | 0,80 | 1,00  | 1,16  | 1,30 | 1,43  | 1,45     |

Multipliers for typical operating conditions.



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

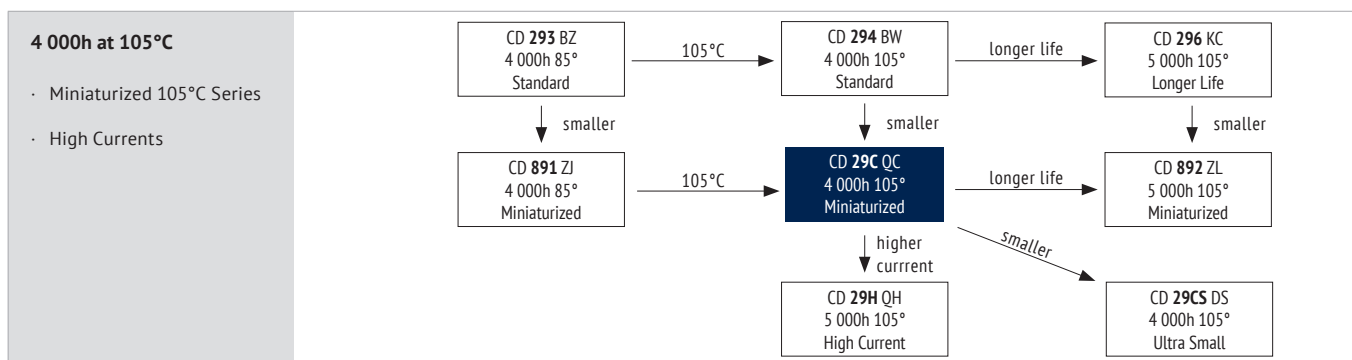
## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|--------------------------------------|------------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                                | (mΩ)                                                                |                                             | (mA)                                 | (Arms)                                                     | (mm)           |                                                                               |
| 160<br>(200)<br>2C                          | 560                                 | 356                                                                 | 249                                                                 | 0,15                                        | 0,9                                  | 1,50                                                       | 22 x 40        | ECS2CPG561M◇◇△△2240                                                           |
|                                             |                                     | 356                                                                 | 249                                                                 | 0,15                                        | 0,9                                  | 1,50                                                       | 30 x 25        | ECS2CPG561M◇◇△△3025                                                           |
|                                             |                                     | 293                                                                 | 205                                                                 | 0,15                                        | 1,1                                  | 1,70                                                       | 22 x 45        | ECS2CPG681M◇◇△△2245                                                           |
|                                             | 680                                 | 293                                                                 | 205                                                                 | 0,15                                        | 1,1                                  | 1,70                                                       | 25 x 35        | ECS2CPG681M◇◇△△2535                                                           |
|                                             |                                     | 293                                                                 | 205                                                                 | 0,15                                        | 1,1                                  | 1,70                                                       | 30 x 30        | ECS2CPG681M◇◇△△3030                                                           |
|                                             |                                     | 243                                                                 | 170                                                                 | 0,15                                        | 1,3                                  | 2,00                                                       | 25 x 40        | ECS2CPG821M◇◇△△2540                                                           |
|                                             | 1 000                               | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 2,20                                                       | 25 x 45        | ECS2CPG102M◇◇△△2545                                                           |
|                                             |                                     | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 2,20                                                       | 30 x 35        | ECS2CPG102M◇◇△△3035                                                           |
|                                             |                                     | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 2,30                                                       | 25 x 50        | ECS2CPG122M◇◇△△2550                                                           |
|                                             | 1 200                               | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 2,30                                                       | 30 x 40        | ECS2CPG122M◇◇△△3040                                                           |
|                                             |                                     | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 2,30                                                       | 35 x 35        | ECS2CPG122M◇◇△△3535                                                           |
|                                             |                                     | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 2,50                                                       | 30 x 45        | ECS2CPG152M◇◇△△3045                                                           |
|                                             | 1 500                               | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 2,50                                                       | 35 x 40        | ECS2CPG152M◇◇△△3540                                                           |
|                                             |                                     | 111                                                                 | 77                                                                  | 0,15                                        | 1,5                                  | 2,70                                                       | 30 x 50        | ECS2CPG182M◇◇△△3050                                                           |
|                                             |                                     | 111                                                                 | 77                                                                  | 0,15                                        | 1,5                                  | 2,70                                                       | 35 x 45        | ECS2CPG182M◇◇△△3545                                                           |
|                                             | 2 200                               | 91                                                                  | 63                                                                  | 0,15                                        | 1,5                                  | 2,90                                                       | 35 x 50        | ECS2CPG222M◇◇△△3550                                                           |
| 200<br>(250)<br>2D                          | 470                                 | 424                                                                 | 296                                                                 | 0,15                                        | 0,9                                  | 1,40                                                       | 22 x 40        | ECS2DPG471M◇◇△△2240                                                           |
|                                             |                                     | 424                                                                 | 296                                                                 | 0,15                                        | 0,9                                  | 1,40                                                       | 25 x 35        | ECS2DPG471M◇◇△△2535                                                           |
|                                             |                                     | 424                                                                 | 296                                                                 | 0,15                                        | 0,9                                  | 1,40                                                       | 30 x 30        | ECS2DPG471M◇◇△△3030                                                           |
|                                             | 560                                 | 356                                                                 | 249                                                                 | 0,15                                        | 1,1                                  | 1,50                                                       | 22 x 45        | ECS2DPG561M◇◇△△2245                                                           |
|                                             |                                     | 293                                                                 | 205                                                                 | 0,15                                        | 1,4                                  | 1,70                                                       | 25 x 40        | ECS2DPG681M◇◇△△2540                                                           |
|                                             |                                     | 293                                                                 | 205                                                                 | 0,15                                        | 1,4                                  | 1,70                                                       | 30 x 35        | ECS2DPG681M◇◇△△3035                                                           |
|                                             | 680                                 | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 2,00                                                       | 25 x 50        | ECS2DPG821M◇◇△△2550                                                           |
|                                             |                                     | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 2,00                                                       | 30 x 40        | ECS2DPG821M◇◇△△3040                                                           |
|                                             |                                     | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 2,00                                                       | 35 x 30        | ECS2DPG821M◇◇△△3530                                                           |
|                                             | 1 000                               | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 2,20                                                       | 30 x 45        | ECS2DPG102M◇◇△△3045                                                           |
|                                             |                                     | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 2,20                                                       | 35 x 35        | ECS2DPG102M◇◇△△3535                                                           |
|                                             |                                     | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 2,30                                                       | 30 x 50        | ECS2DPG122M◇◇△△3050                                                           |
|                                             | 1 200                               | 166                                                                 | 116                                                                 | 0,15                                        | 1,5                                  | 2,30                                                       | 35 x 40        | ECS2DPG122M◇◇△△3540                                                           |
|                                             |                                     | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 2,50                                                       | 35 x 50        | ECS2DPG152M◇◇△△3550                                                           |
|                                             | 1 500                               | 133                                                                 | 93                                                                  | 0,15                                        | 1,5                                  | 2,50                                                       | 35 x 50        | ECS2DPG152M◇◇△△3550                                                           |
| 250<br>(300)<br>2E                          | 330                                 | 603                                                                 | 422                                                                 | 0,15                                        | 0,8                                  | 1,20                                                       | 22 x 40        | ECS2EPG331M◇◇△△2240                                                           |
|                                             |                                     | 603                                                                 | 422                                                                 | 0,15                                        | 0,8                                  | 1,20                                                       | 25 x 35        | ECS2EPG331M◇◇△△2535                                                           |
|                                             |                                     | 511                                                                 | 357                                                                 | 0,15                                        | 1,0                                  | 1,30                                                       | 22 x 45        | ECS2EPG391M◇◇△△2245                                                           |
|                                             | 390                                 | 511                                                                 | 357                                                                 | 0,15                                        | 1,0                                  | 1,30                                                       | 25 x 40        | ECS2EPG391M◇◇△△2540                                                           |
|                                             |                                     | 511                                                                 | 357                                                                 | 0,15                                        | 1,0                                  | 1,30                                                       | 30 x 30        | ECS2EPG391M◇◇△△3030                                                           |
|                                             |                                     | 424                                                                 | 296                                                                 | 0,15                                        | 1,2                                  | 1,40                                                       | 25 x 45        | ECS2EPG471M◇◇△△2545                                                           |
|                                             | 470                                 | 424                                                                 | 296                                                                 | 0,15                                        | 1,2                                  | 1,40                                                       | 30 x 35        | ECS2EPG471M◇◇△△3035                                                           |
|                                             |                                     | 424                                                                 | 296                                                                 | 0,15                                        | 1,2                                  | 1,40                                                       | 35 x 30        | ECS2EPG471M◇◇△△3530                                                           |
|                                             |                                     | 356                                                                 | 249                                                                 | 0,15                                        | 1,4                                  | 1,50                                                       | 25 x 50        | ECS2EPG561M◇◇△△2550                                                           |
|                                             | 680                                 | 293                                                                 | 205                                                                 | 0,15                                        | 1,5                                  | 1,70                                                       | 30 x 45        | ECS2EPG681M◇◇△△3045                                                           |
|                                             |                                     | 293                                                                 | 205                                                                 | 0,15                                        | 1,5                                  | 1,70                                                       | 35 x 35        | ECS2EPG681M◇◇△△3535                                                           |
|                                             |                                     | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 2,00                                                       | 30 x 50        | ECS2EPG821M◇◇△△3050                                                           |
|                                             | 820                                 | 243                                                                 | 170                                                                 | 0,15                                        | 1,5                                  | 2,00                                                       | 35 x 40        | ECS2EPG821M◇◇△△3540                                                           |
|                                             |                                     | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 2,20                                                       | 35 x 45        | ECS2EPG102M◇◇△△3545                                                           |
|                                             | 1 000                               | 199                                                                 | 139                                                                 | 0,15                                        | 1,5                                  | 2,20                                                       | 35 x 45        | ECS2EPG102M◇◇△△3545                                                           |
| 315<br>(365)<br>2F                          | 220                                 | 905                                                                 | 498                                                                 | 0,15                                        | 0,7                                  | 1,00                                                       | 22 x 45        | ECS2FPG221M◇◇△△2245                                                           |
|                                             |                                     | 905                                                                 | 498                                                                 | 0,15                                        | 0,7                                  | 1,00                                                       | 25 x 40        | ECS2FPG221M◇◇△△2540                                                           |
|                                             |                                     | 905                                                                 | 498                                                                 | 0,15                                        | 0,7                                  | 1,00                                                       | 30 x 30        | ECS2FPG221M◇◇△△3030                                                           |
|                                             | 270                                 | 737                                                                 | 406                                                                 | 0,15                                        | 0,9                                  | 1,10                                                       | 25 x 45        | ECS2FPG271M◇◇△△2545                                                           |
|                                             |                                     | 737                                                                 | 406                                                                 | 0,15                                        | 0,9                                  | 1,10                                                       | 30 x 35        | ECS2FPG271M◇◇△△3035                                                           |
|                                             |                                     | 737                                                                 | 406                                                                 | 0,15                                        | 0,9                                  | 1,10                                                       | 35 x 30        | ECS2FPG271M◇◇△△3530                                                           |
|                                             | 330                                 | 603                                                                 | 332                                                                 | 0,15                                        | 1,0                                  | 1,20                                                       | 25 x 50        | ECS2FPG331M◇◇△△2550                                                           |
|                                             |                                     | 603                                                                 | 332                                                                 | 0,15                                        | 1,0                                  | 1,20                                                       | 30 x 40        | ECS2FPG331M◇◇△△3040                                                           |
|                                             |                                     | 511                                                                 | 281                                                                 | 0,15                                        | 1,2                                  | 1,30                                                       | 30 x 45        | ECS2FPG391M◇◇△△3045                                                           |
|                                             | 390                                 | 511                                                                 | 281                                                                 | 0,15                                        | 1,2                                  | 1,30                                                       | 35 x 35        | ECS2FPG391M◇◇△△3535                                                           |
|                                             |                                     | 424                                                                 | 233                                                                 | 0,15                                        | 1,5                                  | 1,40                                                       | 30 x 50        | ECS2FPG471M◇◇△△3050                                                           |
|                                             |                                     | 424                                                                 | 233                                                                 | 0,15                                        | 1,5                                  | 1,40                                                       | 35 x 40        | ECS2FPG471M◇◇△△3540                                                           |
|                                             | 560                                 | 356                                                                 | 196                                                                 | 0,15                                        | 1,5                                  | 1,50                                                       | 35 x 45        | ECS2FPG561M◇◇△△3545                                                           |
|                                             |                                     | 293                                                                 | 161                                                                 | 0,15                                        | 1,5                                  | 1,70                                                       | 35 x 50        | ECS2FPG681M◇◇△△3550                                                           |
|                                             | 680                                 | 293                                                                 | 161                                                                 | 0,15                                        | 1,5                                  | 1,70                                                       | 35 x 50        | ECS2FPG681M◇◇△△3550                                                           |
| 350<br>(400)<br>2V                          | 180                                 | 1 106                                                               | 608                                                                 | 0,15                                        | 0,6                                  | 0,90                                                       | 22 x 45        | ECS2VPG181M◇◇△△2245                                                           |
|                                             |                                     | 1 106                                                               | 608                                                                 | 0,15                                        | 0,6                                  | 0,90                                                       | 25 x 35        | ECS2VPG181M◇◇△△2535                                                           |
|                                             |                                     | 1 106                                                               | 608                                                                 | 0,15                                        | 0,6                                  | 0,90                                                       | 30 x 30        | ECS2VPG181M◇◇△△3030                                                           |
|                                             | 220                                 | 905                                                                 | 498                                                                 | 0,15                                        | 0,8                                  | 1,00                                                       | 22 x 50        | ECS2VPG221M◇◇△△2250                                                           |
|                                             |                                     | 905                                                                 | 498                                                                 | 0,15                                        | 0,8                                  | 1,00                                                       | 25 x 40        | ECS2VPG221M◇◇△△2540                                                           |
|                                             |                                     | 905                                                                 | 498                                                                 | 0,15                                        | 0,8                                  | 1,00                                                       | 25 x 40        | ECS2VPG221M◇◇△△2540                                                           |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|--------------------------------------|------------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                                | (mΩ)                                                                |                                             | (mA)                                 | (Arms)                                                     | (mm)           |                                                                               |
| 350<br>(400)<br>2V                          | 270                                 | 737                                                                 | 406                                                                 | 0,15                                        | 0,9                                  | 1,10                                                       | 25 x 50        | ECS2VPG271M◇◇△△2550                                                           |
|                                             |                                     | 737                                                                 | 406                                                                 | 0,15                                        | 0,9                                  | 1,10                                                       | 30 x 35        | ECS2VPG271M◇◇△△3035                                                           |
|                                             |                                     | 737                                                                 | 406                                                                 | 0,15                                        | 0,9                                  | 1,10                                                       | 35 x 30        | ECS2VPG271M◇◇△△3530                                                           |
|                                             | 330                                 | 603                                                                 | 332                                                                 | 0,15                                        | 1,2                                  | 1,20                                                       | 30 x 45        | ECS2VPG331M◇◇△△3045                                                           |
|                                             |                                     | 603                                                                 | 332                                                                 | 0,15                                        | 1,2                                  | 1,20                                                       | 35 x 35        | ECS2VPG331M◇◇△△3535                                                           |
|                                             |                                     | 511                                                                 | 281                                                                 | 0,15                                        | 1,4                                  | 1,30                                                       | 30 x 50        | ECS2VPG391M◇◇△△3050                                                           |
|                                             | 390                                 | 511                                                                 | 281                                                                 | 0,15                                        | 1,4                                  | 1,30                                                       | 35 x 40        | ECS2VPG391M◇◇△△3540                                                           |
|                                             |                                     | 511                                                                 | 281                                                                 | 0,15                                        | 1,4                                  | 1,30                                                       | 35 x 40        | ECS2VPG391M◇◇△△3540                                                           |
|                                             |                                     | 356                                                                 | 196                                                                 | 0,15                                        | 1,5                                  | 1,50                                                       | 35 x 50        | ECS2VPG561M◇◇△△3550                                                           |
|                                             | 560                                 | 356                                                                 | 196                                                                 | 0,15                                        | 1,5                                  | 1,50                                                       | 35 x 50        | ECS2VPG561M◇◇△△3550                                                           |
|                                             |                                     | 356                                                                 | 196                                                                 | 0,15                                        | 1,5                                  | 1,50                                                       | 35 x 50        | ECS2VPG561M◇◇△△3550                                                           |
|                                             |                                     | 356                                                                 | 196                                                                 | 0,15                                        | 1,5                                  | 1,50                                                       | 35 x 50        | ECS2VPG561M◇◇△△3550                                                           |
| 400<br>(450)<br>2G                          | 120                                 | 1 658                                                               | 912                                                                 | 0,15                                        | 0,5                                  | 0,62                                                       | 22 x 40        | ECS2GPG121M◇◇△△2240                                                           |
|                                             |                                     | 1 658                                                               | 912                                                                 | 0,15                                        | 0,5                                  | 0,64                                                       | 25 x 35        | ECS2GPG121M◇◇△△2535                                                           |
|                                             | 150                                 | 1 327                                                               | 730                                                                 | 0,15                                        | 0,6                                  | 0,69                                                       | 22 x 50        | ECS2GPG151M◇◇△△2250                                                           |
|                                             |                                     | 1 327                                                               | 730                                                                 | 0,15                                        | 0,6                                  | 0,69                                                       | 25 x 40        | ECS2GPG151M◇◇△△2540                                                           |
|                                             | 180                                 | 1 106                                                               | 608                                                                 | 0,15                                        | 0,7                                  | 0,72                                                       | 25 x 45        | ECS2GPG181M◇◇△△2545                                                           |
|                                             |                                     | 1 106                                                               | 608                                                                 | 0,15                                        | 0,7                                  | 0,78                                                       | 30 x 35        | ECS2GPG181M◇◇△△3035                                                           |
|                                             | 220                                 | 905                                                                 | 498                                                                 | 0,15                                        | 0,9                                  | 0,83                                                       | 25 x 50        | ECS2GPG221M◇◇△△2550                                                           |
|                                             |                                     | 905                                                                 | 498                                                                 | 0,15                                        | 0,9                                  | 0,81                                                       | 30 x 40        | ECS2GPG221M◇◇△△3040                                                           |
|                                             | 270                                 | 737                                                                 | 406                                                                 | 0,15                                        | 1,1                                  | 0,89                                                       | 30 x 35        | ECS2GPG271M◇◇△△3035                                                           |
|                                             |                                     | 737                                                                 | 406                                                                 | 0,15                                        | 1,1                                  | 0,82                                                       | 35 x 25        | ECS2GPG271M◇◇△△3525                                                           |
|                                             | 330                                 | 603                                                                 | 332                                                                 | 0,15                                        | 1,3                                  | 1,07                                                       | 30 x 40        | ECS2GPG331M◇◇△△3040                                                           |
|                                             |                                     | 603                                                                 | 332                                                                 | 0,15                                        | 1,3                                  | 1,02                                                       | 35 x 30        | ECS2GPG331M◇◇△△3530                                                           |
|                                             | 390                                 | 511                                                                 | 281                                                                 | 0,15                                        | 1,5                                  | 1,21                                                       | 30 x 45        | ECS2GPG391M◇◇△△3045                                                           |
|                                             |                                     | 511                                                                 | 281                                                                 | 0,15                                        | 1,5                                  | 1,18                                                       | 35 x 35        | ECS2GPG391M◇◇△△3535                                                           |
|                                             | 470                                 | 424                                                                 | 233                                                                 | 0,15                                        | 1,5                                  | 1,23                                                       | 30 x 50        | ECS2GPG471M◇◇△△3050                                                           |
|                                             |                                     | 424                                                                 | 233                                                                 | 0,15                                        | 1,5                                  | 1,22                                                       | 35 x 40        | ECS2GPG471M◇◇△△3540                                                           |
|                                             | 560                                 | 356                                                                 | 196                                                                 | 0,15                                        | 1,5                                  | 1,50                                                       | 30 x 55        | ECS2GPG561M◇◇△△3055                                                           |
|                                             |                                     | 356                                                                 | 196                                                                 | 0,15                                        | 1,5                                  | 1,50                                                       | 35 x 45        | ECS2GPG561M◇◇△△3545                                                           |
|                                             | 680                                 | 293                                                                 | 161                                                                 | 0,15                                        | 1,5                                  | 1,79                                                       | 35 x 50        | ECS2GPG681M◇◇△△3550                                                           |
|                                             | 820                                 | 243                                                                 | 135                                                                 | 0,15                                        | 1,5                                  | 2,07                                                       | 35 x 55        | ECS2GPG821M◇◇△△3555                                                           |
| 450<br>(500)<br>2W                          | 120                                 | 2 211                                                               | 995                                                                 | 0,20                                        | 0,5                                  | 0,69                                                       | 25 x 30        | ECS2WPG121M◇◇△△2530                                                           |
|                                             |                                     | 1 769                                                               | 796                                                                 | 0,20                                        | 0,7                                  | 0,77                                                       | 25 x 35        | ECS2WPG151M◇◇△△2535                                                           |
|                                             | 150                                 | 1 769                                                               | 796                                                                 | 0,20                                        | 0,7                                  | 0,73                                                       | 30 x 25        | ECS2WPG151M◇◇△△3025                                                           |
|                                             |                                     | 1 474                                                               | 664                                                                 | 0,20                                        | 0,8                                  | 0,83                                                       | 25 x 40        | ECS2WPG181M◇◇△△2540                                                           |
|                                             | 180                                 | 1 474                                                               | 664                                                                 | 0,20                                        | 0,8                                  | 0,81                                                       | 30 x 30        | ECS2WPG181M◇◇△△3030                                                           |
|                                             |                                     | 1 206                                                               | 543                                                                 | 0,20                                        | 1,0                                  | 0,96                                                       | 30 x 35        | ECS2WPG221M◇◇△△3035                                                           |
|                                             | 220                                 | 1 206                                                               | 543                                                                 | 0,20                                        | 1,0                                  | 0,89                                                       | 35 x 25        | ECS2WPG221M◇◇△△3525                                                           |
|                                             |                                     | 983                                                                 | 442                                                                 | 0,20                                        | 1,2                                  | 1,09                                                       | 30 x 40        | ECS2WPG271M◇◇△△3040                                                           |
|                                             | 270                                 | 783                                                                 | 442                                                                 | 0,20                                        | 1,2                                  | 1,04                                                       | 35 x 30        | ECS2WPG271M◇◇△△3530                                                           |
|                                             |                                     | 804                                                                 | 362                                                                 | 0,20                                        | 1,5                                  | 1,21                                                       | 30 x 45        | ECS2WPG331M◇◇△△3045                                                           |
|                                             | 330                                 | 804                                                                 | 362                                                                 | 0,20                                        | 1,5                                  | 1,18                                                       | 35 x 35        | ECS2WPG331M◇◇△△3535                                                           |
|                                             |                                     | 680                                                                 | 306                                                                 | 0,20                                        | 1,5                                  | 1,24                                                       | 30 x 50        | ECS2WPG391M◇◇△△3050                                                           |
|                                             | 390                                 | 680                                                                 | 306                                                                 | 0,20                                        | 1,5                                  | 1,23                                                       | 35 x 40        | ECS2WPG391M◇◇△△3540                                                           |
|                                             |                                     | 565                                                                 | 254                                                                 | 0,20                                        | 1,5                                  | 1,41                                                       | 30 x 55        | ECS2WPG471M◇◇△△3055                                                           |
|                                             | 470                                 | 565                                                                 | 254                                                                 | 0,20                                        | 1,5                                  | 1,41                                                       | 35 x 45        | ECS2WPG471M◇◇△△3545                                                           |
|                                             |                                     | 474                                                                 | 213                                                                 | 0,20                                        | 1,5                                  | 1,58                                                       | 30 x 60        | ECS2WPG561M◇◇△△3060                                                           |
|                                             | 560                                 | 474                                                                 | 213                                                                 | 0,20                                        | 1,5                                  | 1,60                                                       | 35 x 50        | ECS2WPG561M◇◇△△3550                                                           |
|                                             |                                     | 390                                                                 | 176                                                                 | 0,20                                        | 1,5                                  | 1,83                                                       | 35 x 55        | ECS2WPG681M◇◇△△3555                                                           |



## ITEM CHARACTERISTICS

|                                     |             |            |                            |
|-------------------------------------|-------------|------------|----------------------------|
| Operating Temperature Range (°C)    | -40 ~ +105  | -25 ~ +105 |                            |
| Voltage Range (V)                   | 200 ~ 250   | 400 ~ 450  | Lower Voltages on request. |
| Capacitance Range (µF)              | 180 ~ 2 700 |            |                            |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%       |            |                            |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)                                   | 200 | 250 | 400 | 450 |
|---------------------------------------------------------|-----------------------------------------------------|-----|-----|-----|-----|
| Impedance Ratio                                         | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 4   |     | 8   |     |
|                                                         | $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 12  |     | -   |     |

Fast Charge-Discharge **!** Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

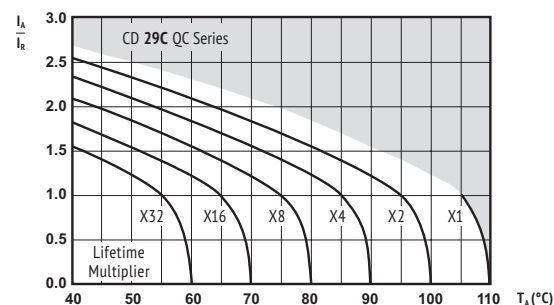
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                        |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------|
| Lifetime                                                                | 4 000h                                | > 180 000h                        | 2 000h                                | 3 000h                                   | 1 000h                                |                                                                        |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                        |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value            | Within ± 20% of initial value         |                                                                        |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value    | Not more than 200% of specified value |                                                                        |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for 30 min > 24h before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency         | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | ≥ 50 kHz |
|-------------------|------|-------|-------|------|-------|----------|
| Rated Voltage (V) |      |       |       |      |       |          |
| 200 ~ 250         | 0,80 | 1,00  | 1,17  | 1,32 | 1,45  | 1,50     |
| 400 ~ 450         | 0,80 | 1,00  | 1,16  | 1,30 | 1,41  | 1,43     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 105°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

**!** Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pin number<br><br>Details: Page 105 |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                              | (mm)                             |                                                                                       |
| 200<br>(250)<br>2D                   | 560                        | 355                                                          | 248                                                          | 0,15                                                | 1,1                           | 1,48                                                | 25 x 30                          | ECS2DQC561M◇◇△△2530                                                                   |
|                                      |                            | 293                                                          | 204                                                          | 0,15                                                | 1,4                           | 1,62                                                | 22 x 40                          | ECS2DQC681M◇◇△△2240                                                                   |
|                                      |                            | 293                                                          | 204                                                          | 0,15                                                | 1,4                           | 1,60                                                | 25 x 30                          | ECS2DQC681M◇◇△△2530                                                                   |
|                                      | 680                        | 293                                                          | 204                                                          | 0,15                                                | 1,4                           | 1,60                                                | 30 x 25                          | ECS2DQC681M◇◇△△3025                                                                   |
|                                      |                            | 243                                                          | 169                                                          | 0,15                                                | 1,5                           | 1,75                                                | 22 x 45                          | ECS2DQC821M◇◇△△2245                                                                   |
|                                      |                            | 243                                                          | 169                                                          | 0,15                                                | 1,5                           | 1,75                                                | 25 x 35                          | ECS2DQC821M◇◇△△2535                                                                   |
|                                      | 820                        | 243                                                          | 169                                                          | 0,15                                                | 1,5                           | 1,75                                                | 30 x 30                          | ECS2DQC821M◇◇△△3030                                                                   |
|                                      |                            | 199                                                          | 139                                                          | 0,15                                                | 1,5                           | 2,04                                                | 22 x 50                          | ECS2DQC102M◇◇△△2250                                                                   |
|                                      |                            | 199                                                          | 139                                                          | 0,15                                                | 1,5                           | 2,04                                                | 25 x 40                          | ECS2DQC102M◇◇△△2540                                                                   |
|                                      | 1 000                      | 199                                                          | 139                                                          | 0,15                                                | 1,5                           | 2,04                                                | 30 x 35                          | ECS2DQC102M◇◇△△3035                                                                   |
|                                      |                            | 199                                                          | 139                                                          | 0,15                                                | 1,5                           | 2,04                                                | 35 x 25                          | ECS2DQC102M◇◇△△3525                                                                   |
|                                      |                            | 166                                                          | 116                                                          | 0,15                                                | 1,5                           | 2,30                                                | 25 x 45                          | ECS2DQC122M◇◇△△2545                                                                   |
|                                      | 1 200                      | 166                                                          | 116                                                          | 0,15                                                | 1,5                           | 2,30                                                | 30 x 35                          | ECS2DQC122M◇◇△△3035                                                                   |
|                                      |                            | 133                                                          | 92                                                           | 0,15                                                | 1,5                           | 2,57                                                | 30 x 40                          | ECS2DQC152M◇◇△△3040                                                                   |
|                                      | 1 500                      | 133                                                          | 92                                                           | 0,15                                                | 1,5                           | 2,57                                                | 35 x 30                          | ECS2DQC152M◇◇△△3530                                                                   |
|                                      |                            | 111                                                          | 77                                                           | 0,15                                                | 1,5                           | 2,68                                                | 30 x 50                          | ECS2DQC182M◇◇△△3050                                                                   |
|                                      | 1 800                      | 111                                                          | 77                                                           | 0,15                                                | 1,5                           | 2,68                                                | 35 x 35                          | ECS2DQC182M◇◇△△3535                                                                   |
|                                      |                            | 91                                                           | 63                                                           | 0,15                                                | 1,5                           | 2,92                                                | 35 x 45                          | ECS2DQC222M◇◇△△3545                                                                   |
|                                      | 2 700                      | 74                                                           | 51                                                           | 0,15                                                | 1,5                           | 3,30                                                | 35 x 50                          | ECS2DQC272M◇◇△△3550                                                                   |

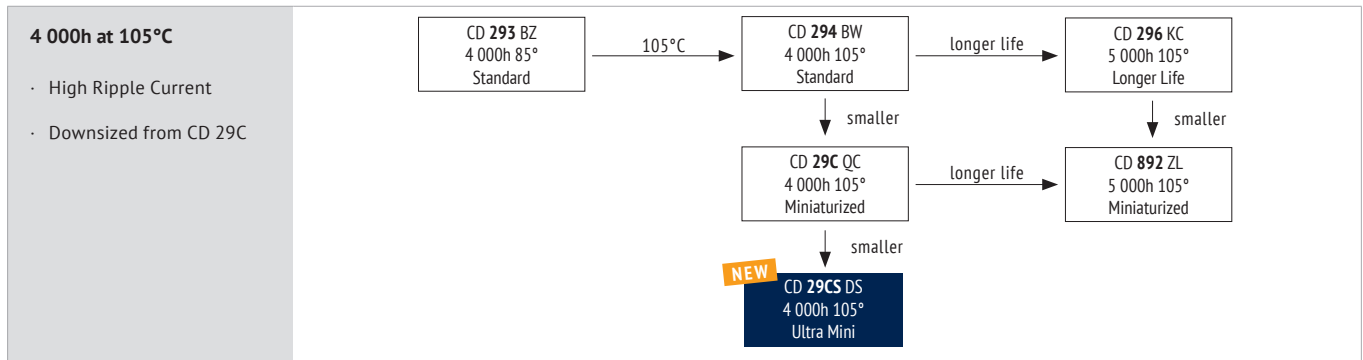
| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pin number<br><br>Details: Page 105 |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                              | (mm)                             |                                                                                       |
| 450<br>(500)<br>2W                   | 330                        | 804                                                          | 422                                                          | 0,20                                                | 1,5                           | 1,28                                                | 25 x 50                          | ECS2WQC331M◇◇△△2550                                                                   |
|                                      |                            | 804                                                          | 422                                                          | 0,20                                                | 1,5                           | 1,31                                                | 30 x 35                          | ECS2WQC331M◇◇△△3035                                                                   |
|                                      |                            | 804                                                          | 422                                                          | 0,20                                                | 1,5                           | 1,25                                                | 35 x 30                          | ECS2WQC331M◇◇△△3530                                                                   |
|                                      | 390                        | 681                                                          | 357                                                          | 0,20                                                | 1,5                           | 1,41                                                | 30 x 40                          | ECS2WQC391M◇◇△△3040                                                                   |
|                                      |                            | 681                                                          | 357                                                          | 0,20                                                | 1,5                           | 1,45                                                | 35 x 35                          | ECS2WQC391M◇◇△△3535                                                                   |
|                                      |                            | 565                                                          | 296                                                          | 0,20                                                | 1,5                           | 1,52                                                | 30 x 45                          | ECS2WQC471M◇◇△△3045                                                                   |
|                                      | 470                        | 565                                                          | 296                                                          | 0,20                                                | 1,5                           | 1,61                                                | 35 x 40                          | ECS2WQC471M◇◇△△3540                                                                   |
|                                      |                            | 560                                                          | 474                                                          | 0,20                                                | 1,5                           | 1,75                                                | 35 x 45                          | ECS2WQC561M◇◇△△3545                                                                   |
|                                      | 680                        | 391                                                          | 204                                                          | 0,20                                                | 1,5                           | 1,93                                                | 35 x 50                          | ECS2WQC681M◇◇△△3550                                                                   |

|                    |       |     |     |      |     |      |         |                     |
|--------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 250<br>(300)<br>2E | 470   | 424 | 296 | 0,15 | 1,2 | 1,56 | 22 x 40 | ECS2EQC471M◇◇△△2240 |
|                    |       | 424 | 296 | 0,15 | 1,2 | 1,56 | 25 x 30 | ECS2EQC471M◇◇△△2530 |
|                    |       | 356 | 248 | 0,15 | 1,4 | 1,74 | 22 x 45 | ECS2EQC561M◇◇△△2245 |
|                    | 560   | 356 | 248 | 0,15 | 1,4 | 1,74 | 25 x 35 | ECS2EQC561M◇◇△△2535 |
|                    |       | 293 | 204 | 0,15 | 1,5 | 1,92 | 22 x 50 | ECS2EQC681M◇◇△△2250 |
|                    |       | 293 | 204 | 0,15 | 1,5 | 1,92 | 25 x 40 | ECS2EQC681M◇◇△△2540 |
|                    | 680   | 293 | 204 | 0,15 | 1,5 | 1,92 | 30 x 30 | ECS2EQC681M◇◇△△3030 |
|                    |       | 243 | 169 | 0,15 | 1,5 | 2,13 | 25 x 45 | ECS2EQC821M◇◇△△2545 |
|                    |       | 243 | 169 | 0,15 | 1,5 | 2,13 | 30 x 35 | ECS2EQC821M◇◇△△3035 |
|                    | 1 000 | 199 | 139 | 0,15 | 1,5 | 2,40 | 25 x 50 | ECS2EQC102M◇◇△△2550 |
|                    |       | 199 | 139 | 0,15 | 1,5 | 2,40 | 30 x 40 | ECS2EQC102M◇◇△△3040 |
|                    |       | 199 | 139 | 0,15 | 1,5 | 2,40 | 35 x 30 | ECS2EQC102M◇◇△△3530 |
|                    | 1 200 | 166 | 139 | 0,15 | 1,5 | 2,55 | 30 x 40 | ECS2EQC122M◇◇△△3040 |
|                    |       | 133 | 92  | 0,15 | 1,5 | 2,73 | 30 x 50 | ECS2EQC152M◇◇△△3050 |
|                    | 1 500 | 133 | 92  | 0,15 | 1,5 | 2,73 | 35 x 40 | ECS2EQC152M◇◇△△3540 |
|                    |       | 111 | 77  | 0,15 | 1,5 | 2,82 | 35 x 45 | ECS2EQC182M◇◇△△3545 |
|                    | 2 200 | 91  | 63  | 0,15 | 1,5 | 2,95 | 35 x 50 | ECS2EQC222M◇◇△△3550 |

|                    |     |     |     |      |     |      |         |                     |
|--------------------|-----|-----|-----|------|-----|------|---------|---------------------|
| 400<br>(450)<br>2G | 220 | 905 | 633 | 0,15 | 0,9 | 0,87 | 25 x 30 | ECS2GQC221M◇◇△△2530 |
|                    |     | 737 | 516 | 0,15 | 1,1 | 0,93 | 22 x 40 | ECS2GQC271M◇◇△△2240 |
|                    |     | 737 | 516 | 0,15 | 1,1 | 1,05 | 25 x 35 | ECS2GQC271M◇◇△△2535 |
|                    | 270 | 737 | 516 | 0,15 | 1,1 | 1,02 | 30 x 25 | ECS2GQC271M◇◇△△3025 |
|                    |     | 603 | 422 | 0,15 | 1,3 | 1,16 | 22 x 50 | ECS2GQC331M◇◇△△2250 |
|                    |     | 603 | 422 | 0,15 | 1,3 | 1,14 | 25 x 40 | ECS2GQC331M◇◇△△2540 |
|                    | 330 | 603 | 422 | 0,15 | 1,3 | 1,14 | 30 x 30 | ECS2GQC331M◇◇△△3030 |
|                    |     | 603 | 422 | 0,15 | 1,3 | 1,13 | 35 x 25 | ECS2GQC331M◇◇△△3525 |
|                    |     | 511 | 357 | 0,15 | 1,5 | 1,45 | 25 x 45 | ECS2GQC391M◇◇△△2545 |
|                    | 390 | 511 | 357 | 0,15 | 1,5 | 1,47 | 30 x 35 | ECS2GQC391M◇◇△△3035 |
|                    |     | 511 | 357 | 0,15 | 1,5 | 1,50 | 35 x 30 | ECS2GQC391M◇◇△△3530 |
|                    |     | 424 | 296 | 0,15 | 1,5 | 1,54 | 25 x 50 | ECS2GQC471M◇◇△△2550 |
|                    | 470 | 424 | 296 | 0,15 | 1,5 | 1,61 | 30 x 40 | ECS2GQC471M◇◇△△3040 |
|                    |     | 424 | 296 | 0,15 | 1,5 | 1,50 | 35 x 30 | ECS2GQC471M◇◇△△3530 |
|                    |     | 356 | 248 | 0,15 | 1,5 | 1,70 | 30 x 45 | ECS2GQC561M◇◇△△3045 |
|                    | 560 | 356 | 248 | 0,15 | 1,5 | 1,67 | 35 x 35 | ECS2GQC561M◇◇△△3535 |
|                    |     | 293 | 204 | 0,15 | 1,5 | 1,82 | 30 x 50 | ECS2GQC681M◇◇△△3050 |
|                    | 680 | 293 | 204 | 0,15 | 1,5 | 1,87 | 35 x 40 | ECS2GQC681M◇◇△△3540 |
|                    |     | 243 | 169 | 0,15 | 1,5 | 2,08 | 35 x 45 | ECS2GQC821M◇◇△△3545 |
|                    |     | 243 | 169 | 0,15 | 1,5 | 2,14 | 30 x 60 | ECS2GQC821M◇◇△△3060 |

|                    |     |      |     |      |     |      |         |                     |
|--------------------|-----|------|-----|------|-----|------|---------|---------------------|
| 450<br>(500)<br>2W | 180 | 1474 | 774 | 0,20 | 0,8 | 0,79 | 25 x 30 | ECS2WQC181M◇◇△△2530 |
|                    |     | 1206 | 633 | 0,20 | 1,0 | 0,85 | 22 x 45 | ECS2WQC221M◇◇△△2245 |
|                    |     | 1206 | 633 | 0,20 | 1,0 | 0,87 | 25 x 35 | ECS2WQC221M◇◇△△2535 |
|                    |     | 1206 | 633 | 0,20 | 1,0 | 0,89 | 30 x 30 | ECS2WQC221M◇◇△△3030 |
|                    | 270 | 983  | 516 | 0,20 | 1,2 | 1,00 | 22 x 50 | ECS2WQC271M◇◇△△2250 |
|                    |     | 983  | 516 | 0,20 | 1,2 | 1,10 | 25 x 40 | ECS2WQC271M◇◇△△2540 |
|                    |     | 983  | 516 | 0,20 | 1,2 | 1,01 | 30 x 30 | ECS2WQC271M◇◇△△3030 |
|                    |     | 983  | 516 | 0,20 | 1,2 | 1,00 | 35 x 25 | ECS2WQC271M◇◇△△3525 |





## ITEM CHARACTERISTICS

|                                                            |                                                                                                                                                                              |                            |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Operating Temperature Range (°C)                           | -25 ~ +105                                                                                                                                                                   |                            |
| Voltage Range (V)                                          | 400 ~ 450                                                                                                                                                                    | Lower Voltages on request. |
| Capacitance Range (µF)                                     | 220 ~ 820                                                                                                                                                                    |                            |
| Capacitance Tolerance (20°C, 120Hz)                        | ± 20%                                                                                                                                                                        |                            |
| Leakage Current                                            | After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.                                                                   |                            |
| Stability at Low Temperature<br>(Impedance Ratio at 120Hz) | Rated Voltage (V)                                                                                                                                                            | 400      420      450      |
|                                                            | Impedance Ratio                                                                                                                                                              | $Z_{-25°C} / Z_{+20°C}$ 8  |
| Fast Charge-Discharge                                      | ⚠ Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray |                            |

⚠ The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

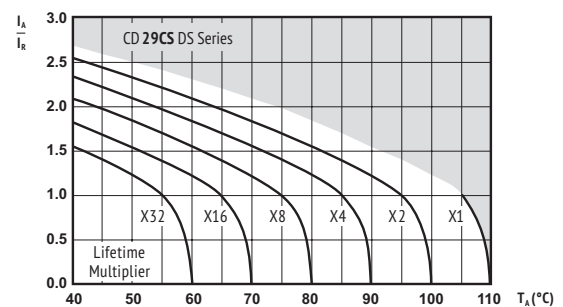
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                              |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------------|
| Lifetime                                                                | 4 000h                                | ≥ 180 000h                        | 2 000h                                | 3 000h                                   | 1 000h                                |                                                                              |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                              |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value            | Within ± 20% of initial value         |                                                                              |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value    | Not more than 200% of specified value |                                                                              |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied<br>for 30 min > 24h<br>before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency         | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | ≥ 50 kHz |
|-------------------|------|-------|-------|------|-------|----------|
| Rated Voltage (V) |      |       |       |      |       |          |
| 400 ~ 450         | 0,80 | 1,00  | 1,16  | 1,30 | 1,41  | 1,43     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

⚠ Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

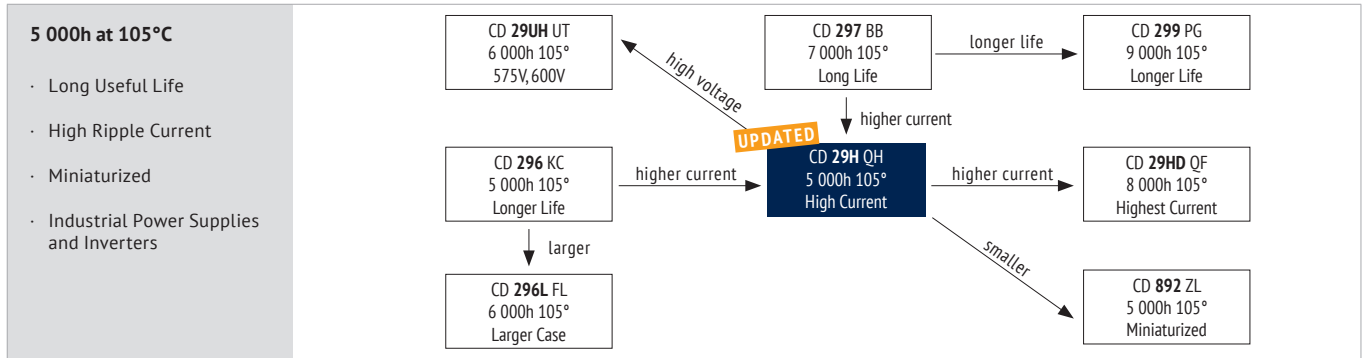
## ENVIRONMENTAL

The products are RoHS, WEEE and RECh compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated<br>Capacitance | $ESR_{max}$<br>Equivalent<br>Series<br>Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent<br>Series<br>Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation<br>Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage<br>Current | $I_{RAC}$<br>Rated<br>Ripple<br>Current<br>105°C<br>120Hz | Size<br><br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pin number |
|--------------------------------------|-------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------|----------------------------------|-----------------------------------------------------------|--------------------------------------|--------------------------------------------------------------|
| (V)                                  | (μF)                          | (mΩ)                                                               | (mΩ)                                                               |                                                        | (mA)                             | (Arms)                                                    | (mm)                                 | Details: Page 105                                            |
| <b>400<br/>(450)<br/>2G</b>          | 270                           | 737                                                                | 383                                                                | 0,15                                                   | 1,08                             | 1,43                                                      | 25x30                                | ECS2GDS271M◇◇△△2530                                          |
|                                      | 330                           | 603                                                                | 314                                                                | 0,15                                                   | 1,32                             | 1,77                                                      | 22x45                                | ECS2GDS331M◇◇△△2245                                          |
|                                      |                               | 603                                                                | 314                                                                | 0,15                                                   | 1,32                             | 1,65                                                      | 25x35                                | ECS2GDS331M◇◇△△2535                                          |
|                                      | 390                           | 510                                                                | 265                                                                | 0,15                                                   | 1,50                             | 1,97                                                      | 22x50                                | ECS2GDS391M◇◇△△2250                                          |
|                                      |                               | 510                                                                | 265                                                                | 0,15                                                   | 1,50                             | 1,85                                                      | 25x40                                | ECS2GDS391M◇◇△△2540                                          |
|                                      |                               | 510                                                                | 265                                                                | 0,15                                                   | 1,50                             | 1,65                                                      | 30x30                                | ECS2GDS391M◇◇△△3030                                          |
|                                      | 470                           | 424                                                                | 220                                                                | 0,15                                                   | 1,50                             | 2,07                                                      | 25x45                                | ECS2GDS471M◇◇△△2545                                          |
|                                      |                               | 424                                                                | 220                                                                | 0,15                                                   | 1,50                             | 1,89                                                      | 30x35                                | ECS2GDS471M◇◇△△3035                                          |
|                                      | 560                           | 355                                                                | 185                                                                | 0,15                                                   | 1,50                             | 2,12                                                      | 30x40                                | ECS2GDS561M◇◇△△3040                                          |
|                                      | 680                           | 293                                                                | 153                                                                | 0,15                                                   | 1,50                             | 2,00                                                      | 30x45                                | ECS2GDS681M◇◇△△3045                                          |
|                                      | 820                           | 242                                                                | 126                                                                | 0,15                                                   | 1,50                             | 2,48                                                      | 30x50                                | ECS2GDS821M◇◇△△3050                                          |
| <b>420<br/>(470)<br/>2X</b>          | 270                           | 983                                                                | 472                                                                | 0,20                                                   | 1,14                             | 1,27                                                      | 22x40                                | ECS2XDS271M◇◇△△2240                                          |
|                                      |                               | 983                                                                | 472                                                                | 0,20                                                   | 1,14                             | 1,28                                                      | 25x30                                | ECS2XDS271M◇◇△△2530                                          |
|                                      |                               | 983                                                                | 472                                                                | 0,20                                                   | 1,14                             | 1,28                                                      | 30x25                                | ECS2XDS271M◇◇△△3025                                          |
|                                      | 330                           | 804                                                                | 402                                                                | 0,20                                                   | 1,39                             | 1,44                                                      | 22x45                                | ECS2XDS331M◇◇△△2245                                          |
|                                      |                               | 804                                                                | 402                                                                | 0,20                                                   | 1,39                             | 1,48                                                      | 25x35                                | ECS2XDS331M◇◇△△2535                                          |
|                                      | 390                           | 681                                                                | 340                                                                | 0,20                                                   | 1,50                             | 1,63                                                      | 22x55                                | ECS2XDS391M◇◇△△2255                                          |
|                                      |                               | 681                                                                | 340                                                                | 0,20                                                   | 1,50                             | 1,64                                                      | 25x40                                | ECS2XDS391M◇◇△△2540                                          |
|                                      |                               | 681                                                                | 340                                                                | 0,20                                                   | 1,50                             | 1,55                                                      | 30x30                                | ECS2XDS391M◇◇△△3030                                          |
|                                      | 470                           | 565                                                                | 282                                                                | 0,20                                                   | 1,50                             | 1,86                                                      | 25x50                                | ECS2XDS471M◇◇△△2550                                          |
|                                      |                               | 565                                                                | 282                                                                | 0,20                                                   | 1,50                             | 1,74                                                      | 30x35                                | ECS2XDS471M◇◇△△3035                                          |
|                                      | 560                           | 472                                                                | 237                                                                | 0,20                                                   | 1,50                             | 2,09                                                      | 25x55                                | ECS2XDS561M◇◇△△2555                                          |
|                                      |                               | 472                                                                | 237                                                                | 0,20                                                   | 1,50                             | 1,96                                                      | 30x40                                | ECS2XDS561M◇◇△△3040                                          |
|                                      | 680                           | 391                                                                | 196                                                                | 0,20                                                   | 1,50                             | 2,25                                                      | 30x50                                | ECS2XDS681M◇◇△△3050                                          |
|                                      | 820                           | 324                                                                | 162                                                                | 0,20                                                   | 1,50                             | 2,52                                                      | 30x55                                | ECS2XDS821M◇◇△△3055                                          |
| <b>450<br/>(500)<br/>2W</b>          | 220                           | 1206                                                               | 603                                                                | 0,20                                                   | 0,99                             | 1,16                                                      | 25x30                                | ECS2WDS221M◇◇△△2530                                          |
|                                      | 270                           | 983                                                                | 492                                                                | 0,20                                                   | 1,22                             | 1,30                                                      | 22x45                                | ECS2WDS271M◇◇△△2245                                          |
|                                      |                               | 983                                                                | 492                                                                | 0,20                                                   | 1,22                             | 1,34                                                      | 25x35                                | ECS2WDS271M◇◇△△2535                                          |
|                                      |                               | 983                                                                | 492                                                                | 0,20                                                   | 1,22                             | 1,28                                                      | 30x25                                | ECS2WDS271M◇◇△△3025                                          |
|                                      |                               | 804                                                                | 402                                                                | 0,20                                                   | 1,49                             | 1,47                                                      | 22x50                                | ECS2WDS331M◇◇△△2250                                          |
|                                      | 330                           | 804                                                                | 402                                                                | 0,20                                                   | 1,49                             | 1,51                                                      | 25x40                                | ECS2WDS331M◇◇△△2540                                          |
|                                      |                               | 804                                                                | 402                                                                | 0,20                                                   | 1,49                             | 1,43                                                      | 30x30                                | ECS2WDS331M◇◇△△3030                                          |
|                                      |                               | 681                                                                | 340                                                                | 0,20                                                   | 1,50                             | 1,63                                                      | 22x55                                | ECS2WDS391M◇◇△△2255                                          |
|                                      | 390                           | 681                                                                | 340                                                                | 0,20                                                   | 1,50                             | 1,67                                                      | 25x45                                | ECS2WDS391M◇◇△△2545                                          |
|                                      |                               | 681                                                                | 340                                                                | 0,20                                                   | 1,50                             | 1,59                                                      | 30x35                                | ECS2WDS391M◇◇△△3035                                          |
|                                      |                               | 565                                                                | 283                                                                | 0,20                                                   | 1,50                             | 1,91                                                      | 25x55                                | ECS2WDS471M◇◇△△2555                                          |
|                                      | 470                           | 565                                                                | 283                                                                | 0,20                                                   | 1,50                             | 1,79                                                      | 30x40                                | ECS2WDS471M◇◇△△3040                                          |
|                                      |                               | 473                                                                | 237                                                                | 0,20                                                   | 1,50                             | 2,13                                                      | 25x60                                | ECS2WDS561M◇◇△△2560                                          |
|                                      | 560                           | 473                                                                | 237                                                                | 0,20                                                   | 1,50                             | 2,01                                                      | 30x45                                | ECS2WDS561M◇◇△△3045                                          |
|                                      |                               | 391                                                                | 196                                                                | 0,20                                                   | 1,50                             | 2,25                                                      | 30x50                                | ECS2WDS681M◇◇△△3050                                          |
|                                      | 820                           | 324                                                                | 162                                                                | 0,20                                                   | 1,50                             | 2,56                                                      | 30x60                                | ECS2WDS821M◇◇△△3060                                          |



## ITEM CHARACTERISTICS

|                                     |            |
|-------------------------------------|------------|
| Operating Temperature Range (°C)    | -40 ~ +105 |
| Voltage Range (V)                   | 200 ~ 450  |
| Capacitance Range (µF)              | 47 ~ 2 200 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%      |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

|                 |                                                                                                            |
|-----------------|------------------------------------------------------------------------------------------------------------|
| Leakage Current | After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table. |
|-----------------|------------------------------------------------------------------------------------------------------------|

|                                                         |                                                     |           |
|---------------------------------------------------------|-----------------------------------------------------|-----------|
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)                                   | 200 ~ 450 |
|                                                         | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 4         |
|                                                         | $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 8         |

Fast Charge-Discharge **!** Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

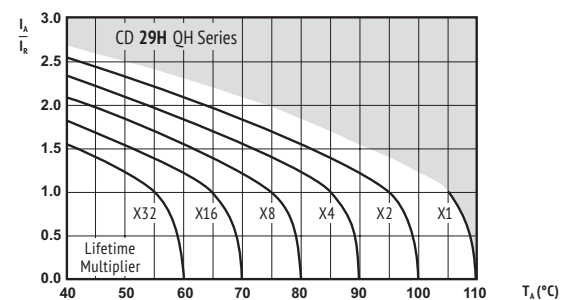
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                        |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------|
| Lifetime                                                                | 5 000h                                | > 100 000h                        | 3 000h                                | 3 000h                                   | 1 000h                                |                                                                        |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                        |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value            | Within ± 20% of initial value         |                                                                        |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value    | Not more than 200% of specified value |                                                                        |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,4 \times I_R$<br>50°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for 30 min > 24h before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency          | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | ≥ 50 kHz |
|--------------------|------|-------|-------|------|-------|----------|
| <b>Coefficient</b> | 0,80 | 1,00  | 1,16  | 1,30 | 1,41  | 1,45     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

**!** Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| U <sub>RDC</sub><br>(Surge<br>Voltage)<br>Code | C <sub>R</sub><br>Rated<br>Capaci-<br>tance | ESR <sub>max</sub><br>Equivalent<br>Series<br>Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent<br>Series<br>Resistance<br>20°C<br>120Hz | tanδ<br>Dissipa-<br>tion<br>Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage<br>Current | I <sub>RAC</sub><br>Rated<br>Ripple<br>Current<br>105°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------|------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                            | (μF)                                        | (mΩ)                                                                      | (mΩ)                                                                      |                                                     | (mA)                                    | (Arms)                                                           | (mm)           |                                                                               |

|                    |       |     |     |      |     |      |         |                     |
|--------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 200<br>(250)<br>2D | 470   | 424 | 260 | 0,15 | 0,9 | 1,53 | 22 x 35 | ECS2DQH471M◇◇△△2235 |
|                    | 560   | 356 | 220 | 0,15 | 1,1 | 1,65 | 25 x 35 | ECS2DQH561M◇◇△△2535 |
|                    | 680   | 293 | 180 | 0,15 | 1,4 | 1,92 | 25 x 40 | ECS2DQH681M◇◇△△2540 |
|                    | 820   | 243 | 150 | 0,15 | 1,5 | 2,10 | 30 x 30 | ECS2DQH821M◇◇△△3030 |
|                    | 1 000 | 199 | 120 | 0,15 | 1,5 | 2,40 | 30 x 40 | ECS2DQH102M◇◇△△3040 |
|                    |       | 199 | 120 | 0,15 | 1,5 | 2,40 | 35 x 35 | ECS2DQH102M◇◇△△3535 |
|                    | 1 200 | 166 | 100 | 0,15 | 1,5 | 2,71 | 30 x 40 | ECS2DQH122M◇◇△△3040 |
|                    | 1 500 | 133 | 80  | 0,15 | 1,5 | 3,13 | 25 x 50 | ECS2DQH152M◇◇△△2550 |
|                    | 1 800 | 111 | 68  | 0,15 | 1,5 | 3,90 | 30 x 50 | ECS2DQH182M◇◇△△3050 |
|                    | 2 200 | 91  | 56  | 0,15 | 1,5 | 4,50 | 35 x 50 | ECS2DQH222M◇◇△△3550 |

|                    |       |     |     |      |     |      |         |                     |
|--------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 250<br>(300)<br>2E | 330   | 603 | 380 | 0,15 | 0,8 | 1,23 | 22 x 35 | ECS2EQH331M◇◇△△2235 |
|                    |       | 603 | 380 | 0,15 | 0,8 | 1,35 | 25 x 30 | ECS2EQH331M◇◇△△2530 |
|                    |       | 424 | 268 | 0,15 | 1,2 | 1,52 | 25 x 35 | ECS2EQH471M◇◇△△2535 |
|                    | 470   | 424 | 268 | 0,15 | 1,2 | 1,65 | 30 x 30 | ECS2EQH471M◇◇△△3030 |
|                    |       | 356 | 225 | 0,15 | 1,4 | 1,85 | 25 x 45 | ECS2EQH561M◇◇△△2545 |
|                    | 680   | 293 | 185 | 0,15 | 1,5 | 2,20 | 25 x 50 | ECS2EQH681M◇◇△△2550 |
|                    |       | 293 | 185 | 0,15 | 1,5 | 2,18 | 30 x 35 | ECS2EQH681M◇◇△△3035 |
|                    |       | 243 | 153 | 0,15 | 1,5 | 2,25 | 30 x 35 | ECS2EQH821M◇◇△△3035 |
|                    | 1 000 | 199 | 125 | 0,15 | 1,5 | 2,90 | 30 x 50 | ECS2EQH102M◇◇△△3050 |
|                    |       | 199 | 125 | 0,15 | 1,5 | 2,90 | 35 x 40 | ECS2EQH102M◇◇△△3540 |
|                    |       | 166 | 105 | 0,15 | 1,5 | 2,97 | 35 x 35 | ECS2EQH122M◇◇△△3535 |
|                    | 1 500 | 133 | 85  | 0,15 | 1,5 | 3,80 | 35 x 50 | ECS2EQH152M◇◇△△3550 |

|                    |     |       |       |      |     |      |         |                     |
|--------------------|-----|-------|-------|------|-----|------|---------|---------------------|
| 350<br>(400)<br>2V | 68  | 2 926 | 1 280 | 0,15 | 0,2 | 0,70 | 22 x 25 | ECS2VQH680M◇◇△△2225 |
|                    |     | 1 990 | 1 060 | 0,15 | 0,4 | 0,87 | 22 x 30 | ECS2VQH101M◇◇△△2230 |
|                    |     | 1 990 | 1 060 | 0,15 | 0,4 | 0,87 | 25 x 25 | ECS2VQH101M◇◇△△2525 |
|                    | 100 | 1 658 | 880   | 0,15 | 0,4 | 0,90 | 22 x 35 | ECS2VQH121M◇◇△△2235 |
|                    |     | 1 327 | 700   | 0,15 | 0,5 | 0,98 | 22 x 40 | ECS2VQH151M◇◇△△2240 |
|                    |     | 1 327 | 700   | 0,15 | 0,5 | 1,02 | 25 x 30 | ECS2VQH151M◇◇△△2530 |
|                    | 150 | 1 327 | 700   | 0,15 | 0,5 | 1,02 | 30 x 25 | ECS2VQH151M◇◇△△3025 |
|                    |     | 1 106 | 580   | 0,15 | 0,6 | 1,11 | 22 x 45 | ECS2VQH181M◇◇△△2245 |
|                    |     | 1 106 | 580   | 0,15 | 0,6 | 1,11 | 25 x 35 | ECS2VQH181M◇◇△△2535 |
|                    | 180 | 1 106 | 580   | 0,15 | 0,6 | 1,12 | 30 x 30 | ECS2VQH181M◇◇△△3030 |
|                    |     | 905   | 470   | 0,15 | 0,8 | 1,16 | 22 x 50 | ECS2VQH221M◇◇△△2250 |
|                    |     | 905   | 480   | 0,15 | 0,8 | 1,20 | 25 x 40 | ECS2VQH221M◇◇△△2540 |
|                    | 220 | 905   | 480   | 0,15 | 0,8 | 1,20 | 35 x 25 | ECS2VQH221M◇◇△△3525 |
|                    |     | 737   | 390   | 0,15 | 0,9 | 1,26 | 25 x 50 | ECS2VQH271M◇◇△△2550 |
|                    |     | 737   | 390   | 0,15 | 0,9 | 1,31 | 30 x 35 | ECS2VQH271M◇◇△△3035 |
|                    | 270 | 737   | 390   | 0,15 | 0,9 | 1,26 | 35 x 30 | ECS2VQH271M◇◇△△3530 |
|                    |     | 603   | 320   | 0,15 | 1,2 | 1,45 | 30 x 45 | ECS2VQH331M◇◇△△3045 |
|                    |     | 603   | 320   | 0,15 | 1,2 | 1,45 | 35 x 35 | ECS2VQH331M◇◇△△3535 |
|                    | 330 | 603   | 320   | 0,15 | 1,2 | 1,45 | 35 x 35 | ECS2VQH331M◇◇△△3535 |
|                    |     | 511   | 270   | 0,15 | 1,4 | 1,58 | 30 x 50 | ECS2VQH391M◇◇△△3050 |
|                    |     | 511   | 270   | 0,15 | 1,4 | 1,58 | 35 x 40 | ECS2VQH391M◇◇△△3540 |
|                    | 470 | 424   | 228   | 0,15 | 1,5 | 1,69 | 35 x 45 | ECS2VQH471M◇◇△△3545 |
|                    | 560 | 356   | 190   | 0,15 | 1,5 | 1,89 | 35 x 50 | ECS2VQH561M◇◇△△3550 |

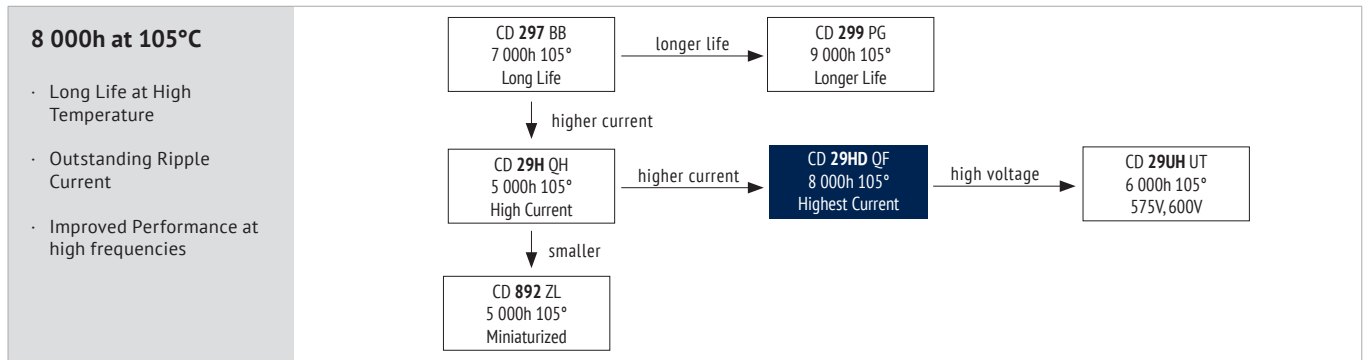
|                    |     |       |     |      |     |      |         |                     |
|--------------------|-----|-------|-----|------|-----|------|---------|---------------------|
| 400<br>(450)<br>2G | 150 | 1 062 | 575 | 0,12 | 0,6 | 0,85 | 22 x 40 | ECS2GQH151M◇◇△△2240 |
|                    |     | 1 062 | 575 | 0,12 | 0,6 | 0,85 | 25 x 35 | ECS2GQH151M◇◇△△2535 |
|                    |     | 885   | 479 | 0,12 | 0,7 | 1,00 | 22 x 50 | ECS2GQH181M◇◇△△2250 |
|                    | 180 | 885   | 479 | 0,12 | 0,7 | 1,00 | 25 x 40 | ECS2GQH181M◇◇△△2540 |
|                    |     | 724   | 292 | 0,12 | 0,9 | 1,20 | 25 x 45 | ECS2GQH221M◇◇△△2545 |
|                    | 220 | 724   | 292 | 0,12 | 0,9 | 1,15 | 30 x 25 | ECS2GQH221M◇◇△△3025 |
|                    |     | 590   | 319 | 0,12 | 1,1 | 1,25 | 22 x 50 | ECS2GQH271M◇◇△△2250 |
|                    | 270 | 590   | 319 | 0,12 | 1,1 | 1,35 | 35 x 30 | ECS2GQH271M◇◇△△3530 |
|                    |     | 483   | 260 | 0,12 | 1,3 | 1,44 | 25 x 45 | ECS2GQH331M◇◇△△2545 |
|                    | 330 | 483   | 260 | 0,12 | 1,3 | 1,35 | 30 x 30 | ECS2GQH331M◇◇△△3030 |
|                    |     | 409   | 220 | 0,12 | 1,5 | 1,72 | 25 x 50 | ECS2GQH391M◇◇△△2550 |
|                    | 390 | 409   | 220 | 0,12 | 1,5 | 1,80 | 35 x 40 | ECS2GQH391M◇◇△△3540 |
|                    |     | 339   | 183 | 0,12 | 1,5 | 2,00 | 30 x 50 | ECS2GQH471M◇◇△△3050 |
|                    | 470 | 339   | 183 | 0,12 | 1,5 | 2,10 | 35 x 45 | ECS2GQH471M◇◇△△3545 |
|                    |     | 285   | 154 | 0,12 | 1,5 | 1,98 | 35 x 35 | ECS2GQH561M◇◇△△3535 |
|                    | 560 | 285   | 154 | 0,12 | 1,5 | 2,20 | 35 x 45 | ECS2GQH561M◇◇△△3545 |
|                    |     | 285   | 154 | 0,12 | 1,5 | 2,30 | 35 x 50 | ECS2GQH561M◇◇△△3550 |
|                    | 680 | 234   | 127 | 0,12 | 1,5 | 2,58 | 35 x 55 | ECS2GQH681M◇◇△△3555 |
|                    | 820 | 194   | 105 | 0,12 | 1,5 | 2,84 | 35 x 60 | ECS2GQH821M◇◇△△3560 |

| U <sub>RDC</sub><br>(Surge<br>Voltage)<br>Code | C <sub>R</sub><br>Rated<br>Capaci-<br>tance | ESR <sub>max</sub><br>Equivalent<br>Series<br>Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent<br>Series<br>Resistance<br>20°C<br>120Hz | tanδ<br>Dissipa-<br>tion<br>Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage<br>Current | I <sub>RAC</sub><br>Rated<br>Ripple<br>Current<br>105°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------|------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                            | (μF)                                        | (mΩ)                                                                      | (mΩ)                                                                      |                                                     | (mA)                                    | (Arms)                                                           | (mm)           |                                                                               |

|                    |     |       |     |      |     |      |         |                     |
|--------------------|-----|-------|-----|------|-----|------|---------|---------------------|
| 450<br>(500)<br>2W | 150 | 1 062 | 530 | 0,12 | 0,7 | 0,84 | 22 x 35 | ECS2WQH151M◇◇△△2235 |
|                    |     | 1 062 | 530 | 0,12 | 0,7 | 0,84 | 25 x 30 | ECS2WQH151M◇◇△△2530 |
|                    |     | 1 062 | 530 | 0,12 | 0,7 | 0,88 | 30 x 25 | ECS2WQH151M◇◇△△3025 |
|                    | 180 | 885   | 440 | 0,12 | 0,8 | 0,88 | 25 x 30 | ECS2WQH181M◇◇△△2530 |
|                    |     | 885   | 440 | 0,12 | 0,8 | 0,92 | 30 x 25 | ECS2WQH181M◇◇△△3025 |
|                    | 220 | 724   | 360 | 0,12 | 1,0 | 1,10 | 25 x 40 | ECS2WQH221M◇◇△△2540 |
|                    |     | 724   | 360 | 0,12 | 1,0 | 1,10 | 30 x 30 | ECS2WQH221M◇◇△△3030 |
|                    | 270 | 590   | 295 | 0,12 | 1,2 | 1,36 | 30 x 30 | ECS2WQH271M◇◇△△3030 |
|                    |     | 590   | 295 | 0,12 | 1,2 | 1,41 | 30 x 35 | ECS2WQH271M◇◇△△3035 |
|                    | 330 | 483   | 240 | 0,12 | 1,5 | 1,44 | 30 x 30 | ECS2WQH331M◇◇△△3030 |
|                    |     | 483   | 240 | 0,12 | 1,5 | 1,49 | 30 x 35 | ECS2WQH331M◇◇△△3035 |
|                    |     | 483   | 240 | 0,12 | 1,5 | 1,65 | 35 x 40 | ECS2WQH331M◇◇△△3540 |
|                    | 390 | 409   | 205 | 0,12 | 1,5 | 1,67 | 25 x 50 | ECS2WQH391M◇◇△△2550 |
|                    |     | 409   | 205 | 0,12 | 1,5 | 1,55 | 30 x 35 | ECS2WQH391M◇◇△△3035 |
|                    |     | 409   | 205 | 0,12 | 1,5 | 1,60 | 35 x 30 | ECS2WQH391M◇◇△△3530 |
|                    | 470 | 339   | 170 | 0,12 | 1,5 | 1,92 | 30 x 45 | ECS2WQH471M◇◇△△3045 |
|                    |     | 339   | 170 | 0,12 | 1,5 | 2,10 | 35 x 40 | ECS2WQH471M◇◇△△3540 |
|                    |     | 339   | 170 | 0,12 | 1,5 | 2,20 | 35 x 50 | ECS2WQH471M◇◇△△3550 |
|                    | 560 | 284   | 142 | 0,12 | 1,5 | 2,10 | 30 x 50 | ECS2WQH561M◇◇△△3050 |
|                    |     | 284   | 142 | 0,12 | 1,5 | 2,30 | 35 x 45 | ECS2WQH561M◇◇△△3545 |
|                    | 680 | 234   | 116 | 0,12 | 1,5 | 2,50 | 35 x 50 | ECS2WQH681M◇◇△△3550 |
|                    |     | 195   | 95  | 0,12 | 1,5 | 2,72 | 30 x 60 | ECS2WQH821M◇◇△△3060 |
|                    | 820 | 194   | 95  | 0,12 | 1,5 | 3,00 | 35 x 60 | ECS2WQH821M◇◇△△3560 |

■ = not preferred





## ITEM CHARACTERISTICS

|                                                            |                                                                                                                                                                            |           |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Operating Temperature Range (°C)                           | -40 ~ +105                                                                                                                                                                 |           |
| Voltage Range (V)                                          | 200 ~ 450                                                                                                                                                                  |           |
| Capacitance Range (µF)                                     | 220 ~ 3 900                                                                                                                                                                |           |
| Capacitance Tolerance (20°C, 120Hz)                        | ± 20%                                                                                                                                                                      |           |
| Leakage Current                                            | After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.                                                                 |           |
| Stability at Low Temperature<br>(Impedance Ratio at 120Hz) | Rated Voltage (V)                                                                                                                                                          | 200 ~ 400 |
|                                                            | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$                                                                                                                        | 3         |
|                                                            | $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$                                                                                                                        | 7         |
| Fast Charge-Discharge                                      | Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray |           |

The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

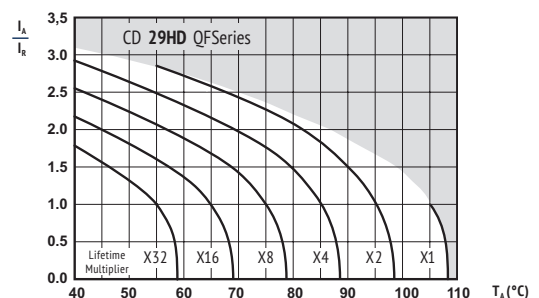
| ITEM                                                                    | USEFUL LIFE                           |                                    | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                        |
|-------------------------------------------------------------------------|---------------------------------------|------------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------|
| Lifetime                                                                | 8 000h                                | > 200 000h                         | 3 000h                                | 4 000h                                   | 1 000h                                |                                                                        |
| Leakage Current                                                         | Not more than specified value         |                                    | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                        |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                    | Within ± 20% of initial value         | Within ± 20% of initial value            | Within ± 20% of initial value         |                                                                        |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                    | Not more than 200% of specified value | Not more than 130% of specified value    | Not more than 200% of specified value |                                                                        |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,35 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for 30 min > 24h before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency<br>Rated Voltage (V) | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | ≥50kHz |
|--------------------------------|------|-------|-------|------|-------|--------|
| 200 ~ 350                      | 0,80 | 1,00  | 1,35  | 1,50 | 1,59  | 1,60   |
| 400                            | 0,80 | 1,00  | 1,35  | 1,60 | 1,72  | 1,72   |
| 450                            | 0,80 | 1,00  | 1,32  | 1,50 | 1,62  | 1,63   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 105°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

**Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.**

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pin number<br><br>Details: Page 105 |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                              | (mm)                             |                                                                                       |
| 200<br>(250)<br>2D                   | 1 000                      | 199                                                          | 80                                                           | 0,15                                                | 1,5                           | 3,20                                                | 30 x 35                          | ECS2DQF102M◇◇△△3035                                                                   |
|                                      | 1 200                      | 166                                                          | 66                                                           | 0,15                                                | 1,5                           | 3,70                                                | 30 x 40                          | ECS2DQF122M◇◇△△3040                                                                   |
|                                      | 1 500                      | 133                                                          | 53                                                           | 0,15                                                | 1,5                           | 4,36                                                | 30 x 50                          | ECS2DQF152M◇◇△△3050                                                                   |
|                                      |                            | 133                                                          | 53                                                           | 0,15                                                | 1,5                           | 4,32                                                | 35 x 40                          | ECS2DQF152M◇◇△△3540                                                                   |
|                                      | 1 800                      | 111                                                          | 48                                                           | 0,15                                                | 1,5                           | 4,58                                                | 30 x 55                          | ECS2DQF182M◇◇△△3055                                                                   |
|                                      |                            | 111                                                          | 48                                                           | 0,15                                                | 1,5                           | 4,67                                                | 35 x 45                          | ECS2DQF182M◇◇△△3545                                                                   |
|                                      |                            | 111                                                          | 48                                                           | 0,15                                                | 1,5                           | 4,35                                                | 40 x 35                          | ECS2DQF182M◇◇△△4035                                                                   |
|                                      | 2 200                      | 91                                                           | 42                                                           | 0,15                                                | 1,5                           | 5,46                                                | 35 x 50                          | ECS2DQF222M◇◇△△3550                                                                   |
|                                      |                            | 91                                                           | 42                                                           | 0,15                                                | 1,5                           | 5,38                                                | 40 x 40                          | ECS2DQF222M◇◇△△4040                                                                   |
|                                      | 2 700                      | 74                                                           | 34                                                           | 0,15                                                | 1,5                           | 5,95                                                | 35 x 55                          | ECS2DQF272M◇◇△△3555                                                                   |
|                                      |                            | 74                                                           | 34                                                           | 0,15                                                | 1,5                           | 6,05                                                | 40 x 50                          | ECS2DQF272M◇◇△△4050                                                                   |
|                                      | 3 300                      | 61                                                           | 30                                                           | 0,15                                                | 1,5                           | 6,41                                                | 35 x 65                          | ECS2DQF332M◇◇△△3565                                                                   |
|                                      |                            | 61                                                           | 30                                                           | 0,15                                                | 1,5                           | 6,52                                                | 40 x 55                          | ECS2DQF332M◇◇△△4055                                                                   |
|                                      | 3 900                      | 52                                                           | 26                                                           | 0,15                                                | 1,5                           | 7,15                                                | 40 x 65                          | ECS2DQF392M◇◇△△4065                                                                   |

|                    |       |     |     |      |     |      |         |                     |
|--------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 250<br>(300)<br>2E | 680   | 293 | 117 | 0,15 | 1,5 | 2,65 | 30 x 35 | ECS2EQF681M◇◇△△3035 |
|                    | 820   | 243 | 97  | 0,15 | 1,5 | 3,00 | 30 x 40 | ECS2EQF821M◇◇△△3040 |
|                    |       | 243 | 97  | 0,15 | 1,5 | 3,05 | 35 x 35 | ECS2EQF821M◇◇△△3535 |
|                    | 1 000 | 199 | 80  | 0,15 | 1,5 | 3,56 | 30 x 50 | ECS2EQF102M◇◇△△3050 |
|                    |       | 199 | 80  | 0,15 | 1,5 | 3,52 | 35 x 40 | ECS2EQF102M◇◇△△3540 |
|                    | 1 200 | 166 | 66  | 0,15 | 1,5 | 3,93 | 30 x 55 | ECS2EQF122M◇◇△△3055 |
|                    |       | 166 | 66  | 0,15 | 1,5 | 3,87 | 35 x 45 | ECS2EQF122M◇◇△△3545 |
|                    | 1 500 | 133 | 62  | 0,15 | 1,5 | 4,30 | 30 x 60 | ECS2EQF152M◇◇△△3060 |
|                    |       | 133 | 62  | 0,15 | 1,5 | 4,38 | 35 x 50 | ECS2EQF152M◇◇△△3550 |
|                    | 1 800 | 111 | 55  | 0,15 | 1,5 | 4,70 | 35 x 55 | ECS2EQF182M◇◇△△3555 |
|                    |       | 111 | 55  | 0,15 | 1,5 | 4,85 | 40 x 45 | ECS2EQF182M◇◇△△4045 |
|                    | 2 200 | 91  | 45  | 0,15 | 1,5 | 5,15 | 35 x 65 | ECS2EQF222M◇◇△△3565 |
|                    |       | 91  | 45  | 0,15 | 1,5 | 5,35 | 40 x 50 | ECS2EQF222M◇◇△△4050 |
|                    | 2 700 | 74  | 37  | 0,15 | 1,5 | 5,92 | 40 x 60 | ECS2EQF272M◇◇△△4060 |

|                    |       |     |     |      |     |      |         |                     |
|--------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 350<br>(400)<br>2V | 330   | 603 | 241 | 0,15 | 1,2 | 2,12 | 30 x 35 | ECS2VQF331M◇◇△△3035 |
|                    | 390   | 511 | 204 | 0,15 | 1,4 | 2,36 | 30 x 40 | ECS2VQF391M◇◇△△3040 |
|                    | 470   | 424 | 169 | 0,15 | 1,5 | 2,60 | 30 x 45 | ECS2VQF471M◇◇△△3045 |
|                    |       | 424 | 169 | 0,15 | 1,5 | 2,53 | 35 x 35 | ECS2VQF471M◇◇△△3535 |
|                    | 560   | 356 | 142 | 0,15 | 1,5 | 2,86 | 30 x 50 | ECS2VQF561M◇◇△△3050 |
|                    |       | 356 | 142 | 0,15 | 1,5 | 2,83 | 35 x 40 | ECS2VQF561M◇◇△△3540 |
|                    | 680   | 293 | 117 | 0,15 | 1,5 | 3,06 | 30 x 55 | ECS2VQF681M◇◇△△3055 |
|                    |       | 293 | 117 | 0,15 | 1,5 | 3,10 | 35 x 45 | ECS2VQF681M◇◇△△3545 |
|                    |       | 293 | 117 | 0,15 | 1,5 | 3,20 | 40 x 40 | ECS2VQF681M◇◇△△4040 |
|                    | 820   | 243 | 97  | 0,15 | 1,5 | 3,40 | 30 x 65 | ECS2VQF821M◇◇△△3065 |
|                    |       | 243 | 97  | 0,15 | 1,5 | 3,23 | 35 x 50 | ECS2VQF821M◇◇△△3550 |
|                    | 1 000 | 199 | 80  | 0,15 | 1,5 | 3,82 | 35 x 60 | ECS2VQF102M◇◇△△3560 |
|                    |       | 199 | 80  | 0,15 | 1,5 | 3,80 | 40 x 50 | ECS2VQF102M◇◇△△4050 |
|                    | 1 200 | 166 | 66  | 0,15 | 1,5 | 4,25 | 40 x 55 | ECS2VQF122M◇◇△△4055 |
|                    | 1 500 | 133 | 53  | 0,15 | 1,5 | 4,72 | 40 x 65 | ECS2VQF152M◇◇△△4065 |

|                    |       |     |     |      |     |      |         |                     |
|--------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 400<br>(450)<br>2G | 270   | 737 | 270 | 0,15 | 1,1 | 1,62 | 30 x 35 | ECS2GQF271M◇◇△△3035 |
|                    | 330   | 603 | 221 | 0,15 | 1,3 | 2,10 | 30 x 35 | ECS2GQF331M◇◇△△3035 |
|                    | 390   | 511 | 187 | 0,15 | 1,5 | 2,20 | 30 x 40 | ECS2GQF391M◇◇△△3040 |
|                    |       | 511 | 187 | 0,15 | 1,5 | 2,31 | 35 x 35 | ECS2GQF391M◇◇△△3535 |
|                    | 470   | 424 | 155 | 0,15 | 1,5 | 2,70 | 30 x 50 | ECS2GQF471M◇◇△△3050 |
|                    |       | 424 | 155 | 0,15 | 1,5 | 2,60 | 35 x 40 | ECS2GQF471M◇◇△△3540 |
|                    |       | 424 | 155 | 0,15 | 1,5 | 2,75 | 40 x 35 | ECS2GQF471M◇◇△△4035 |
|                    | 560   | 356 | 130 | 0,15 | 1,5 | 2,90 | 30 x 55 | ECS2GQF561M◇◇△△3055 |
|                    |       | 356 | 130 | 0,15 | 1,5 | 2,95 | 35 x 45 | ECS2GQF561M◇◇△△3545 |
|                    |       | 356 | 130 | 0,15 | 1,5 | 3,01 | 40 x 40 | ECS2GQF561M◇◇△△4040 |
|                    | 680   | 293 | 107 | 0,15 | 1,5 | 3,25 | 35 x 50 | ECS2GQF681M◇◇△△3550 |
|                    |       | 293 | 107 | 0,15 | 1,5 | 3,45 | 40 x 45 | ECS2GQF681M◇◇△△4045 |
|                    | 820   | 243 | 89  | 0,15 | 1,5 | 3,81 | 35 x 55 | ECS2GQF821M◇◇△△3555 |
|                    |       | 243 | 89  | 0,15 | 1,5 | 3,92 | 40 x 50 | ECS2GQF821M◇◇△△4050 |
|                    | 1 000 | 199 | 73  | 0,15 | 1,5 | 4,30 | 35 x 65 | ECS2GQF102M◇◇△△3565 |
|                    |       | 199 | 73  | 0,15 | 1,5 | 4,35 | 40 x 55 | ECS2GQF102M◇◇△△4055 |
|                    | 1 200 | 166 | 61  | 0,15 | 1,5 | 4,80 | 40 x 65 | ECS2GQF122M◇◇△△4065 |

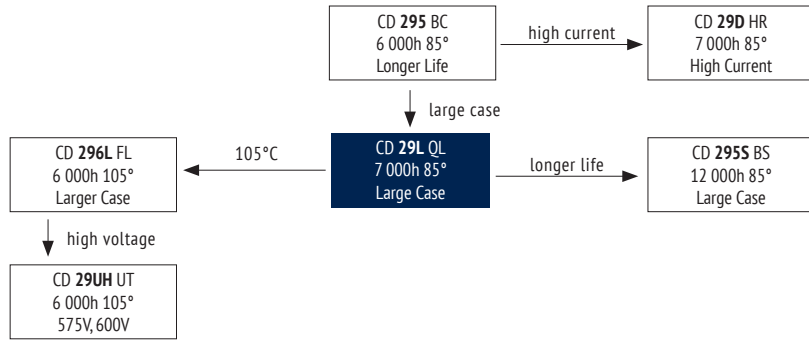
| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pin number<br><br>Details: Page 105 |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                              | (mm)                             |                                                                                       |
| 450<br>(500)<br>2W                   | 220                        | 1206                                                         | 362                                                          | 0,20                                                | 1,0                           | 1,67                                                | 30 x 35                          | ECS2WQF221M◇◇△△3035                                                                   |
|                                      | 270                        | 983                                                          | 295                                                          | 0,20                                                | 1,2                           | 1,88                                                | 30 x 40                          | ECS2WQF271M◇◇△△3040                                                                   |
|                                      | 330                        | 804                                                          | 241                                                          | 0,20                                                | 1,5                           | 2,18                                                | 30 x 45                          | ECS2WQF331M◇◇△△3045                                                                   |
|                                      |                            | 804                                                          | 241                                                          | 0,20                                                | 1,5                           | 2,09                                                | 35 x 35                          | ECS2WQF331M◇◇△△3535                                                                   |
|                                      | 390                        | 681                                                          | 204                                                          | 0,20                                                | 1,5                           | 2,45                                                | 30 x 50                          | ECS2WQF391M◇◇△△3050                                                                   |
|                                      |                            | 681                                                          | 204                                                          | 0,20                                                | 1,5                           | 2,43                                                | 35 x 40                          | ECS2WQF391M◇◇△△3540                                                                   |
|                                      |                            | 565                                                          | 169                                                          | 0,20                                                | 1,5                           | 2,79                                                | 30 x 55                          | ECS2WQF471M◇◇△△3055                                                                   |
|                                      | 470                        | 565                                                          | 169                                                          | 0,20                                                | 1,5                           | 2,83                                                | 35 x 45                          | ECS2WQF471M◇◇△△3545                                                                   |
|                                      |                            | 565                                                          | 169                                                          | 0,20                                                | 1,5                           | 2,70                                                | 40 x 35                          | ECS2WQF471M◇◇△△4035                                                                   |
|                                      |                            | 474                                                          | 142                                                          | 0,20                                                | 1,5                           | 3,15                                                | 30 x 60                          | ECS2WQF561M◇◇△△3060                                                                   |
|                                      | 560                        | 474                                                          | 142                                                          | 0,20                                                | 1,5                           | 3,20                                                | 35 x 50                          | ECS2WQF561M◇◇△△3550                                                                   |
|                                      |                            | 474                                                          | 142                                                          | 0,20                                                | 1,5                           | 3,00                                                | 40 x 40                          | ECS2WQF561M◇◇△△4040                                                                   |
|                                      | 680                        | 391                                                          | 117                                                          | 0,20                                                | 1,5                           | 3,53                                                | 35 x 55                          | ECS2WQF681M◇◇△△3555                                                                   |
|                                      |                            | 391                                                          | 117                                                          | 0,20                                                | 1,5                           | 3,40                                                | 40 x 45                          | ECS2WQF681M◇◇△△4045                                                                   |
|                                      | 820                        | 324                                                          | 97                                                           | 0,20                                                | 1,5                           | 3,85                                                | 35 x 65                          | ECS2WQF821M◇◇△△3565                                                                   |
|                                      |                            | 324                                                          | 97                                                           | 0,20                                                | 1,5                           | 3,88                                                | 40 x 55                          | ECS2WQF821M◇◇△△4055                                                                   |
|                                      | 1 000                      | 266                                                          | 80                                                           | 0,20                                                | 1,5                           | 4,26                                                | 40 x 65                          | ECS2WQF102M◇◇△△4065                                                                   |





## 7 000h at 85°C

- Larger Size Components
- Long Useful Life
- High Ripple Current
- Industrial Power Supplies



## ITEM CHARACTERISTICS

|                                     |             |           |                            |
|-------------------------------------|-------------|-----------|----------------------------|
| Operating Temperature Range (°C)    | -40 ~ +85   | -25 ~ +85 | Lower Voltages on request. |
| Voltage Range (V)                   | 160 ~ 400   | 450 ~ 500 |                            |
| Capacitance Range (µF)              | 390 ~ 4 700 |           |                            |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%       |           |                            |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

|                                                         |                                                     |           |           |     |     |
|---------------------------------------------------------|-----------------------------------------------------|-----------|-----------|-----|-----|
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)                                   | 160 ~ 200 | 250 ~ 400 | 450 | 500 |
|                                                         | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 3         | 4         |     |     |
|                                                         | $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 6         | 8         | -   |     |

Fast Charge-Discharge **!** Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

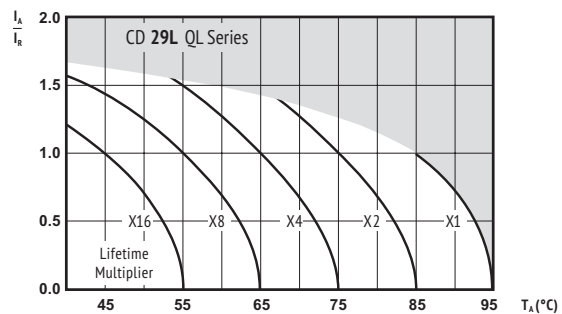
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                          | SHELF LIFE                            |                                                                        |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|------------------------------------------------------------------------|
| Lifetime                                                                | 7 000h                                | > 100 000h                        | 5 000h                                | 5 000h                                  | 1 000h                                |                                                                        |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value           | Not more than specified value         |                                                                        |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value           | Within ± 20% of initial value         |                                                                        |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value   | Not more than 200% of specified value |                                                                        |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$1,2 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$I_R = 0$<br>85°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>85°C        | After test:<br>$U_R$ to be applied for 30 min > 24h before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency         | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | ≥50kHz |
|-------------------|------|-------|-------|------|-------|--------|
| Rated Voltage (V) |      |       |       |      |       |        |
| ≥ 160             | 0,80 | 1,00  | 1,16  | 1,30 | 1,41  | 1,45   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM) $U_R \geq 160V$



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 85°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

**!** Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/ lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                 | (mm)           |                                                                               |

|                    |       |    |    |      |     |     |         |                     |
|--------------------|-------|----|----|------|-----|-----|---------|---------------------|
| 160<br>(200)<br>2C | 2 200 | 91 | 63 | 0,15 | 1,5 | 4,9 | 35 x 45 | ECS2CQL222M◇◇△△3545 |
|                    | 2 700 | 74 | 52 | 0,15 | 1,5 | 5,3 | 35 x 50 | ECS2CQL272M◇◇△△3550 |
|                    | 3 300 | 61 | 42 | 0,15 | 1,5 | 5,5 | 35 x 70 | ECS2CQL332M◇◇△△3570 |
|                    |       | 61 | 42 | 0,15 | 1,5 | 5,5 | 40 x 60 | ECS2CQL332M◇◇△△4060 |
|                    | 3 900 | 52 | 36 | 0,15 | 1,5 | 5,9 | 35 x 80 | ECS2CQL392M◇◇△△3580 |
|                    | 4 700 | 43 | 30 | 0,15 | 1,5 | 7,3 | 40 x 80 | ECS2CQL472M◇◇△△4080 |

|                    |       |     |    |      |     |     |         |                     |
|--------------------|-------|-----|----|------|-----|-----|---------|---------------------|
| 200<br>(250)<br>2D | 1 500 | 133 | 93 | 0,15 | 1,5 | 4,3 | 35 x 40 | ECS2DQL152M◇◇△△3540 |
|                    | 1 800 | 111 | 77 | 0,15 | 1,5 | 4,7 | 35 x 45 | ECS2DQL182M◇◇△△3545 |
|                    | 2 200 | 91  | 63 | 0,15 | 1,5 | 5,4 | 35 x 50 | ECS2DQL222M◇◇△△3550 |
|                    |       | 91  | 63 | 0,15 | 1,5 | 5,4 | 40 x 40 | ECS2DQL222M◇◇△△4040 |
|                    | 2 700 | 74  | 52 | 0,15 | 1,5 | 5,9 | 35 x 60 | ECS2DQL272M◇◇△△3560 |
|                    |       | 74  | 52 | 0,15 | 1,5 | 5,9 | 40 x 50 | ECS2DQL272M◇◇△△4050 |
|                    | 3 300 | 61  | 42 | 0,15 | 1,5 | 6,5 | 35 x 80 | ECS2DQL332M◇◇△△3580 |
|                    |       | 61  | 42 | 0,15 | 1,5 | 6,5 | 40 x 60 | ECS2DQL332M◇◇△△4060 |
|                    | 3 900 | 52  | 36 | 0,15 | 1,5 | 7,0 | 40 x 80 | ECS2DQL392M◇◇△△4080 |
|                    | 4 700 | 43  | 30 | 0,15 | 1,5 | 9,2 | 40 x 90 | ECS2DQL472M◇◇△△4090 |
|                    |       |     |    |      |     |     |         |                     |
|                    |       |     |    |      |     |     |         |                     |

|                    |       |     |     |      |     |     |         |                     |
|--------------------|-------|-----|-----|------|-----|-----|---------|---------------------|
| 250<br>(300)<br>2E | 1 000 | 199 | 139 | 0,15 | 1,5 | 3,5 | 35 x 35 | ECS2EQL102M◇◇△△3535 |
|                    | 1 200 | 166 | 116 | 0,15 | 1,5 | 3,6 | 35 x 40 | ECS2EQL122M◇◇△△3540 |
|                    | 1 500 | 133 | 93  | 0,15 | 1,5 | 4,2 | 35 x 45 | ECS2EQL152M◇◇△△3545 |
|                    | 1 800 | 111 | 77  | 0,15 | 1,5 | 4,6 | 35 x 50 | ECS2EQL182M◇◇△△3550 |
|                    |       | 111 | 77  | 0,15 | 1,5 | 4,6 | 40 x 40 | ECS2EQL182M◇◇△△4040 |
|                    | 2 200 | 91  | 63  | 0,15 | 1,5 | 5,1 | 35 x 60 | ECS2EQL222M◇◇△△3560 |
|                    | 2 700 | 74  | 52  | 0,15 | 1,5 | 6,0 | 40 x 60 | ECS2EQL272M◇◇△△4060 |
|                    |       |     |     |      |     |     |         |                     |

|                    |       |     |     |      |     |     |          |                      |
|--------------------|-------|-----|-----|------|-----|-----|----------|----------------------|
| 400<br>(450)<br>2G | 560   | 356 | 249 | 0,15 | 1,5 | 3,0 | 35 x 45  | ECS2GQL561M◇◇△△3545  |
|                    |       | 356 | 249 | 0,15 | 1,5 | 2,8 | 40 x 40  | ECS2GQL561M◇◇△△4040  |
|                    | 680   | 293 | 205 | 0,15 | 1,5 | 3,5 | 35 x 50  | ECS2GQL681M◇◇△△3550  |
|                    |       | 293 | 205 | 0,15 | 1,5 | 3,3 | 40 x 40  | ECS2GQL681M◇◇△△4040  |
|                    | 820   | 243 | 170 | 0,15 | 1,5 | 3,8 | 35 x 50  | ECS2GQL821M◇◇△△3550  |
|                    |       | 243 | 170 | 0,15 | 1,5 | 4,1 | 40 x 50  | ECS2GQL821M◇◇△△4050  |
|                    | 1 000 | 199 | 139 | 0,15 | 1,5 | 4,4 | 35 x 55  | ECS2GQL102M◇◇△△3555  |
|                    |       | 199 | 139 | 0,15 | 1,5 | 4,8 | 40 x 60  | ECS2GQL102M◇◇△△4060  |
|                    | 1 200 | 166 | 116 | 0,15 | 1,5 | 5,3 | 35 x 70  | ECS2GQL122M◇◇△△3570  |
|                    |       | 166 | 116 | 0,15 | 1,5 | 5,5 | 40 x 60  | ECS2GQL122M◇◇△△4060  |
|                    | 1 500 | 133 | 93  | 0,15 | 1,5 | 6,5 | 40 x 80  | ECS2GQL152M◇◇△△4080  |
|                    |       | 133 | 93  | 0,15 | 1,5 | 6,3 | 45 x 60  | ECS2GQL152M◇◇△△4560  |
|                    | 1 800 | 111 | 77  | 0,15 | 1,5 | 7,3 | 35 x 90  | ECS2GQL182M◇◇△△3590  |
|                    |       | 111 | 77  | 0,15 | 1,5 | 7,9 | 40 x 100 | ECS2GQL182M◇◇△△40100 |
|                    | 2 200 | 91  | 63  | 0,15 | 1,5 | 8,6 | 40 x 100 | ECS2GQL222M◇◇△△40100 |
|                    |       | 91  | 63  | 0,15 | 1,5 | 8,1 | 45 x 80  | ECS2GQL222M◇◇△△4580  |
|                    |       |     |     |      |     |     |          |                      |
|                    |       |     |     |      |     |     |          |                      |

|                    |       |     |     |      |     |     |          |                      |
|--------------------|-------|-----|-----|------|-----|-----|----------|----------------------|
| 450<br>(500)<br>2W | 470   | 424 | 296 | 0,15 | 1,5 | 2,7 | 35 x 45  | ECS2WQL471M◇◇△△3545  |
|                    | 560   | 356 | 249 | 0,15 | 1,5 | 3,1 | 35 x 50  | ECS2WQL561M◇◇△△3550  |
|                    |       | 293 | 205 | 0,15 | 1,5 | 3,1 | 40 x 40  | ECS2WQL561M◇◇△△4040  |
|                    | 680   | 293 | 205 | 0,15 | 1,5 | 3,5 | 35 x 60  | ECS2WQL681M◇◇△△3560  |
|                    |       | 293 | 205 | 0,15 | 1,5 | 3,4 | 40 x 50  | ECS2WQL681M◇◇△△4050  |
|                    | 820   | 243 | 170 | 0,15 | 1,5 | 4,4 | 35 x 70  | ECS2WQL821M◇◇△△3570  |
|                    |       | 243 | 170 | 0,15 | 1,5 | 4,4 | 40 x 60  | ECS2WQL821M◇◇△△4060  |
|                    | 1 000 | 199 | 139 | 0,15 | 1,5 | 5,2 | 35 x 80  | ECS2WQL102M◇◇△△3580  |
|                    |       | 199 | 139 | 0,15 | 1,5 | 5,2 | 40 x 60  | ECS2WQL102M◇◇△△4060  |
|                    | 1 200 | 166 | 116 | 0,15 | 1,5 | 5,9 | 40 x 70  | ECS2WQL122M◇◇△△4070  |
|                    |       | 166 | 116 | 0,15 | 1,5 | 6,0 | 45 x 60  | ECS2WQL122M◇◇△△4560  |
|                    | 1 500 | 133 | 93  | 0,15 | 1,5 | 6,8 | 40 x 85  | ECS2WQL152M◇◇△△4085  |
|                    |       | 133 | 93  | 0,15 | 1,5 | 6,7 | 45 x 70  | ECS2WQL152M◇◇△△4570  |
|                    | 1 800 | 111 | 77  | 0,15 | 1,5 | 7,6 | 40 x 100 | ECS2WQL182M◇◇△△40100 |
|                    | 2 200 | 91  | 64  | 0,15 | 1,5 | 8,6 | 45 x 100 | ECS2WQL222M◇◇△△45100 |

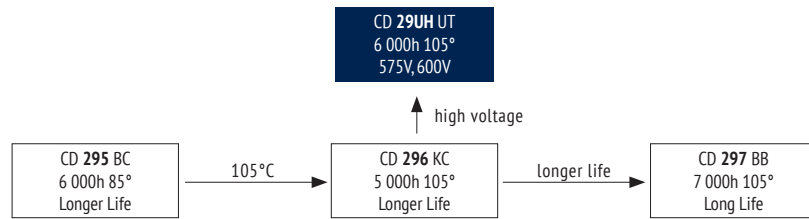
| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                 | (mm)           |                                                                               |

|                    |       |     |     |      |     |     |          |                      |
|--------------------|-------|-----|-----|------|-----|-----|----------|----------------------|
| 500<br>(550)<br>2H | 390   | 511 | 357 | 0,15 | 1,5 | 2,4 | 35 x 45  | ECS2HQL391M◇◇△△3545  |
|                    | 470   | 424 | 296 | 0,15 | 1,5 | 2,8 | 35 x 50  | ECS2HQL471M◇◇△△3550  |
|                    | 560   | 356 | 249 | 0,15 | 1,5 | 3,3 | 35 x 60  | ECS2HQL561M◇◇△△3560  |
|                    |       | 356 | 249 | 0,15 | 1,5 | 3,3 | 40 x 50  | ECS2HQL561M◇◇△△4050  |
|                    | 680   | 293 | 205 | 0,15 | 1,5 | 3,8 | 35 x 70  | ECS2HQL681M◇◇△△3570  |
|                    |       | 293 | 205 | 0,15 | 1,5 | 3,7 | 40 x 60  | ECS2HQL681M◇◇△△4060  |
|                    | 820   | 243 | 170 | 0,15 | 1,5 | 4,6 | 35 x 80  | ECS2HQL821M◇◇△△3580  |
|                    |       | 243 | 170 | 0,15 | 1,5 | 4,6 | 40 x 70  | ECS2HQL821M◇◇△△4070  |
|                    | 1 000 | 199 | 139 | 0,15 | 1,5 | 5,4 | 40 x 80  | ECS2HQL102M◇◇△△4080  |
|                    |       | 199 | 139 | 0,15 | 1,5 | 5,4 | 45 x 70  | ECS2HQL102M◇◇△△4570  |
|                    | 1 200 | 166 | 116 | 0,15 | 1,5 | 6,4 | 40 x 90  | ECS2HQL122M◇◇△△4090  |
|                    | 1 500 | 133 | 93  | 0,15 | 1,5 | 7,2 | 40 x 100 | ECS2HQL152M◇◇△△40100 |



### 6 000h at 105°C

- Ultra High Voltage
- Long Life at High Temperature
- High Ripple Current



## ITEM CHARACTERISTICS

|                                     |            |
|-------------------------------------|------------|
| Operating Temperature Range (°C)    | -25 ~ +105 |
| Voltage Range (V)                   | 575 ~ 600  |
| Capacitance Range (µF)              | 56 ~ 390   |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%      |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

|                                                         |                                                     |     |     |
|---------------------------------------------------------|-----------------------------------------------------|-----|-----|
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)                                   | 575 | 600 |
|                                                         | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$ | 8   |     |

Fast Charge-Discharge **!** Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

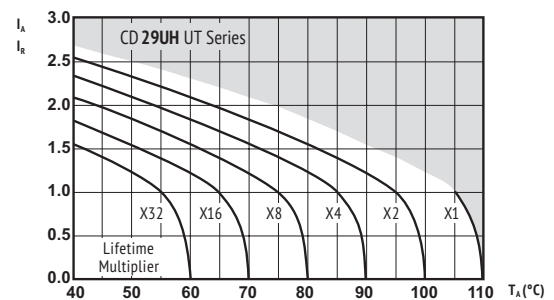
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                        |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------|
| Lifetime                                                                | 6 000h                                | > 200 000h                        | 3 000h                                | 3 000h                                   | 500h                                  |                                                                        |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                        |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value            | Within ± 20% of initial value         |                                                                        |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value    | Not more than 200% of specified value |                                                                        |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for 30 min > 24h before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

|             |      |       |       |      |       |          |
|-------------|------|-------|-------|------|-------|----------|
| Frequency   | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | ≥ 50 kHz |
| Coefficient | 0,75 | 1,00  | 1,16  | 1,30 | 1,41  | 1,45     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

**!** Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

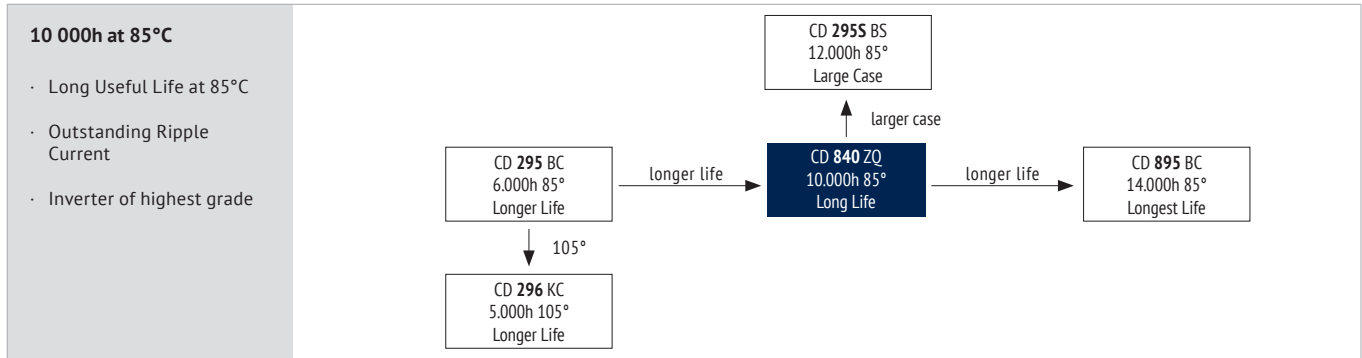
## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>$\varnothing D \times L$ | <b>ODER CODE</b><br>◇◇ = pin style & length<br>△△ = pin number<br><b>Details: Page 105</b> |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------------------------|----------------------------------|--------------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                              | (mm)                             |                                                                                            |
| <b>575<br/>(625)<br/>2Z</b>          | 68                         | 3903                                                         | 1659                                                         | 0,20                                                | 0,4                           | 0,52                                                | 30 x 25                          | ECS2ZUT680M◇◇△△3025                                                                        |
|                                      | 82                         | 3236                                                         | 1376                                                         | 0,20                                                | 0,5                           | 0,58                                                | 30 x 30                          | ECS2ZUT820M◇◇△△3030                                                                        |
|                                      | 100                        | 2654                                                         | 1128                                                         | 0,20                                                | 0,6                           | 0,63                                                | 30 x 35                          | ECS2ZUT101M◇◇△△3035                                                                        |
|                                      | 120                        | 2212                                                         | 940                                                          | 0,20                                                | 0,7                           | 0,70                                                | 30 x 40                          | ECS2ZUT121M◇◇△△3040                                                                        |
|                                      | 150                        | 1769                                                         | 752                                                          | 0,20                                                | 0,9                           | 0,81                                                | 30 x 45                          | ECS2ZUT151M◇◇△△3045                                                                        |
|                                      | 180                        | 1474                                                         | 627                                                          | 0,20                                                | 1,0                           | 0,89                                                | 30 x 50                          | ECS2ZUT181M◇◇△△3050                                                                        |
|                                      | 220                        | 1206                                                         | 513                                                          | 0,20                                                | 1,3                           | 1,01                                                | 30 x 60                          | ECS2ZUT221M◇◇△△3060                                                                        |
|                                      | 270                        | 983                                                          | 418                                                          | 0,20                                                | 1,5                           | 1,12                                                | 30 x 70                          | ECS2ZUT271M◇◇△△3070                                                                        |
|                                      |                            | 983                                                          | 418                                                          | 0,20                                                | 1,5                           | 1,12                                                | 35 x 55                          | ECS2ZUT271M◇◇△△3555                                                                        |
|                                      | 330                        | 804                                                          | 342                                                          | 0,20                                                | 1,5                           | 1,21                                                | 30 x 85                          | ECS2ZUT331M◇◇△△3085                                                                        |
|                                      |                            | 804                                                          | 342                                                          | 0,20                                                | 1,5                           | 1,21                                                | 35 x 60                          | ECS2ZUT331M◇◇△△3560                                                                        |
|                                      |                            | 804                                                          | 342                                                          | 0,20                                                | 1,5                           | 1,21                                                | 40 x 50                          | ECS2ZUT331M◇◇△△4050                                                                        |
|                                      | 390                        | 680                                                          | 289                                                          | 0,20                                                | 1,5                           | 1,30                                                | 35 x 65                          | ECS2ZUT391M◇◇△△3565                                                                        |
|                                      |                            | 680                                                          | 289                                                          | 0,20                                                | 1,5                           | 1,30                                                | 40 x 60                          | ECS2ZUT391M◇◇△△4060                                                                        |
| <b>600<br/>(650)<br/>2S</b>          | 56                         | 4739                                                         | 2014                                                         | 0,20                                                | 0,3                           | 0,50                                                | 30 x 25                          | ECS2SUT560M◇◇△△3025                                                                        |
|                                      | 68                         | 3903                                                         | 1659                                                         | 0,20                                                | 0,4                           | 0,56                                                | 30 x 30                          | ECS2SUT680M◇◇△△3030                                                                        |
|                                      | 82                         | 3236                                                         | 1376                                                         | 0,20                                                | 0,5                           | 0,61                                                | 30 x 35                          | ECS2SUT820M◇◇△△3035                                                                        |
|                                      |                            | 3236                                                         | 1376                                                         | 0,20                                                | 0,5                           | 0,61                                                | 35 x 25                          | ECS2SUT820M◇◇△△3525                                                                        |
|                                      | 100                        | 2654                                                         | 1128                                                         | 0,20                                                | 0,6                           | 0,67                                                | 30 x 40                          | ECS2SUT101M◇◇△△3040                                                                        |
|                                      |                            | 2654                                                         | 1128                                                         | 0,20                                                | 0,6                           | 0,67                                                | 35 x 30                          | ECS2SUT101M◇◇△△3530                                                                        |
|                                      | 120                        | 2212                                                         | 940                                                          | 0,20                                                | 0,7                           | 0,74                                                | 30 x 45                          | ECS2SUT121M◇◇△△3045                                                                        |
|                                      |                            | 2212                                                         | 940                                                          | 0,20                                                | 0,7                           | 0,74                                                | 35 x 35                          | ECS2SUT121M◇◇△△3535                                                                        |
|                                      | 150                        | 1769                                                         | 752                                                          | 0,20                                                | 0,9                           | 0,83                                                | 30 x 50                          | ECS2SUT151M◇◇△△3050                                                                        |
|                                      |                            | 1769                                                         | 752                                                          | 0,20                                                | 0,9                           | 0,83                                                | 35 x 40                          | ECS2SUT151M◇◇△△3540                                                                        |
|                                      | 180                        | 1474                                                         | 627                                                          | 0,20                                                | 1,1                           | 0,91                                                | 30 x 55                          | ECS2SUT181M◇◇△△3055                                                                        |
|                                      |                            | 1474                                                         | 627                                                          | 0,20                                                | 1,1                           | 0,91                                                | 35 x 45                          | ECS2SUT181M◇◇△△3545                                                                        |
|                                      | 220                        | 1206                                                         | 513                                                          | 0,20                                                | 1,3                           | 1,05                                                | 30 x 60                          | ECS2SUT221M◇◇△△3060                                                                        |
|                                      |                            | 1206                                                         | 513                                                          | 0,20                                                | 1,3                           | 1,05                                                | 35 x 50                          | ECS2SUT221M◇◇△△3550                                                                        |
|                                      | 270                        | 983                                                          | 418                                                          | 0,20                                                | 1,5                           | 1,17                                                | 35 x 55                          | ECS2SUT271M◇◇△△3555                                                                        |
|                                      | 330                        | 804                                                          | 342                                                          | 0,20                                                | 1,5                           | 1,27                                                | 35 x 65                          | ECS2SUT331M◇◇△△3565                                                                        |



| ITEM                                                       | CHARACTERISTICS                                                                                                                                                            |           |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Operating Temperature Range (°C)                           | -40 ~ +85                                                                                                                                                                  |           |
| Voltage Range (V)                                          | 200 ~ 450                                                                                                                                                                  |           |
| Capacitance Range (µF)                                     | 68 ~ 2 200                                                                                                                                                                 |           |
| Capacitance Tolerance (20°C, 120Hz)                        | ± 20%                                                                                                                                                                      |           |
| Leakage Current                                            | After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.                                                                 |           |
| Stability at Low Temperature<br>(Impedance Ratio at 120Hz) | Rated Voltage (V)                                                                                                                                                          | 200 ~ 450 |
|                                                            | Z <sub>-25°C</sub> / Z <sub>+20°C</sub>                                                                                                                                    | 4         |
| Fast Charge-Discharge                                      | Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray |           |

The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

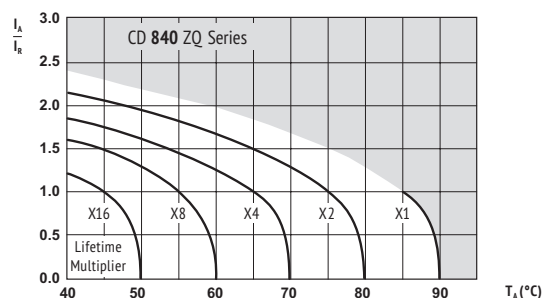
| ITEM                                                                    | USEFUL LIFE                              |                                                | LOAD LIFE                                | ENDURANCE TEST                                            | SHELF LIFE                                       |                                                                                 |
|-------------------------------------------------------------------------|------------------------------------------|------------------------------------------------|------------------------------------------|-----------------------------------------------------------|--------------------------------------------------|---------------------------------------------------------------------------------|
| Lifetime                                                                | 10 000h                                  | > 100 000h                                     | 5 000h                                   | 5 000h                                                    | 1 000h                                           |                                                                                 |
| Leakage Current                                                         | Not more than specified value            |                                                | Not more than specified value            | Not more than specified value                             | Not more than specified value                    |                                                                                 |
| Capacitance Change                                                      | Within ± 30% of initial value            |                                                | Within ± 20% of initial value            | Within ± 20% of initial value                             | Within ± 15% of initial value                    |                                                                                 |
| Dissipation Factor                                                      | Not more than 300% of specified value    |                                                | Not more than 200% of specified value    | Not more than 200% of specified value                     | Not more than 150% of specified value            |                                                                                 |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | U <sub>R</sub><br>I <sub>R</sub><br>85°C | U <sub>R</sub><br>1,5 x I <sub>R</sub><br>40°C | U <sub>R</sub><br>I <sub>R</sub><br>85°C | U <sub>R</sub><br>I <sub>R</sub> = 0<br>85°C<br>IEC 60384 | U <sub>R</sub> = 0<br>I <sub>R</sub> = 0<br>85°C | After test:<br>U <sub>R</sub> to be applied for 30 min > 24h before measurement |

### MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Rated Voltage (V) \ Frequency | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | ≥ 50 kHz |
|-------------------------------|------|-------|-------|------|-------|----------|
| 200 ~ 250                     | 0,87 | 1,00  | 1,17  | 1,32 | 1,45  | 1,50     |
| 400 ~ 500                     | 0,80 | 1,00  | 1,16  | 1,30 | 1,41  | 1,45     |

Multipliers for typical operating conditions.

### MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 85°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

**Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.**

### ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

### SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



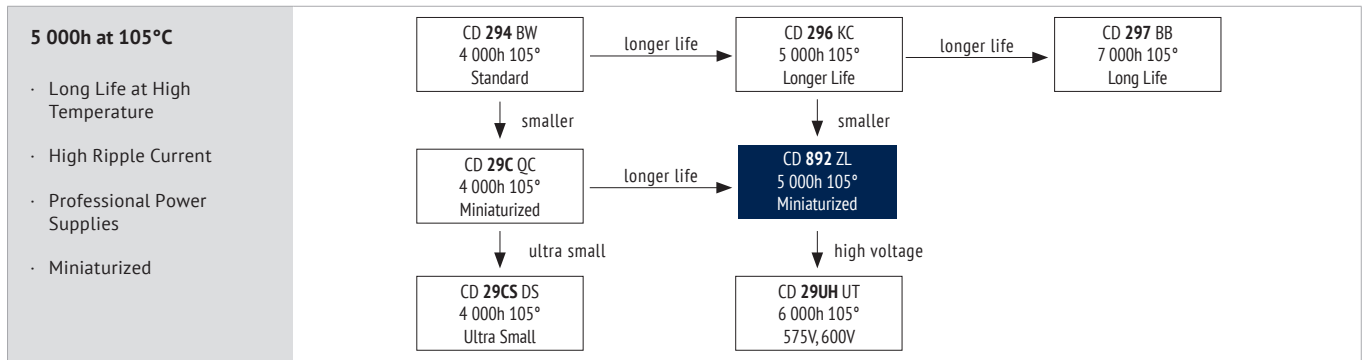
| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                 | (mm)           |                                                                               |
| 200<br>(250)<br>2D                          | 330                                 | 603                                                              | 423                                                              | 0,15                                     | 0,7                                  | 1,59                                                   | 25 x 25        | ECS2DZQ331M◇◇△△2525                                                           |
|                                             |                                     | 511                                                              | 358                                                              | 0,15                                     | 0,8                                  | 1,81                                                   | 25 x 30        | ECS2DZQ391M◇◇△△2530                                                           |
|                                             |                                     | 511                                                              | 358                                                              | 0,15                                     | 0,8                                  | 1,88                                                   | 30 x 25        | ECS2DZQ391M◇◇△△3025                                                           |
|                                             | 470                                 | 424                                                              | 297                                                              | 0,15                                     | 0,9                                  | 1,99                                                   | 25 x 30        | ECS2DZQ471M◇◇△△2530                                                           |
|                                             |                                     | 424                                                              | 297                                                              | 0,15                                     | 0,9                                  | 2,06                                                   | 30 x 25        | ECS2DZQ471M◇◇△△3025                                                           |
|                                             | 560                                 | 356                                                              | 249                                                              | 0,15                                     | 1,1                                  | 2,26                                                   | 25 x 35        | ECS2DZQ561M◇◇△△2535                                                           |
|                                             |                                     | 356                                                              | 249                                                              | 0,15                                     | 1,1                                  | 2,36                                                   | 30 x 30        | ECS2DZQ561M◇◇△△3030                                                           |
|                                             | 680                                 | 293                                                              | 205                                                              | 0,15                                     | 1,4                                  | 2,58                                                   | 25 x 40        | ECS2DZQ681M◇◇△△2540                                                           |
|                                             |                                     | 293                                                              | 205                                                              | 0,15                                     | 1,4                                  | 2,60                                                   | 30 x 30        | ECS2DZQ681M◇◇△△3030                                                           |
|                                             |                                     | 293                                                              | 205                                                              | 0,15                                     | 1,4                                  | 2,58                                                   | 35 x 25        | ECS2DZQ681M◇◇△△3525                                                           |
|                                             | 820                                 | 243                                                              | 170                                                              | 0,15                                     | 1,5                                  | 2,92                                                   | 25 x 45        | ECS2DZQ821M◇◇△△2545                                                           |
|                                             |                                     | 243                                                              | 170                                                              | 0,15                                     | 1,5                                  | 2,97                                                   | 30 x 35        | ECS2DZQ821M◇◇△△3035                                                           |
|                                             |                                     | 243                                                              | 170                                                              | 0,15                                     | 1,5                                  | 3,22                                                   | 35 x 30        | ECS2DZQ821M◇◇△△3530                                                           |
|                                             | 1 000                               | 199                                                              | 140                                                              | 0,15                                     | 1,5                                  | 3,32                                                   | 25 x 50        | ECS2DZQ102M◇◇△△2550                                                           |
|                                             |                                     | 199                                                              | 140                                                              | 0,15                                     | 1,5                                  | 3,69                                                   | 30 x 40        | ECS2DZQ102M◇◇△△3040                                                           |
|                                             |                                     | 199                                                              | 140                                                              | 0,15                                     | 1,5                                  | 3,70                                                   | 35 x 35        | ECS2DZQ102M◇◇△△3535                                                           |
|                                             | 1 200                               | 166                                                              | 117                                                              | 0,15                                     | 1,5                                  | 4,17                                                   | 30 x 45        | ECS2DZQ122M◇◇△△3045                                                           |
|                                             |                                     | 166                                                              | 117                                                              | 0,15                                     | 1,5                                  | 4,05                                                   | 35 x 35        | ECS2DZQ122M◇◇△△3535                                                           |
|                                             | 1 500                               | 133                                                              | 93                                                               | 0,15                                     | 1,5                                  | 4,80                                                   | 30 x 50        | ECS2DZQ152M◇◇△△3050                                                           |
|                                             |                                     | 133                                                              | 93                                                               | 0,15                                     | 1,5                                  | 4,69                                                   | 35 x 40        | ECS2DZQ152M◇◇△△3540                                                           |
|                                             | 1 800                               | 111                                                              | 78                                                               | 0,15                                     | 1,5                                  | 5,30                                                   | 35 x 45        | ECS2DZQ182M◇◇△△3545                                                           |
|                                             | 2 200                               | 91                                                               | 63                                                               | 0,15                                     | 1,5                                  | 6,17                                                   | 35 x 55        | ECS2DZQ222M◇◇△△3555                                                           |

|                    |       |     |     |      |     |      |         |                     |
|--------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 250<br>(300)<br>2E | 270   | 737 | 516 | 0,15 | 0,7 | 1,52 | 25 x 25 | ECS2EZQ271M◇◇△△2525 |
|                    | 330   | 603 | 423 | 0,15 | 0,8 | 1,76 | 25 x 30 | ECS2EZQ331M◇◇△△2530 |
|                    |       | 511 | 358 | 0,15 | 1,0 | 2,00 | 25 x 35 | ECS2EZQ391M◇◇△△2535 |
|                    |       | 511 | 358 | 0,15 | 1,0 | 1,99 | 30 x 25 | ECS2EZQ391M◇◇△△3025 |
|                    | 470   | 424 | 297 | 0,15 | 1,2 | 2,19 | 25 x 35 | ECS2EZQ471M◇◇△△2535 |
|                    |       | 424 | 297 | 0,15 | 1,2 | 2,29 | 30 x 30 | ECS2EZQ471M◇◇△△3030 |
|                    | 560   | 356 | 249 | 0,15 | 1,4 | 2,48 | 25 x 40 | ECS2EZQ561M◇◇△△2540 |
|                    |       | 356 | 249 | 0,15 | 1,4 | 2,50 | 30 x 30 | ECS2EZQ561M◇◇△△3030 |
|                    |       | 356 | 249 | 0,15 | 1,4 | 2,52 | 35 x 25 | ECS2EZQ561M◇◇△△3525 |
|                    | 680   | 293 | 205 | 0,15 | 1,5 | 2,82 | 25 x 45 | ECS2EZQ681M◇◇△△2545 |
|                    |       | 293 | 205 | 0,15 | 1,5 | 2,87 | 30 x 35 | ECS2EZQ681M◇◇△△3035 |
|                    |       | 293 | 205 | 0,15 | 1,5 | 3,10 | 35 x 30 | ECS2EZQ681M◇◇△△3530 |
|                    | 820   | 243 | 170 | 0,15 | 1,5 | 3,27 | 25 x 55 | ECS2EZQ821M◇◇△△2555 |
|                    |       | 243 | 170 | 0,15 | 1,5 | 3,47 | 30 x 40 | ECS2EZQ821M◇◇△△3040 |
|                    |       | 243 | 170 | 0,15 | 1,5 | 3,54 | 35 x 35 | ECS2EZQ821M◇◇△△3535 |
|                    | 1 000 | 199 | 140 | 0,15 | 1,5 | 3,96 | 30 x 45 | ECS2EZQ102M◇◇△△3045 |
|                    |       | 199 | 140 | 0,15 | 1,5 | 3,90 | 35 x 35 | ECS2EZQ102M◇◇△△3535 |
|                    | 1 200 | 166 | 117 | 0,15 | 1,5 | 4,58 | 30 x 55 | ECS2EZQ122M◇◇△△3055 |
|                    |       | 166 | 117 | 0,15 | 1,5 | 4,43 | 35 x 40 | ECS2EZQ122M◇◇△△3540 |
|                    | 1 500 | 133 | 94  | 0,15 | 1,5 | 5,25 | 35 x 50 | ECS2EZQ152M◇◇△△3550 |
|                    | 1 800 | 111 | 78  | 0,15 | 1,5 | 5,89 | 35 x 55 | ECS2EZQ182M◇◇△△3555 |

|                    |     |      |      |      |     |      |         |                     |
|--------------------|-----|------|------|------|-----|------|---------|---------------------|
| 400<br>(450)<br>2G | 100 | 1990 | 1035 | 0,15 | 0,4 | 1,04 | 25 x 25 | ECS2GZQ101M◇◇△△2525 |
|                    | 120 | 1658 | 863  | 0,15 | 0,5 | 1,19 | 25 x 30 | ECS2GZQ121M◇◇△△2530 |
|                    |     | 1327 | 690  | 0,15 | 0,6 | 1,39 | 25 x 35 | ECS2GZQ151M◇◇△△2535 |
|                    | 150 | 1327 | 690  | 0,15 | 0,6 | 1,39 | 30 x 25 | ECS2GZQ151M◇◇△△3025 |
|                    |     | 1106 | 575  | 0,15 | 0,7 | 1,58 | 25 x 40 | ECS2GZQ181M◇◇△△2540 |
|                    | 180 | 1106 | 575  | 0,15 | 0,7 | 1,59 | 30 x 30 | ECS2GZQ181M◇◇△△3030 |
|                    |     | 1106 | 575  | 0,15 | 0,7 | 1,60 | 35 x 25 | ECS2GZQ181M◇◇△△3525 |
|                    |     | 905  | 471  | 0,15 | 0,9 | 1,75 | 25 x 40 | ECS2GZQ221M◇◇△△2540 |
|                    | 220 | 905  | 471  | 0,15 | 0,9 | 1,76 | 30 x 30 | ECS2GZQ221M◇◇△△3030 |
|                    |     | 905  | 471  | 0,15 | 0,9 | 1,97 | 35 x 30 | ECS2GZQ221M◇◇△△3530 |
|                    |     | 737  | 384  | 0,15 | 1,1 | 2,00 | 25 x 45 | ECS2GZQ271M◇◇△△2545 |
|                    | 270 | 737  | 384  | 0,15 | 1,1 | 2,03 | 30 x 35 | ECS2GZQ271M◇◇△△3035 |
|                    |     | 737  | 384  | 0,15 | 1,1 | 2,18 | 35 x 30 | ECS2GZQ271M◇◇△△3530 |
|                    |     | 603  | 314  | 0,15 | 1,3 | 2,33 | 25 x 55 | ECS2GZQ331M◇◇△△2555 |
|                    | 330 | 603  | 314  | 0,15 | 1,3 | 2,55 | 30 x 45 | ECS2GZQ331M◇◇△△3045 |
|                    |     | 603  | 314  | 0,15 | 1,3 | 2,51 | 35 x 35 | ECS2GZQ331M◇◇△△3535 |
|                    |     | 511  | 266  | 0,15 | 1,5 | 2,78 | 30 x 45 | ECS2GZQ391M◇◇△△3045 |
|                    | 390 | 511  | 266  | 0,15 | 1,5 | 2,72 | 35 x 35 | ECS2GZQ391M◇◇△△3535 |
|                    |     | 424  | 221  | 0,15 | 1,5 | 3,14 | 30 x 50 | ECS2GZQ471M◇◇△△3050 |
|                    | 470 | 424  | 221  | 0,15 | 1,5 | 3,19 | 35 x 45 | ECS2GZQ471M◇◇△△3545 |
|                    |     | 356  | 185  | 0,15 | 1,5 | 3,58 | 35 x 50 | ECS2GZQ561M◇◇△△3550 |
|                    | 680 | 293  | 147  | 0,15 | 1,5 | 4,05 | 35 x 55 | ECS2GZQ681M◇◇△△3555 |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                 | (mm)           |                                                                               |
| 450<br>(500)<br>2W                          | 68                                  | 3901                                                             | 1951                                                             | 0,20                                     | 0,3                                  | 0,80                                                   | 25 x 25        | ECS2WZQ680M◇◇△△2525                                                           |
|                                             | 82                                  | 3235                                                             | 1618                                                             | 0,20                                     | 0,4                                  | 0,92                                                   | 25 x 30        | ECS2WZQ820M◇◇△△2530                                                           |
|                                             |                                     | 2653                                                             | 1327                                                             | 0,20                                     | 0,5                                  | 1,01                                                   | 25 x 30        | ECS2WZQ101M◇◇△△2530                                                           |
|                                             | 100                                 | 2653                                                             | 1327                                                             | 0,20                                     | 0,5                                  | 1,05                                                   | 30 x 25        | ECS2WZQ101M◇◇△△3025                                                           |
|                                             |                                     | 2211                                                             | 1106                                                             | 0,20                                     | 0,5                                  | 1,16                                                   | 25 x 35        | ECS2WZQ121M◇◇△△2535                                                           |
|                                             | 120                                 | 2211                                                             | 1106                                                             | 0,20                                     | 0,5                                  | 1,21                                                   | 30 x 30        | ECS2WZQ121M◇◇△△3030                                                           |
|                                             |                                     | 1769                                                             | 885                                                              | 0,20                                     | 0,7                                  | 1,29                                                   | 25 x 35        | ECS2WZQ151M◇◇△△2535                                                           |
|                                             | 150                                 | 1769                                                             | 885                                                              | 0,20                                     | 0,7                                  | 1,35                                                   | 30 x 30        | ECS2WZQ151M◇◇△△3030                                                           |
|                                             |                                     | 1769                                                             | 885                                                              | 0,20                                     | 0,7                                  | 1,36                                                   | 35 x 25        | ECS2WZQ151M◇◇△△3525                                                           |
|                                             |                                     | 1474                                                             | 737                                                              | 0,20                                     | 0,8                                  | 1,51                                                   | 25 x 45        | ECS2WZQ181M◇◇△△2545                                                           |
|                                             | 180                                 | 1474                                                             | 737                                                              | 0,20                                     | 0,8                                  | 1,54                                                   | 30 x 35        | ECS2WZQ181M◇◇△△3035                                                           |
|                                             |                                     | 1474                                                             | 737                                                              | 0,20                                     | 0,8                                  | 1,69                                                   | 35 x 30        | ECS2WZQ181M◇◇△△3530                                                           |
|                                             |                                     | 1206                                                             | 603                                                              | 0,20                                     | 1,0                                  | 1,72                                                   | 25 x 50        | ECS2WZQ221M◇◇△△2550                                                           |
|                                             | 220                                 | 1206                                                             | 603                                                              | 0,20                                     | 1,0                                  | 1,92                                                   | 30 x 40        | ECS2WZQ221M◇◇△△3040                                                           |
|                                             |                                     | 1206                                                             | 603                                                              | 0,20                                     | 1,0                                  | 1,87                                                   | 35 x 30        | ECS2WZQ221M◇◇△△3530                                                           |
|                                             | 270                                 | 983                                                              | 492                                                              | 0,20                                     | 1,2                                  | 1,96                                                   | 25 x 55        | ECS2WZQ271M◇◇△△2555                                                           |
|                                             |                                     | 983                                                              | 492                                                              | 0,20                                     | 1,2                                  | 2,12                                                   | 30 x 40        | ECS2WZQ271M◇◇△△3040                                                           |
|                                             |                                     | 983                                                              | 492                                                              | 0,20                                     | 1,2                                  | 2,16                                                   | 35 x 35        | ECS2WZQ271M◇◇△△3535                                                           |
|                                             | 330                                 | 804                                                              | 402                                                              | 0,20                                     | 1,5                                  | 2,49                                                   | 30 x 50        | ECS2WZQ331M◇◇△△3050                                                           |
|                                             |                                     | 804                                                              | 402                                                              | 0,20                                     | 1,5                                  | 2,47                                                   | 35 x 40        | ECS2WZQ331M◇◇△△3540                                                           |
|                                             | 390                                 | 681                                                              | 341                                                              | 0,20                                     | 1,5                                  | 2,78                                                   | 30 x 55        | ECS2WZQ391M◇◇△△3055                                                           |
|                                             |                                     | 681                                                              | 341                                                              | 0,20                                     | 1,5                                  | 2,77                                                   | 35 x 45        | ECS2WZQ391M◇◇△△3545                                                           |
|                                             | 470                                 | 565                                                              | 283                                                              | 0,20                                     | 1,5                                  | 3,15                                                   | 35 x 50        | ECS2WZQ471M◇◇△△3550                                                           |
|                                             | 560                                 | 474                                                              | 238                                                              | 0,20                                     | 1,5                                  | 3,50                                                   | 35 x 55        | ECS2WZQ561M◇◇△△3555                                                           |





## ITEM CHARACTERISTICS

|                                     |             |
|-------------------------------------|-------------|
| Operating Temperature Range (°C)    | -25 ~ +105  |
| Voltage Range (V)                   | 400 ~ 500   |
| Capacitance Range (µF)              | 47 ~ 18 000 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%       |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

|                 |                                                                                                            |
|-----------------|------------------------------------------------------------------------------------------------------------|
| Leakage Current | After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table. |
|-----------------|------------------------------------------------------------------------------------------------------------|

|                                                         |                                         |           |
|---------------------------------------------------------|-----------------------------------------|-----------|
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)                       | 400 ~ 500 |
|                                                         | Z <sub>-25°C</sub> / Z <sub>+20°C</sub> | 4         |

|                       |                                                                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fast Charge-Discharge | <b>!</b> Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

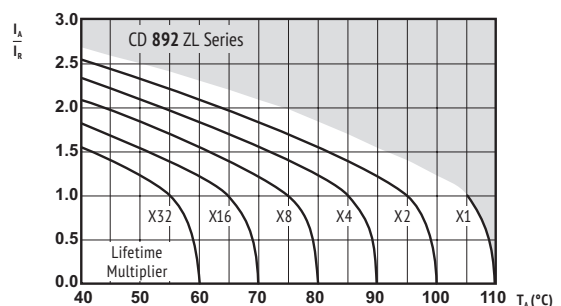
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                        |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|------------------------------------------------------------------------|
| Lifetime                                                                | 5 000h                                | > 200 000h                        | 3 000h                                | 4 000h                                   | 1 000h                                |                                                                        |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                        |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value            | Within ± 20% of initial value         |                                                                        |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value    | Not more than 200% of specified value |                                                                        |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test:<br>$U_R$ to be applied for 30 min > 24h before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency          | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | ≥ 50 kHz |
|--------------------|------|-------|-------|------|-------|----------|
| <b>Coefficient</b> | 0,80 | 1,00  | 1,16  | 1,30 | 1,41  | 1,43     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



I<sub>A</sub> = actual ripple current at 120Hz,  
I<sub>R</sub> = rated ripple current at 120Hz, 105°C  
Multiplier of Useful Life as a function of ambient temperature & ripple current load

**!** Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

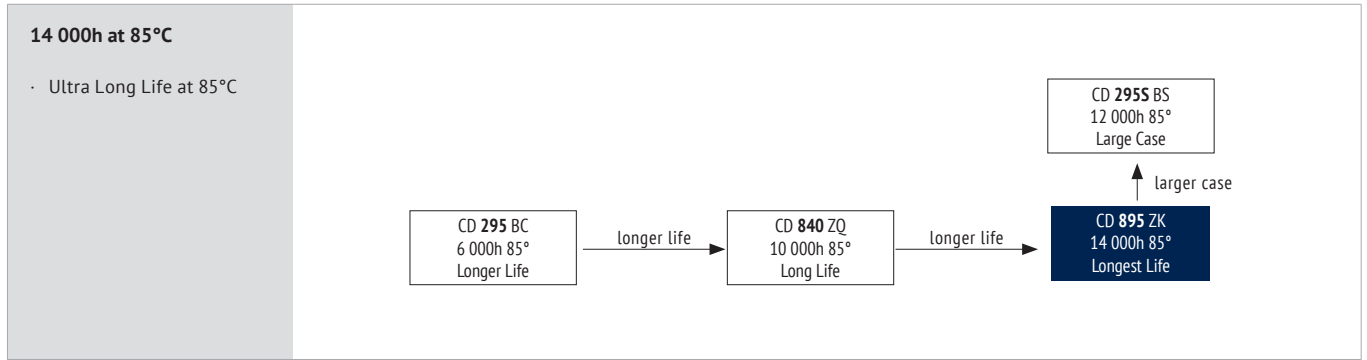


| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>øD x L | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pin number |                      |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|--------------------------------------|------------------------------------------------------------|----------------|--------------------------------------------------------------|----------------------|
| (V)                                         | (μF)                                | (mΩ)                                                                | (mΩ)                                                                |                                             | (mA)                                 | (Arms)                                                     | (mm)           | Details: Page 105                                            |                      |
| 400<br>(450)<br>2G                          | 47                                  | 4233                                                                | 2350                                                                | 0,15                                        | 0,2                                  | 0,39                                                       | 22 x 20        | ECS2GZL470M◇◇△△2220                                          |                      |
|                                             | 82                                  | 2427                                                                | 1340                                                                | 0,15                                        | 0,3                                  | 0,56                                                       | 22 x 25        | ECS2GZL820M◇◇△△2225                                          |                      |
|                                             | 100                                 | 1990                                                                | 1035                                                                | 0,15                                        | 0,4                                  | 0,65                                                       | 22 x 25        | ECS2GZL101M◇◇△△2225                                          |                      |
|                                             |                                     | 1990                                                                | 1035                                                                | 0,15                                        | 0,4                                  | 0,70                                                       | 22 x 30        | ECS2GZL101M◇◇△△2230                                          |                      |
|                                             |                                     | 1990                                                                | 1035                                                                | 0,15                                        | 0,4                                  | 0,58                                                       | 25 x 25        | ECS2GZL101M◇◇△△2525                                          |                      |
|                                             |                                     | 1990                                                                | 1035                                                                | 0,15                                        | 0,4                                  | 0,72                                                       | 25 x 30        | ECS2GZL101M◇◇△△2530                                          |                      |
|                                             | 150                                 | 1327                                                                | 690                                                                 | 0,15                                        | 0,6                                  | 0,88                                                       | 25 x 30        | ECS2GZL151M◇◇△△2530                                          |                      |
|                                             |                                     | 1106                                                                | 575                                                                 | 0,15                                        | 0,7                                  | 0,70                                                       | 22 x 45        | ECS2GZL181M◇◇△△2245                                          |                      |
|                                             |                                     | 1106                                                                | 575                                                                 | 0,15                                        | 0,7                                  | 0,95                                                       | 22 x 50        | ECS2GZL181M◇◇△△2250                                          |                      |
|                                             |                                     | 1106                                                                | 575                                                                 | 0,15                                        | 0,7                                  | 0,82                                                       | 25 x 35        | ECS2GZL181M◇◇△△2535                                          |                      |
|                                             | 220                                 | 1106                                                                | 575                                                                 | 0,15                                        | 0,7                                  | 0,78                                                       | 35 x 20        | ECS2GZL181M◇◇△△3520                                          |                      |
|                                             |                                     | 905                                                                 | 471                                                                 | 0,15                                        | 0,9                                  | 1,00                                                       | 25 x 45        | ECS2GZL221M◇◇△△2545                                          |                      |
|                                             |                                     | 905                                                                 | 471                                                                 | 0,15                                        | 0,9                                  | 0,86                                                       | 30 x 30        | ECS2GZL221M◇◇△△3030                                          |                      |
|                                             |                                     | 905                                                                 | 471                                                                 | 0,15                                        | 0,9                                  | 1,10                                                       | 35 x 25        | ECS2GZL221M◇◇△△3525                                          |                      |
|                                             | 270                                 | 905                                                                 | 471                                                                 | 0,15                                        | 0,9                                  | 1,30                                                       | 35 x 30        | ECS2GZL221M◇◇△△3530                                          |                      |
|                                             |                                     | 737                                                                 | 385                                                                 | 0,15                                        | 1,1                                  | 1,35                                                       | 25 x 45        | ECS2GZL271M◇◇△△2545                                          |                      |
|                                             |                                     | 737                                                                 | 385                                                                 | 0,15                                        | 1,1                                  | 1,48                                                       | 30 x 30        | ECS2GZL271M◇◇△△3030                                          |                      |
|                                             |                                     | 737                                                                 | 385                                                                 | 0,15                                        | 1,1                                  | 1,58                                                       | 30 x 40        | ECS2GZL271M◇◇△△3040                                          |                      |
|                                             | 330                                 | 603                                                                 | 314                                                                 | 0,15                                        | 1,3                                  | 1,50                                                       | 25 x 50        | ECS2GZL331M◇◇△△2550                                          |                      |
|                                             |                                     | 603                                                                 | 314                                                                 | 0,15                                        | 1,3                                  | 1,11                                                       | 30 x 40        | ECS2GZL331M◇◇△△3040                                          |                      |
|                                             |                                     | 603                                                                 | 314                                                                 | 0,15                                        | 1,3                                  | 1,10                                                       | 35 x 30        | ECS2GZL331M◇◇△△3530                                          |                      |
|                                             |                                     | 603                                                                 | 314                                                                 | 0,15                                        | 1,3                                  | 1,70                                                       | 35 x 40        | ECS2GZL331M◇◇△△3540                                          |                      |
|                                             | 390                                 | 511                                                                 | 266                                                                 | 0,15                                        | 1,5                                  | 1,15                                                       | 30 x 45        | ECS2GZL391M◇◇△△3045                                          |                      |
|                                             |                                     | 511                                                                 | 266                                                                 | 0,15                                        | 1,5                                  | 1,26                                                       | 35 x 35        | ECS2GZL391M◇◇△△3535                                          |                      |
|                                             |                                     | 424                                                                 | 221                                                                 | 0,15                                        | 1,5                                  | 1,31                                                       | 30 x 50        | ECS2GZL471M◇◇△△3050                                          |                      |
|                                             |                                     | 424                                                                 | 221                                                                 | 0,15                                        | 1,5                                  | 1,50                                                       | 35 x 35        | ECS2GZL471M◇◇△△3535                                          |                      |
|                                             | 470                                 | 424                                                                 | 221                                                                 | 0,15                                        | 1,5                                  | 2,30                                                       | 35 x 40        | ECS2GZL471M◇◇△△3540                                          |                      |
|                                             |                                     | 424                                                                 | 221                                                                 | 0,15                                        | 1,5                                  | 1,65                                                       | 40 x 40        | ECS2GZL471M◇◇△△4040                                          |                      |
|                                             |                                     | 424                                                                 | 221                                                                 | 0,15                                        | 1,5                                  | 3,30                                                       | 45 x 50        | ECS2GZL471M◇◇△△4550                                          |                      |
|                                             |                                     | 356                                                                 | 185                                                                 | 0,15                                        | 1,5                                  | 1,90                                                       | 30 x 45        | ECS2GZL561M◇◇△△3045                                          |                      |
|                                             | 560                                 | 356                                                                 | 185                                                                 | 0,15                                        | 1,5                                  | 1,75                                                       | 35 x 45        | ECS2GZL561M◇◇△△3545                                          |                      |
|                                             |                                     | 293                                                                 | 153                                                                 | 0,15                                        | 1,5                                  | 2,20                                                       | 30 x 55        | ECS2GZL681M◇◇△△3055                                          |                      |
|                                             |                                     | 293                                                                 | 153                                                                 | 0,15                                        | 1,5                                  | 2,10                                                       | 35 x 45        | ECS2GZL681M◇◇△△3545                                          |                      |
|                                             |                                     | 293                                                                 | 153                                                                 | 0,15                                        | 1,5                                  | 2,50                                                       | 35 x 50        | ECS2GZL681M◇◇△△3550                                          |                      |
|                                             | 680                                 | 293                                                                 | 153                                                                 | 0,15                                        | 1,5                                  | 2,15                                                       | 40 x 40        | ECS2GZL681M◇◇△△4040                                          |                      |
|                                             |                                     | 243                                                                 | 145                                                                 | 0,15                                        | 1,5                                  | 3,50                                                       | 35 x 55        | ECS2GZL821M◇◇△△3555                                          |                      |
|                                             |                                     | 1 000                                                               | 199                                                                 | 130                                         | 0,15                                 | 1,5                                                        | 2,80           | 35 x 55                                                      | ECS2GZL102M◇◇△△3555  |
|                                             |                                     |                                                                     | 199                                                                 | 130                                         | 0,15                                 | 1,5                                                        | 3,30           | 35 x 100                                                     | ECS2GZL102M◇◇△△35100 |
|                                             | 199                                 |                                                                     | 130                                                                 | 0,15                                        | 1,5                                  | 3,50                                                       | 40 x 70        | ECS2GZL102M◇◇△△4070                                          |                      |
|                                             | 199                                 |                                                                     | 130                                                                 | 0,15                                        | 1,5                                  | 3,80                                                       | 40 x 80        | ECS2GZL102M◇◇△△4080                                          |                      |
|                                             | 1 200                               | 166                                                                 | 108                                                                 | 0,15                                        | 1,5                                  | 3,80                                                       | 35 x 80        | ECS2GZL122M◇◇△△3580                                          |                      |
|                                             |                                     | 166                                                                 | 108                                                                 | 0,15                                        | 1,5                                  | 4,50                                                       | 35 x 100       | ECS2GZL122M◇◇△△35100                                         |                      |
|                                             |                                     | 166                                                                 | 108                                                                 | 0,15                                        | 1,5                                  | 4,50                                                       | 40 x 75        | ECS2GZL122M◇◇△△4075                                          |                      |
|                                             | 1 500                               | 133                                                                 | 90                                                                  | 0,15                                        | 1,5                                  | 4,25                                                       | 40 x 100       | ECS2GZL152M◇◇△△40100                                         |                      |
|                                             | 1 800                               | 111                                                                 | 72                                                                  | 0,15                                        | 1,5                                  | 6,10                                                       | 40 x 100       | ECS2GZL182M◇◇△△40100                                         |                      |

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pin number |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------------------------|----------------------------------|--------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                              | (mm)                             | Details: Page 105                                            |
| 450<br>(500)<br>2W                   | 47                         | 5644                                                         | 2890                                                         | 0,20                                                | 0,2                           | 0,35                                                | 20 x 25                          | ECS2WZL470M◇◇△△2025                                          |
|                                      |                            | 5644                                                         | 2890                                                         | 0,20                                                | 0,2                           | 0,42                                                | 22 x 25                          | ECS2WZL470M◇◇△△2225                                          |
|                                      | 68                         | 3901                                                         | 1951                                                         | 0,20                                                | 0,3                           | 0,55                                                | 22 x 25                          | ECS2WZL680M◇◇△△2225                                          |
|                                      | 82                         | 3235                                                         | 1618                                                         | 0,20                                                | 0,4                           | 0,50                                                | 22 x 25                          | ECS2WZL820M◇◇△△2225                                          |
|                                      |                            | 2653                                                         | 1327                                                         | 0,20                                                | 0,5                           | 0,60                                                | 22 x 30                          | ECS2WZL101M◇◇△△2230                                          |
|                                      |                            | 2653                                                         | 1327                                                         | 0,20                                                | 0,5                           | 0,64                                                | 22 x 35                          | ECS2WZL101M◇◇△△2235                                          |
|                                      |                            | 2653                                                         | 1327                                                         | 0,20                                                | 0,5                           | 0,70                                                | 25 x 25                          | ECS2WZL101M◇◇△△2525                                          |
|                                      |                            | 2653                                                         | 1327                                                         | 0,20                                                | 0,5                           | 0,80                                                | 25 x 30                          | ECS2WZL101M◇◇△△2530                                          |
|                                      |                            | 2211                                                         | 1106                                                         | 0,20                                                | 0,5                           | 1,00                                                | 22 x 35                          | ECS2WZL121M◇◇△△2235                                          |
|                                      | 120                        | 2211                                                         | 1106                                                         | 0,20                                                | 0,5                           | 0,70                                                | 25 x 30                          | ECS2WZL121M◇◇△△2530                                          |
|                                      |                            | 2211                                                         | 1106                                                         | 0,20                                                | 0,5                           | 0,70                                                | 30 x 25                          | ECS2WZL121M◇◇△△3025                                          |
|                                      |                            | 1769                                                         | 885                                                          | 0,20                                                | 0,7                           | 0,90                                                | 22 x 30                          | ECS2WZL151M◇◇△△2230                                          |
|                                      | 150                        | 1769                                                         | 885                                                          | 0,20                                                | 0,7                           | 0,80                                                | 25 x 30                          | ECS2WZL151M◇◇△△2530                                          |
|                                      |                            | 1769                                                         | 885                                                          | 0,20                                                | 0,7                           | 0,73                                                | 30 x 25                          | ECS2WZL151M◇◇△△3025                                          |
|                                      |                            | 1474                                                         | 737                                                          | 0,20                                                | 0,8                           | 1,00                                                | 22 x 40                          | ECS2WZL181M◇◇△△2240                                          |
|                                      | 180                        | 1474                                                         | 737                                                          | 0,20                                                | 0,8                           | 1,00                                                | 30 x 30                          | ECS2WZL181M◇◇△△3030                                          |
|                                      |                            | 1474                                                         | 737                                                          | 0,20                                                | 0,8                           | 1,00                                                | 35 x 25                          | ECS2WZL181M◇◇△△3525                                          |
|                                      |                            | 1206                                                         | 603                                                          | 0,20                                                | 1,0                           | 1,10                                                | 25 x 40                          | ECS2WZL221M◇◇△△2540                                          |
|                                      | 220                        | 1206                                                         | 603                                                          | 0,20                                                | 1,0                           | 1,10                                                | 30 x 30                          | ECS2WZL221M◇◇△△3030                                          |
|                                      |                            | 983                                                          | 492                                                          | 0,20                                                | 1,2                           | 0,97                                                | 25 x 50                          | ECS2WZL271M◇◇△△2550                                          |
|                                      |                            | 983                                                          | 492                                                          | 0,20                                                | 1,2                           | 0,97                                                | 30 x 40                          | ECS2WZL271M◇◇△△3040                                          |
|                                      |                            | 983                                                          | 492                                                          | 0,20                                                | 1,2                           | 1,30                                                | 30 x 60                          | ECS2WZL271M◇◇△△3060                                          |
|                                      |                            | 983                                                          | 492                                                          | 0,20                                                | 1,2                           | 1,50                                                | 35 x 30                          | ECS2WZL271M◇◇△△3530                                          |
|                                      | 270                        | 804                                                          | 402                                                          | 0,20                                                | 1,5                           | 1,30                                                | 25 x 55                          | ECS2WZL331M◇◇△△2555                                          |
|                                      |                            | 804                                                          | 402                                                          | 0,20                                                | 1,5                           | 1,10                                                | 30 x 45                          | ECS2WZL331M◇◇△△3045                                          |
|                                      |                            | 804                                                          | 402                                                          | 0,20                                                | 1,5                           | 1,18                                                | 35 x 30                          | ECS2WZL331M◇◇△△3530                                          |
|                                      |                            | 804                                                          | 402                                                          | 0,20                                                | 1,5                           | 1,80                                                | 35 x 35                          | ECS2WZL331M◇◇△△3535                                          |
|                                      | 330                        | 681                                                          | 340                                                          | 0,20                                                | 1,5                           | 1,31                                                | 30 x 45                          | ECS2WZL391M◇◇△△3045                                          |
|                                      |                            | 681                                                          | 340                                                          | 0,20                                                | 1,5                           | 1,70                                                | 35 x 35                          | ECS2WZL391M◇◇△△3535                                          |
|                                      |                            | 681                                                          | 340                                                          | 0,20                                                | 1,5                           | 2,00                                                | 35 x 40                          | ECS2WZL391M◇◇△△3540                                          |
|                                      | 390                        | 565                                                          | 282                                                          | 0,20                                                | 1,5                           | 2,00                                                | 30 x 50                          | ECS2WZL471M◇◇△△3050                                          |
|                                      |                            | 565                                                          | 282                                                          | 0,20                                                | 1,5                           | 1,60                                                | 35 x 40                          | ECS2WZL471M◇◇△△3540                                          |
|                                      |                            | 565                                                          | 282                                                          | 0,20                                                | 1,5                           | 2,00                                                | 35 x 45                          | ECS2WZL471M◇◇△△3545                                          |
|                                      |                            | 565                                                          | 282                                                          | 0,20                                                | 1,5                           | 2,20                                                | 35 x 50                          | ECS2WZL471M◇◇△△3550                                          |
|                                      |                            | 565                                                          | 282                                                          | 0,20                                                | 1,5                           | 1,50                                                | 40 x 40                          | ECS2WZL471M◇◇△△4040                                          |
|                                      | 470                        | 474                                                          | 237                                                          | 0,20                                                | 1,5                           | 2,10                                                | 35 x 50                          | ECS2WZL561M◇◇△△3550                                          |
|                                      |                            | 474                                                          | 237                                                          | 0,20                                                | 1,5                           | 2,10                                                | 40 x 50                          | ECS2WZL561M◇◇△△4050                                          |
|                                      | 560                        | 391                                                          | 196                                                          | 0,20                                                | 1,5                           | 2,50                                                | 35 x 60                          | ECS2WZL681M◇◇△△3560                                          |
|                                      |                            | 391                                                          | 196                                                          | 0,20                                                | 1,5                           | 2,40                                                | 40 x 55                          | ECS2WZL681M◇◇△△4055                                          |
|                                      | 680                        | 324                                                          | 162                                                          | 0,20                                                | 1,5                           | 2,70                                                | 35 x 70                          | ECS2WZL821M◇◇△△3570                                          |
|                                      |                            | 324                                                          | 162                                                          | 0,20                                                | 1,5                           | 2,80                                                | 40 x 70                          | ECS2WZL821M◇◇△△4070                                          |
|                                      |                            | 324                                                          | 162                                                          | 0,20                                                | 1,5                           | 3,00                                                | 45 x 45                          | ECS2WZL821M◇◇△△4545                                          |
|                                      |                            | 266                                                          | 139                                                          | 0,20                                                | 1,5                           | 3,40                                                | 35 x 105                         | ECS2WZL102M◇◇△△35105                                         |
|                                      | 820                        | 266                                                          | 139                                                          | 0,20                                                | 1,5                           | 4,00                                                | 40 x 80                          | ECS2WZL102M◇◇△△4080                                          |
|                                      |                            | 222                                                          | 114                                                          | 0,20                                                | 1,5                           | 3,50                                                | 40 x 90                          | ECS2WZL122M◇◇△△4090                                          |
|                                      | 1 000                      | 222                                                          | 114                                                          | 0,20                                                | 1,5                           | 4,50                                                | 40 x 100                         | ECS2WZL122M◇◇△△40100                                         |
|                                      |                            | 1 500                                                        | 177                                                          | 100                                                 | 0,20                          | 1,5                                                 | 3,80                             | 40 x 100                                                     |

|                    |     |      |      |      |     |      |         |                     |
|--------------------|-----|------|------|------|-----|------|---------|---------------------|
| 420<br>(470)<br>2X | 100 | 2653 | 1300 | 0,20 | 0,4 | 0,70 | 22 x 30 | ECS2XZL101M◇◇△△2230 |
|                    |     | 2653 | 1300 | 0,20 | 0,4 | 0,60 | 25 x 25 | ECS2XZL101M◇◇△△2525 |
|                    |     | 2653 | 1300 | 0,20 | 0,4 | 0,60 | 30 x 20 | ECS2XZL101M◇◇△△3020 |
|                    |     | 2211 | 1100 | 0,20 | 0,5 | 0,71 | 25 x 30 | ECS2XZL121M◇◇△△2530 |
|                    | 120 | 1769 | 890  | 0,20 | 0,6 | 0,78 | 22 x 40 | ECS2XZL151M◇◇△△2240 |
|                    |     | 1769 | 890  | 0,20 | 0,6 | 0,72 | 25 x 35 | ECS2XZL151M◇◇△△2535 |
|                    |     | 1769 | 890  | 0,20 | 0,6 | 0,72 | 30 x 25 | ECS2XZL151M◇◇△△3025 |
|                    |     | 1769 | 890  | 0,20 | 0,6 | 0,72 | 35 x 30 | ECS2XZL151M◇◇△△3530 |
|                    | 150 | 1474 | 737  | 0,20 | 0,8 | 0,81 | 25 x 30 | ECS2XZL181M◇◇△△2530 |
|                    |     | 1206 | 603  | 0,20 | 0,9 | 0,90 | 25 x 40 | ECS2XZL221M◇◇△△2540 |
|                    |     | 1206 | 603  | 0,20 | 0,9 | 0,85 | 30 x 35 | ECS2XZL221M◇◇△△3035 |
|                    |     | 1206 | 603  | 0,20 | 0,9 | 0,85 | 35 x 25 | ECS2XZL221M◇◇△△3525 |
|                    | 180 | 983  | 492  | 0,20 | 1,1 | 0,90 | 25 x 45 | ECS2XZL271M◇◇△△2545 |
|                    |     | 983  | 492  | 0,20 | 1,1 | 1,10 | 25 x 50 | ECS2XZL271M◇◇△△2550 |
|                    |     | 804  | 402  | 0,20 | 1,4 | 1,20 | 30 x 45 | ECS2XZL331M◇◇△△3045 |
|                    |     | 804  | 402  | 0,20 | 1,4 | 1,20 | 35 x 35 | ECS2XZL331M◇◇△△3535 |
|                    | 220 | 681  | 340  | 0,20 | 1,5 | 1,30 | 30 x 50 | ECS2XZL391M◇◇△△3050 |
|                    |     | 565  | 282  | 0,20 | 1,5 | 1,60 | 30 x 55 | ECS2XZL471M◇◇△△3055 |
|                    |     | 565  | 282  | 0,20 | 1,5 | 1,40 | 35 x 45 | ECS2XZL471M◇◇△△3545 |
|                    |     | 474  | 237  | 0,20 | 1,5 | 1,70 | 30 x 60 | ECS2XZL561M◇◇△△3060 |
|                    | 270 | 474  | 237  | 0,20 | 1,5 | 1,80 | 35 x 55 | ECS2XZL561M◇◇△△3555 |
|                    |     | 391  | 196  | 0,20 | 1,5 | 2,50 | 35 x 50 | ECS2XZL681M◇◇△△3550 |
|                    |     | 391  | 196  | 0,20 | 1,5 | 3,30 | 35 x 55 | ECS2XZL681M◇◇△△3555 |

|                    |     |      |     |      |     |      |         |                     |
|--------------------|-----|------|-----|------|-----|------|---------|---------------------|
| 500<br>(550)<br>2H | 180 | 1474 | 737 | 0,20 | 0,9 | 1,10 | 35 x 30 | ECS2HZL181M◇◇△△3530 |
|                    | 330 | 804  | 402 | 0,20 | 1,5 | 1,30 | 30 x 50 | ECS2HZL331M◇◇△△3050 |
|                    | 390 | 681  | 341 | 0,20 | 1,5 | 1,70 | 35 x 50 | ECS2HZL391M◇◇△△3550 |
|                    | 470 | 565  | 286 | 0,20 | 1,5 | 1,70 | 35 x 50 | ECS2HZL471M◇◇△△3550 |
|                    |     | 565  | 286 | 0,20 | 1,5 | 1,80 | 35 x 55 | ECS2HZL471M◇◇△△3555 |
|                    |     | 565  | 286 | 0,20 | 1,5 | 2,00 | 35 x 60 | ECS2HZL471M◇◇△△3560 |
|                    | 560 | 474  | 241 | 0,20 | 1,5 | 1,80 | 35 x 60 | ECS2HZL561M◇◇△△3560 |
|                    |     | 474  | 241 | 0,20 | 1,5 | 2,20 | 40 x 60 | ECS2HZL561M◇◇△△4060 |
|                    | 680 | 391  | 200 | 0,20 | 1,5 | 2,50 | 35 x 80 | ECS2HZL681M◇◇△△3580 |
|                    | 820 | 324  | 165 | 0,20 | 1,5 | 2,70 | 35 x 90 | ECS2HZL821M◇◇△△3590 |



## ITEM CHARACTERISTICS

|                                                         |                                                                                                                                                                                                                                                              |           |                                                                                                                                                                                                                      |         |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Operating Temperature Range (°C)                        | -40 ~ +85                                                                                                                                                                                                                                                    | -25 ~ +85 | <br>The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval. |         |
| Voltage Range (V)                                       | 16 ~ 100                                                                                                                                                                                                                                                     | 160 ~ 500 |                                                                                                                                                                                                                      |         |
| Capacitance Range (µF)                                  | 39 ~ 47 000                                                                                                                                                                                                                                                  |           |                                                                                                                                                                                                                      |         |
| Capacitance Tolerance (20°C, 120Hz)                     | ± 20%                                                                                                                                                                                                                                                        |           |                                                                                                                                                                                                                      |         |
| Leakage Current                                         | After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.                                                                                                                                                   |           |                                                                                                                                                                                                                      |         |
| Stability at Low Temperature (Impedance Ratio at 120Hz) | Rated Voltage (V)                                                                                                                                                                                                                                            | 16~100    | 160~200                                                                                                                                                                                                              | 250~500 |
|                                                         | $Z_{-25^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$                                                                                                                                                                                                          | 4         |                                                                                                                                                                                                                      |         |
|                                                         | $Z_{-40^{\circ}\text{C}} / Z_{+20^{\circ}\text{C}}$                                                                                                                                                                                                          | 15        | -                                                                                                                                                                                                                    |         |
| Fast Charge-Discharge                                   |  Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray |           |                                                                                                                                                                                                                      |         |

The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

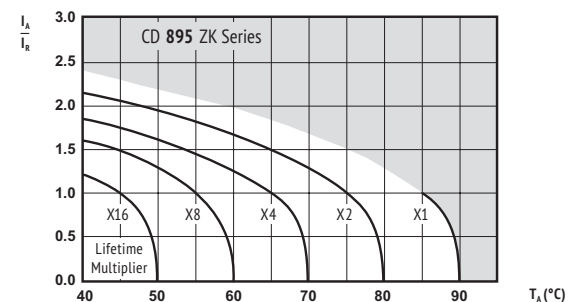
| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                          | SHELF LIFE                            |                                                                        |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|------------------------------------------------------------------------|
| Lifetime                                                                | 14 000h                               | > 150 000h                        | 6 000h                                | 9 000h                                  | 1 000h                                |                                                                        |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value           | Not more than specified value         |                                                                        |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 20% of initial value           | Within ± 15% of initial value         |                                                                        |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value   | Not more than 150% of specified value |                                                                        |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$1,5 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$I_R = 0$<br>85°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>85°C        | After test:<br>$U_R$ to be applied for 30 min > 24h before measurement |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency<br>Rated Voltage (V) | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz | ≥50kHz |
|--------------------------------|------|-------|-------|------|-------|--------|
| ≤ 100                          | 0,95 | 1,00  | 1,07  | 1,13 | 1,19  | 1,20   |
| 160 ~ 250                      | 0,87 | 1,00  | 1,17  | 1,32 | 1,45  | 1,50   |
| ≥ 350                          | 0,80 | 1,00  | 1,16  | 1,30 | 1,41  | 1,43   |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 85°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

Max. Current Snap-In Terminal: 15A. For more current use Lug-Terminals.

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>øD x L<br>(mm) | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|--------------------------------------|-----------------------------------------------------------|------------------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                                | (mΩ)                                                                |                                             | (mA)                                 | (Arms)                                                    |                        |                                                                               |
| 16<br>(20)<br>1C                            | 6 800                               | 98                                                                  | 69                                                                  | 0,50                                        | 1,1                                  | 1,68                                                      | 22 x 25                | ECS1CZK682M◇◇△△2225                                                           |
|                                             |                                     | 67                                                                  | 47                                                                  | 0,50                                        | 1,5                                  | 2,09                                                      | 22 x 30                | ECS1CZK103M◇◇△△2230                                                           |
|                                             |                                     | 67                                                                  | 47                                                                  | 0,50                                        | 1,5                                  | 2,09                                                      | 25 x 25                | ECS1CZK103M◇◇△△2525                                                           |
|                                             | 10 000                              | 56                                                                  | 39                                                                  | 0,50                                        | 1,5                                  | 2,39                                                      | 22 x 35                | ECS1CZK123M◇◇△△2235                                                           |
|                                             |                                     | 56                                                                  | 39                                                                  | 0,50                                        | 1,5                                  | 2,41                                                      | 25 x 30                | ECS1CZK123M◇◇△△2530                                                           |
|                                             |                                     | 56                                                                  | 39                                                                  | 0,50                                        | 1,5                                  | 2,50                                                      | 30 x 25                | ECS1CZK123M◇◇△△3025                                                           |
|                                             | 12 000                              | 45                                                                  | 31                                                                  | 0,50                                        | 1,5                                  | 2,77                                                      | 22 x 40                | ECS1CZK153M◇◇△△2240                                                           |
|                                             |                                     | 45                                                                  | 31                                                                  | 0,50                                        | 1,5                                  | 2,81                                                      | 25 x 35                | ECS1CZK153M◇◇△△2535                                                           |
|                                             |                                     | 37                                                                  | 26                                                                  | 0,50                                        | 1,5                                  | 3,13                                                      | 22 x 45                | ECS1CZK183M◇◇△△2245                                                           |
|                                             | 15 000                              | 37                                                                  | 26                                                                  | 0,50                                        | 1,5                                  | 3,19                                                      | 25 x 40                | ECS1CZK183M◇◇△△2540                                                           |
|                                             |                                     | 37                                                                  | 26                                                                  | 0,50                                        | 1,5                                  | 3,15                                                      | 30 x 30                | ECS1CZK183M◇◇△△3030                                                           |
|                                             |                                     | 37                                                                  | 26                                                                  | 0,50                                        | 1,5                                  | 3,26                                                      | 35 x 25                | ECS1CZK183M◇◇△△3525                                                           |
|                                             | 18 000                              | 31                                                                  | 22                                                                  | 0,50                                        | 1,5                                  | 3,57                                                      | 25 x 45                | ECS1CZK223M◇◇△△2545                                                           |
|                                             |                                     | 31                                                                  | 22                                                                  | 0,50                                        | 1,5                                  | 3,56                                                      | 30 x 35                | ECS1CZK223M◇◇△△3035                                                           |
|                                             |                                     | 25                                                                  | 18                                                                  | 0,50                                        | 1,5                                  | 4,00                                                      | 25 x 50                | ECS1CZK273M◇◇△△2550                                                           |
|                                             | 22 000                              | 25                                                                  | 18                                                                  | 0,50                                        | 1,5                                  | 4,02                                                      | 30 x 40                | ECS1CZK273M◇◇△△3040                                                           |
|                                             |                                     | 25                                                                  | 18                                                                  | 0,50                                        | 1,5                                  | 3,92                                                      | 35 x 30                | ECS1CZK273M◇◇△△3530                                                           |
|                                             |                                     | 21                                                                  | 15                                                                  | 0,50                                        | 1,5                                  | 4,52                                                      | 30 x 45                | ECS1CZK333M◇◇△△3045                                                           |
|                                             | 27 000                              | 21                                                                  | 15                                                                  | 0,50                                        | 1,5                                  | 4,45                                                      | 35 x 35                | ECS1CZK333M◇◇△△3535                                                           |
|                                             |                                     | 18                                                                  | 12                                                                  | 0,50                                        | 1,5                                  | 4,98                                                      | 30 x 50                | ECS1CZK393M◇◇△△3050                                                           |
|                                             |                                     | 18                                                                  | 12                                                                  | 0,50                                        | 1,5                                  | 4,96                                                      | 35 x 40                | ECS1CZK393M◇◇△△3540                                                           |
|                                             | 39 000                              | 15                                                                  | 10                                                                  | 0,50                                        | 1,5                                  | 5,53                                                      | 35 x 45                | ECS1CZK473M◇◇△△3545                                                           |

|                  |        |     |    |      |     |      |         |                     |
|------------------|--------|-----|----|------|-----|------|---------|---------------------|
| 25<br>(32)<br>1E | 4 700  | 113 | 80 | 0,40 | 1,2 | 1,63 | 22 x 25 | ECS1EZK472M◇◇△△2225 |
|                  |        | 79  | 55 | 0,40 | 1,5 | 2,01 | 22 x 30 | ECS1EZK682M◇◇△△2230 |
|                  |        | 79  | 55 | 0,40 | 1,5 | 2,01 | 25 x 25 | ECS1EZK682M◇◇△△2525 |
|                  | 6 800  | 65  | 46 | 0,40 | 1,5 | 2,25 | 22 x 35 | ECS1EZK822M◇◇△△2235 |
|                  |        | 65  | 46 | 0,40 | 1,5 | 2,27 | 25 x 30 | ECS1EZK822M◇◇△△2530 |
|                  |        | 65  | 46 | 0,40 | 1,5 | 2,36 | 30 x 25 | ECS1EZK822M◇◇△△3025 |
|                  | 8 200  | 54  | 38 | 0,40 | 1,5 | 2,52 | 22 x 40 | ECS1EZK103M◇◇△△2240 |
|                  |        | 54  | 38 | 0,40 | 1,5 | 2,56 | 25 x 35 | ECS1EZK103M◇◇△△2535 |
|                  |        | 45  | 31 | 0,40 | 1,5 | 2,83 | 22 x 45 | ECS1EZK123M◇◇△△2245 |
|                  | 10 000 | 45  | 31 | 0,40 | 1,5 | 2,88 | 25 x 40 | ECS1EZK123M◇◇△△2540 |
|                  |        | 45  | 31 | 0,40 | 1,5 | 2,84 | 30 x 30 | ECS1EZK123M◇◇△△3030 |
|                  |        | 45  | 31 | 0,40 | 1,5 | 2,94 | 35 x 25 | ECS1EZK123M◇◇△△3525 |
|                  | 12 000 | 36  | 25 | 0,40 | 1,5 | 3,31 | 25 x 45 | ECS1EZK153M◇◇△△2545 |
|                  |        | 36  | 25 | 0,40 | 1,5 | 3,29 | 30 x 35 | ECS1EZK153M◇◇△△3035 |
|                  |        | 36  | 25 | 0,40 | 1,5 | 3,38 | 35 x 30 | ECS1EZK153M◇◇△△3530 |
|                  | 15 000 | 30  | 21 | 0,40 | 1,5 | 3,72 | 25 x 50 | ECS1EZK183M◇◇△△2550 |
|                  |        | 30  | 21 | 0,40 | 1,5 | 3,72 | 30 x 40 | ECS1EZK183M◇◇△△3040 |
|                  |        | 25  | 17 | 0,40 | 1,5 | 4,45 | 30 x 45 | ECS1EZK223M◇◇△△3045 |
|                  | 18 000 | 25  | 17 | 0,40 | 1,5 | 4,16 | 35 x 35 | ECS1EZK223M◇◇△△3535 |
|                  |        | 20  | 14 | 0,40 | 1,5 | 4,99 | 35 x 45 | ECS1EZK273M◇◇△△3545 |
|                  |        | 17  | 12 | 0,40 | 1,5 | 5,66 | 35 x 50 | ECS1EZK333M◇◇△△3550 |

|                  |        |     |    |      |     |      |         |                     |
|------------------|--------|-----|----|------|-----|------|---------|---------------------|
| 35<br>(44)<br>1V | 3 300  | 141 | 99 | 0,35 | 1,2 | 1,50 | 22 x 25 | ECS1VZK332M◇◇△△2225 |
|                  |        | 120 | 84 | 0,35 | 1,4 | 1,73 | 22 x 30 | ECS1VZK392M◇◇△△2230 |
|                  |        | 99  | 70 | 0,35 | 1,5 | 1,87 | 25 x 25 | ECS1VZK472M◇◇△△2525 |
|                  | 4 700  | 83  | 59 | 0,35 | 1,5 | 2,12 | 22 x 35 | ECS1VZK562M◇◇△△2235 |
|                  |        | 83  | 59 | 0,35 | 1,5 | 2,14 | 25 x 30 | ECS1VZK562M◇◇△△2530 |
|                  |        | 83  | 59 | 0,35 | 1,5 | 2,22 | 30 x 25 | ECS1VZK562M◇◇△△3025 |
|                  | 5 600  | 69  | 48 | 0,35 | 1,5 | 2,39 | 22 x 40 | ECS1VZK682M◇◇△△2240 |
|                  |        | 69  | 48 | 0,35 | 1,5 | 2,43 | 25 x 35 | ECS1VZK682M◇◇△△2535 |
|                  |        | 57  | 40 | 0,35 | 1,5 | 2,80 | 22 x 50 | ECS1VZK822M◇◇△△2250 |
|                  | 6 800  | 57  | 40 | 0,35 | 1,5 | 2,73 | 25 x 40 | ECS1VZK822M◇◇△△2540 |
|                  |        | 57  | 40 | 0,35 | 1,5 | 2,69 | 30 x 30 | ECS1VZK822M◇◇△△3030 |
|                  |        | 57  | 40 | 0,35 | 1,5 | 2,92 | 35 x 25 | ECS1VZK822M◇◇△△3525 |
|                  | 8 200  | 47  | 33 | 0,35 | 1,5 | 3,07 | 25 x 45 | ECS1VZK103M◇◇△△2545 |
|                  |        | 47  | 33 | 0,35 | 1,5 | 3,07 | 30 x 35 | ECS1VZK103M◇◇△△3035 |
|                  |        | 39  | 28 | 0,35 | 1,5 | 3,42 | 25 x 50 | ECS1VZK123M◇◇△△2550 |
|                  | 10 000 | 39  | 28 | 0,35 | 1,5 | 3,44 | 30 x 40 | ECS1VZK123M◇◇△△3040 |
|                  |        | 39  | 28 | 0,35 | 1,5 | 3,36 | 35 x 30 | ECS1VZK123M◇◇△△3530 |
|                  |        | 31  | 22 | 0,35 | 1,5 | 3,93 | 30 x 45 | ECS1VZK153M◇◇△△3045 |
|                  | 12 000 | 31  | 22 | 0,35 | 1,5 | 3,88 | 35 x 35 | ECS1VZK153M◇◇△△3535 |
|                  |        | 26  | 19 | 0,35 | 1,5 | 4,37 | 35 x 40 | ECS1VZK183M◇◇△△3540 |
|                  |        | 22  | 15 | 0,35 | 1,5 | 5,17 | 35 x 50 | ECS1VZK223M◇◇△△3550 |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>øD x L<br>(mm) | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|--------------------------------------|-----------------------------------------------------------|------------------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                                | (mΩ)                                                                |                                             | (mA)                                 | (Arms)                                                    |                        |                                                                               |
| 50<br>(63)<br>1H                            | 1 800                               | 222                                                                 | 155                                                                 | 0,30                                        | 0,9                                  | 1,37                                                      | 22 x 25                | ECS1HZK182M◇◇△△2225                                                           |
|                                             |                                     | 181                                                                 | 127                                                                 | 0,30                                        | 1,1                                  | 1,53                                                      | 22 x 30                | ECS1HZK222M◇◇△△2230                                                           |
|                                             |                                     | 148                                                                 | 104                                                                 | 0,30                                        | 1,4                                  | 1,79                                                      | 22 x 30                | ECS1HZK272M◇◇△△2230                                                           |
|                                             | 2 200                               | 148                                                                 | 104                                                                 | 0,30                                        | 1,4                                  | 1,79                                                      | 25 x 25                | ECS1HZK272M◇◇△△2525                                                           |
|                                             |                                     | 121                                                                 | 85                                                                  | 0,30                                        | 1,5                                  | 2,05                                                      | 22 x 35                | ECS1HZK332M◇◇△△2235                                                           |
|                                             |                                     | 121                                                                 | 85                                                                  | 0,30                                        | 1,5                                  | 2,10                                                      | 25 x 30                | ECS1HZK332M◇◇△△2530                                                           |
|                                             | 2 700                               | 103                                                                 | 72                                                                  | 0,30                                        | 1,5                                  | 2,36                                                      | 22 x 40                | ECS1HZK392M◇◇△△2240                                                           |
|                                             |                                     | 103                                                                 | 72                                                                  | 0,30                                        | 1,5                                  | 2,39                                                      | 25 x 35                | ECS1HZK392M◇◇△△2535                                                           |
|                                             |                                     | 103                                                                 | 72                                                                  | 0,30                                        | 1,5                                  | 2,33                                                      | 30 x 25                | ECS1HZK392M◇◇△△3025                                                           |
|                                             | 3 300                               | 85                                                                  | 60                                                                  | 0,30                                        | 1,5                                  | 2,69                                                      | 22 x 45                | ECS1HZK472M◇◇△△2245                                                           |
|                                             |                                     | 85                                                                  | 60                                                                  | 0,30                                        | 1,5                                  | 2,71                                                      | 30 x 30                | ECS1HZK472M◇◇△△3030                                                           |
|                                             |                                     | 85                                                                  | 60                                                                  | 0,30                                        | 1,5                                  | 2,80                                                      | 35 x 25                | ECS1HZK472M◇◇△△3525                                                           |
|                                             | 3 900                               | 72                                                                  | 50                                                                  | 0,30                                        | 1,5                                  | 3,03                                                      | 22 x 50                | ECS1HZK562M◇◇△△2250                                                           |
|                                             |                                     | 72                                                                  | 50                                                                  | 0,30                                        | 1,5                                  | 2,95                                                      | 25 x 40                | ECS1HZK562M◇◇△△2540                                                           |
|                                             |                                     | 72                                                                  | 50                                                                  | 0,30                                        | 1,5                                  | 3,10                                                      | 30 x 35                | ECS1HZK562M◇◇△△3035                                                           |
|                                             | 4 700                               | 59                                                                  | 41                                                                  | 0,30                                        | 1,5                                  | 3,54                                                      | 25 x 50                | ECS1HZK682M◇◇△△2550                                                           |
|                                             |                                     | 59                                                                  | 41                                                                  | 0,30                                        | 1,5                                  | 3,56                                                      | 30 x 40                | ECS1HZK682M◇◇△△3040                                                           |
|                                             |                                     | 59                                                                  | 41                                                                  | 0,30                                        | 1,5                                  | 3,48                                                      | 35 x 30                | ECS1HZK682M◇◇△△3530                                                           |
|                                             | 5 600                               | 49                                                                  | 34                                                                  | 0,30                                        | 1,5                                  | 3,90                                                      | 30 x 45                | ECS1HZK822M◇◇△△3045                                                           |
|                                             |                                     | 49                                                                  | 34                                                                  | 0,30                                        | 1,5                                  | 3,84                                                      | 35 x 35                | ECS1HZK822M◇◇△△3535                                                           |
|                                             |                                     | 40                                                                  | 28                                                                  | 0,30                                        | 1,5                                  | 4,29                                                      | 30 x 50                | ECS1HZK103M◇◇△△3050                                                           |
|                                             | 6 800                               | 40                                                                  | 28                                                                  | 0,30                                        | 1,5                                  | 4,27                                                      | 35 x 40                | ECS1HZK103M◇◇△△3540                                                           |
|                                             |                                     | 34                                                                  | 24                                                                  | 0,30                                        | 1,5                                  | 4,73                                                      | 35 x 45                | ECS1HZK123M◇◇△△3545                                                           |

|                  |       |     |     |      |     |      |         |                     |
|------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 63<br>(79)<br>1J | 1 200 | 222 | 155 | 0,20 | 0,8 | 1,31 | 22 x 25 | ECS1JZK122M◇◇△△2225 |
|                  |       | 148 | 104 | 0,20 | 1,1 | 1,60 | 22 x 30 | ECS1JZK182M◇◇△△2230 |
|                  |       | 148 | 104 | 0,20 | 1,1 | 1,60 | 25 x 25 | ECS1JZK182M◇◇△△2525 |
|                  | 1 800 | 121 | 85  | 0,20 | 1,4 | 1,82 | 22 x 35 | ECS1JZK222M◇◇△△2235 |
|                  |       | 121 | 85  | 0,20 | 1,4 | 1,84 | 25 x 30 | ECS1JZK222M◇◇△△2530 |
|                  |       | 99  | 69  | 0,20 | 1,5 | 2,07 | 22 x 40 | ECS1JZK272M◇◇△△2240 |
|                  | 2 200 | 99  | 69  | 0,20 | 1,5 | 2,09 | 25 x 35 | ECS1JZK272M◇◇△△2535 |
|                  |       | 99  | 69  | 0,20 | 1,5 | 2,03 | 30 x 25 | ECS1JZK272M◇◇△△3025 |
|                  |       | 81  | 57  | 0,20 | 1,5 | 2,44 | 22 x 50 | ECS1JZK332M◇◇△△2250 |
|                  | 2 700 | 81  | 57  | 0,20 | 1,5 | 2,38 | 25 x 40 | ECS1JZK332M◇◇△△2540 |
|                  |       | 81  | 57  | 0,20 | 1,5 | 2,35 | 30 x 30 | ECS1JZK332M◇◇△△3030 |
|                  |       | 81  | 57  | 0,20 | 1,5 | 2,53 | 35 x 25 | ECS1JZK332M◇◇△△3525 |
|                  | 3 300 | 69  | 48  | 0,20 | 1,5 | 2,67 | 25 x 45 | ECS1JZK392M◇◇△△2545 |
|                  |       | 69  | 48  | 0,20 | 1,5 | 2,68 | 30 x 35 | ECS1JZK392M◇◇△△3035 |
|                  |       | 57  | 40  | 0,20 | 1,5 | 3,02 | 25 x 50 | ECS1JZK472M◇◇△△2550 |
|                  | 3 900 | 57  | 40  | 0,20 | 1,5 | 3,05 | 30 x 40 | ECS1JZK472M◇◇△△3040 |
|                  |       | 57  | 40  | 0,20 | 1,5 | 2,97 | 35 x 30 | ECS1JZK472M◇◇△△3530 |
|                  |       | 48  | 34  | 0,20 | 1,5 | 3,44 | 30 x 45 | ECS1JZK562M◇◇△△3045 |
|                  | 4 700 | 48  | 34  | 0,20 | 1,5 | 3,40 | 35 x 35 | ECS1JZK562M◇◇△△3535 |
|                  |       | 40  | 28  | 0,20 | 1,5 | 3,92 | 30 x 50 | ECS1JZK682M◇◇△△3050 |
|                  |       | 40  | 28  | 0,20 | 1,5 | 3,90 | 35 x 40 | ECS1JZK682M◇◇△△3540 |
|                  | 5 600 | 33  | 23  | 0,20 | 1,5 | 4,37 | 35 x 45 | ECS1JZK822M◇◇△△3545 |
|                  |       | 27  | 19  | 0,20 | 1,5 | 4,92 | 35 x 50 | ECS1JZK103M◇◇△△3550 |

|                   |       |       |      |      |      |         |                     |                     |
|-------------------|-------|-------|------|------|------|---------|---------------------|---------------------|
| 80<br>(100)<br>1K | 820   | 324   | 227  | 0,20 | 0,7  | 1,17    | 22 x 25             | ECS1KZK821M◇◇△△2225 |
|                   |       | 1 000 | 266  | 186  | 0,20 | 0,8     | 1,31                | 22 x 25             |
|                   | 1 200 | 222   | 155  | 0,20 | 1,0  | 1,46    | 22 x 30             | ECS1KZK122M◇◇△△2230 |
|                   |       | 222   | 155  | 0,20 | 1,0  | 1,46    | 25 x 25             | ECS1KZK122M◇◇△△2525 |
|                   | 1 500 | 177   | 124  | 0,20 | 1,2  | 1,69    | 22 x 35             | ECS1KZK152M◇◇△△2235 |
|                   |       | 177   | 124  | 0,20 | 1,2  | 1,70    | 25 x 30             | ECS1KZK152M◇◇△△2530 |
|                   | 1 800 | 148   | 104  | 0,20 | 1,4  | 1,92    | 22 x 40             | ECS1KZK182M◇◇△△2240 |
|                   |       | 148   | 104  | 0,20 | 1,4  | 1,90    | 30 x 25             | ECS1KZK182M◇◇△△3025 |
|                   | 2 200 | 121   | 85   | 0,20 | 1,5  | 2,19    | 22 x 45             | ECS1KZK222M◇◇△△2245 |
|                   |       | 121   | 85   | 0,20 | 1,5  | 2,11    | 25 x 35             | ECS1KZK222M◇◇△△2535 |
|                   |       | 121   | 85   | 0,20 | 1,5  | 2,20    | 30 x 30             | ECS1KZK222M◇◇△△3030 |
|                   |       | 121   | 85   | 0,20 | 1,5  | 2,28    | 35 x 25             | ECS1KZK222M◇◇△△3525 |
|                   | 2 700 | 99    | 69   | 0,20 | 1,5  | 2,55    | 25 x 45             | ECS1KZK272M◇◇△△2545 |
|                   |       | 99    | 69   | 0,20 | 1,5  | 2,55    | 30 x 35             | ECS1KZK272M◇◇△△3035 |
|                   | 3 300 | 81    | 57   | 0,20 | 1,5  | 2,90    | 25 x 50             | ECS1KZK332M◇◇△△2550 |
|                   |       | 81    | 57   | 0,20 | 1,5  | 2,92    | 30 x 40             | ECS1KZK332M◇◇△△3040 |
| 81                |       | 57    | 0,20 | 1,5  | 2,85 | 35 x 30 | ECS1KZK332M◇◇△△3530 |                     |
| 3 900             | 69    | 48    | 0,20 | 1,5  | 3,28 | 30 x 45 | ECS1KZK392M◇◇△△3045 |                     |
|                   | 69    | 48    | 0,20 | 1,5  | 3,22 | 35 x 35 | ECS1KZK392M◇◇△△3535 |                     |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                 | (mm)           |                                                                               |

|                   |       |       |    |      |      |      |         |                     |
|-------------------|-------|-------|----|------|------|------|---------|---------------------|
| 80<br>(100)<br>1K | 4 700 | 57    | 40 | 0,20 | 1,5  | 3,74 | 30 x 50 | ECS1KZK472M◇◇△△3050 |
|                   |       | 57    | 40 | 0,20 | 1,5  | 3,68 | 35 x 40 | ECS1KZK472M◇◇△△3540 |
|                   |       | 5 600 | 48 | 34   | 0,20 | 4,06 | 35 x 45 | ECS1KZK562M◇◇△△3545 |
|                   |       | 6 800 | 40 | 28   | 0,20 | 1,5  | 35 x 50 | ECS1KZK682M◇◇△△3550 |

|                    |       |     |     |      |     |      |         |                     |
|--------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 100<br>(125)<br>2A | 560   | 474 | 332 | 0,20 | 0,6 | 1,12 | 22 x 25 | ECS2AZK561M◇◇△△2225 |
|                    |       | 324 | 227 | 0,20 | 0,8 | 1,42 | 22 x 30 | ECS2AZK821M◇◇△△2230 |
|                    |       | 324 | 227 | 0,20 | 0,8 | 1,42 | 25 x 25 | ECS2AZK821M◇◇△△2525 |
|                    | 820   | 266 | 186 | 0,20 | 1,0 | 1,62 | 22 x 35 | ECS2AZK102M◇◇△△2235 |
|                    |       | 266 | 186 | 0,20 | 1,0 | 1,64 | 25 x 30 | ECS2AZK102M◇◇△△2530 |
|                    | 1 000 | 222 | 155 | 0,20 | 1,2 | 1,83 | 22 x 40 | ECS2AZK122M◇◇△△2240 |
|                    |       | 222 | 155 | 0,20 | 1,2 | 1,85 | 25 x 35 | ECS2AZK122M◇◇△△2535 |
|                    |       | 222 | 155 | 0,20 | 1,2 | 1,80 | 30 x 25 | ECS2AZK122M◇◇△△3025 |
|                    | 1 200 | 177 | 124 | 0,20 | 1,5 | 2,09 | 22 x 45 | ECS2AZK152M◇◇△△2245 |
|                    |       | 177 | 124 | 0,20 | 1,5 | 2,13 | 25 x 40 | ECS2AZK152M◇◇△△2540 |
|                    |       | 177 | 124 | 0,20 | 1,5 | 2,10 | 30 x 30 | ECS2AZK152M◇◇△△3030 |
|                    | 1 500 | 177 | 124 | 0,20 | 1,5 | 2,17 | 35 x 25 | ECS2AZK152M◇◇△△3525 |
|                    |       | 148 | 104 | 0,20 | 1,5 | 2,39 | 25 x 45 | ECS2AZK182M◇◇△△2545 |
|                    |       | 148 | 104 | 0,20 | 1,5 | 2,38 | 30 x 35 | ECS2AZK182M◇◇△△3035 |
|                    | 1 800 | 121 | 85  | 0,20 | 1,5 | 2,70 | 25 x 50 | ECS2AZK222M◇◇△△2550 |
|                    |       | 121 | 85  | 0,20 | 1,5 | 2,72 | 30 x 40 | ECS2AZK222M◇◇△△3040 |
|                    |       | 121 | 85  | 0,20 | 1,5 | 2,65 | 35 x 30 | ECS2AZK222M◇◇△△3530 |
|                    | 2 200 | 99  | 69  | 0,20 | 1,5 | 3,09 | 30 x 45 | ECS2AZK272M◇◇△△3045 |
|                    |       | 99  | 69  | 0,20 | 1,5 | 3,05 | 35 x 35 | ECS2AZK272M◇◇△△3535 |
|                    | 2 700 | 81  | 57  | 0,20 | 1,5 | 3,49 | 30 x 50 | ECS2AZK332M◇◇△△3050 |
|                    |       | 81  | 57  | 0,20 | 1,5 | 3,48 | 35 x 40 | ECS2AZK332M◇◇△△3540 |
|                    | 3 300 | 69  | 48  | 0,20 | 1,5 | 3,88 | 35 x 45 | ECS2AZK392M◇◇△△3545 |
|                    |       | 69  | 48  | 0,20 | 1,5 | 3,88 | 35 x 45 | ECS2AZK392M◇◇△△3545 |
|                    | 4 700 | 57  | 40  | 0,20 | 1,5 | 4,35 | 35 x 50 | ECS2AZK472M◇◇△△3550 |

|                    |       |     |     |      |     |      |         |                     |
|--------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 160<br>(200)<br>2C | 330   | 603 | 423 | 0,15 | 0,5 | 1,22 | 22 x 25 | ECS2CZK331M◇◇△△2225 |
|                    |       | 390 | 511 | 0,15 | 0,6 | 1,50 | 22 x 30 | ECS2CZK391M◇◇△△2230 |
|                    | 470   | 424 | 297 | 0,15 | 0,8 | 1,60 | 22 x 35 | ECS2CZK471M◇◇△△2235 |
|                    |       | 424 | 297 | 0,15 | 0,8 | 1,63 | 25 x 25 | ECS2CZK471M◇◇△△2525 |
|                    | 560   | 356 | 249 | 0,15 | 0,9 | 1,70 | 22 x 40 | ECS2CZK561M◇◇△△2240 |
|                    |       | 356 | 249 | 0,15 | 0,9 | 1,82 | 25 x 30 | ECS2CZK561M◇◇△△2530 |
|                    | 680   | 293 | 205 | 0,15 | 1,1 | 1,79 | 22 x 45 | ECS2CZK681M◇◇△△2245 |
|                    |       | 293 | 205 | 0,15 | 1,1 | 1,90 | 25 x 35 | ECS2CZK681M◇◇△△2535 |
|                    |       | 293 | 205 | 0,15 | 1,1 | 1,91 | 30 x 25 | ECS2CZK681M◇◇△△3025 |
|                    | 820   | 243 | 170 | 0,15 | 1,3 | 1,90 | 22 x 50 | ECS2CZK821M◇◇△△2250 |
|                    |       | 243 | 170 | 0,15 | 1,3 | 2,08 | 25 x 40 | ECS2CZK821M◇◇△△2540 |
|                    |       | 243 | 170 | 0,15 | 1,3 | 2,08 | 30 x 30 | ECS2CZK821M◇◇△△3030 |
|                    |       | 243 | 170 | 0,15 | 1,3 | 2,03 | 35 x 25 | ECS2CZK821M◇◇△△3525 |
|                    | 1 000 | 199 | 140 | 0,15 | 1,5 | 2,14 | 25 x 45 | ECS2CZK102M◇◇△△2545 |
|                    |       | 199 | 140 | 0,15 | 1,5 | 2,25 | 30 x 35 | ECS2CZK102M◇◇△△3035 |
|                    |       | 166 | 117 | 0,15 | 1,5 | 2,23 | 25 x 50 | ECS2CZK122M◇◇△△2550 |
|                    | 1 200 | 166 | 117 | 0,15 | 1,5 | 2,33 | 30 x 40 | ECS2CZK122M◇◇△△3040 |
|                    |       | 166 | 117 | 0,15 | 1,5 | 2,52 | 35 x 30 | ECS2CZK122M◇◇△△3530 |
|                    | 1 500 | 133 | 93  | 0,15 | 1,5 | 2,58 | 30 x 45 | ECS2CZK152M◇◇△△3045 |
|                    |       | 133 | 93  | 0,15 | 1,5 | 2,66 | 35 x 35 | ECS2CZK152M◇◇△△3535 |
|                    | 1 800 | 111 | 78  | 0,15 | 1,5 | 3,13 | 35 x 45 | ECS2CZK182M◇◇△△3545 |
|                    | 2 200 | 91  | 64  | 0,15 | 1,5 | 3,26 | 35 x 50 | ECS2CZK222M◇◇△△3550 |

|                    |     |     |     |      |     |      |         |                     |
|--------------------|-----|-----|-----|------|-----|------|---------|---------------------|
| 200<br>(250)<br>2D | 220 | 905 | 634 | 0,15 | 0,4 | 1,13 | 22 x 25 | ECS2DZK221M◇◇△△2225 |
|                    |     | 270 | 737 | 0,15 | 0,5 | 1,26 | 22 x 30 | ECS2DZK271M◇◇△△2230 |
|                    | 330 | 603 | 423 | 0,15 | 0,7 | 1,36 | 22 x 30 | ECS2DZK331M◇◇△△2230 |
|                    |     | 603 | 423 | 0,15 | 0,7 | 1,42 | 25 x 25 | ECS2DZK331M◇◇△△2525 |
|                    | 390 | 511 | 358 | 0,15 | 0,8 | 1,48 | 22 x 35 | ECS2DZK391M◇◇△△2235 |
|                    |     | 424 | 297 | 0,15 | 0,9 | 1,58 | 22 x 40 | ECS2DZK471M◇◇△△2240 |
|                    | 470 | 424 | 297 | 0,15 | 0,9 | 1,54 | 25 x 30 | ECS2DZK471M◇◇△△2530 |
|                    |     | 424 | 297 | 0,15 | 0,9 | 1,64 | 30 x 25 | ECS2DZK471M◇◇△△3025 |
|                    | 560 | 356 | 249 | 0,15 | 1,1 | 1,66 | 22 x 45 | ECS2DZK561M◇◇△△2245 |
|                    |     | 356 | 249 | 0,15 | 1,1 | 1,73 | 25 x 35 | ECS2DZK561M◇◇△△2535 |
|                    | 680 | 293 | 205 | 0,15 | 1,4 | 1,76 | 22 x 50 | ECS2DZK681M◇◇△△2250 |
|                    |     | 293 | 205 | 0,15 | 1,4 | 1,89 | 25 x 40 | ECS2DZK681M◇◇△△2540 |
|                    |     | 293 | 205 | 0,15 | 1,4 | 1,91 | 30 x 30 | ECS2DZK681M◇◇△△3030 |
|                    |     | 293 | 205 | 0,15 | 1,4 | 2,06 | 35 x 25 | ECS2DZK681M◇◇△△3525 |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇◇ = pin style & length<br>△△ = pin number<br>Details: Page 105 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------------------------|----------------|-------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                 | (mm)           |                                                                               |

|                    |       |     |     |      |     |      |         |                     |
|--------------------|-------|-----|-----|------|-----|------|---------|---------------------|
| 200<br>(250)<br>2D | 820   | 243 | 170 | 0,15 | 1,5 | 1,96 | 25 x 50 | ECS2DZK821M◇◇△△2550 |
|                    |       | 243 | 170 | 0,15 | 1,5 | 2,09 | 30 x 35 | ECS2DZK821M◇◇△△3035 |
|                    |       | 243 | 170 | 0,15 | 1,5 | 2,17 | 35 x 30 | ECS2DZK821M◇◇△△3530 |
|                    | 1 000 | 199 | 140 | 0,15 | 1,5 | 2,28 | 30 x 45 | ECS2DZK102M◇◇△△3045 |
|                    |       | 199 | 140 | 0,15 | 1,5 | 2,33 | 35 x 35 | ECS2DZK102M◇◇△△3535 |
|                    | 1 200 | 166 | 117 | 0,15 | 1,5 | 2,33 | 30 x 50 | ECS2DZK122M◇◇△△3050 |
|                    |       | 166 | 117 | 0,15 | 1,5 | 2,54 | 35 x 40 | ECS2DZK122M◇◇△△3540 |
|                    | 1 500 | 133 | 93  | 0,15 | 1,5 | 2,72 | 35 x 45 | ECS2DZK152M◇◇△△3545 |
|                    | 1 800 | 111 | 78  | 0,15 | 1,5 | 2,84 | 35 x 50 | ECS2DZK182M◇◇△△3550 |

|                    |       |      |     |      |     |      |         |                     |
|--------------------|-------|------|-----|------|-----|------|---------|---------------------|
| 250<br>(300)<br>2E | 180   | 1106 | 774 | 0,15 | 0,5 | 0,99 | 22 x 25 | ECS2EZK181M◇◇△△2225 |
|                    |       | 905  | 634 | 0,15 | 0,6 | 1,15 | 22 x 30 | ECS2EZK221M◇◇△△2230 |
|                    | 220   | 905  | 634 | 0,15 | 0,6 | 1,21 | 25 x 25 | ECS2EZK221M◇◇△△2525 |
|                    |       | 737  | 516 | 0,15 | 0,7 | 1,19 | 22 x 35 | ECS2EZK271M◇◇△△2235 |
|                    | 270   | 603  | 423 | 0,15 | 0,8 | 1,26 | 22 x 40 | ECS2EZK331M◇◇△△2240 |
|                    |       | 603  | 423 | 0,15 | 0,8 | 1,37 | 25 x 30 | ECS2EZK331M◇◇△△2530 |
|                    | 330   | 603  | 423 | 0,15 | 0,8 | 1,37 | 30 x 25 | ECS2EZK331M◇◇△△3025 |
|                    |       | 511  | 358 | 0,15 | 1,0 | 1,32 | 22 x 45 | ECS2EZK391M◇◇△△2245 |
|                    | 390   | 511  | 358 | 0,15 | 1,0 | 1,48 | 25 x 35 | ECS2EZK391M◇◇△△2535 |
|                    |       | 424  | 297 | 0,15 | 1,2 | 1,44 | 22 x 50 | ECS2EZK471M◇◇△△2250 |
|                    | 470   | 424  | 297 | 0,15 | 1,2 | 1,60 | 25 x 40 | ECS2EZK471M◇◇△△2540 |
|                    |       | 424  | 297 | 0,15 | 1,2 | 1,43 | 30 x 30 | ECS2EZK471M◇◇△△3030 |
|                    | 560   | 424  | 297 | 0,15 | 1,2 | 1,47 | 35 x 25 | ECS2EZK471M◇◇△△3525 |
|                    |       | 356  | 249 | 0,15 | 1,4 | 1,67 | 25 x 45 | ECS2EZK561M◇◇△△2545 |
|                    | 680   | 356  | 249 | 0,15 | 1,4 | 1,65 | 30 x 35 | ECS2EZK561M◇◇△△3035 |
|                    |       | 356  | 249 | 0,15 | 1,4 | 1,64 | 35 x 30 | ECS2EZK561M◇◇△△3530 |
|                    | 820   | 293  | 205 | 0,15 | 1,5 | 1,85 | 25 x 50 | ECS2EZK681M◇◇△△2550 |
|                    |       | 293  | 205 | 0,15 | 1,5 | 1,85 | 30 x 40 | ECS2EZK681M◇◇△△3040 |
|                    | 1 000 | 243  | 170 | 0,15 | 1,5 | 1,92 | 30 x 45 | ECS2EZK821M◇◇△△3045 |
|                    |       | 243  | 170 | 0,15 | 1,5 | 1,91 | 35 x 35 | ECS2EZK821M◇◇△△3535 |
|                    | 1 200 | 199  | 140 | 0,15 | 1,5 | 1,96 | 30 x 50 | ECS2EZK102M◇◇△△3050 |
|                    |       | 199  | 140 | 0,15 | 1,5 | 2,09 | 35 x 40 | ECS2EZK102M◇◇△△3540 |
|                    | 1 500 | 166  | 117 | 0,15 | 1,5 | 2,20 | 35 x 45 | ECS2EZK122M◇◇△△3545 |

|                    |      |      |      |      |      |         |                     |                     |
|--------------------|------|------|------|------|------|---------|---------------------|---------------------|
| 350<br>(400)<br>2V | 68   | 2926 | 1610 | 0,15 | 0,2  | 0,59    | 22 x 25             | ECS2VZK680M◇◇△△2225 |
|                    |      | 1990 | 1095 | 0,15 | 0,4  | 0,74    | 22 x 30             | ECS2VZK101M◇◇△△2230 |
|                    | 100  | 1990 | 1950 | 0,15 | 0,4  | 0,74    | 25 x 25             | ECS2VZK101M◇◇△△2525 |
|                    |      | 120  | 1658 | 912  | 0,15 | 0,4     | 0,77                | 22 x 35             |
|                    | 1327 |      | 730  | 0,15 | 0,5  | 0,83    | 22 x 40             | ECS2VZK151M◇◇△△2240 |
|                    | 150  | 1327 | 730  | 0,15 | 0,5  | 0,86    | 25 x 30             | ECS2VZK151M◇◇△△2530 |
|                    |      | 1327 | 730  | 0,15 | 0,5  | 0,86    | 30 x 25             | ECS2VZK151M◇◇△△3025 |
|                    | 180  | 1106 | 608  | 0,15 | 0,6  | 0,85    | 22 x 45             | ECS2VZK181M◇◇△△2245 |
|                    |      | 1106 | 608  | 0,15 | 0,6  | 0,93    | 25 x 35             | ECS2VZK181M◇◇△△2535 |
|                    | 220  | 1106 | 608  | 0,15 | 0,6  | 0,95    | 30 x 30             | ECS2VZK181M◇◇△△3030 |
|                    |      | 905  | 498  | 0,15 | 0,8  | 0,98    | 22 x 50             | ECS2VZK221M◇◇△△2250 |
|                    | 270  | 905  | 498  | 0,15 | 0,8  | 1,01    | 25 x 40             | ECS2VZK221M◇◇△△2540 |
|                    |      | 905  | 498  | 0,15 | 0,8  | 1,03    | 35 x 25             | ECS2VZK221M◇◇△△3525 |
|                    | 330  | 737  | 406  | 0,15 | 0,9  | 1,06    | 25 x 50             | ECS2VZK271M◇◇△△2550 |
|                    |      | 737  | 406  | 0,15 | 0,9  | 1,10    | 30 x 35             | ECS2VZK271M◇◇△△3035 |
|                    | 390  | 737  | 406  | 0,15 | 0,9  | 1,06    | 35 x 30             | ECS2VZK271M◇◇△△3530 |
| 603                |      | 332  | 0,15 | 1,2  | 1,22 | 30 x 45 | ECS2VZK331M◇◇△△3045 |                     |
| 470                | 603  | 332  | 0,15 | 1,2  | 1,22 | 35 x 35 | ECS2VZK331M◇◇△△3535 |                     |
|                    | 511  | 281  | 0,15 | 1,4  | 1,32 | 30 x 50 | ECS2VZK391M◇◇△△3050 |                     |
| 560                | 511  | 281  | 0,15 | 1,4  | 1,32 | 35 x 40 | ECS2VZK391M◇◇△△3540 |                     |
|                    | 424  | 233  | 0,15 | 1,5  | 1,42 | 35 x 45 | ECS2VZK471M◇◇△△3545 |                     |
|                    | 560  | 356  | 196  | 0,15 | 1,5  | 1,59    | 35 x 50             | ECS2VZK561M◇◇△△3550 |



| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇◇ = pin style & length<br>△△ = pin number<br><br>Details: Page 105 |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|----------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                             | (mm)                             |                                                                                       |
| 400<br>(450)<br>2G                   | 180                        | 1106                                                         | 575                                                          | 0,15                                                | 0,7                           | 0,82                                               | 22 x 50                          | ECS2GZK181M◇◇△△2250                                                                   |
|                                      |                            | 1106                                                         | 575                                                          | 0,15                                                | 0,7                           | 0,86                                               | 25 x 40                          | ECS2GZK181M◇◇△△2540                                                                   |
|                                      |                            | 1106                                                         | 575                                                          | 0,15                                                | 0,7                           | 0,87                                               | 30 x 30                          | ECS2GZK181M◇◇△△3030                                                                   |
|                                      |                            | 1106                                                         | 575                                                          | 0,15                                                | 0,7                           | 0,90                                               | 35 x 25                          | ECS2GZK181M◇◇△△3525                                                                   |
|                                      | 220                        | 905                                                          | 471                                                          | 0,15                                                | 0,9                           | 0,91                                               | 25 x 45                          | ECS2GZK221M◇◇△△2545                                                                   |
|                                      |                            | 905                                                          | 471                                                          | 0,15                                                | 0,9                           | 0,90                                               | 30 x 35                          | ECS2GZK221M◇◇△△3035                                                                   |
|                                      | 270                        | 737                                                          | 384                                                          | 0,15                                                | 1,1                           | 0,99                                               | 25 x 50                          | ECS2GZK271M◇◇△△2550                                                                   |
|                                      |                            | 737                                                          | 384                                                          | 0,15                                                | 1,1                           | 1,00                                               | 30 x 40                          | ECS2GZK271M◇◇△△3040                                                                   |
|                                      |                            | 737                                                          | 384                                                          | 0,15                                                | 1,1                           | 0,96                                               | 35 x 30                          | ECS2GZK271M◇◇△△3530                                                                   |
|                                      | 330                        | 603                                                          | 314                                                          | 0,15                                                | 1,3                           | 1,17                                               | 30 x 45                          | ECS2GZK331M◇◇△△3045                                                                   |
|                                      |                            | 603                                                          | 314                                                          | 0,15                                                | 1,3                           | 1,19                                               | 35 x 35                          | ECS2GZK331M◇◇△△3535                                                                   |
|                                      | 390                        | 511                                                          | 266                                                          | 0,15                                                | 1,5                           | 1,21                                               | 30 x 50                          | ECS2GZK391M◇◇△△3050                                                                   |
|                                      |                            | 511                                                          | 266                                                          | 0,15                                                | 1,5                           | 1,32                                               | 35 x 40                          | ECS2GZK391M◇◇△△3540                                                                   |
|                                      | 470                        | 424                                                          | 221                                                          | 0,15                                                | 1,5                           | 1,38                                               | 35 x 45                          | ECS2GZK471M◇◇△△3545                                                                   |
|                                      | 560                        | 356                                                          | 185                                                          | 0,15                                                | 1,5                           | 1,58                                               | 35 x 50                          | ECS2GZK561M◇◇△△3550                                                                   |

|                    |     |      |      |      |     |      |         |                     |
|--------------------|-----|------|------|------|-----|------|---------|---------------------|
| 450<br>(500)<br>2W | 56  | 4737 | 2369 | 0,20 | 0,3 | 0,49 | 22 x 25 | ECS2WZK560M◇◇△△2225 |
|                    | 68  | 3901 | 1951 | 0,20 | 0,3 | 0,59 | 22 x 30 | ECS2WZK680M◇◇△△2230 |
|                    |     | 3901 | 1951 | 0,20 | 0,3 | 0,63 | 25 x 25 | ECS2WZK680M◇◇△△2525 |
|                    | 82  | 3235 | 1618 | 0,20 | 0,4 | 0,67 | 22 x 35 | ECS2WZK820M◇◇△△2235 |
|                    | 100 | 2653 | 1327 | 0,20 | 0,5 | 0,74 | 22 x 40 | ECS2WZK101M◇◇△△2240 |
|                    |     | 2653 | 1327 | 0,20 | 0,5 | 0,74 | 25 x 30 | ECS2WZK101M◇◇△△2530 |
|                    |     | 2653 | 1327 | 0,20 | 0,5 | 0,82 | 30 x 25 | ECS2WZK101M◇◇△△3025 |
|                    | 120 | 2211 | 1106 | 0,20 | 0,5 | 0,77 | 22 x 45 | ECS2WZK121M◇◇△△2245 |
|                    |     | 2211 | 1106 | 0,20 | 0,5 | 0,77 | 25 x 35 | ECS2WZK121M◇◇△△2535 |
|                    | 150 | 1769 | 885  | 0,20 | 0,7 | 0,82 | 22 x 50 | ECS2WZK151M◇◇△△2250 |
|                    |     | 1769 | 885  | 0,20 | 0,7 | 0,86 | 25 x 40 | ECS2WZK151M◇◇△△2540 |
|                    |     | 1769 | 885  | 0,20 | 0,7 | 0,87 | 30 x 30 | ECS2WZK151M◇◇△△3030 |
|                    |     | 1769 | 885  | 0,20 | 0,7 | 0,90 | 35 x 25 | ECS2WZK151M◇◇△△3525 |
|                    | 180 | 1474 | 737  | 0,20 | 0,8 | 0,91 | 25 x 45 | ECS2WZK181M◇◇△△2545 |
|                    |     | 1474 | 737  | 0,20 | 0,8 | 0,90 | 30 x 35 | ECS2WZK181M◇◇△△3035 |
|                    | 220 | 1206 | 603  | 0,20 | 1,0 | 0,99 | 25 x 50 | ECS2WZK221M◇◇△△2550 |
|                    |     | 1206 | 603  | 0,20 | 1,0 | 1,00 | 30 x 40 | ECS2WZK221M◇◇△△3040 |
|                    |     | 1206 | 603  | 0,20 | 1,0 | 0,96 | 35 x 30 | ECS2WZK221M◇◇△△3530 |
|                    | 270 | 983  | 492  | 0,20 | 1,2 | 1,17 | 30 x 45 | ECS2WZK271M◇◇△△3045 |
|                    |     | 983  | 492  | 0,20 | 1,2 | 1,19 | 35 x 35 | ECS2WZK271M◇◇△△3535 |
|                    | 330 | 804  | 402  | 0,20 | 1,5 | 1,21 | 30 x 50 | ECS2WZK331M◇◇△△3050 |
|                    |     | 804  | 402  | 0,20 | 1,5 | 1,32 | 35 x 40 | ECS2WZK331M◇◇△△3540 |
|                    | 390 | 681  | 341  | 0,20 | 1,5 | 1,38 | 35 x 45 | ECS2WZK391M◇◇△△3545 |
|                    | 470 | 565  | 283  | 0,20 | 1,5 | 1,58 | 35 x 50 | ECS2WZK471M◇◇△△3550 |

|                    |     |      |      |      |     |      |         |                     |
|--------------------|-----|------|------|------|-----|------|---------|---------------------|
| 500<br>(550)<br>2H | 39  | 6802 | 3401 | 0,20 | 0,2 | 0,37 | 22 x 30 | ECS2HZK390M◇◇△△2230 |
|                    | 47  | 5644 | 2822 | 0,20 | 0,2 | 0,43 | 22 x 35 | ECS2HZK470M◇◇△△2235 |
|                    | 56  | 4737 | 2369 | 0,20 | 0,3 | 0,49 | 22 x 40 | ECS2HZK560M◇◇△△2240 |
|                    | 68  | 3901 | 1951 | 0,20 | 0,3 | 0,57 | 22 x 45 | ECS2HZK680M◇◇△△2245 |
|                    | 82  | 3235 | 1618 | 0,20 | 0,4 | 0,65 | 25 x 40 | ECS2HZK820M◇◇△△2540 |
|                    | 100 | 2653 | 1327 | 0,20 | 0,5 | 0,70 | 25 x 45 | ECS2HZK101M◇◇△△2545 |
|                    | 120 | 2211 | 1106 | 0,20 | 0,6 | 0,81 | 25 x 50 | ECS2HZK121M◇◇△△2550 |
|                    |     | 2211 | 1106 | 0,20 | 0,6 | 0,76 | 35 x 30 | ECS2HZK121M◇◇△△3530 |
|                    | 150 | 1769 | 885  | 0,20 | 0,8 | 0,89 | 30 x 40 | ECS2HZK151M◇◇△△3040 |
|                    | 180 | 1474 | 737  | 0,20 | 0,9 | 1,06 | 30 x 50 | ECS2HZK181M◇◇△△3050 |
|                    | 220 | 1206 | 603  | 0,20 | 1,1 | 1,18 | 35 x 45 | ECS2HZK221M◇◇△△3545 |
|                    | 270 | 983  | 492  | 0,20 | 1,4 | 1,35 | 35 x 50 | ECS2HZK271M◇◇△△3550 |





# ELECTROLYTIC CAPACITORS

*Screw Type*

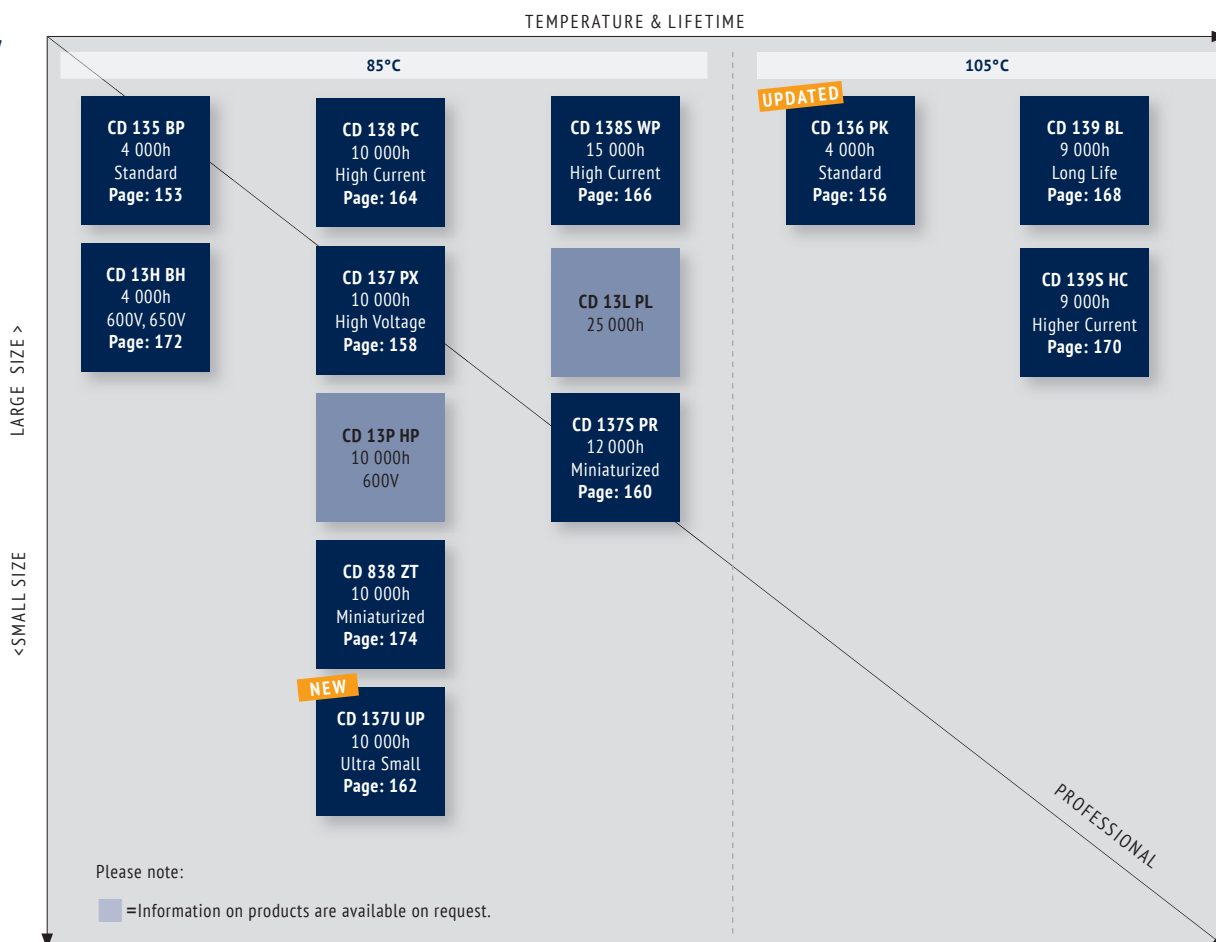
## OVERVIEW SCREW

149

|                                                    |     |
|----------------------------------------------------|-----|
| Portfolio: All Screw Type at a glance & Order Code | 150 |
| Technical Specifications                           | 151 |

| SERIES SCREW                | CODE | TYPE  | TEMPERATURE | VOLTAGE  | LIFETIME | INFO                             |     |
|-----------------------------|------|-------|-------------|----------|----------|----------------------------------|-----|
| CD 135                      | BP   | Screw | 85°C        | 10-500V  | 4 000h   | Standard                         | 153 |
| CD 136 <span>UPDATED</span> | PK   | Screw | 105°C       | 25-450V  | 4 000h   | Standard                         | 156 |
| CD 137                      | PX   | Screw | 85°C        | 400-550V | 10 000h  | Long Life, High Voltage          | 158 |
| CD 137S                     | PR   | Screw | 85°C        | 350-500V | 12 000h  | Miniaturized, Prolonged Lifetime | 160 |
| CD 137U <span>NEW</span>    | UP   | Screw | 85°C        | 400-450V | 10 000h  | Ultra Small                      | 162 |
| CD 138                      | PC   | Screw | 85°C        | 350-450V | 10 000h  | Long Life, High Current          | 164 |
| CD 138S                     | WP   | Screw | 85°C        | 350-500V | 15 000h  | Longest Life, Highest Currents   | 166 |
| CD 139                      | BL   | Screw | 105°C       | 350-450V | 9 000h   | Long Life 105°C                  | 168 |
| CD 139S                     | HC   | Screw | 105°C       | 350-450V | 9 000h   | Long Life 105°C, High Current    | 170 |
| CD 13H                      | BH   | Screw | 85°C        | 600-650V | 4 000h   | 600V, 650V                       | 172 |
| CD 838                      | ZT   | Screw | 85°C        | 350-450V | 10 000h  | Miniaturized, Long Life          | 174 |

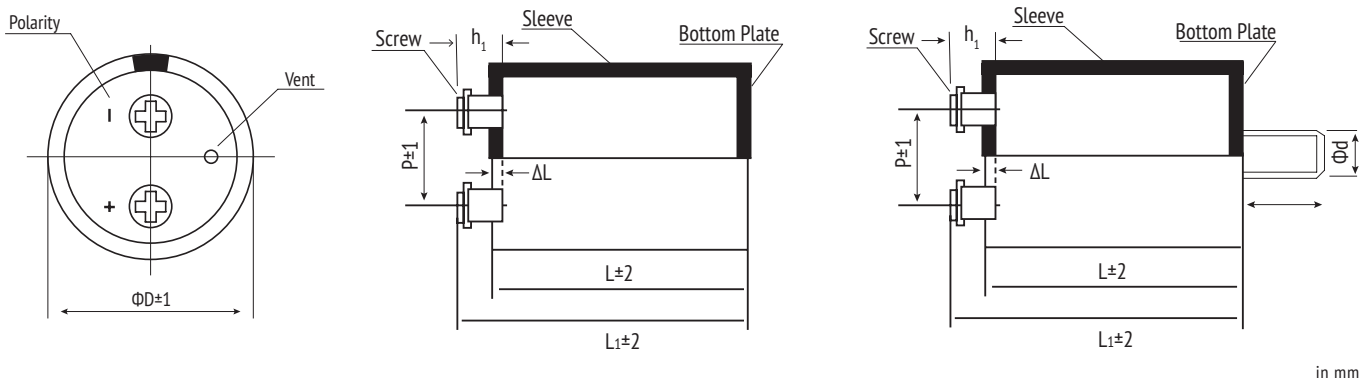
## SCREW



## ORDER CODE SCREW TYPE

| EC                                | G                | 2G                       | BP             | 102                 | M                        | B                                                | E        | 160     | A771                                            | -                       | JExxxxx                 |
|-----------------------------------|------------------|--------------------------|----------------|---------------------|--------------------------|--------------------------------------------------|----------|---------|-------------------------------------------------|-------------------------|-------------------------|
| Techno-<br>logy                   | Terminal<br>Type | Rated<br>Voltage<br>Code | Series<br>Code | Capacitance<br>Code | Capacitance<br>Tolerance | Mounting                                         | Diameter | Length  | For Terminal<br>Code see tables<br>on the right | Material<br>Code        | for<br>Specials<br>only |
| EC<br>= Electrolytic<br>Capacitor | Screw            | G                        | 10 1A          | CD 135 BP           | 100 101                  | ±20% M                                           | Bolt B   | 36 A    | 53 053                                          | -                       | -                       |
|                                   |                  | 16 1C                    | CD 136 PK      | 1 000 102           | ±10% K                   | Flat bottom, no bracket,<br>single sleeve N      | 40 B     | 65 065  |                                                 | PVC V                   |                         |
|                                   |                  | 25 1E                    | CD 137 PX      | 10 000 103          | +30/-10% Q               | Flat bottom, no bracket,<br>full double sleeve D | 51 C     | 96 096  |                                                 | PET E                   |                         |
|                                   |                  | 35 1V                    | CD 137S PR     |                     | +20/-0% R                | Flat bottom incl. 2<br>stoppers bracket I        | 64 D     | 100 100 |                                                 | Polyolefin O            |                         |
|                                   |                  | 40 1G                    | CD 137U UP     |                     | +20/-10% V               | Flat bottom incl. 3<br>stoppers bracket Y        | 77 E     | 115 115 |                                                 | Standard:<br>PVC Sleeve |                         |
|                                   |                  | 50 1H                    | CD 138 PC      |                     | +50/-10% T               |                                                  | 90 F     | 236 236 |                                                 |                         |                         |
|                                   |                  | 63 1J                    | CD 138S WP     |                     | ■ = preferred            | Details of Sleeving see<br>table on the right    | 101 G    |         |                                                 |                         |                         |
|                                   |                  | 80 1K                    | CD 139 BL      |                     |                          |                                                  |          |         |                                                 |                         |                         |
|                                   |                  | 100 2A                   | CD 139S HC     |                     |                          |                                                  |          |         |                                                 |                         |                         |
|                                   |                  | 200 2D                   | CD 13H BH      |                     |                          |                                                  |          |         |                                                 |                         |                         |
|                                   |                  | 250 2E                   | CD 838 ZT      |                     |                          |                                                  |          |         |                                                 |                         |                         |
|                                   |                  | 350 2V                   |                |                     |                          |                                                  |          |         |                                                 |                         |                         |
|                                   |                  | 400 2G                   |                |                     |                          |                                                  |          |         |                                                 |                         |                         |
|                                   |                  | 420 2X                   |                |                     |                          |                                                  |          |         |                                                 |                         |                         |
|                                   |                  | 450 2W                   |                |                     |                          |                                                  |          |         |                                                 |                         |                         |
|                                   |                  | 500 2H                   |                |                     |                          |                                                  |          |         |                                                 |                         |                         |
|                                   |                  | 550 2Y                   |                |                     |                          |                                                  |          |         |                                                 |                         |                         |
|                                   |                  | 575 2Z                   |                |                     |                          |                                                  |          |         |                                                 |                         |                         |
|                                   |                  | 600 2S                   |                |                     |                          |                                                  |          |         |                                                 |                         |                         |
|                                   |                  | 650 S6                   |                |                     |                          |                                                  |          |         |                                                 |                         |                         |

## TECHNICAL SPECIFICATION



in mm

## LENGTH

|                                                             |
|-------------------------------------------------------------|
| $L_1 = L + h_1 - \Delta L$                                  |
| $L_1$ = Total Capacitor Length                              |
| $L$ = Capacitor Case Length (see Capacitor Table)           |
| $h_1$ = Terminal Length (see Terminal Code)                 |
| $\Delta L$ = Housing Correction (see Case & Mounting Style) |

## CASE & MOUNTING STYLE

| Order Code | Mounting Style          | Sleeving Style (typical design)                                                                                                                              | Housing Correction $\Delta L$ (in mm) |
|------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| B          | Bolt                    | Single Sleeve                                                                                                                                                | 0,8                                   |
| N          | Flat bottom, no bracket | Single Sleeve                                                                                                                                                | 0,8                                   |
| D          | Flat bottom, no bracket | Full length Double Sleeve                                                                                                                                    | 0,4                                   |
| I          | I-Type Bracket          | Diameter 36: Single Sleeve<br>Diameter 51-101: Ur < 350V: ½ length Double Sleeve<br>Ur ≥ 350V: full length Double Sleeve<br>Other Sleeve Versions on request | 0,8<br>0,6<br>0,4                     |
| Y          | Y-Type Bracket          | Ur < 350V: ½ length Double Sleeve<br>Ur ≥ 350V: full length Double Sleeve<br>Other Sleeve Versions on request                                                | 0,6<br>0,4                            |

| Bolt: | Ø D    | Ø d | l (mm) | Max. Torque (Nm) |
|-------|--------|-----|--------|------------------|
|       | Ø 36   | M8  | 12     | 4                |
|       | ≥ Ø 51 | M12 | 16     | 12,5             |

## SCREW TERMINAL (Hexagon Head)

| Dimension | Min. Thread Depth (mm) | Max. Torque (Nm) | Max. Ripple Current (A) |
|-----------|------------------------|------------------|-------------------------|
| M5 x 10   | 8,5                    | 3                | 60                      |
| M6 x 12   | 8,5                    | 4                | 100                     |
| M8 x 16   | 8,5                    | 6                | 100                     |

## CAPACITOR POSITION

Screw capacitors need to be mounted into an upright position.  
**!** If a horizontal position is needed please ensure the safety vent is located on the highest position (12 o'clock).

## TERMINAL CODE

| Terminal Code<br>(cont. page 152) | ØD  | Screw   | Pitch P | d <sub>1</sub> | d <sub>2</sub> | h <sub>1</sub> | h <sub>2</sub> |
|-----------------------------------|-----|---------|---------|----------------|----------------|----------------|----------------|
| A361                              | 36  | M5      | 12,7    | 8              | 11             | 6,8            | 1,8            |
| A511                              | 51  | M5      | 21,8    | 10             | 13,5           | 6,8            | 1,8            |
| A513                              | 51  | M5-/M6+ | 21,8    | 10             | 13,5           | 6,8            | 1,8            |
| D511                              | 51  | M5      | 21,8    | 10             | 13             | 5,5            | 0              |
| D512                              | 51  | M5      | 21,8    | 10             | 13             | 7,14           | 0              |
| E511                              | 51  | M5      | 21,8    | 10             | 13,5           | 6,8            | 1,8            |
| C641                              | 64  | M5      | 28,5    | 13             | 0              | 7,2            | 0              |
| D641                              | 64  | M5      | 28,2    | 13             | 15             | 6,4            | 0              |
| D642                              | 64  | M6      | 28,2    | 13             | 15             | 6,4            | 0              |
| D643                              | 64  | M5      | 28,2    | 13             | 15             | 7,14           | 0              |
| E641                              | 64  | M5      | 28,2    | 10             | 15,5           | 6,3            | 1,3            |
| E645                              | 64  | M5-/M6+ | 28,2    | 10             | 15,5           | 6,3            | 1,3            |
| B771                              | 77  | M6      | 31,4    | 17,2           | 0              | 3,17           | 0              |
| B773                              | 77  | M8      | 31,4    | 17,2           | 0              | 3,17           | 0              |
| B778                              | 77  | M5      | 31,4    | 17,2           | 0              | 10,4/6,4       | 0              |
| C771                              | 77  | M5      | 31,4    | 17,2           | 0              | 3,5            | 0              |
| C772                              | 77  | M6      | 31,4    | 17,2           | 0              | 3,5            | 0              |
| C774                              | 77  | M5      | 31,4    | 17,2           | 0              | 6,4            | 0              |
| C775                              | 77  | M6      | 31,4    | 17,2           | 0              | 6,4            | 0              |
| C779                              | 77  | M6      | 31,4    | 13             | 0              | 5,5            | 0              |
| D771                              | 77  | M5      | 31,4    | 13             | 15             | 6,4            | 0              |
| D774                              | 77  | M5      | 31,4    | 13             | 14,2           | 6,4            | 0              |
| D775                              | 77  | M5      | 31,4    | 13             | 15             | 7,14           | 0              |
| E772                              | 77  | M5      | 31,4    | 10             | 15,5           | 6,3            | 1,3            |
| A901                              | 90  | M5      | 31,4    | 10             | 15,5           | 6,3            | 1,3            |
| B901                              | 90  | M6      | 31,4    | 17,2           | 0              | 6,4            | 0              |
| B902                              | 90  | M5      | 31,4    | 17,2           | 0              | 6,4            | 0              |
| B903                              | 90  | M5      | 31,4    | 17,2           | 0              | 10,4/6,4       | 0              |
| C902                              | 90  | M6      | 31,4    | 17,2           | 0              | 6,4            | 0              |
| C906                              | 90  | M5      | 31,4    | 17,2           | 0              | 6,4            | 0              |
| D901                              | 90  | M5      | 31,4    | 10             | 13             | 5,5            | 0              |
| D902                              | 90  | M5      | 31,4    | 13             | 15             | 6,4            | 0              |
| D903                              | 90  | M6      | 31,4    | 13             | 15             | 6,4            | 0              |
| E903                              | 90  | M5      | 31,4    | 10             | 15,5           | 6,3            | 1,3            |
| A101                              | 101 | M8      | 41,5    | 17,2           | 21,5           | 11             | 6              |

■ = preferred

Other forms on request, especially non-symmetrical layout, watercooling or laser welded terminals.

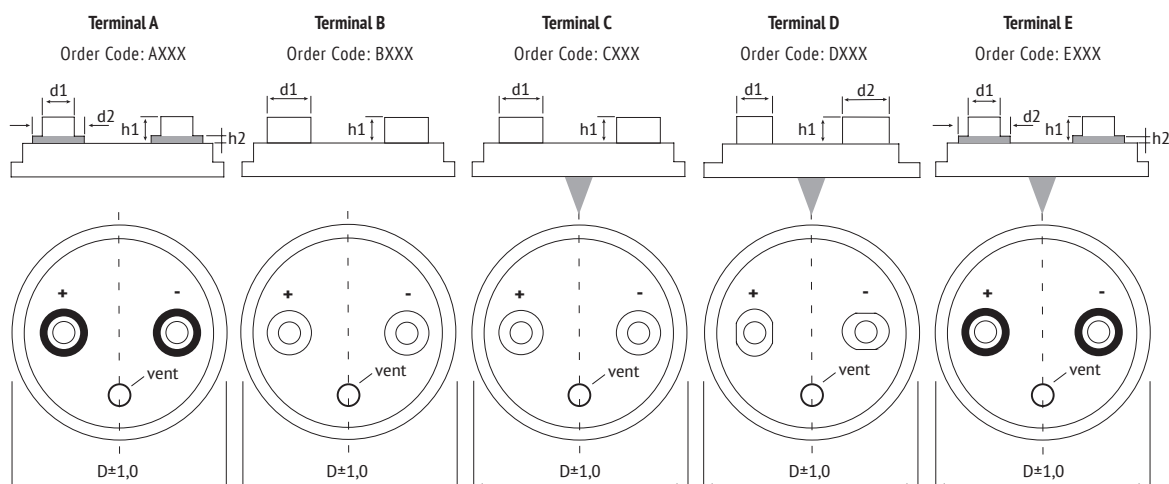
Terminal A101 = A991

Terminal A, B and F include a potting mass filling, Terminal C, D and E use a middle pin fixation without glue.

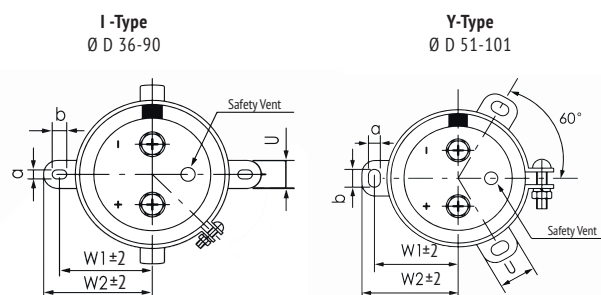
Extended Cathode designs only available with Terminal C, D and E.

Some series of the catalogue might only be available with Terminal C, D and E.

**TERMINAL FORM** (C, D, E preferred; other designs on request)



## BRACKET MOUNTING



|     | I-bracket      |                |     |   |    |    | Y-bracket      |                |     |   |    |    |
|-----|----------------|----------------|-----|---|----|----|----------------|----------------|-----|---|----|----|
| øD  | w <sub>1</sub> | w <sub>2</sub> | a   | b | U  | h  | w <sub>1</sub> | w <sub>2</sub> | a   | b | U  | h  |
| 36  | 24             | 29             | 3,8 | 7 | 10 | 15 | -              | -              | -   | - | -  | -  |
| 51  | 34             | 40             | 5   | 7 | 14 | 30 | 31,8           | 36,5           | 5   | 7 | 14 | 30 |
| 64  | 40,5           | 46,5           | 5   | 7 | 14 | 30 | 38,1           | 42,6           | 5   | 7 | 14 | 30 |
| 77  | 46,8           | 53             | 5   | 7 | 14 | 30 | 44,5           | 49,2           | 5   | 7 | 14 | 30 |
| 90  | 54             | 60,3           | 5   | 7 | 14 | 30 | 50,8           | 55,6           | 5   | 7 | 14 | 30 |
| 101 | -              | -              | -   | - | -  | -  | 57,5           | 63,5           | 5,5 | 8 | 20 | 35 |

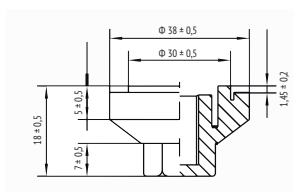
■ = preferred  
h = Height of brackets

in mm

### ACCESSORIES FOR BOLT MOUNTING (Other accessories on request)

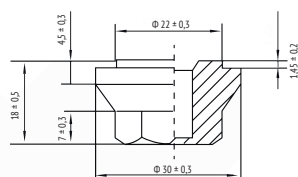
### Cap Nut

Order Code: ACCNUT3038M12  
For Screw Capacitors with M12 Bolt



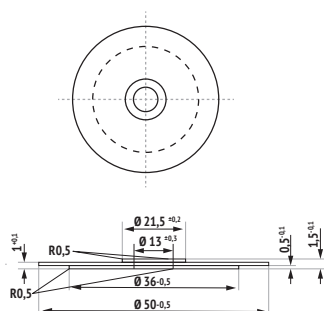
### Cap Nut

Order Code: ACCNUT2230M12  
For Screw Capacitors with M12 Bolt



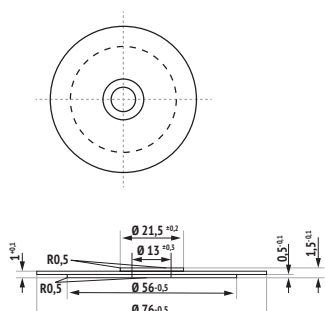
### Insulation Washer

Order Code: ACCIS05113  
For Screw Capacitors  
with Diameter 51 and 64

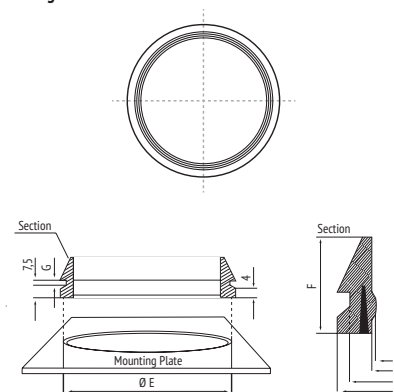


### Insulation Washer

Order Code: ACCIS07713  
For Screw Capacitors  
with Diameter 77 and 90

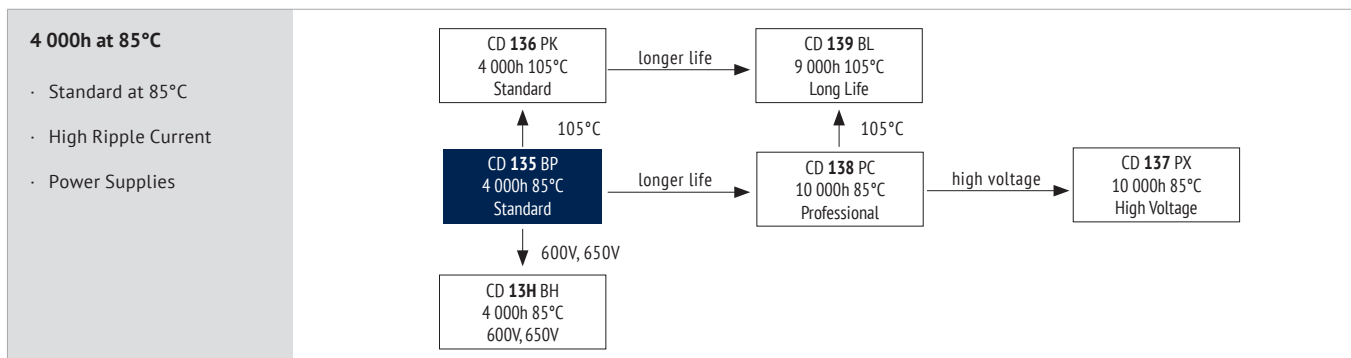


### Press Ring



| Ø Capacitor                                          | 64        | 77        | 90        |
|------------------------------------------------------|-----------|-----------|-----------|
| A +0,3                                               | 62,3      | 74,8      | 88,0      |
| B +0,3                                               | 64,1      | 77,0      | 90,0      |
| C +0,3                                               | 70,5      | 84,5      | 97,9      |
| D +0,3                                               | 74,5      | 88,6      | 102,0     |
| E +0,2                                               | 71,2      | 85,5      | 98,6      |
| F +0,2                                               | 18,0      | 20,0      | 23,5      |
| G -0,25                                              | 3,0       | 2,4       | 3,0       |
| <b>Product Code</b><br>Agree with RoHS               | ACC PR164 | ACC PR177 | ACC PR190 |
| <b>Product Code</b><br>Agree with RoHS and III-94-V0 | ACC PR464 | ACC PR477 | ACC PR490 |

All dimensions in mm



## ITEM CHARACTERISTICS

|                                     |               |           |
|-------------------------------------|---------------|-----------|
| Operating Temperature Range (°C)    | -40 ~ +85     | -25 ~ +85 |
| Voltage Range (V)                   | 10 ~ 250      | 350 ~ 500 |
| Capacitance Range (µF)              | 470 ~ 820 000 |           |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%         |           |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

|                       |                                                                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Leakage Current       | After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.                                                                          |
| Fast Charge-Discharge | <b>!</b> Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray |

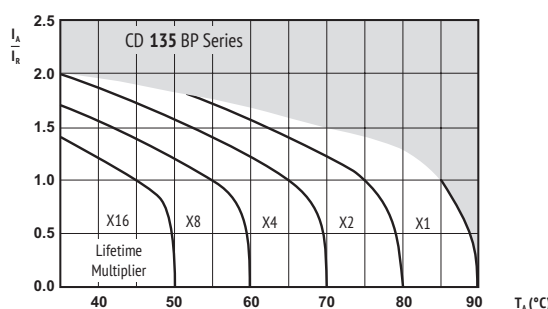
| ITEM                                                                    | USEFUL LIFE                                                                                                                                                                          |                                   | LOAD LIFE                             | ENDURANCE TEST                          | SHELF LIFE                            |                                                                     |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|---------------------------------------------------------------------|
| Lifetime                                                                | 4 000h                                                                                                                                                                               | > 65 000h                         | 2 000h                                | 2 000h                                  | 1 000h                                |                                                                     |
| Leakage Current                                                         | Not more than specified value                                                                                                                                                        |                                   | Not more than specified value         | Not more than specified value           | Not more than specified value         |                                                                     |
| Capacitance Change                                                      | Within ± 30% of initial value                                                                                                                                                        |                                   | Within ± 20% of initial value         | Within ± 10% of initial value           | Within ± 20% of initial value         |                                                                     |
| Dissipation Factor                                                      | Not more than 300% of specified value                                                                                                                                                |                                   | Not more than 200% of specified value | Not more than 200% of specified value   | Not more than 200% of specified value |                                                                     |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>85°C                                                                                                                                                               | $U_R$<br>$1,2 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$I_R = 0$<br>85°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>85°C        | After test: $U_R$ to be applied for 30 min > 24h before measurement |
| Terminal and Construction                                               | The terminal version has an impact on the current capability and mechanical behavior (vibration). For high current applications the terminals C,D and E are preferred, see page 151. |                                   |                                       |                                         |                                       |                                                                     |
| Optional                                                                | Self-extinguishing Electrolyte on request                                                                                                                                            |                                   |                                       |                                         |                                       |                                                                     |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency<br>Rated Voltage (V) | 50Hz | 120Hz | 300Hz | 1kHz | 3kHz | 5kHz | ≥ 10 kHz |
|--------------------------------|------|-------|-------|------|------|------|----------|
| 10 ~ 50                        | 0,95 | 1,00  | 1,04  | 1,10 | 1,12 | 1,13 | 1,15     |
| 63 ~ 100                       | 0,95 | 1,00  | 1,06  | 1,16 | 1,22 | 1,26 | 1,30     |
| 160 ~ 500                      | 0,80 | 1,00  | 1,10  | 1,25 | 1,35 | 1,40 | 1,50     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 85°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇ = mounting style (stud)<br>△△△△ = terminal style<br>Details: Page 150 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------------------------|----------------|---------------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                 | (mm)           |                                                                                       |
| 10<br>(13)<br>1A                            | 33 000                              | 33                                                               | 21                                                               | 0,80                                     | 3,3                                  | 4,3                                                    | 36 x 53        | ECG1ABP333M◇A053△△△△                                                                  |
|                                             | 39 000                              | 28                                                               | 18                                                               | 0,80                                     | 3,9                                  | 4,7                                                    | 36 x 53        | ECG1ABP393M◇A053△△△△                                                                  |
|                                             | 47 000                              | 23                                                               | 15                                                               | 0,80                                     | 4,7                                  | 5,2                                                    | 36 x 65        | ECG1ABP473M◇A065△△△△                                                                  |
|                                             | 56 000                              | 19                                                               | 13                                                               | 0,80                                     | 5,0                                  | 6,1                                                    | 36 x 83        | ECG1ABP563M◇A083△△△△                                                                  |
|                                             | 68 000                              | 16                                                               | 10                                                               | 0,80                                     | 5,0                                  | 6,7                                                    | 36 x 83        | ECG1ABP683M◇A083△△△△                                                                  |
|                                             | 82 000                              | 13                                                               | 9,0                                                              | 0,80                                     | 5,0                                  | 7,7                                                    | 36 x 100       | ECG1ABP823M◇A100△△△△                                                                  |
|                                             | 100 000                             | 11                                                               | 8,0                                                              | 0,80                                     | 5,0                                  | 8,8                                                    | 36 x 100       | ECG1ABP104M◇A100△△△△                                                                  |
|                                             | 120 000                             | 8,9                                                              | 7,0                                                              | 0,80                                     | 5,0                                  | 10,0                                                   | 36 x 121       | ECG1ABP124M◇A121△△△△                                                                  |
|                                             | 150 000                             | 8,9                                                              | 7,0                                                              | 1,00                                     | 5,0                                  | 10,8                                                   | 36 x 121       | ECG1ABP154M◇A121△△△△                                                                  |
|                                             | 180 000                             | 7,4                                                              | 6,0                                                              | 1,00                                     | 5,0                                  | 12,0                                                   | 51 x 96        | ECG1ABP184M◇C096△△△△                                                                  |
|                                             | 220 000                             | 9,1                                                              | 5,0                                                              | 1,50                                     | 5,0                                  | 11,2                                                   | 51 x 121       | ECG1ABP224M◇C121△△△△                                                                  |
|                                             | 270 000                             | 7,4                                                              | 4,0                                                              | 1,50                                     | 5,0                                  | 12,8                                                   | 51 x 121       | ECG1ABP274M◇C121△△△△                                                                  |
|                                             | 330 000                             | 6,1                                                              | 4,0                                                              | 1,50                                     | 5,0                                  | 15,3                                                   | 64 x 96        | ECG1ABP334M◇D096△△△△                                                                  |
|                                             | 390 000                             | 5,2                                                              | 3,0                                                              | 1,50                                     | 5,0                                  | 17,3                                                   | 64 x 115       | ECG1ABP394M◇D115△△△△                                                                  |
|                                             | 470 000                             | 5,7                                                              | 3,0                                                              | 2,00                                     | 5,0                                  | 16,7                                                   | 64 x 130       | ECG1ABP474M◇D130△△△△                                                                  |
|                                             | 560 000                             | 4,8                                                              | 3,0                                                              | 2,00                                     | 5,0                                  | 19,0                                                   | 77 x 115       | ECG1ABP564M◇E115△△△△                                                                  |
|                                             | 680 000                             | 4,0                                                              | 3,0                                                              | 2,00                                     | 5,0                                  | 21,7                                                   | 77 x 130       | ECG1ABP684M◇E130△△△△                                                                  |
|                                             | 820 000                             | 3,3                                                              | 2,0                                                              | 2,00                                     | 5,0                                  | 24,7                                                   | 77 x 155       | ECG1ABP824M◇E155△△△△                                                                  |

|                  |         |     |     |      |     |      |          |                      |
|------------------|---------|-----|-----|------|-----|------|----------|----------------------|
| 16<br>(20)<br>1C | 22 000  | 37  | 22  | 0,60 | 3,5 | 4,1  | 36 x 53  | ECG1CBP223M◇A053△△△△ |
|                  | 27 000  | 30  | 19  | 0,60 | 4,3 | 4,5  | 36 x 53  | ECG1CBP273M◇A053△△△△ |
|                  | 33 000  | 25  | 16  | 0,60 | 5,0 | 5,0  | 36 x 53  | ECG1CBP333M◇A053△△△△ |
|                  | 39 000  | 21  | 13  | 0,60 | 5,0 | 5,9  | 36 x 65  | ECG1CBP393M◇A065△△△△ |
|                  | 47 000  | 17  | 11  | 0,60 | 5,0 | 6,4  | 36 x 83  | ECG1CBP473M◇A083△△△△ |
|                  | 56 000  | 15  | 10  | 0,60 | 5,0 | 7,3  | 36 x 83  | ECG1CBP563M◇A083△△△△ |
|                  | 68 000  | 12  | 8,0 | 0,60 | 5,0 | 8,4  | 36 x 100 | ECG1CBP683M◇A100△△△△ |
|                  | 82 000  | 13  | 7,0 | 0,80 | 5,0 | 8,3  | 36 x 100 | ECG1CBP823M◇A100△△△△ |
|                  | 100 000 | 11  | 6,0 | 0,80 | 5,0 | 9,5  | 36 x 121 | ECG1CBP104M◇A121△△△△ |
|                  | 120 000 | 8,9 | 5,0 | 0,80 | 5,0 | 10,9 | 36 x 121 | ECG1CBP124M◇A121△△△△ |
|                  | 150 000 | 8,9 | 4,0 | 1,00 | 5,0 | 11,3 | 51 x 96  | ECG1CBP154M◇C096△△△△ |
|                  | 180 000 | 7,4 | 3,0 | 1,00 | 5,0 | 12,8 | 51 x 115 | ECG1CBP184M◇C115△△△△ |
|                  | 220 000 | 6,1 | 3,0 | 1,00 | 5,0 | 15,3 | 51 x 130 | ECG1CBP224M◇C130△△△△ |
|                  | 270 000 | 5,0 | 3,0 | 1,00 | 5,0 | 17,6 | 64 x 96  | ECG1CBP274M◇D096△△△△ |
|                  | 330 000 | 6,1 | 3,0 | 1,50 | 5,0 | 16,8 | 64 x 115 | ECG1CBP334M◇D115△△△△ |
|                  | 390 000 | 5,2 | 3,0 | 1,50 | 5,0 | 18,3 | 64 x 130 | ECG1CBP394M◇D130△△△△ |
|                  | 470 000 | 4,3 | 2,0 | 1,50 | 5,0 | 21,3 | 77 x 115 | ECG1CBP474M◇E115△△△△ |
|                  | 560 000 | 3,6 | 2,0 | 1,50 | 5,0 | 23,6 | 77 x 130 | ECG1CBP564M◇E130△△△△ |
|                  | 680 000 | 3,0 | 2,0 | 1,50 | 5,0 | 27,6 | 77 x 155 | ECG1CBP684M◇E155△△△△ |
|                  | 820 000 | 3,3 | 2,0 | 2,00 | 5,0 | 27,1 | 90 x 157 | ECG1CBP824M◇F157△△△△ |

|                  |         |     |     |      |     |      |          |                      |
|------------------|---------|-----|-----|------|-----|------|----------|----------------------|
| 25<br>(32)<br>1E | 15 000  | 45  | 22  | 0,50 | 3,8 | 3,7  | 36 x 53  | ECG1EBP153M◇A053△△△△ |
|                  | 18 000  | 37  | 18  | 0,50 | 4,5 | 4,1  | 36 x 53  | ECG1EBP183M◇A053△△△△ |
|                  | 22 000  | 31  | 16  | 0,50 | 5,0 | 4,5  | 36 x 53  | ECG1EBP223M◇A053△△△△ |
|                  | 27 000  | 25  | 13  | 0,50 | 5,0 | 5,0  | 36 x 65  | ECG1EBP273M◇A065△△△△ |
|                  | 33 000  | 21  | 11  | 0,50 | 5,0 | 5,9  | 36 x 83  | ECG1EBP333M◇A083△△△△ |
|                  | 39 000  | 18  | 9,0 | 0,50 | 5,0 | 6,7  | 36 x 83  | ECG1EBP393M◇A083△△△△ |
|                  | 47 000  | 15  | 8,0 | 0,50 | 5,0 | 7,7  | 36 x 100 | ECG1EBP473M◇A100△△△△ |
|                  | 56 000  | 15  | 7,0 | 0,60 | 5,0 | 7,9  | 36 x 100 | ECG1EBP563M◇A100△△△△ |
|                  | 68 000  | 12  | 6,0 | 0,60 | 5,0 | 9,1  | 36 x 121 | ECG1EBP683M◇A121△△△△ |
|                  | 82 000  | 9,8 | 5,0 | 0,60 | 5,0 | 10,4 | 36 x 121 | ECG1EBP823M◇A121△△△△ |
|                  | 100 000 | 11  | 4,0 | 0,80 | 5,0 | 10,3 | 51 x 96  | ECG1EBP104M◇C096△△△△ |
|                  | 120 000 | 8,9 | 4,0 | 0,80 | 5,0 | 11,7 | 51 x 115 | ECG1EBP124M◇C115△△△△ |
|                  | 150 000 | 7,1 | 3,0 | 0,80 | 5,0 | 14,1 | 51 x 130 | ECG1EBP154M◇C130△△△△ |
|                  | 180 000 | 5,9 | 3,0 | 0,80 | 5,0 | 15,7 | 64 x 96  | ECG1EBP184M◇D096△△△△ |
|                  | 220 000 | 6,1 | 3,0 | 1,00 | 5,0 | 16,1 | 64 x 115 | ECG1EBP224M◇D115△△△△ |
|                  | 270 000 | 5,0 | 3,0 | 1,00 | 5,0 | 18,6 | 64 x 130 | ECG1EBP274M◇D130△△△△ |
|                  | 330 000 | 4,1 | 3,0 | 1,00 | 5,0 | 21,9 | 64 x 155 | ECG1EBP334M◇D155△△△△ |
|                  | 390 000 | 4,1 | 2,0 | 1,20 | 5,0 | 22,0 | 77 x 115 | ECG1EBP394M◇E115△△△△ |
|                  | 470 000 | 3,4 | 2,0 | 1,20 | 5,0 | 25,6 | 77 x 155 | ECG1EBP474M◇E155△△△△ |
|                  | 560 000 | 2,9 | 2,0 | 1,20 | 5,0 | 27,9 | 90 x 131 | ECG1EBP564M◇F131△△△△ |
|                  | 680 000 | 2,4 | 2,0 | 1,20 | 5,0 | 32,5 | 90 x 157 | ECG1EBP684M◇F157△△△△ |

|                  |        |    |     |      |     |     |          |                      |
|------------------|--------|----|-----|------|-----|-----|----------|----------------------|
| 35<br>(44)<br>1V | 10 000 | 54 | 24  | 0,40 | 3,5 | 3,4 | 36 x 53  | ECG1VBP103M◇A053△△△△ |
|                  | 12 000 | 45 | 20  | 0,40 | 4,2 | 3,7 | 36 x 53  | ECG1VBP123M◇A053△△△△ |
|                  | 15 000 | 36 | 17  | 0,40 | 5,0 | 4,2 | 36 x 65  | ECG1VBP153M◇A065△△△△ |
|                  | 18 000 | 30 | 14  | 0,40 | 5,0 | 4,7 | 36 x 83  | ECG1VBP183M◇A083△△△△ |
|                  | 22 000 | 25 | 12  | 0,40 | 5,0 | 5,7 | 36 x 83  | ECG1VBP223M◇A083△△△△ |
|                  | 27 000 | 20 | 9,0 | 0,40 | 5,0 | 6,3 | 36 x 100 | ECG1VBP273M◇A100△△△△ |
|                  | 33 000 | 17 | 9,0 | 0,40 | 5,0 | 7,2 | 36 x 100 | ECG1VBP333M◇A100△△△△ |
|                  | 39 000 | 18 | 8,0 | 0,50 | 5,0 | 8,3 | 36 x 121 | ECG1VBP393M◇A121△△△△ |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇ = mounting style (stud)<br>△△△△ = terminal style<br>Details: Page 150 |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|--------------------------------------------------------|----------------|---------------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                 | (mm)           |                                                                                       |
| 35<br>(44)<br>1V                            | 47 000                              | 15                                                               | 8,0                                                              | 0,50                                     | 5,0                                  | 8,7                                                    | 51 x 96        | ECG1VBP473M◇C096△△△△                                                                  |
|                                             | 56 000                              | 15                                                               | 8,0                                                              | 0,60                                     | 5,0                                  | 8,6                                                    | 51 x 96        | ECG1VBP563M◇C096△△△△                                                                  |
|                                             | 68 000                              | 12                                                               | 6,0                                                              | 0,60                                     | 5,0                                  | 9,8                                                    | 51 x 115       | ECG1VBP683M◇C115△△△△                                                                  |
|                                             | 82 000                              | 9,8                                                              | 5,0                                                              | 0,60                                     | 5,0                                  | 11,6                                                   | 64 x 96        | ECG1VBP823M◇D096△△△△                                                                  |
|                                             | 100 000                             | 8,0                                                              | 4,0                                                              | 0,60                                     | 5,0                                  | 13,3                                                   | 64 x 115       | ECG1VBP104M◇D115△△△△                                                                  |
|                                             | 120 000                             | 6,7                                                              | 4,0                                                              | 0,60                                     | 5,0                                  | 14,8                                                   | 64 x 121       | ECG1VBP124M◇D121△△△△                                                                  |
|                                             | 150 000                             | 7,1                                                              | 4,0                                                              | 0,80                                     | 5,0                                  | 14,9                                                   | 64 x 130       | ECG1VBP154M◇D130△△△△                                                                  |
|                                             | 180 000                             | 5,9                                                              | 3,0                                                              | 0,80                                     | 5,0                                  | 17,0                                                   | 77 x 115       | ECG1VBP184M◇E115△△△△                                                                  |
|                                             | 220 000                             | 4,9                                                              | 3,0                                                              | 0,80                                     | 5,0                                  | 20,0                                                   | 77 x 130       | ECG1VBP224M◇E130△△△△                                                                  |
|                                             | 270 000                             | 5,0                                                              | 3,0                                                              | 1,00                                     | 5,0                                  | 20,3                                                   | 77 x 155       | ECG1VBP274M◇E155△△△△                                                                  |
|                                             | 330 000                             | 4,1                                                              | 2,0                                                              | 1,00                                     | 5,0                                  | 23,5                                                   | 90 x 131       | ECG1VBP334M◇F131△△△△                                                                  |
|                                             | 390 000                             | 3,5                                                              | 2,0                                                              | 1,00                                     | 5,0                                  | 26,4                                                   | 90 x 157       | ECG1VBP394M◇F157△△△△                                                                  |
|                                             | 470 000                             | 2,9                                                              | 2,0                                                              | 1,00                                     | 5,0                                  | 29,6                                                   | 90 x 157       | ECG1VBP474M◇F157△△△△                                                                  |

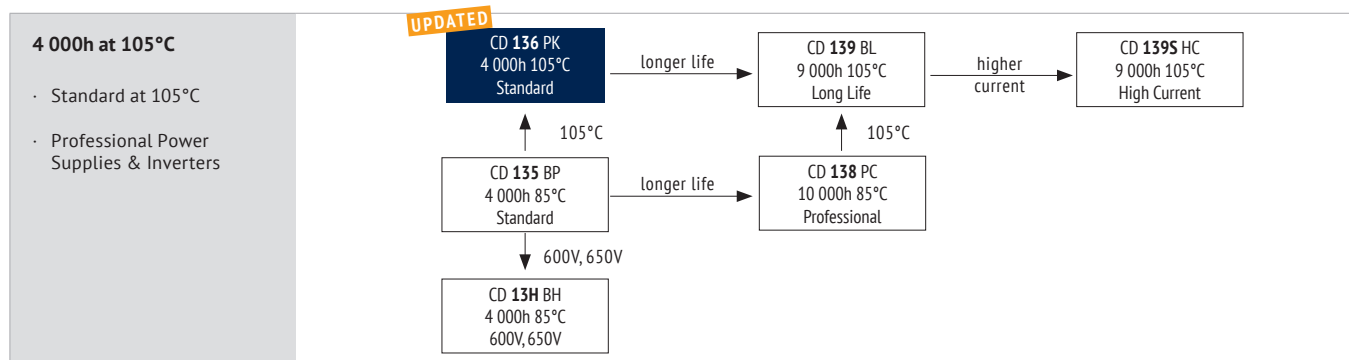
|                  |         |     |     |      |     |      |          |                      |
|------------------|---------|-----|-----|------|-----|------|----------|----------------------|
| 50<br>(63)<br>1H | 5 600   | 72  | 46  | 0,30 | 2,8 | 3,0  | 36 x 53  | ECG1HBP562M◇A053△△△△ |
|                  | 6 800   | 59  | 38  | 0,30 | 3,4 | 3,3  | 36 x 53  | ECG1HBP682M◇A053△△△△ |
|                  | 8 200   | 49  | 31  | 0,30 | 4,1 | 3,6  | 36 x 53  | ECG1HBP822M◇A053△△△△ |
|                  | 10 000  | 40  | 26  | 0,30 | 5,0 | 4,0  | 36 x 65  | ECG1HBP103M◇A065△△△△ |
|                  | 12 000  | 34  | 22  | 0,30 | 5,0 | 4,7  | 36 x 83  | ECG1HBP123M◇A083△△△△ |
|                  | 15 000  | 27  | 15  | 0,30 | 5,0 | 5,5  | 36 x 83  | ECG1HBP153M◇A083△△△△ |
|                  | 18 000  | 23  | 12  | 0,30 | 5,0 | 6,2  | 36 x 100 | ECG1HBP183M◇A100△△△△ |
|                  | 22 000  | 25  | 11  | 0,40 | 5,0 | 6,3  | 36 x 121 | ECG1HBP223M◇A121△△△△ |
|                  | 27 000  | 20  | 10  | 0,40 | 5,0 | 7,1  | 36 x 121 | ECG1HBP273M◇A121△△△△ |
|                  | 33 000  | 17  | 9,0 | 0,40 | 5,0 | 8,2  | 51 x 96  | ECG1HBP333M◇C096△△△△ |
|                  | 39 000  | 18  | 8,0 | 0,50 | 5,0 | 8,1  | 51 x 96  | ECG1HBP393M◇C096△△△△ |
|                  | 47 000  | 15  | 8,0 | 0,50 | 5,0 | 9,3  | 51 x 115 | ECG1HBP473M◇C115△△△△ |
|                  | 56 000  | 12  | 6,0 | 0,50 | 5,0 | 10,5 | 64 x 96  | ECG1HBP563M◇D096△△△△ |
|                  | 68 000  | 9,8 | 5,0 | 0,50 | 5,0 | 12,0 | 64 x 96  | ECG1HBP683M◇D096△△△△ |
|                  | 82 000  | 8,1 | 4,0 | 0,50 | 5,0 | 13,7 | 64 x 115 | ECG1HBP823M◇D115△△△△ |
|                  | 100 000 | 8,0 | 4,0 | 0,60 | 5,0 | 14,7 | 77 x 115 | ECG1HBP104M◇E115△△△△ |
|                  | 120 000 | 6,7 | 3,0 | 0,60 | 5,0 | 16,7 | 77 x 115 | ECG1HBP124M◇E115△△△△ |
|                  | 150 000 | 5,4 | 3,0 | 0,60 | 5,0 | 19,3 | 77 x 130 | ECG1HBP154M◇E130△△△△ |
|                  | 180 000 | 4,5 | 3,0 | 0,60 | 5,0 | 21,9 | 77 x 155 | ECG1HBP184M◇E155△△△△ |
|                  | 220 000 | 3,7 | 2,0 | 0,60 | 5,0 | 21,4 | 90 x 131 | ECG1HBP224M◇F131△△△△ |
|                  | 270 000 | 3,0 | 2,0 | 0,60 | 5,0 | 24,6 | 90 x 157 | ECG1HBP274M◇F157△△△△ |

|                  |        |     |      |      |      |          |                      |                      |
|------------------|--------|-----|------|------|------|----------|----------------------|----------------------|
| 63<br>(79)<br>1J | 3 900  | 86  | 47   | 0,25 | 2,5  | 2,7      | 36 x 53              | ECG1JBP392M◊A053△△△△ |
|                  | 4 700  | 71  | 39   | 0,25 | 3,0  | 3,0      | 36 x 53              | ECG1JBP472M◊A053△△△△ |
|                  | 5 600  | 60  | 38   | 0,25 | 3,5  | 3,3      | 36 x 53              | ECG1JBP562M◊A053△△△△ |
|                  | 6 800  | 49  | 32   | 0,25 | 4,3  | 3,6      | 36 x 65              | ECG1JBP682M◊A065△△△△ |
|                  | 8 200  | 41  | 26   | 0,25 | 5,0  | 4,3      | 36 x 83              | ECG1JBP822M◊A083△△△△ |
|                  | 10 000 | 34  | 23   | 0,25 | 5,0  | 4,9      | 36 x 83              | ECG1JBP103M◊A083△△△△ |
|                  | 12 000 | 28  | 18   | 0,25 | 5,0  | 5,6      | 36 x 100             | ECG1JBP123M◊A100△△△△ |
|                  | 15 000 | 27  | 16   | 0,30 | 5,0  | 5,9      | 36 x 100             | ECG1JBP153M◊A100△△△△ |
|                  | 18 000 | 23  | 15   | 0,30 | 5,0  | 6,7      | 36 x 121             | ECG1JBP183M◊A121△△△△ |
|                  | 22 000 | 19  | 13   | 0,30 | 5,0  | 7,8      | 36 x 121             | ECG1JBP223M◊A121△△△△ |
|                  | 27 000 | 20  | 12   | 0,40 | 5,0  | 7,4      | 51 x 96              | ECG1JBP273M◊C096△△△△ |
|                  | 33 000 | 17  | 8,0  | 0,40 | 5,0  | 8,4      | 51 x 96              | ECG1JBP333M◊C096△△△△ |
|                  | 39 000 | 14  | 7,0  | 0,40 | 5,0  | 9,5      | 51 x 115             | ECG1JBP393M◊C115△△△△ |
|                  | 47 000 | 12  | 6,0  | 0,40 | 5,0  | 11,3     | 51 x 130             | ECG1JBP473M◊C130△△△△ |
|                  | 56 000 | 9,5 | 6,0  | 0,40 | 5,0  | 12,8     | 64 x 115             | ECG1JBP563M◊D115△△△△ |
| 68 000           | 9,8    | 5,0 | 0,50 | 5,0  | 12,7 | 64 x 121 | ECG1JBP683M◊D121△△△△ |                      |
| 82 000           | 8,1    | 4,0 | 0,50 | 5,0  | 14,5 | 64 x 130 | ECG1JBP823M◊D130△△△△ |                      |
| 100 000          | 6,7    | 4,0 | 0,50 | 5,0  | 16,7 | 77 x 115 | ECG1JBP104M◊E115△△△△ |                      |
| 120 000          | 5,6    | 3,0 | 0,50 | 5,0  | 18,9 | 77 x 130 | ECG1JBP124M◊E130△△△△ |                      |
| 150 000          | 4,5    | 2,0 | 0,50 | 5,0  | 22,4 | 77 x 155 | ECG1JBP154M◊E155△△△△ |                      |
| 180 000          | 4,5    | 2,0 | 0,60 | 5,0  | 22,4 | 90 x 131 | ECG1JBP184M◊F131△△△△ |                      |
| 220 000          | 3,7    | 2,0 | 0,60 | 5,0  | 26,2 | 90 x 157 | ECG1JBP224M◊F157△△△△ |                      |



| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇ = mounting style (stud)<br>△△△△ = terminal style<br>Details: Page 150 |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|--------------------------------------|-----------------------------------------------------------|----------------|---------------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                                | (mΩ)                                                                |                                             | (mA)                                 | (Arms)                                                    | (mm)           |                                                                                       |
| 80<br>(100)<br>1K                           | 27 000                              | 15                                                                  | 8,0                                                                 | 0,30                                        | 5,0                                  | 9,2                                                       | 51 x 96        | ECG1KBP273M◇C096△△△△                                                                  |
|                                             | 33 000                              | 13                                                                  | 7,0                                                                 | 0,30                                        | 5,0                                  | 10,5                                                      | 51 x 115       | ECG1KBP333M◇C115△△△△                                                                  |
|                                             | 39 000                              | 11                                                                  | 6,0                                                                 | 0,30                                        | 5,0                                  | 12,0                                                      | 51 x 130       | ECG1KBP393M◇C130△△△△                                                                  |
|                                             | 47 000                              | 8,5                                                                 | 5,0                                                                 | 0,30                                        | 5,0                                  | 13,6                                                      | 64 x 115       | ECG1KBP473M◇D115△△△△                                                                  |
|                                             | 56 000                              | 9,5                                                                 | 4,0                                                                 | 0,40                                        | 5,0                                  | 13,4                                                      | 64 x 130       | ECG1KBP563M◇D130△△△△                                                                  |
|                                             | 68 000                              | 7,9                                                                 | 4,0                                                                 | 0,40                                        | 5,0                                  | 15,4                                                      | 77 x 115       | ECG1KBP683M◇E115△△△△                                                                  |
|                                             | 82 000                              | 6,5                                                                 | 4,0                                                                 | 0,40                                        | 5,0                                  | 17,5                                                      | 77 x 130       | ECG1KBP823M◇E130△△△△                                                                  |
|                                             | 100 000                             | 5,4                                                                 | 3,0                                                                 | 0,40                                        | 5,0                                  | 20,5                                                      | 77 x 155       | ECG1KBP104M◇E155△△△△                                                                  |
|                                             | 120 000                             | 4,5                                                                 | 2,0                                                                 | 0,40                                        | 5,0                                  | 22,4                                                      | 90 x 131       | ECG1KBP124M◇F131△△△△                                                                  |
|                                             | 150 000                             | 3,6                                                                 | 2,0                                                                 | 0,40                                        | 5,0                                  | 26,5                                                      | 90 x 157       | ECG1KBP154M◇F157△△△△                                                                  |
| 100<br>(125)<br>2A                          | 1 800                               | 185                                                                 | 48                                                                  | 0,25                                        | 1,8                                  | 1,9                                                       | 36 x 53        | ECG2ABP182M◇A053△△△△                                                                  |
|                                             | 2 200                               | 151                                                                 | 44                                                                  | 0,25                                        | 2,2                                  | 2,1                                                       | 36 x 53        | ECG2ABP222M◇A053△△△△                                                                  |
|                                             | 2 700                               | 123                                                                 | 39                                                                  | 0,25                                        | 2,7                                  | 2,3                                                       | 36 x 53        | ECG2ABP272M◇A053△△△△                                                                  |
|                                             | 3 300                               | 101                                                                 | 35                                                                  | 0,25                                        | 3,3                                  | 2,6                                                       | 36 x 65        | ECG2ABP332M◇A065△△△△                                                                  |
|                                             | 3 900                               | 86                                                                  | 28                                                                  | 0,25                                        | 3,9                                  | 3,0                                                       | 36 x 83        | ECG2ABP392M◇A083△△△△                                                                  |
|                                             | 4 700                               | 71                                                                  | 26                                                                  | 0,25                                        | 4,7                                  | 3,5                                                       | 36 x 83        | ECG2ABP472M◇A083△△△△                                                                  |
|                                             | 5 600                               | 60                                                                  | 23                                                                  | 0,25                                        | 5,0                                  | 3,9                                                       | 36 x 100       | ECG2ABP562M◇A100△△△△                                                                  |
|                                             | 6 800                               | 49                                                                  | 22                                                                  | 0,25                                        | 5,0                                  | 4,5                                                       | 36 x 100       | ECG2ABP682M◇A100△△△△                                                                  |
|                                             | 8 200                               | 41                                                                  | 20                                                                  | 0,25                                        | 5,0                                  | 5,1                                                       | 36 x 121       | ECG2ABP822M◇A121△△△△                                                                  |
|                                             | 10 000                              | 34                                                                  | 19                                                                  | 0,25                                        | 5,0                                  | 5,9                                                       | 36 x 121       | ECG2ABP103M◇A121△△△△                                                                  |
|                                             | 12 000                              | 28                                                                  | 16                                                                  | 0,25                                        | 5,0                                  | 6,4                                                       | 51 x 75        | ECG2ABP123M◇C075△△△△                                                                  |
|                                             | 15 000                              | 23                                                                  | 12                                                                  | 0,25                                        | 5,0                                  | 7,0                                                       | 51 x 96        | ECG2ABP153M◇C096△△△△                                                                  |
|                                             | 18 000                              | 19                                                                  | 10                                                                  | 0,25                                        | 5,0                                  | 8,3                                                       | 51 x 115       | ECG2ABP183M◇C115△△△△                                                                  |
|                                             | 22 000                              | 16                                                                  | 8,0                                                                 | 0,25                                        | 5,0                                  | 10,0                                                      | 51 x 130       | ECG2ABP223M◇C130△△△△                                                                  |
|                                             | 27 000                              | 13                                                                  | 7,0                                                                 | 0,25                                        | 5,0                                  | 11,5                                                      | 64 x 115       | ECG2ABP273M◇D115△△△△                                                                  |
|                                             | 33 000                              | 11                                                                  | 6,0                                                                 | 0,25                                        | 5,0                                  | 11,9                                                      | 64 x 130       | ECG2ABP333M◇D130△△△△                                                                  |
|                                             | 39 000                              | 8,6                                                                 | 5,0                                                                 | 0,25                                        | 5,0                                  | 13,4                                                      | 77 x 115       | ECG2ABP393M◇E115△△△△                                                                  |
|                                             | 47 000                              | 9,9                                                                 | 5,0                                                                 | 0,35                                        | 5,0                                  | 14,2                                                      | 77 x 130       | ECG2ABP473M◇E130△△△△                                                                  |
|                                             | 56 000                              | 8,3                                                                 | 4,0                                                                 | 0,35                                        | 5,0                                  | 16,0                                                      | 77 x 155       | ECG2ABP563M◇E155△△△△                                                                  |
|                                             | 68 000                              | 6,9                                                                 | 3,0                                                                 | 0,35                                        | 5,0                                  | 18,8                                                      | 90 x 131       | ECG2ABP683M◇F131△△△△                                                                  |
|                                             | 82 000                              | 5,7                                                                 | 3,0                                                                 | 0,35                                        | 5,0                                  | 20,5                                                      | 90 x 157       | ECG2ABP823M◇F157△△△△                                                                  |
|                                             | 100 000                             | 4,7                                                                 | 3,0                                                                 | 0,35                                        | 5,0                                  | 24,0                                                      | 90 x 171       | ECG2ABP104M◇F171△△△△                                                                  |
| 160<br>(200)<br>2C                          | 3 300                               | 101                                                                 | 31                                                                  | 0,25                                        | 5,0                                  | 5,2                                                       | 36 x 121       | ECG2CBP332M◇A121△△△△                                                                  |
|                                             | 4 700                               | 71                                                                  | 21                                                                  | 0,25                                        | 5,0                                  | 5,9                                                       | 51 x 75        | ECG2CBP472M◇C075△△△△                                                                  |
|                                             | 5 600                               | 60                                                                  | 19                                                                  | 0,25                                        | 5,0                                  | 7,0                                                       | 51 x 96        | ECG2CBP562M◇C096△△△△                                                                  |
|                                             | 6 800                               | 49                                                                  | 16                                                                  | 0,25                                        | 5,0                                  | 7,8                                                       | 51 x 96        | ECG2CBP682M◇C096△△△△                                                                  |
|                                             | 10 000                              | 34                                                                  | 13                                                                  | 0,25                                        | 5,0                                  | 10,4                                                      | 64 x 96        | ECG2CBP103M◇D096△△△△                                                                  |
|                                             | 12 000                              | 28                                                                  | 10                                                                  | 0,25                                        | 5,0                                  | 11,6                                                      | 51 x 120       | ECG2CBP123M◇C120△△△△                                                                  |
|                                             | 15 000                              | 23                                                                  | 9,0                                                                 | 0,25                                        | 5,0                                  | 14,3                                                      | 64 x 130       | ECG2CBP153M◇D130△△△△                                                                  |
|                                             | 18 000                              | 19                                                                  | 8,0                                                                 | 0,25                                        | 5,0                                  | 15,6                                                      | 64 x 130       | ECG2CBP183M◇D130△△△△                                                                  |
|                                             | 22 000                              | 16                                                                  | 6,0                                                                 | 0,25                                        | 5,0                                  | 18,3                                                      | 77 x 130       | ECG2CBP223M◇E130△△△△                                                                  |
|                                             | 33 000                              | 11                                                                  | 4,0                                                                 | 0,25                                        | 5,0                                  | 23,8                                                      | 90 x 131       | ECG2CBP333M◇F131△△△△                                                                  |
| 200<br>(250)<br>2D                          | 3 300                               | 101                                                                 | 31                                                                  | 0,25                                        | 5,0                                  | 5,2                                                       | 36 x 121       | ECG2CBP332M◇A121△△△△                                                                  |
|                                             | 4 700                               | 71                                                                  | 21                                                                  | 0,25                                        | 5,0                                  | 5,9                                                       | 51 x 75        | ECG2CBP472M◇C075△△△△                                                                  |
|                                             | 5 600                               | 60                                                                  | 19                                                                  | 0,25                                        | 5,0                                  | 7,0                                                       | 51 x 96        | ECG2CBP562M◇C096△△△△                                                                  |
|                                             | 6 800                               | 49                                                                  | 16                                                                  | 0,25                                        | 5,0                                  | 7,8                                                       | 51 x 96        | ECG2CBP682M◇C096△△△△                                                                  |
|                                             | 10 000                              | 34                                                                  | 13                                                                  | 0,25                                        | 5,0                                  | 10,4                                                      | 64 x 96        | ECG2CBP103M◇D096△△△△                                                                  |
|                                             | 12 000                              | 28                                                                  | 10                                                                  | 0,25                                        | 5,0                                  | 11,6                                                      | 51 x 120       | ECG2CBP123M◇C120△△△△                                                                  |
|                                             | 15 000                              | 23                                                                  | 9,0                                                                 | 0,25                                        | 5,0                                  | 14,3                                                      | 64 x 130       | ECG2CBP153M◇D130△△△△                                                                  |
|                                             | 18 000                              | 19                                                                  | 8,0                                                                 | 0,25                                        | 5,0                                  | 15,6                                                      | 64 x 130       | ECG2CBP183M◇D130△△△△                                                                  |
|                                             | 22 000                              | 16                                                                  | 6,0                                                                 | 0,25                                        | 5,0                                  | 18,3                                                      | 77 x 130       | ECG2CBP223M◇E130△△△△                                                                  |
|                                             | 33 000                              | 11                                                                  | 4,0                                                                 | 0,25                                        | 5,0                                  | 23,8                                                      | 90 x 131       | ECG2CBP333M◇F131△△△△                                                                  |
| 250<br>(300)<br>2E                          | 1 500                               | 222                                                                 | 49                                                                  | 0,25                                        | 3,8                                  | 3,2                                                       | 36 x 100       | ECG2EBP152M◇A100△△△△                                                                  |
|                                             | 2 200                               | 151                                                                 | 33                                                                  | 0,25                                        | 5,0                                  | 4,0                                                       | 51 x 75        | ECG2EBP222M◇C075△△△△                                                                  |
|                                             | 3 300                               | 101                                                                 | 23                                                                  | 0,25                                        | 5,0                                  | 5,4                                                       | 51 x 96        | ECG2EBP332M◇C096△△△△                                                                  |
|                                             | 3 900                               | 86                                                                  | 17                                                                  | 0,25                                        | 5,0                                  | 6,3                                                       | 51 x 115       | ECG2EBP392M◇C115△△△△                                                                  |
|                                             | 4 700                               | 71                                                                  | 17                                                                  | 0,25                                        | 5,0                                  | 7,1                                                       | 64 x 96        | ECG2EBP472M◇D096△△△△                                                                  |
|                                             | 6 800                               | 49                                                                  | 12                                                                  | 0,25                                        | 5,0                                  | 9,1                                                       | 64 x 115       | ECG2EBP682M◇D115△△△△                                                                  |
|                                             | 8 200                               | 41                                                                  | 11                                                                  | 0,25                                        | 5,0                                  | 10,0                                                      | 64 x 115       | ECG2EBP822M◇D115△△△△                                                                  |
|                                             | 10 000                              | 34                                                                  | 11                                                                  | 0,25                                        | 5,0                                  | 11,7                                                      | 64 x 130       | ECG2EBP103M◇D130△△△△                                                                  |
|                                             | 15 000                              | 23                                                                  | 7,0                                                                 | 0,25                                        | 5,0                                  | 15,1                                                      | 77 x 130       | ECG2EBP153M◇E130△△△△                                                                  |
|                                             | 18 000                              | 19                                                                  | 6,0                                                                 | 0,25                                        | 5,0                                  | 17,7                                                      | 77 x 155       | ECG2EBP183M◇E155△△△△                                                                  |
| 250<br>(300)<br>2E                          | 22 000                              | 16                                                                  | 3,0                                                                 | 0,25                                        | 5,0                                  | 20,9                                                      | 90 x 157       | ECG2EBP223M◇F157△△△△                                                                  |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>øD x L       | ORDER CODE<br>◇ = mounting style (stud)<br>△△△△ = terminal style |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|--------------------------------------|-----------------------------------------------------------|----------------------|------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                                | (mΩ)                                                                |                                             | (mA)                                 | (Arms)                                                    | (mm)                 | Details: Page 150                                                |
| 350<br>(400)<br>2V                          | 470                                 | 565                                                                 | 228                                                                 | 0,20                                        | 1,6                                  | 2,2                                                       | 36 x 83              | ECG2VBP471M◇A083△△△△                                             |
|                                             | 680                                 | 391                                                                 | 152                                                                 | 0,20                                        | 2,4                                  | 2,6                                                       | 36 x 83              | ECG2VBP681M◇A083△△△△                                             |
|                                             | 820                                 | 324                                                                 | 104                                                                 | 0,20                                        | 2,9                                  | 3,1                                                       | 36 x 100             | ECG2VBP821M◇A100△△△△                                             |
|                                             | 1 000                               | 266                                                                 | 104                                                                 | 0,20                                        | 3,4                                  | 3,5                                                       | 36 x 100             | ECG2VBP102M◇A100△△△△                                             |
|                                             | 1 500                               | 177                                                                 | 72                                                                  | 0,20                                        | 5,0                                  | 4,3                                                       | 51 x 75              | ECG2VBP152M◇C075△△△△                                             |
|                                             | 1 800                               | 148                                                                 | 58                                                                  | 0,20                                        | 5,0                                  | 5,1                                                       | 51 x 96              | ECG2VBP182M◇C096△△△△                                             |
|                                             | 2 200                               | 121                                                                 | 48                                                                  | 0,20                                        | 5,0                                  | 5,7                                                       | 51 x 96              | ECG2VBP222M◇C096△△△△                                             |
|                                             | 2 700                               | 99                                                                  | 39                                                                  | 0,20                                        | 5,0                                  | 7,1                                                       | 51 x 130             | ECG2VBP272M◇C130△△△△                                             |
|                                             | 3 300                               | 81                                                                  | 32                                                                  | 0,20                                        | 5,0                                  | 7,9                                                       | 51 x 130             | ECG2VBP332M◇C130△△△△                                             |
|                                             | 3 900                               | 69                                                                  | 28                                                                  | 0,20                                        | 5,0                                  | 9,0                                                       | 64 x 115             | ECG2VBP392M◇D115△△△△                                             |
|                                             | 4 700                               | 57                                                                  | 25                                                                  | 0,20                                        | 5,0                                  | 10,3                                                      | 64 x 130             | ECG2VBP472M◇D130△△△△                                             |
|                                             | 5 600                               | 48                                                                  | 22                                                                  | 0,20                                        | 5,0                                  | 11,4                                                      | 77 x 115             | ECG2VBP562M◇E115△△△△                                             |
|                                             | 6 800                               | 40                                                                  | 17                                                                  | 0,20                                        | 5,0                                  | 13,1                                                      | 77 x 130             | ECG2VBP682M◇E130△△△△                                             |
|                                             | 8 200                               | 33                                                                  | 14                                                                  | 0,20                                        | 5,0                                  | 15,4                                                      | 77 x 155             | ECG2VBP822M◇E155△△△△                                             |
|                                             | 10 000                              | 27                                                                  | 12                                                                  | 0,20                                        | 5,0                                  | 18,1                                                      | 90 x 157             | ECG2VBP103M◇F157△△△△                                             |
|                                             | 12 000                              | 23                                                                  | 10                                                                  | 0,20                                        | 5,0                                  | 20,0                                                      | 90 x 157             | ECG2VBP123M◇F157△△△△                                             |
| 15 000                                      | 18                                  | 8,0                                                                 | 0,20                                                                | 5,0                                         | 24,5                                 | 90 x 196                                                  | ECG2VBP153M◇F196△△△△ |                                                                  |
| 18 000                                      | 15                                  | 6,0                                                                 | 0,20                                                                | 5,0                                         | 28,8                                 | 90 x 236                                                  | ECG2VBP183M◇F236△△△△ |                                                                  |
| 400<br>(450)<br>2G                          | 470                                 | 565                                                                 | 178                                                                 | 0,20                                        | 1,9                                  | 2,2                                                       | 36 x 83              | ECG2GBP471M◇A083△△△△                                             |
|                                             | 680                                 | 391                                                                 | 119                                                                 | 0,20                                        | 2,7                                  | 2,8                                                       | 36 x 100             | ECG2GBP681M◇A100△△△△                                             |
|                                             | 1 000                               | 266                                                                 | 82                                                                  | 0,20                                        | 4,0                                  | 3,5                                                       | 51 x 75              | ECG2GBP102M◇C075△△△△                                             |
|                                             | 1 200                               | 222                                                                 | 68                                                                  | 0,20                                        | 4,8                                  | 3,8                                                       | 51 x 75              | ECG2GBP122M◇C075△△△△                                             |
|                                             | 1 500                               | 177                                                                 | 58                                                                  | 0,20                                        | 5,0                                  | 4,7                                                       | 51 x 96              | ECG2GBP152M◇C096△△△△                                             |
|                                             | 1 800                               | 148                                                                 | 47                                                                  | 0,20                                        | 5,0                                  | 5,2                                                       | 51 x 96              | ECG2GBP182M◇C096△△△△                                             |
|                                             | 2 200                               | 121                                                                 | 35                                                                  | 0,20                                        | 5,0                                  | 6,4                                                       | 51 x 120             | ECG2GBP222M◇C120△△△△                                             |
|                                             | 2 700                               | 99                                                                  | 33                                                                  | 0,20                                        | 5,0                                  | 7,0                                                       | 64 x 96              | ECG2GBP272M◇D096△△△△                                             |
|                                             | 3 300                               | 81                                                                  | 31                                                                  | 0,20                                        | 5,0                                  | 8,2                                                       | 64 x 115             | ECG2GBP332M◇D115△△△△                                             |
|                                             | 3 900                               | 69                                                                  | 25                                                                  | 0,20                                        | 5,0                                  | 9,4                                                       | 64 x 130             | ECG2GBP392M◇D130△△△△                                             |
|                                             | 4 700                               | 57                                                                  | 24                                                                  | 0,20                                        | 5,0                                  | 10,4                                                      | 77 x 115             | ECG2GBP472M◇E115△△△△                                             |
|                                             | 5 600                               | 48                                                                  | 19                                                                  | 0,20                                        | 5,0                                  | 11,9                                                      | 77 x 130             | ECG2GBP562M◇E130△△△△                                             |
|                                             | 6 800                               | 40                                                                  | 16                                                                  | 0,20                                        | 5,0                                  | 14,1                                                      | 77 x 155             | ECG2GBP682M◇E155△△△△                                             |
|                                             | 8 200                               | 33                                                                  | 14                                                                  | 0,20                                        | 5,0                                  | 16,4                                                      | 90 x 157             | ECG2GBP822M◇F157△△△△                                             |
|                                             | 10 000                              | 27                                                                  | 11                                                                  | 0,20                                        | 5,0                                  | 18,3                                                      | 90 x 157             | ECG2GBP103M◇F157△△△△                                             |
|                                             | 12 000                              | 23                                                                  | 10                                                                  | 0,20                                        | 5,0                                  | 21,8                                                      | 90 x 196             | ECG2GBP123M◇F196△△△△                                             |
| 15 000                                      | 18                                  | 8,0                                                                 | 0,20                                                                | 5,0                                         | 26,3                                 | 90 x 236                                                  | ECG2GBP153M◇F236△△△△ |                                                                  |
| 450<br>(500)<br>2W                          | 470                                 | 565                                                                 | 200                                                                 | 0,20                                        | 2,1                                  | 2,2                                                       | 36 x 83              | ECG2WBP471M◇A083△△△△                                             |
|                                             | 680                                 | 391                                                                 | 140                                                                 | 0,20                                        | 3,1                                  | 2,8                                                       | 36 x 100             | ECG2WBP681M◇A100△△△△                                             |
|                                             | 820                                 | 324                                                                 | 96                                                                  | 0,20                                        | 3,7                                  | 3,2                                                       | 51 x 75              | ECG2WBP821M◇C075△△△△                                             |
|                                             | 1 000                               | 266                                                                 | 82                                                                  | 0,20                                        | 4,5                                  | 3,5                                                       | 51 x 75              | ECG2WBP102M◇C075△△△△                                             |
|                                             | 1 200                               | 222                                                                 | 72                                                                  | 0,20                                        | 5,0                                  | 4,2                                                       | 51 x 96              | ECG2WBP122M◇C096△△△△                                             |
|                                             | 1 500                               | 177                                                                 | 58                                                                  | 0,20                                        | 5,0                                  | 5,1                                                       | 51 x 115             | ECG2WBP152M◇C115△△△△                                             |
|                                             | 1 800                               | 148                                                                 | 46                                                                  | 0,20                                        | 5,0                                  | 5,9                                                       | 51 x 130             | ECG2WBP182M◇C130△△△△                                             |
|                                             | 2 200                               | 121                                                                 | 33                                                                  | 0,20                                        | 5,0                                  | 6,3                                                       | 64 x 96              | ECG2WBP222M◇D096△△△△                                             |
|                                             | 2 700                               | 99                                                                  | 32                                                                  | 0,20                                        | 5,0                                  | 7,5                                                       | 64 x 115             | ECG2WBP272M◇D115△△△△                                             |
|                                             | 3 300                               | 81                                                                  | 30                                                                  | 0,20                                        | 5,0                                  | 8,7                                                       | 64 x 130             | ECG2WBP332M◇D130△△△△                                             |
|                                             | 3 900                               | 69                                                                  | 29                                                                  | 0,20                                        | 5,0                                  | 9,5                                                       | 77 x 115             | ECG2WBP392M◇E115△△△△                                             |
|                                             | 4 700                               | 57                                                                  | 24                                                                  | 0,20                                        | 5,0                                  | 10,9                                                      | 77 x 130             | ECG2WBP472M◇E130△△△△                                             |
|                                             | 5 600                               | 48                                                                  | 16                                                                  | 0,20                                        | 5,0                                  | 12,8                                                      | 77 x 155             | ECG2WBP562M◇E155△△△△                                             |
|                                             | 6 800                               | 40                                                                  | 14                                                                  | 0,20                                        | 5,0                                  | 15,0                                                      | 90 x 157             | ECG2WBP682M◇F157△△△△                                             |
|                                             | 8 200                               | 33                                                                  | 12                                                                  | 0,20                                        | 5,0                                  | 16,5                                                      | 90 x 157             | ECG2WBP822M◇F157△△△△                                             |
|                                             | 10 000                              | 27                                                                  | 10                                                                  | 0,20                                        | 5,0                                  | 20,0                                                      | 90 x 196             | ECG2WBP103M◇F196△△△△                                             |
| 12 000                                      | 23                                  | 8,0                                                                 | 0,20                                                                | 5,0                                         | 23,6                                 | 90 x 236                                                  | ECG2WBP123M◇F236△△△△ |                                                                  |
| 500<br>(550)<br>2H                          | 1 000                               | 332                                                                 | 85                                                                  | 0,25                                        | 5,0                                  | 4,6                                                       | 51 x 115             | ECG2HBP102M◇C115△△△△                                             |
|                                             | 1 500                               | 222                                                                 | 60                                                                  | 0,25                                        | 5,0                                  | 5,7                                                       | 64 x 96              | ECG2HBP152M◇D096△△△△                                             |
|                                             | 2 200                               | 151                                                                 | 41                                                                  | 0,25                                        | 5,0                                  | 6,9                                                       | 64 x 130             | ECG2HBP222M◇D130△△△△                                             |
|                                             | 2 700                               | 123                                                                 | 36                                                                  | 0,25                                        | 5,0                                  | 8,1                                                       | 77 x 115             | ECG2HBP272M◇E115△△△△                                             |
|                                             | 3 300                               | 101                                                                 | 32                                                                  | 0,25                                        | 5,0                                  | 9,6                                                       | 77 x 130             | ECG2HBP332M◇E130△△△△                                             |
|                                             | 3 900                               | 86                                                                  | 30                                                                  | 0,25                                        | 5,0                                  | 10,8                                                      | 77 x 130             | ECG2HBP392M◇E130△△△△                                             |
|                                             | 4 700                               | 71                                                                  | 27                                                                  | 0,25                                        | 5,0                                  | 12,1                                                      | 77 x 155             | ECG2HBP472M◇E155△△△△                                             |
|                                             | 5 600                               | 60                                                                  | 21                                                                  | 0,25                                        | 5,0                                  | 13,8                                                      | 90 x 157             | ECG2HBP562M◇F157△△△△                                             |
|                                             | 6 800                               | 49                                                                  | 18                                                                  | 0,25                                        | 5,0                                  | 15,8                                                      | 90 x 171             | ECG2HBP682M◇F171△△△△                                             |
|                                             | 8 200                               | 41                                                                  | 14                                                                  | 0,25                                        | 5,0                                  | 17,2                                                      | 77 x 220             | ECG2HBP822M◇E220△△△△                                             |
| 10 000                                      | 34                                  | 10                                                                  | 0,25                                                                | 5,0                                         | 22,1                                 | 90 x 236                                                  | ECG2HBP103M◇F236△△△△ |                                                                  |



## ITEM CHARACTERISTICS

|                                     |               |            |
|-------------------------------------|---------------|------------|
| Operating Temperature Range (°C)    | -40 ~ +105    | -25 ~ +105 |
| Voltage Range (V)                   | 25 ~ 100      | 160 ~ 450  |
| Capacitance Range (µF)              | 220 ~ 330 000 |            |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%         |            |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

Fast Charge-Discharge Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                     |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|---------------------------------------------------------------------|
| Lifetime                                                                | 4 000h                                | > 200 000h                        | 2 000h                                | 2 000h                                   | 1 000h                                |                                                                     |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                     |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 10% of initial value            | Within ± 20% of initial value         |                                                                     |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 130% of specified value    | Not more than 200% of specified value |                                                                     |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$1,2 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test: $U_R$ to be applied for 30 min > 24h before measurement |

Terminal and Construction The terminal version has an impact on the current capability and mechanical behavior (vibration). For high current applications the terminals C,D and E are preferred, see page 151.

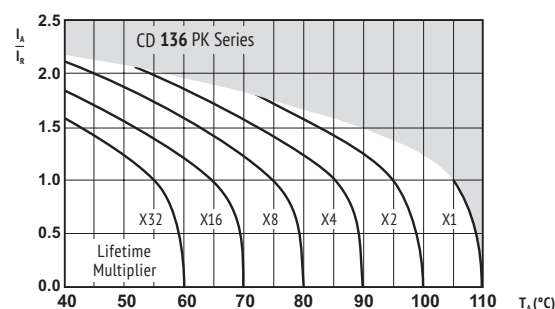
SCREW

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency<br>Rated Voltage (V) | 50Hz | 120Hz | 300Hz | 1kHz | ≥ 10 kHz |
|--------------------------------|------|-------|-------|------|----------|
| 25 ~ 100                       | 0,95 | 1,00  | 1,04  | 1,10 | 1,15     |
| 160 ~ 250                      | 0,95 | 1,00  | 1,08  | 1,15 | 1,20     |
| 350 ~ 450                      | 0,80 | 1,00  | 1,18  | 1,35 | 1,40     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_a$  = actual ripple current at 120Hz,

$I_R$  = rated ripple current at 120Hz, 105°C

Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)



## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.





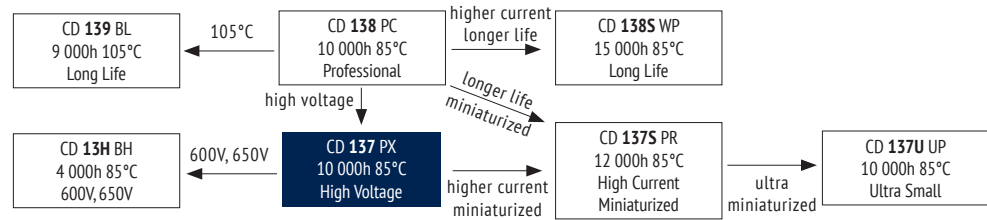
| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 120Hz | Size<br>øD x L | ORDER CODE<br>◇ = mounting style (stud)<br>△△△△ = terminal style |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------------------------------------|----------------|------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                  | (mm)           | Details: Page 150                                                |
| <b>25</b><br>(32)<br>1E                     | 10 000                              | 47                                                               | 25                                                               | 0,35                                     | 2,5                                  | 2,9                                                     | 36 x 53        | ECG1EPK103M◇A053△△△△                                             |
|                                             | 15 000                              | 31                                                               | 20                                                               | 0,35                                     | 3,8                                  | 4,2                                                     | 36 x 83        | ECG1EPK153M◇A083△△△△                                             |
|                                             | 22 000                              | 25                                                               | 13                                                               | 0,40                                     | 5,0                                  | 5,1                                                     | 36 x 83        | ECG1EPK223M◇A083△△△△                                             |
|                                             | 33 000                              | 17                                                               | 10                                                               | 0,40                                     | 5,0                                  | 6,3                                                     | 36 x 100       | ECG1EPK333M◇A100△△△△                                             |
|                                             | 47 000                              | 12                                                               | 4,0                                                              | 0,40                                     | 5,0                                  | 8,0                                                     | 51 x 75        | ECG1EPK473M◇C075△△△△                                             |
|                                             | 68 000                              | 9,8                                                              | 6,0                                                              | 0,50                                     | 5,0                                  | 10,0                                                    | 51 x 115       | ECG1EPK683M◇C115△△△△                                             |
|                                             | 100 000                             | 8,0                                                              | 5,0                                                              | 0,60                                     | 5,0                                  | 11,3                                                    | 64 x 96        | ECG1EPK104M◇D096△△△△                                             |
|                                             | 150 000                             | 7,1                                                              | 4,0                                                              | 0,80                                     | 5,0                                  | 12,9                                                    | 64 x 115       | ECG1EPK154M◇D115△△△△                                             |
|                                             | 220 000                             | 6,1                                                              | 3,0                                                              | 1,00                                     | 5,0                                  | 14,8                                                    | 77 x 115       | ECG1EPK224M◇E115△△△△                                             |
| <b>35</b><br>(44)<br>1V                     | 6 800                               | 59                                                               | 25                                                               | 0,30                                     | 2,4                                  | 2,6                                                     | 36 x 53        | ECG1VPK682M◇A053△△△△                                             |
|                                             | 10 000                              | 40                                                               | 20                                                               | 0,30                                     | 3,5                                  | 3,7                                                     | 36 x 83        | ECG1VPK103M◇A083△△△△                                             |
|                                             | 15 000                              | 27                                                               | 13                                                               | 0,30                                     | 5,0                                  | 4,5                                                     | 36 x 83        | ECG1VPK153M◇A083△△△△                                             |
|                                             | 22 000                              | 22                                                               | 10                                                               | 0,35                                     | 5,0                                  | 5,5                                                     | 36 x 100       | ECG1VPK223M◇A100△△△△                                             |
|                                             | 33 000                              | 17                                                               | 7,0                                                              | 0,40                                     | 5,0                                  | 6,7                                                     | 51 x 75        | ECG1VPK333M◇C075△△△△                                             |
|                                             | 47 000                              | 13                                                               | 6,0                                                              | 0,45                                     | 5,0                                  | 8,1                                                     | 51 x 96        | ECG1VPK473M◇C096△△△△                                             |
|                                             | 68 000                              | 9,8                                                              | 5,0                                                              | 0,50                                     | 5,0                                  | 10,0                                                    | 51 x 115       | ECG1VPK683M◇C115△△△△                                             |
|                                             | 100 000                             | 8,0                                                              | 4,0                                                              | 0,60                                     | 5,0                                  | 12,1                                                    | 64 x 115       | ECG1VPK104M◇D115△△△△                                             |
|                                             | 150 000                             | 6,2                                                              | 3,0                                                              | 0,70                                     | 5,0                                  | 13,8                                                    | 77 x 115       | ECG1VPK154M◇E115△△△△                                             |
| <b>50</b><br>(63)<br>1H                     | 3 300                               | 81                                                               | 50                                                               | 0,20                                     | 1,7                                  | 2,2                                                     | 36 x 53        | ECG1HPK332M◇A053△△△△                                             |
|                                             | 4 700                               | 71                                                               | 36                                                               | 0,25                                     | 2,4                                  | 3,3                                                     | 36 x 53        | ECG1HPK472M◇A053△△△△                                             |
|                                             | 6 800                               | 49                                                               | 32                                                               | 0,25                                     | 3,4                                  | 3,4                                                     | 36 x 83        | ECG1HPK682M◇A083△△△△                                             |
|                                             | 10 000                              | 34                                                               | 22                                                               | 0,25                                     | 5,0                                  | 4,1                                                     | 36 x 83        | ECG1HPK103M◇A083△△△△                                             |
|                                             | 15 000                              | 27                                                               | 14                                                               | 0,30                                     | 5,0                                  | 4,9                                                     | 36 x 100       | ECG1HPK153M◇A100△△△△                                             |
|                                             | 22 000                              | 22                                                               | 10                                                               | 0,35                                     | 5,0                                  | 5,9                                                     | 51 x 75        | ECG1HPK223M◇C075△△△△                                             |
|                                             | 33 000                              | 17                                                               | 7,0                                                              | 0,40                                     | 5,0                                  | 7,8                                                     | 51 x 115       | ECG1HPK333M◇C115△△△△                                             |
|                                             | 47 000                              | 12                                                               | 6,0                                                              | 0,40                                     | 5,0                                  | 9,5                                                     | 64 x 96        | ECG1HPK473M◇D096△△△△                                             |
|                                             | 68 000                              | 8,8                                                              | 5,0                                                              | 0,45                                     | 5,0                                  | 11,6                                                    | 64 x 115       | ECG1HPK683M◇D115△△△△                                             |
| <b>63</b><br>(79)<br>1J                     | 2 200                               | 91                                                               | 70                                                               | 0,15                                     | 1,4                                  | 2,1                                                     | 36 x 53        | ECG1JPK222M◇A053△△△△                                             |
|                                             | 3 300                               | 81                                                               | 50                                                               | 0,20                                     | 2,1                                  | 2,2                                                     | 36 x 53        | ECG1JPK332M◇A053△△△△                                             |
|                                             | 4 700                               | 57                                                               | 36                                                               | 0,20                                     | 3,0                                  | 3,1                                                     | 36 x 83        | ECG1JPK472M◇A083△△△△                                             |
|                                             | 6 800                               | 40                                                               | 25                                                               | 0,20                                     | 4,3                                  | 3,7                                                     | 36 x 83        | ECG1JPK682M◇A083△△△△                                             |
|                                             | 10 000                              | 34                                                               | 20                                                               | 0,25                                     | 5,0                                  | 4,4                                                     | 36 x 100       | ECG1JPK103M◇A100△△△△                                             |
|                                             | 15 000                              | 23                                                               | 14                                                               | 0,25                                     | 5,0                                  | 5,7                                                     | 51 x 75        | ECG1JPK153M◇C075△△△△                                             |
|                                             | 22 000                              | 19                                                               | 10                                                               | 0,30                                     | 5,0                                  | 6,8                                                     | 51 x 96        | ECG1JPK223M◇C096△△△△                                             |
|                                             | 33 000                              | 13                                                               | 7,0                                                              | 0,30                                     | 5,0                                  | 9,2                                                     | 64 x 96        | ECG1JPK333M◇D096△△△△                                             |
|                                             | 47 000                              | 9,9                                                              | 6,0                                                              | 0,35                                     | 5,0                                  | 10,9                                                    | 64 x 115       | ECG1JPK473M◇D115△△△△                                             |
| <b>80</b><br>(100)<br>1K                    | 2 200                               | 91                                                               | 57                                                               | 0,15                                     | 1,8                                  | 2,1                                                     | 36 x 53        | ECG1KPK222M◇A053△△△△                                             |
|                                             | 3 300                               | 61                                                               | 38                                                               | 0,15                                     | 2,6                                  | 3,0                                                     | 36 x 83        | ECG1KPK332M◇A083△△△△                                             |
|                                             | 4 700                               | 43                                                               | 27                                                               | 0,15                                     | 3,8                                  | 3,6                                                     | 36 x 83        | ECG1KPK472M◇A083△△△△                                             |
|                                             | 6 800                               | 40                                                               | 19                                                               | 0,20                                     | 5,0                                  | 4,0                                                     | 36 x 100       | ECG1KPK682M◇A100△△△△                                             |
|                                             | 10 000                              | 27                                                               | 17                                                               | 0,20                                     | 5,0                                  | 5,2                                                     | 51 x 75        | ECG1KPK103M◇C075△△△△                                             |
|                                             | 15 000                              | 23                                                               | 11                                                               | 0,25                                     | 5,0                                  | 6,2                                                     | 51 x 96        | ECG1KPK153M◇C096△△△△                                             |
|                                             | 22 000                              | 16                                                               | 8,0                                                              | 0,25                                     | 5,0                                  | 8,2                                                     | 64 x 96        | ECG1KPK223M◇D096△△△△                                             |
|                                             | 33 000                              | 13                                                               | 7,0                                                              | 0,30                                     | 5,0                                  | 9,7                                                     | 77 x 96        | ECG1KPK333M◇E096△△△△                                             |
|                                             | 47 000                              | 8,5                                                              | 6,0                                                              | 0,30                                     | 5,0                                  | 12,5                                                    | 77 x 115       | ECG1KPK473M◇E115△△△△                                             |
| <b>100</b><br>(125)<br>2A                   | 68 000                              | 5,9                                                              | 5,0                                                              | 0,30                                     | 5,0                                  | 16,4                                                    | 90 x 131       | ECG1KPK683M◇F131△△△△                                             |
|                                             | 1 000                               | 199                                                              | 70                                                               | 0,15                                     | 1,0                                  | 1,4                                                     | 36 x 53        | ECG2APK102M◇A053△△△△                                             |
|                                             | 1 500                               | 133                                                              | 55                                                               | 0,15                                     | 1,5                                  | 1,7                                                     | 36 x 53        | ECG2APK152M◇A053△△△△                                             |
|                                             | 2 200                               | 91                                                               | 38                                                               | 0,15                                     | 2,2                                  | 2,5                                                     | 36 x 83        | ECG2APK222M◇A083△△△△                                             |
|                                             | 3 300                               | 61                                                               | 25                                                               | 0,15                                     | 3,3                                  | 3,0                                                     | 36 x 83        | ECG2APK332M◇A083△△△△                                             |
|                                             | 4 700                               | 43                                                               | 21                                                               | 0,15                                     | 4,7                                  | 3,9                                                     | 36 x 100       | ECG2APK472M◇A100△△△△                                             |
|                                             | 6 800                               | 30                                                               | 19                                                               | 0,15                                     | 5,0                                  | 5,0                                                     | 51 x 75        | ECG2APK682M◇C075△△△△                                             |
|                                             | 10 000                              | 20                                                               | 13                                                               | 0,15                                     | 5,0                                  | 6,5                                                     | 51 x 96        | ECG2APK103M◇C096△△△△                                             |
|                                             | 15 000                              | 18                                                               | 9,0                                                              | 0,20                                     | 5,0                                  | 7,6                                                     | 64 x 96        | ECG2APK153M◇D096△△△△                                             |
| <b>160</b><br>(200)<br>2C                   | 22 000                              | 13                                                               | 7,0                                                              | 0,20                                     | 5,0                                  | 9,7                                                     | 77 x 96        | ECG2APK223M◇E096△△△△                                             |
|                                             | 33 000                              | 11                                                               | 6,0                                                              | 0,25                                     | 5,0                                  | 11,8                                                    | 77 x 130       | ECG2APK333M◇E130△△△△                                             |
|                                             | 47 000                              | 7,1                                                              | 5,0                                                              | 0,25                                     | 5,0                                  | 15,0                                                    | 90 x 131       | ECG2APK473M◇F131△△△△                                             |
|                                             | 1 000                               | 199                                                              | 70                                                               | 0,15                                     | 1,0                                  | 1,4                                                     | 36 x 53        | ECG2WPK102M◇A053△△△△                                             |
|                                             | 1 500                               | 133                                                              | 55                                                               | 0,15                                     | 1,5                                  | 1,7                                                     | 36 x 53        | ECG2WPK152M◇A053△△△△                                             |
|                                             | 2 200                               | 91                                                               | 38                                                               | 0,15                                     | 2,2                                  | 2,5                                                     | 36 x 83        | ECG2WPK222M◇A083△△△△                                             |
|                                             | 3 300                               | 61                                                               | 25                                                               | 0,15                                     | 3,3                                  | 3,0                                                     | 36 x 83        | ECG2WPK332M◇A083△△△△                                             |
|                                             | 4 700                               | 43                                                               | 21                                                               | 0,15                                     | 4,7                                  | 3,9                                                     | 36 x 100       | ECG2WPK472M◇A100△△△△                                             |
|                                             | 6 800                               | 30                                                               | 19                                                               | 0,15                                     | 5,0                                  | 5,0                                                     | 51 x 75        | ECG2WPK682M◇C075△△△△                                             |
| <b>200</b><br>(250)<br>2D                   | 10 000                              | 20                                                               | 13                                                               | 0,15                                     | 5,0                                  | 6,5                                                     | 51 x 96        | ECG2WPK103M◇C096△△△△                                             |
|                                             | 15 000                              | 18                                                               | 9,0                                                              | 0,20                                     | 5,0                                  | 7,6                                                     | 64 x 96        | ECG2WPK153M◇D096△△△△                                             |
|                                             | 22 000                              | 13                                                               | 7,0                                                              | 0,20                                     | 5,0                                  | 9,7                                                     | 77 x 96        | ECG2WPK223M◇E096△△△△                                             |
|                                             | 33 000                              | 11                                                               | 6,0                                                              | 0,25                                     | 5,0                                  | 11,8                                                    | 77 x 130       | ECG2WPK333M◇E130△△△△                                             |
|                                             | 47 000                              | 7,1                                                              | 5,0                                                              | 0,25                                     | 5,0                                  | 15,0                                                    | 90 x 131       | ECG2WPK473M◇F131△△△△                                             |
|                                             | 1 000                               | 199                                                              | 70                                                               | 0,15                                     | 1,0                                  | 1,4                                                     | 36 x 53        | ECG2GPK102M◇C075△△△△                                             |
|                                             | 1 500                               | 133                                                              | 55                                                               | 0,15                                     | 1,5                                  | 1,7                                                     | 36 x 53        | ECG2GPK152M◇C096△△△△                                             |
|                                             | 2 200                               | 91                                                               | 38                                                               | 0,15                                     | 2,2                                  | 2,5                                                     | 36 x 83        | ECG2GPK222M◇C115△△△△                                             |
|                                             | 3 300                               | 61                                                               | 25                                                               | 0,15                                     | 3,3                                  | 3,0                                                     | 36 x 83        | ECG2GPK332M◇C130△△△△                                             |
| <b>250</b><br>(300)<br>2E                   | 4 700                               | 43                                                               | 21                                                               | 0,15                                     | 4,7                                  | 3,9                                                     | 36 x 100       | ECG2GPK472M◇C130△△△△                                             |
|                                             | 6 800                               | 30                                                               | 19                                                               | 0,15                                     | 5,0                                  | 5,0                                                     | 51 x 75        | ECG2GPK682M◇C096△△△△                                             |
|                                             | 10 000                              | 20                                                               | 13                                                               | 0,15                                     | 5,0                                  | 6,5                                                     | 51 x 96        | ECG2GPK103M◇C115△△△△                                             |
|                                             | 15 000                              | 18                                                               | 9,0                                                              | 0,20                                     | 5,0                                  | 7,6                                                     | 64 x 96        | ECG2GPK153M◇C130△△△△                                             |
|                                             | 22 000                              | 13                                                               | 7,0                                                              | 0,20                                     | 5,0                                  | 9,7                                                     | 77 x 96        | ECG2GPK223M◇D096△△△△                                             |
|                                             | 33 000                              | 11                                                               | 6,0                                                              | 0,25                                     | 5,0                                  | 11,8                                                    | 77 x 130       | ECG2GPK333M◇D115△△△△                                             |
|                                             | 47 000                              | 7,1                                                              | 5,0                                                              | 0,25                                     | 5,0                                  | 15,0                                                    | 90 x 131       | ECG2GPK473M◇D130△△△△                                             |
|                                             | 1 000                               | 199                                                              | 70                                                               | 0,15                                     | 1,0                                  | 1,4                                                     | 36 x 53        | ECG2GPK102M◇D155△△△△                                             |
|                                             | 1 500                               | 133                                                              | 55                                                               | 0,15                                     | 1,5                                  | 1,7                                                     | 36 x 53        | ECG2GPK152M◇D195△△△△                                             |
| <b>400</b><br>(450)<br>2G                   | 2 200                               | 91                                                               | 38                                                               | 0,15                                     | 2,2                                  | 2,5                                                     | 36 x 83        | ECG2GPK222M◇D195△△△△                                             |
|                                             | 3 300                               | 61                                                               | 25                                                               | 0,15                                     | 3,3                                  | 3,0                                                     | 36 x 83        | ECG2GPK332M◇D195△△△△                                             |
|                                             | 4 700                               | 43                                                               | 21                                                               | 0,15                                     | 4,7                                  | 3,9                                                     | 36 x 100       | ECG2GPK472M◇D195△△△△                                             |
|                                             | 6 800                               | 30                                                               | 19                                                               | 0,15                                     | 5,0                                  | 5,0                                                     | 51 x 75        | ECG2GPK682M◇E115△△△△                                             |
|                                             | 10 000                              | 20                                                               | 13                                                               | 0,15                                     | 5,0                                  | 6,5                                                     | 51 x 96        | ECG2GPK103M◇E130△△△△                                             |
|                                             | 15 000                              | 18                                                               | 9,0                                                              | 0,20                                     | 5,0                                  | 7,6                                                     | 64 x 96        | ECG2GPK153M◇E130△△△△                                             |
|                                             | 22 000                              | 13                                                               | 7,0                                                              | 0,20                                     | 5,0                                  | 9,7                                                     | 77 x 96        | ECG2GPK223M◇E155△△△△                                             |
|                                             | 33 000                              | 11                                                               | 6,0                                                              | 0,25                                     | 5,0                                  | 11,8                                                    | 77 x 130       | ECG2GPK333M◇E155△△△△                                             |
|                                             | 47 000                              | 7,1                                                              | 5,0                                                              | 0,25                                     | 5,0                                  | 15,0                                                    | 90 x 131       | ECG2GPK473M◇F157△△△△                                             |
| <b>450</b><br>(500)<br>2W                   | 68 000                              | 5,9                                                              | 5,0                                                              | 0,30                                     | 5,0                                  | 16,4                                                    | 90 x 131       | ECG2GPK682M◇F157△△△△                                             |
|                                             | 1 000                               | 199                                                              | 70                                                               | 0,15                                     | 1,0                                  | 1,4                                                     | 36 x 53        | ECG2WPK221M◇A053△△△△                                             |
|                                             | 1 500                               | 133                                                              | 55                                                               | 0,15                                     | 1,5                                  | 1,7                                                     | 36 x 53        | ECG2WPK331M◇A100△△△△                                             |
|                                             | 2 200                               | 91                                                               | 38                                                               | 0,15                                     | 2,2                                  | 2,5                                                     | 36 x 83        | ECG2WPK471M◇C083△△△△                                             |
|                                             | 3 300                               | 61                                                               | 25                                                               | 0,15                                     | 3,3                                  | 3,0                                                     | 36 x 83        | ECG2WPK681K◇C096△△△△                                             |
|                                             | 4 700                               | 43                                                               | 21                                                               | 0,15                                     | 4,7                                  | 3,9                                                     | 36 x 100       | ECG2WPK102M◇C100△△△△                                             |
|                                             | 6 800                               | 30                                                               | 19                                                               | 0,15                                     | 5,0                                  | 5,0                                                     | 51 x 75        | ECG2WPK152M◇C130△△△△                                             |
|                                             | 10 000                              | 20                                                               | 13                                                               | 0,15                                     | 5,0                                  | 6,5                                                     | 51 x 96        | ECG2WPK222M◇D115△△△△                                             |
|                                             | 15 000                              | 18                                                               | 9,0                                                              | 0,20                                     | 5,0                                  | 7,6                                                     | 64 x 96        | ECG2WPK332M◇E130△△△△                                             |
| <b>160</b><br>(200)<br>2C                   | 22 000                              | 13                                                               | 7,0                                                              | 0,20                                     | 5,0                                  | 9,7                                                     | 77 x 96        | ECG2WPK472M◇E155△△△△                                             |
|                                             | 33 000                              | 11                                                               | 6,0                                                              | 0,25                                     | 5,0                                  | 11,8                                                    | 77 x 130       | ECG2WPK682M◇F157△△△△                                             |
|                                             | 47 000                              | 7,1                                                              | 5,0                                                              | 0,25                                     | 5,0                                  | 15,0                                                    | 90 x 131       | ECG2WPK103M◇F157△△△△                                             |
|                                             | 1 000                               | 199                                                              | 70                                                               | 0,15                                     | 1,0                                  | 1,4                                                     | 36 x 53        | ECG2WPK221M◇A053△△△△                                             |
|                                             | 1 500                               | 133                                                              | 55                                                               | 0,15                                     | 1,5                                  | 1,7                                                     | 36 x 53        | ECG2WPK331M◇A100△△△△                                             |
|                                             | 2 200                               | 91                                                               | 38                                                               | 0,15                                     | 2,2                                  | 2,5                                                     | 36 x 83        | ECG2WPK471M◇C083△△△△                                             |
|                                             | 3 300                               | 61                                                               | 25                                                               | 0,15                                     | 3,3                                  | 3,0                                                     | 36 x 83        | ECG2WPK681K◇C096△△△△                                             |
|                                             | 4 700                               | 43                                                               | 21                                                               | 0,15                                     | 4,7                                  | 3,9                                                     | 36 x 100       | ECG2WPK102M◇C100△△△△                                             |
|                                             | 6 800                               | 30                                                               | 19                                                               | 0,15                                     | 5,0                                  | 5,0                                                     | 51 x 75        | ECG2WPK152M◇C130△△△△                                             |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C 120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C 120Hz | tanδ<br>Dissipation Factor<br>20°C 120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>105°C 120Hz | Size<br>øD x L       | ORDER CODE<br>◇ = mounting style (stud)<br>△△△△ = terminal style |
|---------------------------------------------|-------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------|--------------------------------------|---------------------------------------------------------|----------------------|------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                             | (mΩ)                                                             |                                          | (mA)                                 | (Arms)                                                  | (mm)                 | Details: Page 150                                                |
| 160<br>(200)<br>2C                          | 470                                 | 424                                                              | 265                                                              | 0,15                                     | 0,8                                  | 1,0                                                     | 36 x 53              | ECG2CPK471M◇A053△△△△                                             |
|                                             | 680                                 | 293                                                              | 186                                                              | 0,15                                     | 1,1                                  | 1,1                                                     | 36 x 53              | ECG2CPK681M◇A053△△△△                                             |
|                                             | 1 000                               | 199                                                              | 125                                                              | 0,15                                     | 1,6                                  | 1,7                                                     | 36 x 83              | ECG2CPK102M◇A083△△△△                                             |
|                                             | 1 500                               | 133                                                              | 85                                                               | 0,15                                     | 2,4                                  | 2,0                                                     | 36 x 83              | ECG2CPK152M◇A083△△△△                                             |
|                                             | 2 200                               | 91                                                               | 55                                                               | 0,15                                     | 3,5                                  | 2,7                                                     | 36 x 100             | ECG2CPK222M◇A100△△△△                                             |
|                                             | 3 300                               | 61                                                               | 38                                                               | 0,15                                     | 5,0                                  | 3,5                                                     | 51 x 83              | ECG2CPK332M◇C083△△△△                                             |
|                                             | 4 700                               | 43                                                               | 35                                                               | 0,15                                     | 5,0                                  | 4,4                                                     | 51 x 96              | ECG2CPK472M◇C096△△△△                                             |
|                                             | 6 800                               | 30                                                               | 25                                                               | 0,15                                     | 5,0                                  | 5,9                                                     | 64 x 96              | ECG2CPK682M◇D096△△△△                                             |
|                                             | 10 000                              | 20                                                               | 15                                                               | 0,15                                     | 5,0                                  | 7,6                                                     | 77 x 96              | ECG2CPK103M◇E096△△△△                                             |
|                                             | 15 000                              | 14                                                               | 11                                                               | 0,15                                     | 5,0                                  | 10,3                                                    | 77 x 130             | ECG2CPK153M◇E130△△△△                                             |
| 22 000                                      | 9,1                                 | 6,0                                                              | 0,15                                                             | 5,0                                      | 13,2                                 | 90 x 131                                                | ECG2CPK223M◇F131△△△△ |                                                                  |
| 200<br>(250)<br>2D                          | 330                                 | 603                                                              | 375                                                              | 0,15                                     | 0,7                                  | 0,8                                                     | 36 x 53              | ECG2DPK331M◇A053△△△△                                             |
|                                             | 470                                 | 424                                                              | 262                                                              | 0,15                                     | 0,9                                  | 1,0                                                     | 36 x 53              | ECG2DPK471M◇A053△△△△                                             |
|                                             | 680                                 | 293                                                              | 180                                                              | 0,15                                     | 1,4                                  | 1,1                                                     | 36 x 53              | ECG2DPK681M◇A053△△△△                                             |
|                                             | 1 000                               | 199                                                              | 125                                                              | 0,15                                     | 2,0                                  | 1,7                                                     | 36 x 83              | ECG2DPK102M◇A083△△△△                                             |
|                                             | 1 500                               | 133                                                              | 75                                                               | 0,15                                     | 3,0                                  | 2,2                                                     | 36 x 100             | ECG2DPK152M◇A100△△△△                                             |
|                                             | 2 200                               | 91                                                               | 50                                                               | 0,15                                     | 4,4                                  | 2,8                                                     | 51 x 75              | ECG2DPK222M◇C075△△△△                                             |
|                                             | 3 300                               | 61                                                               | 36                                                               | 0,15                                     | 5,0                                  | 3,7                                                     | 51 x 96              | ECG2DPK332M◇C096△△△△                                             |
|                                             | 4 700                               | 43                                                               | 24                                                               | 0,15                                     | 5,0                                  | 4,9                                                     | 64 x 96              | ECG2DPK472M◇D096△△△△                                             |
|                                             | 6 800                               | 30                                                               | 16                                                               | 0,15                                     | 5,0                                  | 6,3                                                     | 64 x 115             | ECG2DPK682M◇D115△△△△                                             |
|                                             | 10 000                              | 20                                                               | 12                                                               | 0,15                                     | 5,0                                  | 8,1                                                     | 77 x 115             | ECG2DPK103M◇E115△△△△                                             |
| 15 000                                      | 14                                  | 6,0                                                              | 0,15                                                             | 5,0                                      | 10,9                                 | 90 x 131                                                | ECG2DPK153M◇F131△△△△ |                                                                  |
| 250<br>(300)<br>2E                          | 330                                 | 603                                                              | 160                                                              | 0,15                                     | 0,8                                  | 0,8                                                     | 36 x 53              | ECG2EPK331M◇A053△△△△                                             |
|                                             | 470                                 | 424                                                              | 120                                                              | 0,15                                     | 1,2                                  | 1,0                                                     | 36 x 53              | ECG2EPK471M◇A053△△△△                                             |
|                                             | 680                                 | 293                                                              | 85                                                               | 0,15                                     | 1,7                                  | 1,4                                                     | 36 x 83              | ECG2EPK681M◇A083△△△△                                             |
|                                             | 1 000                               | 199                                                              | 55                                                               | 0,15                                     | 2,5                                  | 1,9                                                     | 36 x 100             | ECG2EPK102M◇A100△△△△                                             |
|                                             | 1 500                               | 133                                                              | 40                                                               | 0,15                                     | 3,8                                  | 2,3                                                     | 51 x 75              | ECG2EPK152M◇C075△△△△                                             |
|                                             | 2 200                               | 91                                                               | 28                                                               | 0,15                                     | 5,0                                  | 3,1                                                     | 51 x 96              | ECG2EPK222M◇C096△△△△                                             |
|                                             | 3 300                               | 61                                                               | 20                                                               | 0,15                                     | 5,0                                  | 4,2                                                     | 64 x 96              | ECG2EPK332M◇D096△△△△                                             |
|                                             | 4 700                               | 43                                                               | 15                                                               | 0,15                                     | 5,0                                  | 5,4                                                     | 64 x 115             | ECG2EPK472M◇D115△△△△                                             |
|                                             | 6 800                               | 30                                                               | 10                                                               | 0,15                                     | 5,0                                  | 6,9                                                     | 77 x 115             | ECG2EPK682M◇E115△△△△                                             |
|                                             | 10 000                              | 20                                                               | 8,0                                                              | 0,15                                     | 5,0                                  | 9,3                                                     | 77 x 155             | ECG2EPK103M◇E155△△△△                                             |
| 15 000                                      | 14                                  | 6,0                                                              | 0,15                                                             | 5,0                                      | 12,2                                 | 90 x 157                                                | ECG2EPK153M◇F157△△△△ |                                                                  |
| 400<br>(450)<br>2G                          | 1 000                               | 199                                                              | 82                                                               | 0,15                                     | 4,0                                  | 3,9                                                     | 51 x 75              | ECG2GPK102M◇C075△△△△                                             |
|                                             | 1 200                               | 166                                                              | 70                                                               | 0,15                                     | 4,8                                  | 4,7                                                     | 51 x 96              | ECG2GPK122M◇C096△△△△                                             |
|                                             | 1 500                               | 133                                                              | 49                                                               | 0,15                                     | 5,0                                  | 5,6                                                     | 51 x 115             | ECG2GPK152M◇C115△△△△                                             |
|                                             | 1 800                               | 111                                                              | 39                                                               | 0,15                                     | 5,0                                  | 6,4                                                     | 51 x 130             | ECG2GPK182M◇C130△△△△                                             |
|                                             | 2 200                               | 91                                                               | 30                                                               | 0,15                                     | 5,0                                  | 7,0                                                     | 64 x 96              | ECG2GPK222M◇D096△△△△                                             |
|                                             | 2 700                               | 74                                                               | 22                                                               | 0,15                                     | 5,0                                  | 8,3                                                     | 64 x 115             | ECG2GPK272M◇D115△△△△                                             |
|                                             | 3 300                               | 61                                                               | 20                                                               | 0,15                                     | 5,0                                  | 9,7                                                     | 64 x 130             | ECG2GPK332M◇D130△△△△                                             |
|                                             | 3 900                               | 52                                                               | 18                                                               | 0,15                                     | 5,0                                  | 11,2                                                    | 64 x 155             | ECG2GPK392M◇D155△△△△                                             |
|                                             |                                     | 52                                                               | 18                                                               | 0,15                                     | 5,0                                  | 10,6                                                    | 77 x 115             | ECG2GPK392M◇E115△△△△                                             |
|                                             | 4 700                               | 43                                                               | 13                                                               | 0,15                                     | 5,0                                  | 13,5                                                    | 64 x 195             | ECG2GPK472M◇D195△△△△                                             |
| 43                                          |                                     | 13                                                               | 0,15                                                             | 5,0                                      | 12,1                                 | 77 x 130                                                | ECG2GPK472M◇E130△△△△ |                                                                  |
| 5 600                                       | 36                                  | 12                                                               | 0,15                                                             | 5,0                                      | 15,0                                 | 64 x 195                                                | ECG2GPK562M◇D195△△△△ |                                                                  |
|                                             | 36                                  | 12                                                               | 0,15                                                             | 5,0                                      | 14,3                                 | 77 x 155                                                | ECG2GPK562M◇E155△△△△ |                                                                  |
|                                             | 6 800                               | 30                                                               | 11                                                               | 0,15                                     | 5,0                                  | 16,7                                                    | 90 x 157             | ECG2GPK682M◇F157△△△△                                             |
|                                             | 8 200                               | 25                                                               | 10                                                               | 0,15                                     | 5,0                                  | 18,4                                                    | 90 x 157             | ECG2GPK822M◇F157△△△△                                             |
| 10 000                                      | 20                                  | 9,0                                                              | 0,15                                                             | 5,0                                      | 22,0                                 | 90 x 196                                                | ECG2GPK103M◇F196△△△△ |                                                                  |
| 450<br>(500)<br>2W                          | 220                                 | 905                                                              | 415                                                              | 0,15                                     | 1,0                                  | 1,1                                                     | 36 x 53              | ECG2WPK221M◇A053△△△△                                             |
|                                             | 330                                 | 603                                                              | 277                                                              | 0,15                                     | 1,5                                  | 1,5                                                     | 36 x 100             | ECG2WPK331M◇A100△△△△                                             |
|                                             | 470                                 | 424                                                              | 195                                                              | 0,15                                     | 2,1                                  | 2,1                                                     | 51 x 83              | ECG2WPK471M◇C083△△△△                                             |
|                                             | 680                                 | 293                                                              | 135                                                              | 0,15                                     | 3,1                                  | 2,7                                                     | 51 x 96              | ECG2WPK681K◇C096△△△△                                             |
|                                             | 1 000                               | 199                                                              | 90                                                               | 0,15                                     | 4,5                                  | 4,2                                                     | 51 x 100             | ECG2WPK102M◇C100△△△△                                             |
|                                             | 1 500                               | 133                                                              | 54                                                               | 0,15                                     | 5,0                                  | 5,7                                                     | 51 x 130             | ECG2WPK152M◇C130△△△△                                             |
|                                             | 2 200                               | 91                                                               | 33                                                               | 0,15                                     | 5,0                                  | 7,3                                                     | 64 x 115             | ECG2WPK222M◇D115△△△△                                             |
|                                             | 3 300                               | 61                                                               | 22                                                               | 0,15                                     | 5,0                                  | 10,1                                                    | 77 x 130             | ECG2WPK332M◇E130△△△△                                             |
|                                             | 4 700                               | 43                                                               | 15                                                               | 0,15                                     | 5,0                                  | 12,6                                                    | 77 x 155             | ECG2WPK472M◇E155△△△△                                             |
|                                             | 5 600                               | 36                                                               | 11                                                               | 0,15                                     | 5,0                                  | 15,8                                                    | 90 x 157             | ECG2WPK562M◇F157△△△△                                             |



## 10 000h at 85°C

- High Reliability at High Voltage
- Long Life at Compact Size



## ITEM CHARACTERISTICS

|                                     |                |
|-------------------------------------|----------------|
| Operating Temperature Range (°C)    | -40 ~ +85      |
| Voltage Range (V)                   | 400 ~ 550      |
| Capacitance Range (μF)              | 1 000 ~ 22 200 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%          |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

Fast Charge-Discharge Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                          | SHELF LIFE                            |                                                                     |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|---------------------------------------------------------------------|
| Lifetime                                                                | 10 000h                               | > 100 000h                        | 5 000h                                | 5 000h                                  | 1 000h                                |                                                                     |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value           | Not more than specified value         |                                                                     |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 10% of initial value           | Within ± 20% of initial value         |                                                                     |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value   | Not more than 200% of specified value |                                                                     |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$I_R = 0$<br>85°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>85°C        | After test: $U_R$ to be applied for 30 min > 24h before measurement |

Terminal and Construction The terminal version has an impact on the current capability and mechanical behavior (vibration). For high current applications the terminals C,D and E are preferred, see page 151.

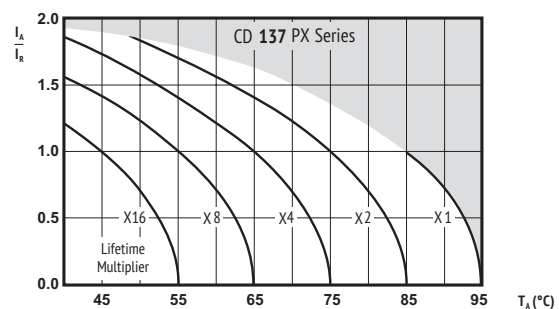
Optional Self-extinguishing Electrolyte on request

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

|             |      |       |       |      |          |
|-------------|------|-------|-------|------|----------|
| Frequency   | 50Hz | 120Hz | 300Hz | 1kHz | ≥ 10 kHz |
| Coefficient | 0,80 | 1,00  | 1,10  | 1,30 | 1,40     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_a$  = actual ripple current at 120Hz,  
 $I_r$  = rated ripple current at 120Hz, 85°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

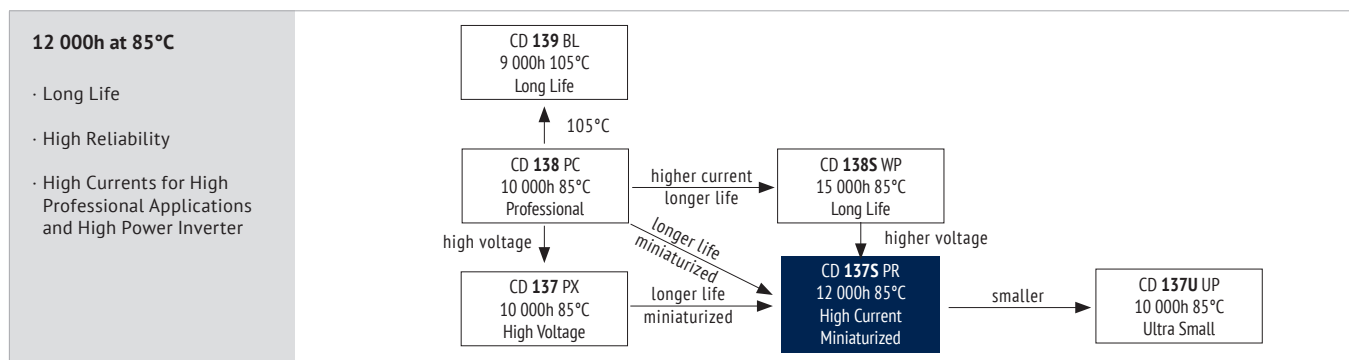


## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇ = mounting style (stud)<br>△△△△ = terminal style<br><br>Details: Page 150 |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|----------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                             | (mm)                             |                                                                                               |
| 400<br>(450)<br>2G                   | 2 200                      | 98                                                           | 28                                                           | 0,15                                                | 5,0                           | 8,8                                                | 51 x 115                         | ECG2GPX222M◇C115△△△△                                                                          |
|                                      | 2 700                      | 80                                                           | 24                                                           | 0,15                                                | 5,0                           | 10,2                                               | 51 x 130                         | ECG2GPX272M◇C130△△△△                                                                          |
|                                      | 3 300                      | 65                                                           | 21                                                           | 0,15                                                | 5,0                           | 11,0                                               | 64 x 96                          | ECG2GPX332M◇D096△△△△                                                                          |
|                                      | 3 900                      | 55                                                           | 19                                                           | 0,15                                                | 5,0                           | 12,8                                               | 64 x 115                         | ECG2GPX392M◇D115△△△△                                                                          |
|                                      | 4 700                      | 46                                                           | 15                                                           | 0,15                                                | 5,0                           | 14,8                                               | 64 x 130                         | ECG2GPX472M◇D130△△△△                                                                          |
|                                      | 5 600                      | 38                                                           | 14                                                           | 0,15                                                | 5,0                           | 16,2                                               | 77 x 115                         | ECG2GPX562M◇E115△△△△                                                                          |
|                                      | 6 800                      | 32                                                           | 13                                                           | 0,15                                                | 5,0                           | 18,7                                               | 77 x 130                         | ECG2GPX682M◇E130△△△△                                                                          |
|                                      | 8 200                      | 26                                                           | 12                                                           | 0,15                                                | 5,0                           | 22,0                                               | 77 x 155                         | ECG2GPX822M◇E155△△△△                                                                          |
|                                      | 10 000                     | 22                                                           | 10                                                           | 0,15                                                | 5,0                           | 26,7                                               | 77 x 195                         | ECG2GPX103M◇E195△△△△                                                                          |
|                                      |                            | 22                                                           | 10                                                           | 0,15                                                | 5,0                           | 24,2                                               | 90 x 131                         | ECG2GPX103M◇F131△△△△                                                                          |
|                                      | 12 000                     | 18                                                           | 8                                                            | 0,15                                                | 5,0                           | 28,5                                               | 90 x 157                         | ECG2GPX123M◇F157△△△△                                                                          |
|                                      | 15 000                     | 14                                                           | 6                                                            | 0,15                                                | 5,0                           | 34,8                                               | 90 x 196                         | ECG2GPX153M◇F196△△△△                                                                          |
|                                      | 18 000                     | 12                                                           | 5                                                            | 0,15                                                | 5,0                           | 41,2                                               | 90 x 236                         | ECG2GPX183M◇F236△△△△                                                                          |
|                                      | 22 000                     | 10                                                           | 5                                                            | 0,15                                                | 5,0                           | 47,0                                               | 101 x 237                        | ECG2GPX223M◇G237△△△△                                                                          |
| 450<br>(500)<br>2W                   | 1 800                      | 119                                                          | 45                                                           | 0,15                                                | 5,0                           | 7,6                                                | 51 x 115                         | ECG2WPX182M◇C115△△△△                                                                          |
|                                      | 2 200                      | 98                                                           | 35                                                           | 0,15                                                | 5,0                           | 8,8                                                | 51 x 130                         | ECG2WPX222M◇C130△△△△                                                                          |
|                                      | 2 700                      | 80                                                           | 30                                                           | 0,15                                                | 5,0                           | 9,5                                                | 64 x 96                          | ECG2WPX272M◇D096△△△△                                                                          |
|                                      | 3 300                      | 65                                                           | 24                                                           | 0,15                                                | 5,0                           | 11,2                                               | 64 x 115                         | ECG2WPX332M◇D115△△△△                                                                          |
|                                      | 3 900                      | 55                                                           | 20                                                           | 0,15                                                | 5,0                           | 12,8                                               | 64 x 130                         | ECG2WPX392M◇D130△△△△                                                                          |
|                                      | 4 700                      | 46                                                           | 16                                                           | 0,15                                                | 5,0                           | 14,1                                               | 77 x 115                         | ECG2WPX472M◇E115△△△△                                                                          |
|                                      | 5 600                      | 38                                                           | 13                                                           | 0,15                                                | 5,0                           | 16,2                                               | 77 x 130                         | ECG2WPX562M◇E130△△△△                                                                          |
|                                      | 6 800                      | 32                                                           | 11                                                           | 0,15                                                | 5,0                           | 19,1                                               | 77 x 155                         | ECG2WPX682M◇E155△△△△                                                                          |
|                                      | 8 200                      | 26                                                           | 10                                                           | 0,15                                                | 5,0                           | 23,0                                               | 77 x 195                         | ECG2WPX822M◇E195△△△△                                                                          |
|                                      |                            | 26                                                           | 10                                                           | 0,15                                                | 5,0                           | 21,0                                               | 90 x 131                         | ECG2WPX822M◇F131△△△△                                                                          |
|                                      | 10 000                     | 22                                                           | 9                                                            | 0,15                                                | 5,0                           | 25,7                                               | 90 x 171                         | ECG2WPX103M◇F171△△△△                                                                          |
|                                      | 12 000                     | 18                                                           | 8                                                            | 0,15                                                | 5,0                           | 29,7                                               | 90 x 196                         | ECG2WPX123M◇F196△△△△                                                                          |
|                                      |                            | 18                                                           | 8                                                            | 0,15                                                | 5,0                           | 29,3                                               | 101 x 175                        | ECG2WPX123M◇G175△△△△                                                                          |
|                                      | 15 000                     | 14                                                           | 7                                                            | 0,15                                                | 5,0                           | 35,9                                               | 90 x 236                         | ECG2WPX153M◇F236△△△△                                                                          |
|                                      |                            | 14                                                           | 7                                                            | 0,15                                                | 5,0                           | 34,2                                               | 101 x 195                        | ECG2WPX153M◇G195△△△△                                                                          |
|                                      | 18 000                     | 12                                                           | 6                                                            | 0,15                                                | 5,0                           | 40,5                                               | 101 x 237                        | ECG2WPX183M◇G237△△△△                                                                          |
| 500<br>(550)<br>2H                   | 1 200                      | 215                                                          | 94                                                           | 0,20                                                | 5,0                           | 6,2                                                | 51 x 115                         | ECG2HPX122M◇C115△△△△                                                                          |
|                                      |                            | 215                                                          | 94                                                           | 0,20                                                | 5,0                           | 6,3                                                | 64 x 96                          | ECG2HPX122M◇D096△△△△                                                                          |
|                                      |                            | 172                                                          | 72                                                           | 0,20                                                | 5,0                           | 7,3                                                | 51 x 130                         | ECG2HPX152M◇C130△△△△                                                                          |
|                                      | 1500                       | 172                                                          | 72                                                           | 0,20                                                | 5,0                           | 7,1                                                | 64 x 96                          | ECG2HPX152M◇D096△△△△                                                                          |
|                                      |                            | 143                                                          | 51                                                           | 0,20                                                | 5,0                           | 8,3                                                | 64 x 115                         | ECG2HPX182M◇D115△△△△                                                                          |
|                                      | 2 200                      | 117                                                          | 40                                                           | 0,20                                                | 5,0                           | 9,6                                                | 64 x 130                         | ECG2HPX222M◇D130△△△△                                                                          |
|                                      | 2 700                      | 96                                                           | 35                                                           | 0,20                                                | 5,0                           | 10,7                                               | 77 x 115                         | ECG2HPX272M◇E115△△△△                                                                          |
|                                      | 3 300                      | 78                                                           | 30                                                           | 0,20                                                | 5,0                           | 12,4                                               | 77 x 130                         | ECG2HPX332M◇E130△△△△                                                                          |
|                                      | 3 900                      | 66                                                           | 25                                                           | 0,20                                                | 5,0                           | 14,4                                               | 77 x 155                         | ECG2HPX392M◇E155△△△△                                                                          |
|                                      | 4 700                      | 55                                                           | 24                                                           | 0,20                                                | 5,0                           | 16,5                                               | 77 x 171                         | ECG2HPX472M◇E171△△△△                                                                          |
|                                      |                            | 55                                                           | 24                                                           | 0,20                                                | 5,0                           | 15,8                                               | 90 x 131                         | ECG2HPX472M◇F131△△△△                                                                          |
|                                      | 5 600                      | 46                                                           | 22                                                           | 0,20                                                | 5,0                           | 19,0                                               | 77 x 195                         | ECG2HPX562M◇E195△△△△                                                                          |
|                                      |                            | 46                                                           | 22                                                           | 0,20                                                | 5,0                           | 18,6                                               | 90 x 157                         | ECG2HPX562M◇F157△△△△                                                                          |
|                                      | 6 800                      | 38                                                           | 19                                                           | 0,20                                                | 5,0                           | 21,2                                               | 90 x 171                         | ECG2HPX682M◇F171△△△△                                                                          |
|                                      | 8 200                      | 31                                                           | 14                                                           | 0,20                                                | 5,0                           | 24,5                                               | 90 x 196                         | ECG2HPX822M◇F196△△△△                                                                          |
|                                      |                            | 31                                                           | 14                                                           | 0,20                                                | 5,0                           | 24,2                                               | 101 x 175                        | ECG2HPX822M◇G175△△△△                                                                          |
|                                      | 10 000                     | 26                                                           | 12                                                           | 0,20                                                | 5,0                           | 29,3                                               | 90 x 236                         | ECG2HPX103M◇F236△△△△                                                                          |
|                                      |                            | 26                                                           | 12                                                           | 0,20                                                | 5,0                           | 27,9                                               | 101 x 195                        | ECG2HPX103M◇G195△△△△                                                                          |
|                                      | 12 000                     | 22                                                           | 11                                                           | 0,20                                                | 5,0                           | 33,1                                               | 101 x 237                        | ECG2HPX123M◇G237△△△△                                                                          |
| 550<br>(600)<br>2Y                   | 1 000                      | 258                                                          | 110                                                          | 0,20                                                | 5,0                           | 5,9                                                | 51 x 130                         | ECG2YPX102M◇C130△△△△                                                                          |
|                                      | 1 200                      | 215                                                          | 95                                                           | 0,20                                                | 5,0                           | 6,8                                                | 64 x 115                         | ECG2YPX122M◇D115△△△△                                                                          |
|                                      | 1 500                      | 172                                                          | 74                                                           | 0,20                                                | 5,0                           | 8,0                                                | 64 x 130                         | ECG2YPX152M◇D130△△△△                                                                          |
|                                      | 1 800                      | 143                                                          | 72                                                           | 0,20                                                | 5,0                           | 8,7                                                | 77 x 115                         | ECG2YPX182M◇E115△△△△                                                                          |
|                                      | 2 200                      | 117                                                          | 50                                                           | 0,20                                                | 5,0                           | 10,1                                               | 77 x 130                         | ECG2YPX222M◇E130△△△△                                                                          |
|                                      | 2 700                      | 96                                                           | 40                                                           | 0,20                                                | 5,0                           | 12,0                                               | 77 x 155                         | ECG2YPX272M◇E155△△△△                                                                          |
|                                      | 3 300                      | 78                                                           | 36                                                           | 0,20                                                | 5,0                           | 13,3                                               | 77 x 155                         | ECG2YPX332M◇E155△△△△                                                                          |
|                                      | 3 900                      | 66                                                           | 30                                                           | 0,20                                                | 5,0                           | 15,5                                               | 90 x 157                         | ECG2YPX392M◇F157△△△△                                                                          |
|                                      | 4 700                      | 55                                                           | 24                                                           | 0,20                                                | 5,0                           | 17,6                                               | 90 x 171                         | ECG2YPX472M◇F171△△△△                                                                          |
|                                      | 5 600                      | 46                                                           | 20                                                           | 0,20                                                | 5,0                           | 20,3                                               | 90 x 196                         | ECG2YPX562M◇F196△△△△                                                                          |
|                                      | 6 800                      | 38                                                           | 16                                                           | 0,20                                                | 5,0                           | 24,1                                               | 90 x 236                         | ECG2YPX682M◇F236△△△△                                                                          |
|                                      | 8 200                      | 31                                                           | 14                                                           | 0,20                                                | 5,0                           | 27,3                                               | 101 x 237                        | ECG2YPX822M◇G237△△△△                                                                          |



## ITEM CHARACTERISTICS

|                                     |                |
|-------------------------------------|----------------|
| Operating Temperature Range (°C)    | -40 ~ +85      |
| Voltage Range (V)                   | 350 ~ 500      |
| Capacitance Range (μF)              | 1 000 ~ 22 000 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%          |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

**Leakage Current** After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

**Stability at Low Temperature (Capacitance Ratio at 120Hz)**  $C_{-25^{\circ}\text{C}} / C_{+20^{\circ}\text{C}} \geq 0,7$

**Fast Charge-Discharge** **!** Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

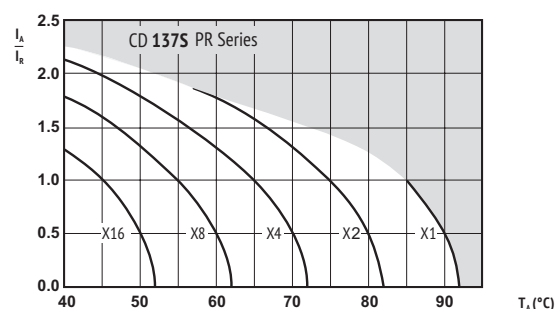
| ITEM                                                                    | USEFUL LIFE                                   |                                   | LOAD LIFE                             | ENDURANCE TEST                          | SHELF LIFE                            |                                                                     |
|-------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|---------------------------------------------------------------------|
| Lifetime                                                                | 12 000h                                       | > 150 000h                        | 5 000h                                | 5 000h                                  | 1 000h                                |                                                                     |
| Leakage Current                                                         | Not more than specified value                 |                                   | Not more than specified value         | Not more than specified value           | Not more than specified value         |                                                                     |
| Capacitance Change                                                      | Within ± 20% of initial value                 |                                   | Within ± 15% of initial value         | Within ± 10% of initial value           | Within ± 20% of initial value         |                                                                     |
| Dissipation Factor                                                      | Not more than 200% of specified value         |                                   | Not more than 175% of specified value | Not more than 130% of specified value   | Not more than 200% of specified value |                                                                     |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>85°C                        | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$I_R = 0$<br>85°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>85°C        | After test: $U_R$ to be applied for 30 min > 24h before measurement |
| Terminal and Construction                                               | only Terminal C, D, E available, see page 151 |                                   |                                       |                                         |                                       |                                                                     |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency          | 50Hz | 120Hz | 300Hz | 1kHz | ≥ 10 kHz |
|--------------------|------|-------|-------|------|----------|
| <b>Coefficient</b> | 0,80 | 1,00  | 1,18  | 1,30 | 1,40     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 85°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

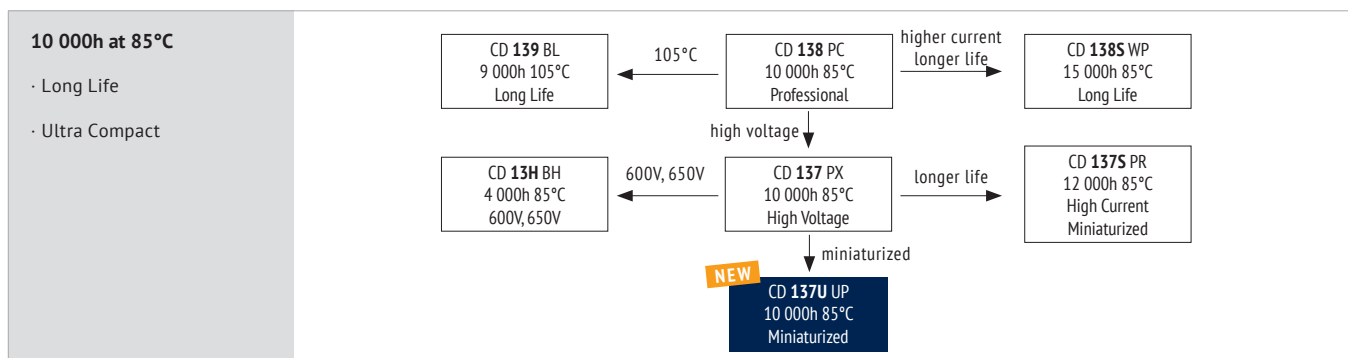


| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇ = mounting style (stud)<br>△△△△ = terminal style<br>Details: Page 150 |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|--------------------------------------|-----------------------------------------------------------|----------------|---------------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                                | (mΩ)                                                                |                                             | (mA)                                 | (Arms)                                                    | (mm)           |                                                                                       |
| <b>350<br/>(400)<br/>2V</b>                 | 2 200                               | 56                                                                  | 28                                                                  | 0,15                                        | 5,0                                  | 8,4                                                       | 51 x 80        | ECG2VPR222M◇C080△△△△                                                                  |
|                                             | 2 700                               | 46                                                                  | 23                                                                  | 0,15                                        | 5,0                                  | 9,9                                                       | 51 x 96        | ECG2VPR272M◇C096△△△△                                                                  |
|                                             | 3 300                               | 40                                                                  | 20                                                                  | 0,15                                        | 5,0                                  | 11,0                                                      | 51 x 105       | ECG2VPR332M◇C105△△△△                                                                  |
|                                             |                                     | 40                                                                  | 20                                                                  | 0,15                                        | 5,0                                  | 11,4                                                      | 64 x 80        | ECG2VPR332M◇D080△△△△                                                                  |
|                                             | 3 900                               | 34                                                                  | 17                                                                  | 0,15                                        | 5,0                                  | 12,7                                                      | 51 x 117       | ECG2VPR392M◇C117△△△△                                                                  |
|                                             |                                     | 34                                                                  | 17                                                                  | 0,15                                        | 5,0                                  | 13,2                                                      | 64 x 96        | ECG2VPR392M◇D096△△△△                                                                  |
|                                             | 4 700                               | 28                                                                  | 14                                                                  | 0,15                                        | 5,0                                  | 14,4                                                      | 64 x 96        | ECG2VPR472M◇D096△△△△                                                                  |
|                                             | 5 600                               | 24                                                                  | 12                                                                  | 0,15                                        | 5,0                                  | 16,8                                                      | 64 x 115       | ECG2VPR562M◇D115△△△△                                                                  |
|                                             |                                     | 24                                                                  | 12                                                                  | 0,15                                        | 5,0                                  | 17,2                                                      | 77 x 96        | ECG2VPR562M◇E096△△△△                                                                  |
|                                             | 6 800                               | 20                                                                  | 10                                                                  | 0,15                                        | 5,0                                  | 18,8                                                      | 64 x 130       | ECG2VPR682M◇D130△△△△                                                                  |
|                                             |                                     | 20                                                                  | 10                                                                  | 0,15                                        | 5,0                                  | 19,5                                                      | 77 x 105       | ECG2VPR682M◇E105△△△△                                                                  |
|                                             | 8 200                               | 18                                                                  | 9                                                                   | 0,15                                        | 5,0                                  | 22,3                                                      | 77 x 117       | ECG2VPR822M◇E117△△△△                                                                  |
|                                             | 10 000                              | 14                                                                  | 7                                                                   | 0,15                                        | 5,0                                  | 28,3                                                      | 90 x 115       | ECG2VPR103M◇F115△△△△                                                                  |
|                                             | 12 000                              | 12                                                                  | 6                                                                   | 0,15                                        | 5,0                                  | 29,8                                                      | 77 x 155       | ECG2VPR123M◇E155△△△△                                                                  |
|                                             |                                     | 12                                                                  | 6                                                                   | 0,15                                        | 5,0                                  | 32,0                                                      | 90 x 130       | ECG2VPR123M◇F130△△△△                                                                  |
|                                             | 15 000                              | 10                                                                  | 5                                                                   | 0,15                                        | 5,0                                  | 36,0                                                      | 90 x 145       | ECG2VPR153M◇F145△△△△                                                                  |
|                                             | 18 000                              | 9                                                                   | 4,5                                                                 | 0,15                                        | 5,0                                  | 40,4                                                      | 90 x 171       | ECG2VPR183M◇F171△△△△                                                                  |
|                                             | 22 000                              | 7                                                                   | 3,5                                                                 | 0,15                                        | 5,0                                  | 46,9                                                      | 90 x 196       | ECG2VPR223M◇F196△△△△                                                                  |

|                             |        |    |     |      |     |      |          |                      |
|-----------------------------|--------|----|-----|------|-----|------|----------|----------------------|
| <b>400<br/>(450)<br/>2G</b> | 1 800  | 68 | 34  | 0,15 | 5,0 | 7,6  | 51 x 80  | ECG2GPR182M◇C080△△△△ |
|                             | 2 200  | 45 | 28  | 0,15 | 5,0 | 9,1  | 51 x 96  | ECG2GPR222M◇C096△△△△ |
|                             | 2 700  | 46 | 23  | 0,15 | 5,0 | 10,4 | 51 x 105 | ECG2GPR272M◇C105△△△△ |
|                             |        | 46 | 23  | 0,15 | 5,0 | 10,5 | 64 x 80  | ECG2GPR272M◇D080△△△△ |
|                             | 3 300  | 38 | 19  | 0,15 | 5,0 | 12,5 | 51 x 130 | ECG2GPR332M◇C130△△△△ |
|                             |        | 38 | 19  | 0,15 | 5,0 | 12,4 | 64 x 96  | ECG2GPR332M◇D096△△△△ |
|                             | 3 900  | 32 | 16  | 0,15 | 5,0 | 13,3 | 64 x 96  | ECG2GPR392M◇D096△△△△ |
|                             | 4 700  | 28 | 14  | 0,15 | 5,0 | 15,2 | 64 x 115 | ECG2GPR472M◇D115△△△△ |
|                             |        | 28 | 14  | 0,15 | 5,0 | 16,3 | 77 x 96  | ECG2GPR472M◇E096△△△△ |
|                             | 5 600  | 24 | 12  | 0,15 | 5,0 | 17,1 | 64 x 130 | ECG2GPR562M◇D130△△△△ |
|                             |        | 24 | 12  | 0,15 | 5,0 | 18,2 | 77 x 105 | ECG2GPR562M◇E105△△△△ |
|                             | 6 800  | 20 | 10  | 0,15 | 5,0 | 20,5 | 77 x 117 | ECG2GPR682M◇E117△△△△ |
|                             | 8 200  | 18 | 9   | 0,15 | 5,0 | 23,3 | 77 x 130 | ECG2GPR822M◇E130△△△△ |
|                             | 10 000 | 14 | 7   | 0,15 | 5,0 | 27,0 | 77 x 155 | ECG2GPR103M◇E155△△△△ |
|                             |        | 14 | 7   | 0,15 | 5,0 | 29,1 | 90 x 130 | ECG2GPR103M◇F130△△△△ |
|                             | 12 000 | 12 | 6   | 0,15 | 5,0 | 31,5 | 77 x 190 | ECG2GPR123M◇E190△△△△ |
|                             |        | 12 | 6   | 0,15 | 5,0 | 32,5 | 90 x 145 | ECG2GPR123M◇F145△△△△ |
|                             | 15 000 | 10 | 5   | 0,15 | 5,0 | 37,2 | 77 x 220 | ECG2GPR153M◇E220△△△△ |
|                             |        | 10 | 5   | 0,15 | 5,0 | 38,3 | 90 x 170 | ECG2GPR153M◇F170△△△△ |
|                             | 18 000 | 9  | 4,5 | 0,15 | 5,0 | 42,4 | 90 x 196 | ECG2GPR183M◇F196△△△△ |

|                             |        |     |     |      |     |      |          |                      |
|-----------------------------|--------|-----|-----|------|-----|------|----------|----------------------|
| <b>450<br/>(500)<br/>2W</b> | 1 500  | 112 | 56  | 0,15 | 5,0 | 7,1  | 51 x 80  | ECG2WPR152M◇C080△△△△ |
|                             | 1 800  | 94  | 57  | 0,15 | 5,0 | 8,0  | 51 x 96  | ECG2WPR182M◇C096△△△△ |
|                             | 2 200  | 78  | 39  | 0,15 | 5,0 | 9,2  | 51 x 105 | ECG2WPR222M◇C105△△△△ |
|                             |        | 78  | 39  | 0,15 | 5,0 | 9,7  | 64 x 80  | ECG2WPR222M◇D080△△△△ |
|                             | 2 700  | 66  | 33  | 0,15 | 5,0 | 10,5 | 51 x 117 | ECG2WPR272M◇C117△△△△ |
|                             |        | 66  | 33  | 0,15 | 5,0 | 10,9 | 64 x 96  | ECG2WPR272M◇D096△△△△ |
|                             | 3 300  | 56  | 28  | 0,15 | 5,0 | 12,1 | 64 x 100 | ECG2WPR332M◇D100△△△△ |
|                             | 3 900  | 48  | 24  | 0,15 | 5,0 | 13,9 | 64 x 115 | ECG2WPR392M◇D115△△△△ |
|                             |        | 48  | 24  | 0,15 | 5,0 | 15,2 | 77 x 96  | ECG2WPR392M◇E096△△△△ |
|                             | 4 700  | 40  | 20  | 0,15 | 5,0 | 15,5 | 64 x 130 | ECG2WPR472M◇D130△△△△ |
|                             |        | 40  | 20  | 0,15 | 5,0 | 16,9 | 77 x 105 | ECG2WPR472M◇E105△△△△ |
|                             | 5 600  | 34  | 17  | 0,15 | 5,0 | 18,2 | 64 x 155 | ECG2WPR562M◇D155△△△△ |
|                             |        | 34  | 17  | 0,15 | 5,0 | 19,4 | 77 x 117 | ECG2WPR562M◇E117△△△△ |
|                             | 6 800  | 28  | 14  | 0,15 | 5,0 | 21,5 | 77 x 130 | ECG2WPR682M◇E130△△△△ |
|                             |        | 28  | 14  | 0,15 | 5,0 | 24,3 | 90 x 115 | ECG2WPR682M◇F115△△△△ |
|                             | 8 200  | 24  | 12  | 0,15 | 5,0 | 24,5 | 77 x 155 | ECG2WPR822M◇E155△△△△ |
|                             |        | 24  | 12  | 0,15 | 5,0 | 27,5 | 90 x 130 | ECG2WPR822M◇F130△△△△ |
|                             | 10 000 | 20  | 10  | 0,15 | 5,0 | 29,2 | 77 x 190 | ECG2WPR103M◇E190△△△△ |
|                             |        | 20  | 10  | 0,15 | 5,0 | 30,3 | 90 x 145 | ECG2WPR103M◇F145△△△△ |
|                             | 12 000 | 17  | 8,5 | 0,15 | 5,0 | 33,4 | 77 x 220 | ECG2WPR123M◇E220△△△△ |
|                             |        | 17  | 8,5 | 0,15 | 5,0 | 34,6 | 90 x 170 | ECG2WPR123M◇F170△△△△ |
|                             | 15 000 | 14  | 6,8 | 0,15 | 5,0 | 39,8 | 90 x 196 | ECG2WPR153M◇F196△△△△ |

| U <sub>RDC</sub><br>(Surge Voltage)<br>Code | C <sub>R</sub><br>Rated Capacitance | ESR <sub>max</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | ESR <sub>typ</sub><br>Equivalent Series Resistance<br>20°C<br>120Hz | tanδ<br>Dissipation Factor<br>20°C<br>120Hz | I <sub>leak</sub><br>Leakage Current | I <sub>RAC</sub><br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>øD x L | ORDER CODE<br>◇ = mounting style (stud)<br>△△△△ = terminal style<br>Details: Page 150 |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------|--------------------------------------|-----------------------------------------------------------|----------------|---------------------------------------------------------------------------------------|
| (V)                                         | (μF)                                | (mΩ)                                                                | (mΩ)                                                                |                                             | (mA)                                 | (Arms)                                                    | (mm)           |                                                                                       |
| <b>500<br/>(550)<br/>2H</b>                 | 1 000                               | 176                                                                 | 88                                                                  | 0,15                                        | 5,0                                  | 6,1                                                       | 51 x 80        | ECG2HPR102M◇C080△△△△                                                                  |
|                                             | 1 200                               | 146                                                                 | 73                                                                  | 0,15                                        | 5,0                                  | 7,0                                                       | 51 x 92        | ECG2HPR122M◇C092△△△△                                                                  |
|                                             | 1 500                               | 120                                                                 | 60                                                                  | 0,15                                        | 5,0                                  | 8,0                                                       | 51 x 105       | ECG2HPR152M◇C105△△△△                                                                  |
|                                             |                                     | 120                                                                 | 60                                                                  | 0,15                                        | 5,0                                  | 8,1                                                       | 64 x 80        | ECG2HPR152M◇D080△△△△                                                                  |
|                                             | 1 800                               | 102                                                                 | 51                                                                  | 0,15                                        | 5,0                                  | 9,2                                                       | 51 x 117       | ECG2HPR182M◇C117△△△△                                                                  |
|                                             | 2 200                               | 86                                                                  | 43                                                                  | 0,15                                        | 5,0                                  | 10,6                                                      | 64 x 100       | ECG2HPR222M◇D100△△△△                                                                  |
|                                             |                                     | 86                                                                  | 43                                                                  | 0,15                                        | 5,0                                  | 11,0                                                      | 77 x 85        | ECG2HPR222M◇E085△△△△                                                                  |
|                                             | 2 700                               | 72                                                                  | 36                                                                  | 0,15                                        | 5,0                                  | 12,2                                                      | 64 x 115       | ECG2HPR272M◇D115△△△△                                                                  |
|                                             | 3 300                               | 60                                                                  | 30                                                                  | 0,15                                        | 5,0                                  | 14,1                                                      | 77 x 105       | ECG2HPR332M◇E105△△△△                                                                  |
|                                             | 3 900                               | 52                                                                  | 26                                                                  | 0,15                                        | 5,0                                  | 16,5                                                      | 77 x 130       | ECG2HPR392M◇E130△△△△                                                                  |
|                                             | 4 700                               | 42                                                                  | 21                                                                  | 0,15                                        | 5,0                                  | 18,8                                                      | 77 x 143       | ECG2HPR472M◇E143△△△△                                                                  |
|                                             |                                     | 42                                                                  | 21                                                                  | 0,15                                        | 5,0                                  | 19,2                                                      | 90 x 115       | ECG2HPR472M◇F115△△△△                                                                  |
|                                             | 5 600                               | 38                                                                  | 19                                                                  | 0,15                                        | 5,0                                  | 21,4                                                      | 90 x 130       | ECG2HPR562M◇F130△△△△                                                                  |
|                                             | 6 800                               | 32                                                                  | 16                                                                  | 0,15                                        | 5,0                                  | 24,6                                                      | 90 x 145       | ECG2HPR682M◇F145△△△△                                                                  |
|                                             | 8 200                               | 26                                                                  | 13                                                                  | 0,15                                        | 5,0                                  | 28,5                                                      | 90 x 170       | ECG2HPR822M◇F170△△△△                                                                  |
|                                             | 10 000                              | 22                                                                  | 11                                                                  | 0,15                                        | 5,0                                  | 32,9                                                      | 90 x 196       | ECG2HPR103M◇F196△△△△                                                                  |
|                                             | 12 000                              | 20                                                                  | 10                                                                  | 0,15                                        | 5,0                                  | 34,7                                                      | 90 x 220       | ECG2HPR123M◇F220△△△△                                                                  |



## ITEM CHARACTERISTICS

|                                     |                |
|-------------------------------------|----------------|
| Operating Temperature Range (°C)    | -40 ~ +85      |
| Voltage Range (V)                   | 400 ~ 450      |
| Capacitance Range (μF)              | 1 800 ~ 22 000 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%          |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

|                 |                                                                                                            |
|-----------------|------------------------------------------------------------------------------------------------------------|
| Leakage Current | After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table. |
|-----------------|------------------------------------------------------------------------------------------------------------|

|                       |                                                                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fast Charge-Discharge | <b>!</b> Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                          | SHELF LIFE                            |                                                                     |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|---------------------------------------------------------------------|
| Lifetime                                                                | 10 000h                               | > 100 000h                        | 5 000h                                | 5 000h                                  | 1 000h                                |                                                                     |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value           | Not more than specified value         |                                                                     |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 10% of initial value           | Within ± 20% of initial value         |                                                                     |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 200% of specified value   | Not more than 200% of specified value |                                                                     |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$I_R = 0$<br>85°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>85°C        | After test: $U_R$ to be applied for 30 min > 24h before measurement |

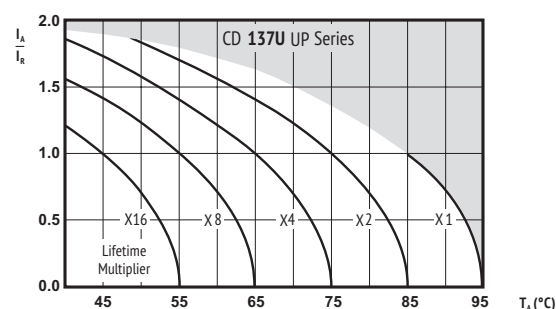
|                           |                                                                                                                                                                                      |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Terminal and Construction | The terminal version has an impact on the current capability and mechanical behavior (vibration). For high current applications the terminals C,D and E are preferred, see page 151. |
| Optional                  | Self-extinguishing Electrolyte on request                                                                                                                                            |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

|             |      |       |       |      |          |
|-------------|------|-------|-------|------|----------|
| Frequency   | 50Hz | 120Hz | 300Hz | 1kHz | ≥ 10 kHz |
| Coefficient | 0,80 | 1,00  | 1,18  | 1,30 | 1,40     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 85°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

## ! SAFETY FACTOR

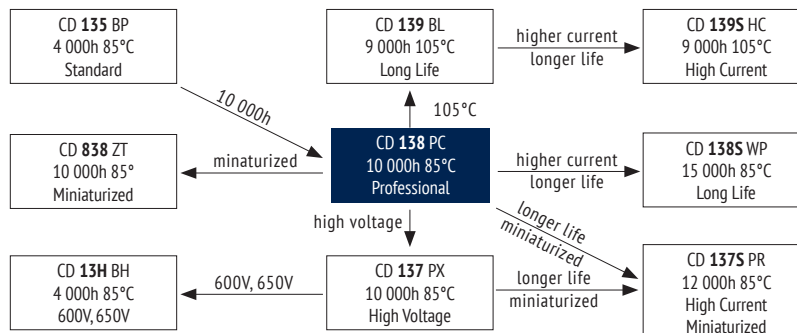
This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇ = mounting style (stud)<br>△△△△ = terminal style<br><br>Details: Page 150 |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|----------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                             | (mm)                             |                                                                                               |
| <b>400<br/>(450)<br/>2G</b>          | 2 200                      | 76                                                           | 38                                                           | 0,15                                                | 5                             | 7,69                                               | 51 x 80                          | ECG2GUP222M◇C080△△△△                                                                          |
|                                      | 2 700                      | 64                                                           | 32                                                           | 0,15                                                | 5                             | 8,90                                               | 51 x 96                          | ECG2GUP272M◇C096△△△△                                                                          |
|                                      | 3 300                      | 52                                                           | 26                                                           | 0,15                                                | 5                             | 10,3                                               | 51 x 105                         | ECG2GUP332M◇C105△△△△                                                                          |
|                                      |                            | 52                                                           | 26                                                           | 0,15                                                | 5                             | 10,6                                               | 64 x 80                          | ECG2GUP332M◇D080△△△△                                                                          |
|                                      | 3 900                      | 42                                                           | 21                                                           | 0,15                                                | 5                             | 11,7                                               | 51 x 130                         | ECG2GUP392M◇C130△△△△                                                                          |
|                                      | 4 700                      | 36                                                           | 18                                                           | 0,15                                                | 5                             | 12,9                                               | 64 x 100                         | ECG2GUP472M◇D100△△△△                                                                          |
|                                      | 5 600                      | 32                                                           | 16                                                           | 0,15                                                | 5                             | 14,7                                               | 64 x 115                         | ECG2GUP562M◇D115△△△△                                                                          |
|                                      | 6 800                      | 28                                                           | 14                                                           | 0,15                                                | 5                             | 16,6                                               | 64 x 130                         | ECG2GUP682M◇D130△△△△                                                                          |
|                                      |                            | 28                                                           | 14                                                           | 0,15                                                | 5                             | 17,5                                               | 77 x 105                         | ECG2GUP682M◇E105△△△△                                                                          |
|                                      | 8 200                      | 24                                                           | 12                                                           | 0,15                                                | 5                             | 19,5                                               | 77 x 115                         | ECG2GUP822M◇E115△△△△                                                                          |
|                                      | 10 000                     | 20                                                           | 10                                                           | 0,15                                                | 5                             | 22,4                                               | 77 x 130                         | ECG2GUP103M◇E130△△△△                                                                          |
|                                      | 12 000                     | 16                                                           | 8                                                            | 0,15                                                | 5                             | 26,3                                               | 77 x 155                         | ECG2GUP123M◇E155△△△△                                                                          |
|                                      |                            | 16                                                           | 8                                                            | 0,15                                                | 5                             | 27,0                                               | 90 x 130                         | ECG2GUP123M◇F130△△△△                                                                          |
|                                      | 15 000                     | 14                                                           | 7                                                            | 0,15                                                | 5                             | 31,6                                               | 77 x 190                         | ECG2GUP153M◇E190△△△△                                                                          |
|                                      | 18 000                     | 12                                                           | 6                                                            | 0,15                                                | 5                             | 35,4                                               | 77 x 220                         | ECG2GUP183M◇E220△△△△                                                                          |
|                                      |                            | 12                                                           | 6                                                            | 0,15                                                | 5                             | 36,3                                               | 90 x 170                         | ECG2GUP183M◇F170△△△△                                                                          |
|                                      | 22 000                     | 9                                                            | 4,5                                                          | 0,15                                                | 5                             | 39,1                                               | 90 x 196                         | ECG2GUP223M◇F196△△△△                                                                          |
| <b>450<br/>(500)<br/>2W</b>          | 1 800                      | 118                                                          | 59                                                           | 0,15                                                | 5                             | 7,12                                               | 51 x 80                          | ECG2WUP182M◇C080△△△△                                                                          |
|                                      | 2 200                      | 96                                                           | 48                                                           | 0,15                                                | 5                             | 8,30                                               | 51 x 96                          | ECG2WUP222M◇C096△△△△                                                                          |
|                                      | 2 700                      | 80                                                           | 40                                                           | 0,15                                                | 5                             | 9,45                                               | 51 x 105                         | ECG2WUP272M◇C105△△△△                                                                          |
|                                      |                            | 80                                                           | 40                                                           | 0,15                                                | 5                             | 9,81                                               | 64 x 80                          | ECG2WUP272M◇D080△△△△                                                                          |
|                                      | 3 300                      | 66                                                           | 33                                                           | 0,15                                                | 5                             | 11,0                                               | 51 x 130                         | ECG2WUP332M◇C130△△△△                                                                          |
|                                      | 3 900                      | 58                                                           | 29                                                           | 0,15                                                | 5                             | 12,0                                               | 64 x 100                         | ECG2WUP392M◇D100△△△△                                                                          |
|                                      | 4 700                      | 50                                                           | 25                                                           | 0,15                                                | 5                             | 13,5                                               | 64 x 115                         | ECG2WUP472M◇D115△△△△                                                                          |
|                                      | 5 600                      | 44                                                           | 22                                                           | 0,15                                                | 5                             | 15,5                                               | 64 x 130                         | ECG2WUP562M◇D130△△△△                                                                          |
|                                      | 6 800                      | 36                                                           | 18                                                           | 0,15                                                | 5                             | 19,2                                               | 77 x 115                         | ECG2WUP682M◇E115△△△△                                                                          |
|                                      | 8 200                      | 30                                                           | 15                                                           | 0,15                                                | 5                             | 21,8                                               | 77 x 130                         | ECG2WUP822M◇E130△△△△                                                                          |
|                                      | 10 000                     | 24                                                           | 12                                                           | 0,15                                                | 5                             | 24,9                                               | 77 x 155                         | ECG2WUP103M◇E155△△△△                                                                          |
|                                      | 12 000                     | 20                                                           | 10                                                           | 0,15                                                | 5                             | 28,4                                               | 77 x 190                         | ECG2WUP123M◇E190△△△△                                                                          |
|                                      | 15 000                     | 16                                                           | 8                                                            | 0,15                                                | 5                             | 33,8                                               | 77 x 220                         | ECG2WUP153M◇E220△△△△                                                                          |
|                                      | 18 000                     | 14                                                           | 7                                                            | 0,15                                                | 5                             | 37,0                                               | 90 x 196                         | ECG2WUP183M◇F196△△△△                                                                          |

**10 000h at 85°C**

- Long Life
- High Reliability
- High Currents for High Professional Applications and High Power Inverter

**ITEM CHARACTERISTICS**

|                                     |                |
|-------------------------------------|----------------|
| Operating Temperature Range (°C)    | -40 ~ +85      |
| Voltage Range (V)                   | 350 ~ 450      |
| Capacitance Range (μF)              | 1 000 ~ 18 000 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%          |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

|                 |                                                                                                            |
|-----------------|------------------------------------------------------------------------------------------------------------|
| Leakage Current | After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table. |
|-----------------|------------------------------------------------------------------------------------------------------------|

|                                                           |                                                              |
|-----------------------------------------------------------|--------------------------------------------------------------|
| Stability at Low Temperature (Capacitance Ratio at 120Hz) | $C_{-25^{\circ}\text{C}} / C_{+20^{\circ}\text{C}} \geq 0,7$ |
|-----------------------------------------------------------|--------------------------------------------------------------|

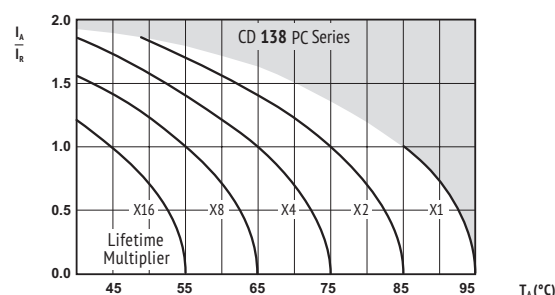
|                       |                                                                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fast Charge-Discharge | Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| ITEM                                                                    | USEFUL LIFE                                                                                                                                                                          |                                   | LOAD LIFE                             | ENDURANCE TEST                          | SHELF LIFE                            |                                                                     |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|---------------------------------------------------------------------|
| Lifetime                                                                | 10 000h                                                                                                                                                                              | > 100 000h                        | 5 000h                                | 5 000h                                  | 1 000h                                |                                                                     |
| Leakage Current                                                         | Not more than specified value                                                                                                                                                        |                                   | Not more than specified value         | Not more than specified value           | Not more than specified value         |                                                                     |
| Capacitance Change                                                      | Within ± 30% of initial value                                                                                                                                                        |                                   | Within ± 20% of initial value         | Within ± 10% of initial value           | Within ± 20% of initial value         |                                                                     |
| Dissipation Factor                                                      | Not more than 300% of specified value                                                                                                                                                |                                   | Not more than 200% of specified value | Not more than 130% of specified value   | Not more than 200% of specified value |                                                                     |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>85°C                                                                                                                                                               | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$I_R = 0$<br>85°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>85°C        | After test: $U_R$ to be applied for 30 min > 24h before measurement |
| Terminal and Construction                                               | The terminal version has an impact on the current capability and mechanical behavior (vibration). For high current applications the terminals C,D and E are preferred, see page 151. |                                   |                                       |                                         |                                       |                                                                     |
| Optional                                                                | Self-extinguishing Electrolyte on request                                                                                                                                            |                                   |                                       |                                         |                                       |                                                                     |

**MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)**

| Frequency   | 50Hz | 120Hz | 300Hz | 1kHz | ≥ 10 kHz |
|-------------|------|-------|-------|------|----------|
| Coefficient | 0,80 | 1,00  | 1,10  | 1,30 | 1,40     |

Multipliers for typical operating conditions.

**MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)**

$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 85°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

**ENVIRONMENTAL**

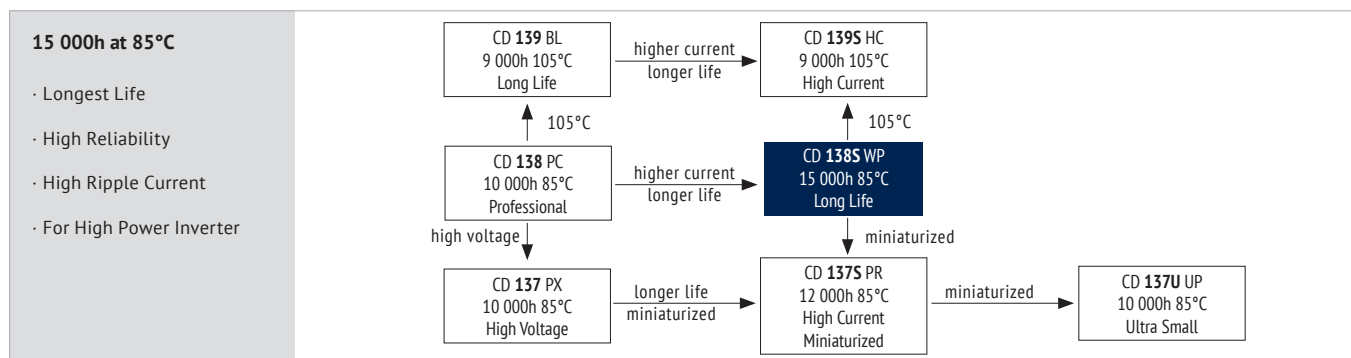
The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

**SAFETY FACTOR**

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{Leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇ = mounting style (stud)<br>AAAA = terminal style |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|----------------------------------------------------|----------------------------------|----------------------------------------------------------------------|
| (V)                                  | ( $\mu F$ )                | (m $\Omega$ )                                                | (m $\Omega$ )                                                |                                                     | (mA)                          | (Arms)                                             | (mm)                             | Details: Page 150                                                    |
| 350<br>(400)<br>2V                   | 1 200                      | 215                                                          | 67                                                           | 0,15                                                | 4,2                           | 5,5                                                | 51 x 83                          | ECG2VPC122M◇C083AAAA                                                 |
|                                      | 1 500                      | 172                                                          | 55                                                           | 0,15                                                | 5,0                           | 6,1                                                | 51 x 83                          | ECG2VPC152M◇C083AAAA                                                 |
|                                      | 1 800                      | 143                                                          | 43                                                           | 0,15                                                | 5,0                           | 7,4                                                | 51 x 96                          | ECG2VPC182M◇C096AAAA                                                 |
|                                      | 2 200                      | 117                                                          | 30                                                           | 0,15                                                | 5,0                           | 8,2                                                | 51 x 96                          | ECG2VPC222M◇C096AAAA                                                 |
|                                      | 2 700                      | 96                                                           | 27                                                           | 0,15                                                | 5,0                           | 10,2                                               | 51 x 130                         | ECG2VPC272M◇C130AAAA                                                 |
|                                      | 3 300                      | 78                                                           | 23                                                           | 0,15                                                | 5,0                           | 11,3                                               | 51 x 130                         | ECG2VPC332M◇C130AAAA                                                 |
|                                      | 3 900                      | 66                                                           | 19                                                           | 0,15                                                | 5,0                           | 12,8                                               | 64 x 115                         | ECG2VPC392M◇D115AAAA                                                 |
|                                      | 4 700                      | 55                                                           | 16                                                           | 0,15                                                | 5,0                           | 14,8                                               | 64 x 130                         | ECG2VPC472M◇D130AAAA                                                 |
|                                      | 5 600                      | 46                                                           | 14                                                           | 0,15                                                | 5,0                           | 16,3                                               | 77 x 115                         | ECG2VPC562M◇E115AAAA                                                 |
|                                      | 6 800                      | 38                                                           | 13                                                           | 0,15                                                | 5,0                           | 18,8                                               | 77 x 130                         | ECG2VPC682M◇E130AAAA                                                 |
|                                      | 8 200                      | 31                                                           | 11                                                           | 0,15                                                | 5,0                           | 22,1                                               | 77 x 155                         | ECG2VPC822M◇E155AAAA                                                 |
|                                      | 10 000                     | 26                                                           | 10                                                           | 0,15                                                | 5,0                           | 25,9                                               | 90 x 157                         | ECG2VPC103M◇F157AAAA                                                 |
|                                      | 12 000                     | 22                                                           | 8                                                            | 0,15                                                | 5,0                           | 28,4                                               | 90 x 157                         | ECG2VPC123M◇F157AAAA                                                 |
|                                      | 15 000                     | 17                                                           | 6                                                            | 0,15                                                | 5,0                           | 34,6                                               | 90 x 196                         | ECG2VPC153M◇F196AAAA                                                 |
|                                      | 18 000                     | 14                                                           | 4                                                            | 0,15                                                | 5,0                           | 41,4                                               | 90 x 236                         | ECG2VPC183M◇F236AAAA                                                 |
| 400<br>(450)<br>2G                   | 1 000                      | 215                                                          | 82                                                           | 0,15                                                | 4,0                           | 5,0                                                | 51 x 83                          | ECG2GPC102M◇C083AAAA                                                 |
|                                      | 1 200                      | 179                                                          | 70                                                           | 0,15                                                | 4,8                           | 5,5                                                | 51 x 83                          | ECG2GPC122M◇C083AAAA                                                 |
|                                      | 1 500                      | 143                                                          | 50                                                           | 0,15                                                | 5,0                           | 6,7                                                | 51 x 96                          | ECG2GPC152M◇C096AAAA                                                 |
|                                      | 1 800                      | 119                                                          | 40                                                           | 0,15                                                | 5,0                           | 7,4                                                | 51 x 96                          | ECG2GPC182M◇C096AAAA                                                 |
|                                      | 2 200                      | 98                                                           | 28                                                           | 0,15                                                | 5,0                           | 9,2                                                | 51 x 130                         | ECG2GPC222M◇C130AAAA                                                 |
|                                      | 2 700                      | 80                                                           | 23                                                           | 0,15                                                | 5,0                           | 9,9                                                | 64 x 96                          | ECG2GPC272M◇D096AAAA                                                 |
|                                      | 3 300                      | 65                                                           | 21                                                           | 0,15                                                | 5,0                           | 11,8                                               | 64 x 115                         | ECG2GPC332M◇D115AAAA                                                 |
|                                      | 3 900                      | 55                                                           | 19                                                           | 0,15                                                | 5,0                           | 13,5                                               | 64 x 130                         | ECG2GPC392M◇D130AAAA                                                 |
|                                      | 4 700                      | 46                                                           | 15                                                           | 0,15                                                | 5,0                           | 14,9                                               | 77 x 115                         | ECG2GPC472M◇E115AAAA                                                 |
|                                      | 5 600                      | 39                                                           | 14                                                           | 0,15                                                | 5,0                           | 17,0                                               | 77 x 130                         | ECG2GPC562M◇E130AAAA                                                 |
|                                      | 6 800                      | 32                                                           | 13                                                           | 0,15                                                | 5,0                           | 20,2                                               | 77 x 155                         | ECG2GPC682M◇E155AAAA                                                 |
|                                      | 8 200                      | 26                                                           | 12                                                           | 0,15                                                | 5,0                           | 23,5                                               | 90 x 157                         | ECG2GPC822M◇F157AAAA                                                 |
|                                      | 10 000                     | 22                                                           | 10                                                           | 0,15                                                | 5,0                           | 25,9                                               | 90 x 157                         | ECG2GPC103M◇F157AAAA                                                 |
|                                      | 12 000                     | 18                                                           | 8                                                            | 0,15                                                | 5,0                           | 31,0                                               | 90 x 196                         | ECG2GPC123M◇F196AAAA                                                 |
|                                      | 15 000                     | 14                                                           | 6                                                            | 0,15                                                | 5,0                           | 37,5                                               | 90 x 236                         | ECG2GPC153M◇F236AAAA                                                 |
| 450<br>(500)<br>2W                   | 1 000                      | 215                                                          | 93                                                           | 0,15                                                | 4,5                           | 5,0                                                | 51 x 83                          | ECG2WPC102M◇C083AAAA                                                 |
|                                      | 1 200                      | 179                                                          | 69                                                           | 0,15                                                | 5,0                           | 6,0                                                | 51 x 96                          | ECG2WPC122M◇C096AAAA                                                 |
|                                      | 1 500                      | 143                                                          | 56                                                           | 0,15                                                | 5,0                           | 7,2                                                | 51 x 115                         | ECG2WPC152M◇C115AAAA                                                 |
|                                      | 1 800                      | 119                                                          | 45                                                           | 0,15                                                | 5,0                           | 8,3                                                | 51 x 130                         | ECG2WPC182M◇C130AAAA                                                 |
|                                      | 2 200                      | 98                                                           | 35                                                           | 0,15                                                | 5,0                           | 9,0                                                | 64 x 93                          | ECG2WPC222M◇D093AAAA                                                 |
|                                      | 2 700                      | 80                                                           | 30                                                           | 0,15                                                | 5,0                           | 10,7                                               | 64 x 115                         | ECG2WPC272M◇D115AAAA                                                 |
|                                      | 3 300                      | 65                                                           | 24                                                           | 0,15                                                | 5,0                           | 12,4                                               | 64 x 130                         | ECG2WPC332M◇D130AAAA                                                 |
|                                      | 3 900                      | 55                                                           | 20                                                           | 0,15                                                | 5,0                           | 13,6                                               | 77 x 115                         | ECG2WPC392M◇E115AAAA                                                 |
|                                      | 4 700                      | 46                                                           | 16                                                           | 0,15                                                | 5,0                           | 15,6                                               | 77 x 130                         | ECG2WPC472M◇E130AAAA                                                 |
|                                      | 5 600                      | 38                                                           | 13                                                           | 0,15                                                | 5,0                           | 18,3                                               | 77 x 155                         | ECG2WPC562M◇E155AAAA                                                 |
|                                      | 6 800                      | 32                                                           | 11                                                           | 0,15                                                | 5,0                           | 21,4                                               | 90 x 157                         | ECG2WPC682M◇F157AAAA                                                 |
|                                      | 8 200                      | 26                                                           | 10                                                           | 0,15                                                | 5,0                           | 23,5                                               | 90 x 157                         | ECG2WPC822M◇F157AAAA                                                 |
|                                      | 10 000                     | 22                                                           | 9                                                            | 0,15                                                | 5,0                           | 28,3                                               | 90 x 196                         | ECG2WPC103M◇F196AAAA                                                 |
|                                      | 12 000                     | 18                                                           | 8                                                            | 0,15                                                | 5,0                           | 33,6                                               | 90 x 236                         | ECG2WPC123M◇F236AAAA                                                 |



## ITEM CHARACTERISTICS

|                                     |                |
|-------------------------------------|----------------|
| Operating Temperature Range (°C)    | -40 ~ +85      |
| Voltage Range (V)                   | 350 ~ 500      |
| Capacitance Range (μF)              | 1 500 ~ 12 000 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%          |

**!** The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

|                 |                                                                                                            |
|-----------------|------------------------------------------------------------------------------------------------------------|
| Leakage Current | After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table. |
|-----------------|------------------------------------------------------------------------------------------------------------|

|                                                           |                                                              |
|-----------------------------------------------------------|--------------------------------------------------------------|
| Stability at Low Temperature (Capacitance Ratio at 120Hz) | $C_{-25^{\circ}\text{C}} / C_{+20^{\circ}\text{C}} \geq 0,7$ |
|-----------------------------------------------------------|--------------------------------------------------------------|

|                       |                                                                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fast Charge-Discharge | <b>!</b> Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

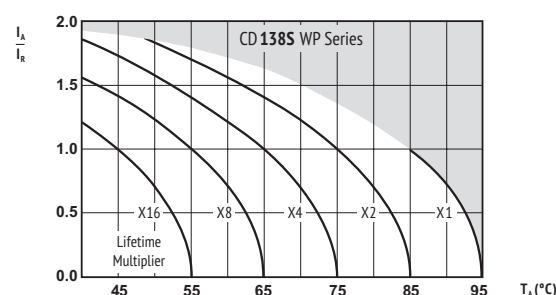
| ITEM                                                                    | USEFUL LIFE                                                                                                                                                                          |                                   | LOAD LIFE                             | ENDURANCE TEST                          | SHELF LIFE                            |                                                                     |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|---------------------------------------------------------------------|
| Lifetime                                                                | 15 000h                                                                                                                                                                              | > 150 000h                        | 10 000h                               | 12 000h                                 | 1 000h                                |                                                                     |
| Leakage Current                                                         | Not more than specified value                                                                                                                                                        |                                   | Not more than specified value         | Not more than specified value           | Not more than specified value         |                                                                     |
| Capacitance Change                                                      | Within ± 30% of initial value                                                                                                                                                        |                                   | Within ± 20% of initial value         | Within ± 10% of initial value           | Within ± 20% of initial value         |                                                                     |
| Dissipation Factor                                                      | Not more than 300% of specified value                                                                                                                                                |                                   | Not more than 200% of specified value | Not more than 130% of specified value   | Not more than 200% of specified value |                                                                     |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>85°C                                                                                                                                                               | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$I_R = 0$<br>85°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>85°C        | After test: $U_R$ to be applied for 30 min > 24h before measurement |
| Terminal and Construction                                               | The terminal version has an impact on the current capability and mechanical behavior (vibration). For high current applications the terminals C,D and E are preferred, see page 151. |                                   |                                       |                                         |                                       |                                                                     |
| Optional                                                                | Self-extinguishing Electrolyte on request                                                                                                                                            |                                   |                                       |                                         |                                       |                                                                     |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency          | 50Hz | 120Hz | 300Hz | 1kHz | ≥ 10 kHz |
|--------------------|------|-------|-------|------|----------|
| <b>Coefficient</b> | 0,80 | 1,00  | 1,10  | 1,30 | 1,40     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 85°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

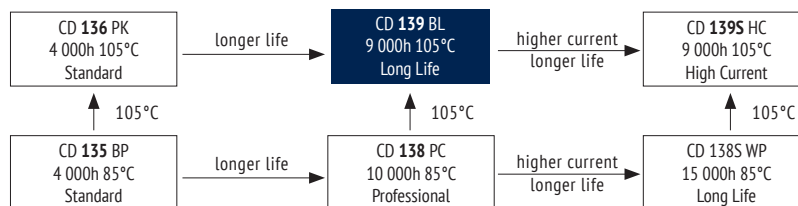
## ! SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>$\phi D \times L$ | ORDER CODE<br><br>◇ = mounting style (stud)<br>△△△△ = terminal style<br><br>Details: Page 150 |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|----------------------------------------------------|---------------------------|-----------------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                             | (mm)                      |                                                                                               |
| 350<br>(400)<br>2V                   | 3 900                      | 50                                                           | 25                                                           | 0,15                                                | 5,0                           | 14,6                                               | 64 x 96                   | ECG2VWP392M◇D096△△△△                                                                          |
|                                      | 4 700                      | 40                                                           | 20                                                           | 0,15                                                | 5,0                           | 16,9                                               | 64 x 115                  | ECG2VWP472M◇D115△△△△                                                                          |
|                                      | 5 600                      | 34                                                           | 17                                                           | 0,15                                                | 5,0                           | 19,8                                               | 64 x 130                  | ECG2VWP562M◇D130△△△△                                                                          |
|                                      |                            | 34                                                           | 17                                                           | 0,15                                                | 5,0                           | 21,6                                               | 77 x 115                  | ECG2VWP562M◇E115△△△△                                                                          |
|                                      | 6 800                      | 28                                                           | 14                                                           | 0,15                                                | 5,0                           | 25,0                                               | 77 x 143                  | ECG2VWP682M◇E143△△△△                                                                          |
|                                      |                            | 28                                                           | 14                                                           | 0,15                                                | 5,0                           | 26,2                                               | 90 x 105                  | ECG2VWP682M◇F105△△△△                                                                          |
|                                      | 8 200                      | 24                                                           | 12                                                           | 0,15                                                | 5,0                           | 29,3                                               | 77 x 143                  | ECG2VWP822M◇E143△△△△                                                                          |
|                                      |                            | 24                                                           | 12                                                           | 0,15                                                | 5,0                           | 30,1                                               | 77 x 155                  | ECG2VWP822M◇E155△△△△                                                                          |
|                                      | 10 000                     | 18                                                           | 9                                                            | 0,15                                                | 5,0                           | 35,7                                               | 90 x 157                  | ECG2VWP103M◇F157△△△△                                                                          |
|                                      | 12 000                     | 16                                                           | 8                                                            | 0,15                                                | 5,0                           | 39,1                                               | 90 x 157                  | ECG2VWP123M◇F157△△△△                                                                          |
| 400<br>(450)<br>2G                   | 2 700                      | 76                                                           | 38                                                           | 0,15                                                | 5,0                           | 11,5                                               | 64 x 96                   | ECG2GWP272M◇D096△△△△                                                                          |
|                                      | 3 300                      | 60                                                           | 30                                                           | 0,15                                                | 5,0                           | 14,2                                               | 64 x 115                  | ECG2GWP332M◇D115△△△△                                                                          |
|                                      | 3 900                      | 52                                                           | 26                                                           | 0,15                                                | 5,0                           | 16,5                                               | 64 x 115                  | ECG2GWP392M◇D115△△△△                                                                          |
|                                      |                            | 52                                                           | 26                                                           | 0,15                                                | 5,0                           | 17,2                                               | 77 x 105                  | ECG2GWP392M◇E105△△△△                                                                          |
|                                      | 4 700                      | 42                                                           | 21                                                           | 0,15                                                | 5,0                           | 18,1                                               | 64 x 130                  | ECG2GWP472M◇D130△△△△                                                                          |
|                                      |                            | 42                                                           | 21                                                           | 0,15                                                | 5,0                           | 20,8                                               | 77 x 115                  | ECG2GWP472M◇E115△△△△                                                                          |
|                                      | 5 600                      | 36                                                           | 18                                                           | 0,15                                                | 5,0                           | 22,7                                               | 77 x 130                  | ECG2GWP562M◇E130△△△△                                                                          |
|                                      |                            | 36                                                           | 18                                                           | 0,15                                                | 5,0                           | 23,8                                               | 90 x 105                  | ECG2GWP562M◇F105△△△△                                                                          |
|                                      | 6 800                      | 30                                                           | 15                                                           | 0,15                                                | 5,0                           | 26,6                                               | 77 x 155                  | ECG2GWP682M◇E155△△△△                                                                          |
|                                      |                            | 30                                                           | 15                                                           | 0,15                                                | 5,0                           | 27,4                                               | 90 x 130                  | ECG2GWP682M◇F130△△△△                                                                          |
|                                      | 8 200                      | 24                                                           | 12                                                           | 0,15                                                | 5,0                           | 32,2                                               | 90 x 157                  | ECG2GWP822M◇F157△△△△                                                                          |
|                                      | 10 000                     | 20                                                           | 10                                                           | 0,15                                                | 5,0                           | 35,7                                               | 90 x 157                  | ECG2GWP103M◇F157△△△△                                                                          |
| 450<br>(500)<br>2W                   | 2 200                      | 92                                                           | 46                                                           | 0,15                                                | 5,0                           | 10,4                                               | 64 x 96                   | ECG2WWP222M◇D096△△△△                                                                          |
|                                      |                            | 92                                                           | 46                                                           | 0,15                                                | 5,0                           | 11,5                                               | 77 x 80                   | ECG2WWP222M◇E080△△△△                                                                          |
|                                      | 2 700                      | 76                                                           | 38                                                           | 0,15                                                | 5,0                           | 12,8                                               | 64 x 115                  | ECG2WWP272M◇D115△△△△                                                                          |
|                                      | 3 300                      | 60                                                           | 30                                                           | 0,15                                                | 5,0                           | 15,2                                               | 64 x 130                  | ECG2WWP332M◇D130△△△△                                                                          |
|                                      |                            | 60                                                           | 30                                                           | 0,15                                                | 5,0                           | 15,8                                               | 77 x 105                  | ECG2WWP332M◇E105△△△△                                                                          |
|                                      | 3 900                      | 54                                                           | 27                                                           | 0,15                                                | 5,0                           | 16,5                                               | 64 x 130                  | ECG2WWP392M◇D130△△△△                                                                          |
|                                      |                            | 54                                                           | 27                                                           | 0,15                                                | 5,0                           | 18,0                                               | 77 x 115                  | ECG2WWP392M◇E115△△△△                                                                          |
|                                      | 4 700                      | 42                                                           | 21                                                           | 0,15                                                | 5,0                           | 20,8                                               | 77 x 143                  | ECG2WWP472M◇E143△△△△                                                                          |
|                                      |                            | 42                                                           | 21                                                           | 0,15                                                | 5,0                           | 21,8                                               | 90 x 105                  | ECG2WWP472M◇F105△△△△                                                                          |
|                                      | 5 600                      | 36                                                           | 18                                                           | 0,15                                                | 5,0                           | 24,2                                               | 77 x 143                  | ECG2WWP562M◇E143△△△△                                                                          |
|                                      |                            | 36                                                           | 18                                                           | 0,15                                                | 5,0                           | 24,9                                               | 90 x 130                  | ECG2WWP562M◇F130△△△△                                                                          |
|                                      | 6 800                      | 30                                                           | 15                                                           | 0,15                                                | 5,0                           | 29,4                                               | 90 x 157                  | ECG2WWP682M◇F157△△△△                                                                          |
|                                      | 8 200                      | 24                                                           | 12                                                           | 0,15                                                | 5,0                           | 32,2                                               | 90 x 157                  | ECG2WWP822M◇F157△△△△                                                                          |
|                                      | 10 000                     | 20                                                           | 10                                                           | 0,15                                                | 5,0                           | 36,9                                               | 90 x 171                  | ECG2WWP103M◇F171△△△△                                                                          |
| 500<br>(550)<br>2H                   | 1 500                      | 148                                                          | 74                                                           | 0,15                                                | 5,0                           | 8,6                                                | 64 x 96                   | ECG2HWP152M◇D096△△△△                                                                          |
|                                      | 1 800                      | 132                                                          | 62                                                           | 0,15                                                | 5,0                           | 10,0                                               | 64 x 115                  | ECG2HWP182M◇D115△△△△                                                                          |
|                                      | 2 200                      | 102                                                          | 51                                                           | 0,15                                                | 5,0                           | 11,7                                               | 64 x 130                  | ECG2HWP222M◇D130△△△△                                                                          |
|                                      | 2 700                      | 82                                                           | 41                                                           | 0,15                                                | 5,0                           | 15,0                                               | 77 x 115                  | ECG2HWP272M◇E115△△△△                                                                          |
|                                      | 3 300                      | 68                                                           | 34                                                           | 0,15                                                | 5,0                           | 17,5                                               | 77 x 130                  | ECG2HWP332M◇E130△△△△                                                                          |
|                                      | 3 900                      | 58                                                           | 29                                                           | 0,15                                                | 5,0                           | 20,2                                               | 77 x 143                  | ECG2HWP392M◇E143△△△△                                                                          |
|                                      | 4 700                      | 48                                                           | 24                                                           | 0,15                                                | 5,0                           | 21,8                                               | 90 x 130                  | ECG2HWP472M◇F130△△△△                                                                          |
|                                      | 5 600                      | 40                                                           | 20                                                           | 0,15                                                | 5,0                           | 25,3                                               | 90 x 157                  | ECG2HWP562M◇F157△△△△                                                                          |
|                                      | 6 800                      | 32                                                           | 16                                                           | 0,15                                                | 5,0                           | 29,0                                               | 90 x 171                  | ECG2HWP682M◇F171△△△△                                                                          |

### 9 000h at 105°C

- Longer Life at 105°C
- Highest Professional Power Application



## ITEM CHARACTERISTICS

|                                     |                |
|-------------------------------------|----------------|
| Operating Temperature Range (°C)    | -40 ~ +105     |
| Voltage Range (V)                   | 350 ~ 450      |
| Capacitance Range (μF)              | 1 000 ~ 15 000 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%          |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

|                 |                                                                                                            |
|-----------------|------------------------------------------------------------------------------------------------------------|
| Leakage Current | After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table. |
|-----------------|------------------------------------------------------------------------------------------------------------|

|                                                           |                                                              |
|-----------------------------------------------------------|--------------------------------------------------------------|
| Stability at Low Temperature (Capacitance Ratio at 120Hz) | $C_{-25^{\circ}\text{C}} / C_{+20^{\circ}\text{C}} \geq 0,7$ |
|-----------------------------------------------------------|--------------------------------------------------------------|

|                       |                                                                                                                                                                              |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fast Charge-Discharge | ⚠ Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

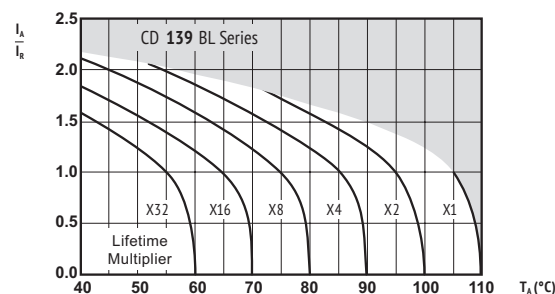
| ITEM                                                                    | USEFUL LIFE                                                                                                                                                                          |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                     |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|---------------------------------------------------------------------|
| Lifetime                                                                | 9 000h                                                                                                                                                                               | > 200 000h                        | 5 000h                                | 5 000h                                   | 1 000h                                |                                                                     |
| Leakage Current                                                         | Not more than specified value                                                                                                                                                        |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                     |
| Capacitance Change                                                      | Within ± 30% of initial value                                                                                                                                                        |                                   | Within ± 20% of initial value         | Within ± 10% of initial value            | Within ± 20% of initial value         |                                                                     |
| Dissipation Factor                                                      | Not more than 300% of specified value                                                                                                                                                |                                   | Not more than 200% of specified value | Not more than 130% of specified value    | Not more than 200% of specified value |                                                                     |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C                                                                                                                                                              | $U_R$<br>$1,4 \times I_R$<br>50°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test: $U_R$ to be applied for 30 min > 24h before measurement |
| Terminal and Construction                                               | The terminal version has an impact on the current capability and mechanical behavior (vibration). For high current applications the terminals C,D and E are preferred, see page 151. |                                   |                                       |                                          |                                       |                                                                     |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency   | 50Hz | 120Hz | 300Hz | 1kHz | ≥ 10 kHz |
|-------------|------|-------|-------|------|----------|
| Coefficient | 0,80 | 1,00  | 1,10  | 1,30 | 1,40     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,

$I_R$  = rated ripple current at 120Hz, 105°C

Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)



## SAFETY FACTOR

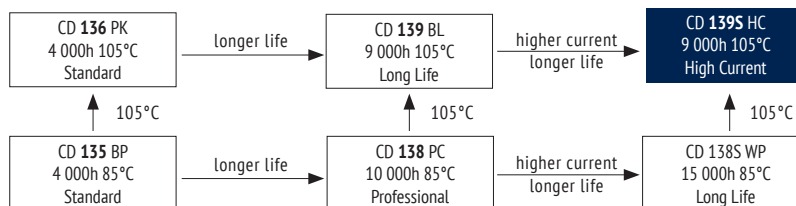
This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.



| $U_{RDC}$<br>(Surge Voltage)<br>Code    | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>$\phi D \times L$ | ORDER CODE<br><br>◇ = mounting style (stud)<br>AAAA = terminal style<br><br>Details: Page 150 |
|-----------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------------------------|---------------------------|-----------------------------------------------------------------------------------------------|
| (V)                                     | ( $\mu F$ )                | (m $\Omega$ )                                                | (m $\Omega$ )                                                |                                                     | (mA)                          | (Arms)                                              | (mm)                      |                                                                                               |
| <b>350</b><br><b>(400)</b><br><b>2V</b> | 1 000                      | 259                                                          | 69                                                           | 0,15                                                | 3,5                           | 3,9                                                 | 51 x 75                   | ECG2VBL102M◇C075AAAA                                                                          |
|                                         | 1 200                      | 215                                                          | 65                                                           | 0,15                                                | 4,2                           | 4,2                                                 | 51 x 75                   | ECG2VBL122M◇C075AAAA                                                                          |
|                                         | 1 500                      | 172                                                          | 55                                                           | 0,15                                                | 5,0                           | 5,2                                                 | 51 x 96                   | ECG2VBL152M◇C096AAAA                                                                          |
|                                         | 1 800                      | 143                                                          | 43                                                           | 0,15                                                | 5,0                           | 5,7                                                 | 51 x 96                   | ECG2VBL182M◇C096AAAA                                                                          |
|                                         | 2 200                      | 117                                                          | 30                                                           | 0,15                                                | 5,0                           | 7,1                                                 | 51 x 130                  | ECG2VBL222M◇C130AAAA                                                                          |
|                                         | 2 700                      | 96                                                           | 27                                                           | 0,15                                                | 5,0                           | 7,7                                                 | 64 x 96                   | ECG2VBL272M◇D096AAAA                                                                          |
|                                         | 3 300                      | 78                                                           | 23                                                           | 0,15                                                | 5,0                           | 9,1                                                 | 64 x 115                  | ECG2VBL332M◇D115AAAA                                                                          |
|                                         | 3 900                      | 66                                                           | 19                                                           | 0,15                                                | 5,0                           | 10,4                                                | 64 x 130                  | ECG2VBL392M◇D130AAAA                                                                          |
|                                         | 4 700                      | 55                                                           | 15                                                           | 0,15                                                | 5,0                           | 12,2                                                | 64 x 155                  | ECG2VBL472M◇D155AAAA                                                                          |
|                                         |                            | 55                                                           | 16                                                           | 0,15                                                | 5,0                           | 11,5                                                | 77 x 115                  | ECG2VBL472M◇E115AAAA                                                                          |
|                                         | 5 600                      | 46                                                           | 13                                                           | 0,15                                                | 5,0                           | 14,6                                                | 64 x 195                  | ECG2VBL562M◇D195AAAA                                                                          |
|                                         |                            | 46                                                           | 14                                                           | 0,15                                                | 5,0                           | 13,1                                                | 77 x 130                  | ECG2VBL562M◇E130AAAA                                                                          |
|                                         | 6 800                      | 38                                                           | 13                                                           | 0,15                                                | 5,0                           | 15,5                                                | 77 x 155                  | ECG2VBL682M◇E155AAAA                                                                          |
|                                         | 8 200                      | 31                                                           | 11                                                           | 0,15                                                | 5,0                           | 18,1                                                | 90 x 157                  | ECG2VBL822M◇F157AAAA                                                                          |
|                                         | 10 000                     | 26                                                           | 10                                                           | 0,15                                                | 5,0                           | 19,9                                                | 90 x 157                  | ECG2VBL103M◇F157AAAA                                                                          |
|                                         | 12 000                     | 22                                                           | 8                                                            | 0,15                                                | 5,0                           | 23,8                                                | 90 x 196                  | ECG2VBL123M◇F196AAAA                                                                          |
|                                         | 15 000                     | 17                                                           | 6                                                            | 0,15                                                | 5,0                           | 28,8                                                | 90 x 236                  | ECG2VBL153M◇F236AAAA                                                                          |
| <b>400</b><br><b>(450)</b><br><b>2G</b> | 1 000                      | 215                                                          | 70                                                           | 0,15                                                | 4,0                           | 3,9                                                 | 51 x 75                   | ECG2GBL102M◇C075AAAA                                                                          |
|                                         | 1 200                      | 179                                                          | 64                                                           | 0,15                                                | 4,8                           | 4,6                                                 | 51 x 96                   | ECG2GBL122M◇C096AAAA                                                                          |
|                                         | 1 500                      | 143                                                          | 54                                                           | 0,15                                                | 5,0                           | 5,6                                                 | 51 x 115                  | ECG2GBL152M◇C115AAAA                                                                          |
|                                         | 1 800                      | 119                                                          | 43                                                           | 0,15                                                | 5,0                           | 6,4                                                 | 51 x 130                  | ECG2GBL182M◇C130AAAA                                                                          |
|                                         | 2 200                      | 98                                                           | 41                                                           | 0,15                                                | 5,0                           | 6,9                                                 | 64 x 96                   | ECG2GBL222M◇D096AAAA                                                                          |
|                                         | 2 700                      | 80                                                           | 38                                                           | 0,15                                                | 5,0                           | 8,2                                                 | 64 x 115                  | ECG2GBL272M◇D115AAAA                                                                          |
|                                         | 3 300                      | 65                                                           | 29                                                           | 0,15                                                | 5,0                           | 9,5                                                 | 64 x 130                  | ECG2GBL332M◇D130AAAA                                                                          |
|                                         | 3 900                      | 55                                                           | 26                                                           | 0,15                                                | 5,0                           | 11,1                                                | 64 x 155                  | ECG2GBL392M◇D155AAAA                                                                          |
|                                         |                            | 55                                                           | 28                                                           | 0,15                                                | 5,0                           | 10,4                                                | 77 x 115                  | ECG2GBL392M◇E115AAAA                                                                          |
|                                         | 4 700                      | 46                                                           | 22                                                           | 0,15                                                | 5,0                           | 13,4                                                | 64 x 195                  | ECG2GBL472M◇D195AAAA                                                                          |
|                                         |                            | 46                                                           | 22                                                           | 0,15                                                | 5,0                           | 12,0                                                | 77 x 130                  | ECG2GBL472M◇E130AAAA                                                                          |
|                                         | 5 600                      | 39                                                           | 19                                                           | 0,15                                                | 5,0                           | 14,6                                                | 64 x 195                  | ECG2GBL562M◇D195AAAA                                                                          |
|                                         |                            | 39                                                           | 19                                                           | 0,15                                                | 5,0                           | 14,0                                                | 77 x 155                  | ECG2GBL562M◇E155AAAA                                                                          |
|                                         | 6 800                      | 32                                                           | 17                                                           | 0,15                                                | 5,0                           | 16,5                                                | 90 x 157                  | ECG2GBL682M◇F157AAAA                                                                          |
|                                         | 8 200                      | 26                                                           | 15                                                           | 0,15                                                | 5,0                           | 18,1                                                | 90 x 157                  | ECG2GBL822M◇F157AAAA                                                                          |
|                                         | 10 000                     | 22                                                           | 12                                                           | 0,15                                                | 5,0                           | 21,7                                                | 90 x 196                  | ECG2GBL103M◇F196AAAA                                                                          |
|                                         | 12 000                     | 18                                                           | 8                                                            | 0,15                                                | 5,0                           | 25,8                                                | 90 x 236                  | ECG2GBL123M◇F236AAAA                                                                          |
| <b>450</b><br><b>(500)</b><br><b>2W</b> | 1 000                      | 215                                                          | 70                                                           | 0,15                                                | 4,5                           | 4,2                                                 | 51 x 96                   | ECG2WBL102M◇C096AAAA                                                                          |
|                                         | 1 200                      | 179                                                          | 66                                                           | 0,15                                                | 5,0                           | 5,0                                                 | 51 x 115                  | ECG2WBL122M◇C115AAAA                                                                          |
|                                         | 1 500                      | 143                                                          | 54                                                           | 0,15                                                | 5,0                           | 5,9                                                 | 51 x 130                  | ECG2WBL152M◇C130AAAA                                                                          |
|                                         | 1 800                      | 119                                                          | 44                                                           | 0,15                                                | 5,0                           | 6,3                                                 | 64 x 96                   | ECG2WBL182M◇D096AAAA                                                                          |
|                                         | 2 200                      | 98                                                           | 42                                                           | 0,15                                                | 5,0                           | 7,4                                                 | 64 x 115                  | ECG2WBL222M◇D115AAAA                                                                          |
|                                         | 2 700                      | 80                                                           | 40                                                           | 0,15                                                | 5,0                           | 8,6                                                 | 64 x 130                  | ECG2WBL272M◇D130AAAA                                                                          |
|                                         |                            | 80                                                           | 42                                                           | 0,15                                                | 5,0                           | 8,7                                                 | 77 x 115                  | ECG2WBL272M◇E115AAAA                                                                          |
|                                         | 3 300                      | 65                                                           | 31                                                           | 0,15                                                | 5,0                           | 10,2                                                | 64 x 155                  | ECG2WBL332M◇D155AAAA                                                                          |
|                                         |                            | 65                                                           | 35                                                           | 0,15                                                | 5,0                           | 10,1                                                | 77 x 130                  | ECG2WBL332M◇E130AAAA                                                                          |
|                                         | 3 900                      | 55                                                           | 28                                                           | 0,15                                                | 5,0                           | 12,3                                                | 64 x 195                  | ECG2WBL392M◇D195AAAA                                                                          |
|                                         | 4 700                      | 46                                                           | 25                                                           | 0,15                                                | 5,0                           | 12,9                                                | 77 x 155                  | ECG2WBL472M◇E155AAAA                                                                          |
|                                         | 5 600                      | 38                                                           | 22                                                           | 0,15                                                | 5,0                           | 15,4                                                | 77 x 195                  | ECG2WBL562M◇E195AAAA                                                                          |
|                                         |                            | 38                                                           | 24                                                           | 0,15                                                | 5,0                           | 14,9                                                | 90 x 157                  | ECG2WBL562M◇F157AAAA                                                                          |
|                                         | 6 800                      | 32                                                           | 21                                                           | 0,15                                                | 5,0                           | 18,0                                                | 90 x 196                  | ECG2WBL682M◇F196AAAA                                                                          |
|                                         | 8 200                      | 27                                                           | 18                                                           | 0,15                                                | 5,0                           | 19,8                                                | 90 x 196                  | ECG2WBL822M◇F196AAAA                                                                          |
|                                         | 10 000                     | 22                                                           | 16                                                           | 0,15                                                | 5,0                           | 23,6                                                | 90 x 236                  | ECG2WBL103M◇F236AAAA                                                                          |

## 9 000h at 105°C

- Longer Life at 105°C for Professional Industry Application
- Improved Current Capability



## ITEM CHARACTERISTICS

|                                     |                |
|-------------------------------------|----------------|
| Operating Temperature Range (°C)    | -40 ~ +105     |
| Voltage Range (V)                   | 350 ~ 450      |
| Capacitance Range (μF)              | 2 200 ~ 15 000 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%          |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

|                 |                                                                                                            |
|-----------------|------------------------------------------------------------------------------------------------------------|
| Leakage Current | After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table. |
|-----------------|------------------------------------------------------------------------------------------------------------|

|                                                              |                                                              |
|--------------------------------------------------------------|--------------------------------------------------------------|
| Stability at Low Temperature<br>(Capacitance Ratio at 120Hz) | $C_{-25^{\circ}\text{C}} / C_{+20^{\circ}\text{C}} \geq 0,7$ |
|--------------------------------------------------------------|--------------------------------------------------------------|

|                       |                                                                                                                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fast Charge-Discharge | <b>!</b> Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

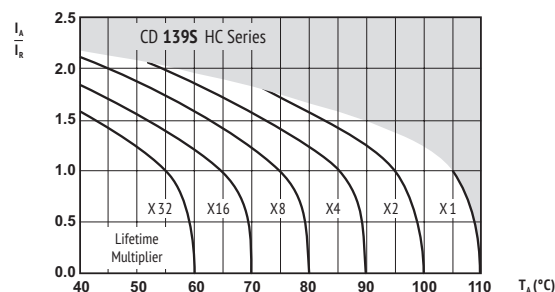
| ITEM                                                                    | USEFUL LIFE                                                                                                                                                                             |                                   | LOAD LIFE                             | ENDURANCE TEST                           | SHELF LIFE                            |                                                                     |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------|------------------------------------------|---------------------------------------|---------------------------------------------------------------------|
| Lifetime                                                                | 9 000h                                                                                                                                                                                  | > 200 000h                        | 5 000h                                | 5 000h                                   | 1 000h                                |                                                                     |
| Leakage Current                                                         | Not more than specified value                                                                                                                                                           |                                   | Not more than specified value         | Not more than specified value            | Not more than specified value         |                                                                     |
| Capacitance Change                                                      | Within ± 30% of initial value                                                                                                                                                           |                                   | Within ± 20% of initial value         | Within ± 10% of initial value            | Within ± 20% of initial value         |                                                                     |
| Dissipation Factor                                                      | Not more than 300% of specified value                                                                                                                                                   |                                   | Not more than 200% of specified value | Not more than 130% of specified value    | Not more than 200% of specified value |                                                                     |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>105°C                                                                                                                                                                 | $U_R$<br>$1,4 \times I_R$<br>50°C | $U_R$<br>$I_R$<br>105°C               | $U_R$<br>$I_R = 0$<br>105°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>105°C       | After test: $U_R$ to be applied for 30 min > 24h before measurement |
| Terminal and Construction                                               | The terminal version has an impact on the current capability and mechanical behavior (vibration).<br>For high current applications the terminals C,D and E are preferred, see page 151. |                                   |                                       |                                          |                                       |                                                                     |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency          | 50Hz | 120Hz | 300Hz | 1kHz | ≥ 10 kHz |
|--------------------|------|-------|-------|------|----------|
| <b>Coefficient</b> | 0,80 | 1,00  | 1,10  | 1,30 | 1,40     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 105°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)



## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

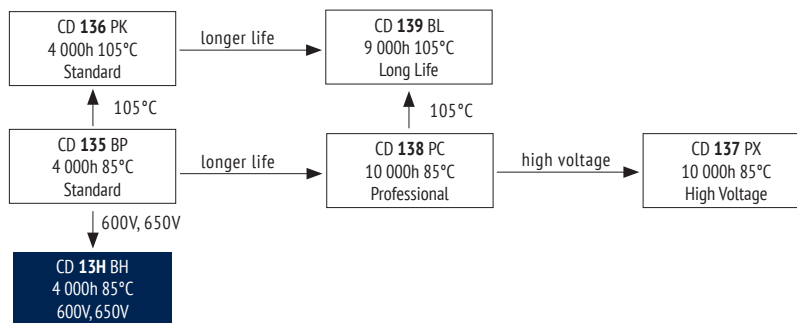




| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>105°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇ = mounting style (stud)<br>△△△△ = terminal style<br><br>Details: Page 150 |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|-----------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                              | (mm)                             |                                                                                               |
| <b>350<br/>(400)<br/>2V</b>          | 3 300                      | 55                                                           | 23                                                           | 0,15                                                | 5,0                           | 14,4                                                | 64 x 115                         | ECG2VHC332M◇D115△△△△                                                                          |
|                                      | 3 900                      | 46                                                           | 19                                                           | 0,15                                                | 5,0                           | 16,6                                                | 64 x 130                         | ECG2VHC392M◇D130△△△△                                                                          |
|                                      | 4 700                      | 39                                                           | 17                                                           | 0,15                                                | 5,0                           | 19,8                                                | 64 x 155                         | ECG2VHC472M◇D155△△△△                                                                          |
|                                      |                            | 39                                                           | 17                                                           | 0,15                                                | 5,0                           | 19,1                                                | 77 x 115                         | ECG2VHC472M◇E115△△△△                                                                          |
|                                      | 5 600                      | 32                                                           | 14                                                           | 0,15                                                | 5,0                           | 21,9                                                | 77 x 130                         | ECG2VHC562M◇E130△△△△                                                                          |
|                                      | 6 800                      | 27                                                           | 12                                                           | 0,15                                                | 5,0                           | 26,2                                                | 77 x 155                         | ECG2VHC682M◇E155△△△△                                                                          |
|                                      | 8 200                      | 22                                                           | 11                                                           | 0,15                                                | 5,0                           | 29,3                                                | 90 x 157                         | ECG2VHC822M◇F157△△△△                                                                          |
|                                      | 10 000                     | 18                                                           | 10                                                           | 0,15                                                | 5,0                           | 32,3                                                | 90 x 157                         | ECG2VHC103M◇F157△△△△                                                                          |
|                                      | 12 000                     | 15                                                           | 8                                                            | 0,15                                                | 5,0                           | 39,0                                                | 90 x 196                         | ECG2VHC123M◇F196△△△△                                                                          |
| <b>400<br/>(450)<br/>2G</b>          | 2 700                      | 56                                                           | 28                                                           | 0,15                                                | 5,0                           | 13,1                                                | 64 x 115                         | ECG2GHC272M◇D115△△△△                                                                          |
|                                      | 3 300                      | 46                                                           | 23                                                           | 0,15                                                | 5,0                           | 15,2                                                | 64 x 130                         | ECG2GHC332M◇D130△△△△                                                                          |
|                                      | 3 900                      | 39                                                           | 21                                                           | 0,15                                                | 5,0                           | 17,9                                                | 64 x 155                         | ECG2GHC392M◇D155△△△△                                                                          |
|                                      |                            | 39                                                           | 21                                                           | 0,15                                                | 5,0                           | 18,2                                                | 77 x 115                         | ECG2GHC392M◇E115△△△△                                                                          |
|                                      | 4 700                      | 32                                                           | 17                                                           | 0,15                                                | 5,0                           | 20,1                                                | 77 x 130                         | ECG2GHC472M◇E130△△△△                                                                          |
|                                      | 5 600                      | 27                                                           | 15                                                           | 0,15                                                | 5,0                           | 23,8                                                | 77 x 155                         | ECG2GHC562M◇E155△△△△                                                                          |
|                                      | 6 800                      | 22                                                           | 13                                                           | 0,15                                                | 5,0                           | 26,7                                                | 90 x 157                         | ECG2GHC682M◇F157△△△△                                                                          |
|                                      | 8 200                      | 18                                                           | 11                                                           | 0,15                                                | 5,0                           | 29,3                                                | 90 x 157                         | ECG2GHC822M◇F157△△△△                                                                          |
|                                      | 10 000                     | 15                                                           | 9                                                            | 0,15                                                | 5,0                           | 35,6                                                | 90 x 196                         | ECG2GHC103M◇F196△△△△                                                                          |
| <b>450<br/>(500)<br/>2W</b>          | 2 200                      | 69                                                           | 38                                                           | 0,15                                                | 5,0                           | 11,8                                                | 64 x 115                         | ECG2WHC222M◇D115△△△△                                                                          |
|                                      | 2 700                      | 56                                                           | 31                                                           | 0,15                                                | 5,0                           | 13,7                                                | 64 x 130                         | ECG2WHC272M◇D130△△△△                                                                          |
|                                      |                            | 56                                                           | 31                                                           | 0,15                                                | 5,0                           | 14,5                                                | 77 x 115                         | ECG2WHC272M◇E115△△△△                                                                          |
|                                      | 3 300                      | 46                                                           | 23                                                           | 0,15                                                | 5,0                           | 16,5                                                | 64 x 155                         | ECG2WHC332M◇D155△△△△                                                                          |
|                                      |                            | 46                                                           | 25                                                           | 0,15                                                | 5,0                           | 16,9                                                | 77 x 130                         | ECG2WHC332M◇E130△△△△                                                                          |
|                                      | 4 700                      | 32                                                           | 18                                                           | 0,15                                                | 5,0                           | 21,7                                                | 77 x 155                         | ECG2WHC472M◇E155△△△△                                                                          |
|                                      | 5 600                      | 27                                                           | 16                                                           | 0,15                                                | 5,0                           | 26,4                                                | 77 x 195                         | ECG2WHC562M◇E195△△△△                                                                          |
|                                      |                            | 27                                                           | 16                                                           | 0,15                                                | 5,0                           | 24,2                                                | 90 x 157                         | ECG2WHC562M◇F157△△△△                                                                          |
|                                      | 6 800                      | 22                                                           | 14                                                           | 0,15                                                | 5,0                           | 29,5                                                | 90 x 196                         | ECG2WHC682M◇F196△△△△                                                                          |
|                                      | 8 200                      | 19                                                           | 12                                                           | 0,15                                                | 5,0                           | 32,4                                                | 90 x 196                         | ECG2WHC822M◇F196△△△△                                                                          |

**4 000h at 85°C**

- Extreme High Voltage
- High Ripple Current
- Power Supplies & Inverters

**ITEM CHARACTERISTICS**

|                                     |               |
|-------------------------------------|---------------|
| Operating Temperature Range (°C)    | -25 ~ +85     |
| Voltage Range (V)                   | 600, 650      |
| Capacitance Range (μF)              | 1 000 ~ 5 600 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%         |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

Leakage Current After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table.

Fast Charge-Discharge Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray

| ITEM                                                                    | USEFUL LIFE                           |                                   | LOAD LIFE                             | ENDURANCE TEST                          | SHELF LIFE                            |                                                                     |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|---------------------------------------------------------------------|
| Lifetime                                                                | 4 000h                                | > 65 000h                         | 2 000h                                | 2 000h                                  | 500h                                  |                                                                     |
| Leakage Current                                                         | Not more than specified value         |                                   | Not more than specified value         | Not more than specified value           | Not more than specified value         |                                                                     |
| Capacitance Change                                                      | Within ± 30% of initial value         |                                   | Within ± 20% of initial value         | Within ± 10% of initial value           | Within ± 20% of initial value         |                                                                     |
| Dissipation Factor                                                      | Not more than 300% of specified value |                                   | Not more than 200% of specified value | Not more than 130% of specified value   | Not more than 200% of specified value |                                                                     |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$1,2 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$I_R = 0$<br>85°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>85°C        | After test: $U_R$ to be applied for 30 min > 24h before measurement |

Terminal and Construction The terminal version has an impact on the current capability and mechanical behavior (vibration). For high current applications the terminals C,D and E are preferred, see page 151.

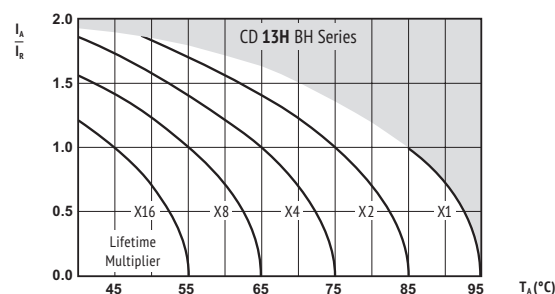
Optional Longer Lifetimes available on request (Series CD 13P HP)

SCREW

**MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)**

| Frequency   | 50Hz | 120Hz | 300Hz | 1kHz | ≥ 10 kHz |
|-------------|------|-------|-------|------|----------|
| Coefficient | 0,80 | 1,00  | 1,10  | 1,30 | 1,40     |

Multipliers for typical operating conditions.

**MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)**

$I_A$  = actual ripple current at 120Hz,

$I_R$  = rated ripple current at 120Hz, 85°C

Multiplier of Useful Life as a function of ambient temperature & ripple current load

**ENVIRONMENTAL**

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)

**SAFETY FACTOR**

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

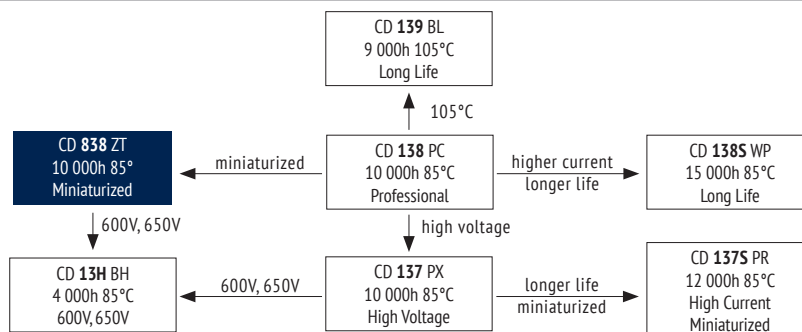




| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>$\varnothing D \times L$ | ORDER CODE<br><br>◇ = mounting style (stud)<br>△△△△ = terminal style<br><br>Details: Page 150 |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|----------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                             | (mm)                             |                                                                                               |
| 600<br>(650)<br>2S                   | 1 200                      | 242                                                          | 121                                                          | 0,25                                                | 5,0                           | 7,7                                                | 64 x 96                          | ECG2SBH122M◇D096△△△△                                                                          |
|                                      | 1 500                      | 224                                                          | 112                                                          | 0,25                                                | 5,0                           | 9,3                                                | 64 x 115                         | ECG2SBH152M◇D115△△△△                                                                          |
|                                      | 1 800                      | 194                                                          | 97                                                           | 0,25                                                | 5,0                           | 10,1                                               | 77 x 96                          | ECG2SBH182M◇E096△△△△                                                                          |
|                                      | 2 200                      | 162                                                          | 81                                                           | 0,25                                                | 5,0                           | 12,0                                               | 77 x 115                         | ECG2SBH222M◇E115△△△△                                                                          |
|                                      | 2 700                      | 132                                                          | 66                                                           | 0,25                                                | 5,0                           | 14,0                                               | 77 x 130                         | ECG2SBH272M◇E130△△△△                                                                          |
|                                      | 3 300                      | 88                                                           | 44                                                           | 0,25                                                | 5,0                           | 16,4                                               | 77 x 155                         | ECG2SBH332M◇E155△△△△                                                                          |
|                                      |                            | 88                                                           | 44                                                           | 0,25                                                | 5,0                           | 16,4                                               | 90 x 131                         | ECG2SBH332M◇F131△△△△                                                                          |
|                                      | 3 900                      | 74                                                           | 37                                                           | 0,25                                                | 5,0                           | 17,8                                               | 90 x 131                         | ECG2SBH392M◇F131△△△△                                                                          |
|                                      | 4 700                      | 62                                                           | 31                                                           | 0,25                                                | 5,0                           | 21,0                                               | 90 x 157                         | ECG2SBH472M◇F157△△△△                                                                          |
|                                      | 5 600                      | 56                                                           | 28                                                           | 0,25                                                | 5,0                           | 24,5                                               | 90 x 196                         | ECG2SBH562M◇F196△△△△                                                                          |
| 650<br>(700)<br>S6                   | 1 000                      | 300                                                          | 150                                                          | 0,25                                                | 5,0                           | 6,0                                                | 64 x 130                         | ECGS6BH102M◇D130△△△△                                                                          |
|                                      | 1 200                      | 266                                                          | 133                                                          | 0,25                                                | 5,0                           | 6,7                                                | 77 x 115                         | ECGS6BH122M◇E115△△△△                                                                          |
|                                      | 1 500                      | 212                                                          | 106                                                          | 0,25                                                | 5,0                           | 8,1                                                | 77 x 130                         | ECGS6BH152M◇E130△△△△                                                                          |
|                                      | 1 800                      | 176                                                          | 88                                                           | 0,25                                                | 5,0                           | 9,8                                                | 77 x 155                         | ECGS6BH182M◇E155△△△△                                                                          |
|                                      | 2 200                      | 144                                                          | 72                                                           | 0,25                                                | 5,0                           | 10,7                                               | 90 x 131                         | ECGS6BH222M◇F131△△△△                                                                          |
|                                      | 2 700                      | 128                                                          | 64                                                           | 0,25                                                | 5,0                           | 12,8                                               | 90 x 157                         | ECGS6BH272M◇F157△△△△                                                                          |
|                                      | 3 300                      | 106                                                          | 53                                                           | 0,25                                                | 5,0                           | 14,7                                               | 90 x 171                         | ECGS6BH332M◇F171△△△△                                                                          |
|                                      | 3 900                      | 94                                                           | 47                                                           | 0,30                                                | 5,0                           | 17,9                                               | 90 x 196                         | ECGS6BH392M◇F196△△△△                                                                          |
|                                      | 4 700                      | 78                                                           | 39                                                           | 0,30                                                | 5,0                           | 21,6                                               | 90 x 196                         | ECGS6BH472M◇F196△△△△                                                                          |
|                                      | 5 600                      | 70                                                           | 35                                                           | 0,30                                                | 5,0                           | 24,9                                               | 101 x 220                        | ECGS6BH562M◇G220△△△△                                                                          |

## 10 000h at 85°C

- Long Life
- High Reliability
- High Currents for High Professional Applications and High Power Inverter
- Miniaturized



## ITEM CHARACTERISTICS

|                                     |              |
|-------------------------------------|--------------|
| Operating Temperature Range (°C)    | -40 ~ +85    |
| Voltage Range (V)                   | 350 ~ 450    |
| Capacitance Range (μF)              | 470 ~ 15 000 |
| Capacitance Tolerance (20°C, 120Hz) | ± 20%        |



The usage at lower temperatures than indicated may be possible. Please contact the Jianghai Europe sales office for approval.

|                 |                                                                                                            |
|-----------------|------------------------------------------------------------------------------------------------------------|
| Leakage Current | After 5 minutes at 20°C application of rated voltage, leakage current is not more than specified in table. |
|-----------------|------------------------------------------------------------------------------------------------------------|

|                                                           |                                                              |
|-----------------------------------------------------------|--------------------------------------------------------------|
| Stability at Low Temperature (Capacitance Ratio at 120Hz) | $C_{-25^{\circ}\text{C}} / C_{+20^{\circ}\text{C}} \geq 0,7$ |
|-----------------------------------------------------------|--------------------------------------------------------------|

|                       |                                                                                                                                                                              |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fast Charge-Discharge | ⚠ Please contact Jianghai for an appropriate choice of the capacitor or possible technical adaptations, esp. for applications like: Welding, Photoflash, Servo motors, X-Ray |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

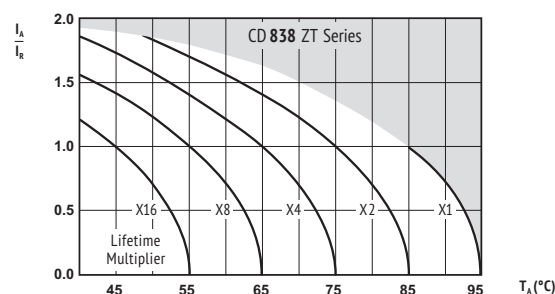
| ITEM                                                                    | USEFUL LIFE                                                                                                                                                                          |                                   | LOAD LIFE                             | ENDURANCE TEST                          | SHELF LIFE                            |                                                                     |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|---------------------------------------------------------------------|
| Lifetime                                                                | 10 000h                                                                                                                                                                              | > 100 000h                        | 5 000h                                | 5 000h                                  | 1 000h                                |                                                                     |
| Leakage Current                                                         | Not more than specified value                                                                                                                                                        |                                   | Not more than specified value         | Not more than specified value           | Not more than specified value         |                                                                     |
| Capacitance Change                                                      | Within ± 30% of initial value                                                                                                                                                        |                                   | Within ± 20% of initial value         | Within ± 10% of initial value           | Within ± 20% of initial value         |                                                                     |
| Dissipation Factor                                                      | Not more than 300% of specified value                                                                                                                                                |                                   | Not more than 200% of specified value | Not more than 130% of specified value   | Not more than 200% of specified value |                                                                     |
| Condition:<br>Applied Voltage<br>Applied Current<br>Applied Temperature | $U_R$<br>$I_R$<br>85°C                                                                                                                                                               | $U_R$<br>$1,4 \times I_R$<br>40°C | $U_R$<br>$I_R$<br>85°C                | $U_R$<br>$I_R = 0$<br>85°C<br>IEC 60384 | $U_R = 0$<br>$I_R = 0$<br>85°C        | After test: $U_R$ to be applied for 30 min > 24h before measurement |
| Terminal and Construction                                               | The terminal version has an impact on the current capability and mechanical behavior (vibration). For high current applications the terminals C,D and E are preferred, see page 151. |                                   |                                       |                                         |                                       |                                                                     |
| Optional                                                                | Self-extinguishing Electrolyte on request                                                                                                                                            |                                   |                                       |                                         |                                       |                                                                     |

## MULTIPLIER FOR RIPPLE CURRENT (FREQUENCY COEFFICIENT)

| Frequency   | 50Hz | 120Hz | 300Hz | 1kHz | ≥ 10 kHz |
|-------------|------|-------|-------|------|----------|
| Coefficient | 0,80 | 1,00  | 1,10  | 1,30 | 1,40     |

Multipliers for typical operating conditions.

## MULTIPLIER FOR LIFETIME (LIFETIME DIAGRAM)



$I_A$  = actual ripple current at 120Hz,  
 $I_R$  = rated ripple current at 120Hz, 85°C  
 Multiplier of Useful Life as a function of ambient temperature & ripple current load

## ENVIRONMENTAL

The products are RoHS, WEEE and REACH compliant. The detailed version please see separate "Environmental Certificates" document or [www.jianghai-europe.com](http://www.jianghai-europe.com)



## SAFETY FACTOR

This diagram includes a safety margin. In many cases the allowed current capability/lifetime may be increased. For details and approvals please contact the Jianghai Europe sales office.

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>$\phi D \times L$ | ORDER CODE<br><br>◇ = mounting style (stud)<br>△△△△ = terminal style |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|----------------------------------------------------|---------------------------|----------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                             | (mm)                      | Details: Page 150                                                    |

|                    |        |     |     |      |     |      |          |                      |
|--------------------|--------|-----|-----|------|-----|------|----------|----------------------|
| 350<br>(400)<br>2V | 1 000  | 199 | 120 | 0,15 | 3,5 | 5,6  | 51 x 80  | ECG2VZT102M◇C080△△△△ |
|                    | 1 500  | 133 | 55  | 0,15 | 5,0 | 8,5  | 64 x 105 | ECG2VZT152M◇D105△△△△ |
|                    | 2 200  | 91  | 30  | 0,15 | 5,0 | 9,1  | 51 x 96  | ECG2VZT222M◇C096△△△△ |
|                    |        | 91  | 30  | 0,15 | 5,0 | 9,4  | 64 x 105 | ECG2VZT222M◇D105△△△△ |
|                    | 3 300  | 61  | 23  | 0,15 | 5,0 | 13,0 | 64 x 130 | ECG2VZT332M◇D130△△△△ |
|                    |        | 61  | 23  | 0,15 | 5,0 | 11,0 | 77 x 105 | ECG2VZT332M◇E105△△△△ |
|                    | 4 700  | 43  | 16  | 0,15 | 5,0 | 14,0 | 77 x 105 | ECG2VZT472M◇E105△△△△ |
|                    |        | 43  | 16  | 0,15 | 5,0 | 18,0 | 77 x 143 | ECG2VZT472M◇E143△△△△ |
|                    | 6 800  | 30  | 13  | 0,15 | 5,0 | 20,0 | 77 x 143 | ECG2VZT682M◇E143△△△△ |
|                    |        | 20  | 10  | 0,15 | 5,0 | 21,4 | 77 x 143 | ECG2VZT103M◇E143△△△△ |
|                    | 10 000 | 20  | 10  | 0,15 | 5,0 | 27,0 | 77 x 220 | ECG2VZT103M◇E220△△△△ |
|                    |        | 20  | 9   | 0,15 | 5,0 | 20,5 | 90 x 105 | ECG2VZT103M◇F105△△△△ |
|                    | 15 000 | 14  | 10  | 0,15 | 5,0 | 24,9 | 77 x 145 | ECG2VZT153M◇E145△△△△ |
|                    |        | 14  | 6   | 0,15 | 5,0 | 35,0 | 90 x 220 | ECG2VZT153M◇F220△△△△ |
|                    | 18 000 | 12  | 6   | 0,15 | 5,0 | 28,7 | 77 x 220 | ECG2VZT183M◇E222△△△△ |

|                    |        |     |    |      |     |      |          |                      |
|--------------------|--------|-----|----|------|-----|------|----------|----------------------|
| 400<br>(450)<br>2G | 1 000  | 199 | 82 | 0,15 | 4,0 | 5,0  | 51 x 80  | ECG2GZT102M◇C080△△△△ |
|                    | 1 500  | 133 | 50 | 0,15 | 5,0 | 6,7  | 51 x 80  | ECG2GZT152M◇C080△△△△ |
|                    | 2 200  | 91  | 28 | 0,15 | 5,0 | 8,0  | 51 x 105 | ECG2GZT222M◇C105△△△△ |
|                    |        | 91  | 28 | 0,15 | 5,0 | 9,2  | 64 x 96  | ECG2GZT222M◇D096△△△△ |
|                    |        | 91  | 28 | 0,15 | 5,0 | 9,5  | 64 x 105 | ECG2GZT222M◇D105△△△△ |
|                    |        | 91  | 28 | 0,15 | 5,0 | 10,0 | 77 x 105 | ECG2GZT222M◇E105△△△△ |
|                    | 3 300  | 61  | 21 | 0,15 | 5,0 | 12,2 | 64 x 105 | ECG2GZT332M◇D105△△△△ |
|                    |        | 61  | 21 | 0,15 | 5,0 | 14,5 | 64 x 115 | ECG2GZT332M◇D115△△△△ |
|                    |        | 61  | 21 | 0,15 | 5,0 | 11,8 | 77 x 100 | ECG2GZT332M◇E100△△△△ |
|                    |        | 61  | 21 | 0,15 | 5,0 | 13,5 | 77 x 105 | ECG2GZT332M◇E105△△△△ |
|                    |        | 61  | 21 | 0,15 | 5,0 | 15,0 | 77 x 143 | ECG2GZT332M◇E143△△△△ |
|                    |        | 52  | 19 | 0,15 | 5,0 | 20,7 | 77 x 121 | ECG2GZT392M◇E121△△△△ |
|                    | 4 700  | 43  | 15 | 0,15 | 5,0 | 14,5 | 77 x 105 | ECG2GZT472M◇E105△△△△ |
|                    |        | 43  | 15 | 0,15 | 5,0 | 18,4 | 77 x 143 | ECG2GZT472M◇E143△△△△ |
|                    | 5 600  | 36  | 14 | 0,15 | 5,0 | 21,0 | 77 x 116 | ECG2GZT562M◇E116△△△△ |
|                    |        | 36  | 18 | 0,15 | 5,0 | 19,0 | 90 x 105 | ECG2GZT562M◇F105△△△△ |
|                    | 6 800  | 30  | 13 | 0,15 | 5,0 | 19,4 | 77 x 143 | ECG2GZT682M◇E143△△△△ |
|                    |        | 30  | 13 | 0,15 | 5,0 | 29,0 | 90 x 145 | ECG2GZT682M◇F145△△△△ |
|                    | 8 200  | 25  | 12 | 0,15 | 5,0 | 20,0 | 77 x 143 | ECG2GZT822M◇E143△△△△ |
|                    |        | 25  | 12 | 0,15 | 5,0 | 25,0 | 77 x 170 | ECG2GZT822M◇E170△△△△ |
|                    | 10 000 | 20  | 10 | 0,15 | 5,0 | 17,8 | 77 x 143 | ECG2GZT103M◇E143△△△△ |
|                    |        | 20  | 10 | 0,15 | 5,0 | 26,0 | 77 x 195 | ECG2GZT103M◇E195△△△△ |
|                    |        | 20  | 10 | 0,15 | 5,0 | 26,7 | 77 x 220 | ECG2GZT103M◇E220△△△△ |
|                    |        | 20  | 10 | 0,15 | 5,0 | 35,7 | 90 x 220 | ECG2GZT103M◇F220△△△△ |
|                    | 12 000 | 17  | 8  | 0,15 | 5,0 | 31,0 | 77 x 220 | ECG2GZT123M◇E220△△△△ |
|                    | 15 000 | 14  | 6  | 0,15 | 5,0 | 36,0 | 90 x 220 | ECG2GZT153M◇F220△△△△ |
|                    | 18 000 | 9   | 5  | 0,15 | 5,0 | 38,5 | 90 x 196 | ECG2GZT183M◇F196△△△△ |

|                    |        |    |    |      |     |      |          |                      |
|--------------------|--------|----|----|------|-----|------|----------|----------------------|
| 420<br>(470)<br>2X | 3 300  | 61 | 21 | 0,15 | 5,0 | 12,4 | 64 x 105 | ECG2XZT332M◇D105△△△△ |
|                    |        | 61 | 21 | 0,15 | 5,0 | 14,5 | 64 x 115 | ECG2XZT332M◇D115△△△△ |
|                    |        | 61 | 21 | 0,15 | 5,0 | 13,5 | 77 x 105 | ECG2XZT332M◇E105△△△△ |
|                    | 3 900  | 52 | 19 | 0,15 | 5,0 | 20,7 | 77 x 121 | ECG2XZT392M◇E121△△△△ |
|                    | 4 700  | 43 | 16 | 0,15 | 5,0 | 18,0 | 77 x 105 | ECG2XZT472M◇E105△△△△ |
|                    |        | 43 | 16 | 0,15 | 5,0 | 18,0 | 77 x 143 | ECG2XZT472M◇E143△△△△ |
|                    | 10 000 | 20 | 10 | 0,15 | 5,0 | 28,0 | 77 x 220 | ECG2XZT103M◇E220△△△△ |

| $U_{RDC}$<br>(Surge Voltage)<br>Code | $C_R$<br>Rated Capacitance | $ESR_{max}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $ESR_{typ}$<br>Equivalent Series Resistance<br>20°C<br>120Hz | $\tan\delta$<br>Dissipation Factor<br>20°C<br>120Hz | $I_{leak}$<br>Leakage Current | $I_{RAC}$<br>Rated Ripple Current<br>85°C<br>120Hz | Size<br>$\phi D \times L$ | ORDER CODE<br><br>◇ = mounting style (stud)<br>△△△△ = terminal style |
|--------------------------------------|----------------------------|--------------------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|-------------------------------|----------------------------------------------------|---------------------------|----------------------------------------------------------------------|
| (V)                                  | (μF)                       | (mΩ)                                                         | (mΩ)                                                         |                                                     | (mA)                          | (Arms)                                             | (mm)                      | Details: Page 150                                                    |

|                    |        |     |     |      |     |      |          |                      |
|--------------------|--------|-----|-----|------|-----|------|----------|----------------------|
| 450<br>(500)<br>2W | 470    | 424 | 250 | 0,15 | 2,1 | 4,5  | 51 x 75  | ECG2WZT471M◇C075△△△△ |
|                    | 680    | 293 | 185 | 0,15 | 3,1 | 4,9  | 51 x 80  | ECG2WZT681M◇C080△△△△ |
|                    | 1 000  | 199 | 93  | 0,15 | 4,5 | 6,4  | 51 x 105 | ECG2WZT102M◇C105△△△△ |
|                    | 1 500  | 133 | 56  | 0,15 | 5,0 | 7,1  | 51 x 105 | ECG2WZT152M◇C105△△△△ |
|                    |        | 133 | 56  | 0,15 | 5,0 | 10,0 | 51 x 115 | ECG2WZT152M◇C115△△△△ |
|                    | 1 800  | 111 | 45  | 0,15 | 5,0 | 8,5  | 64 x 105 | ECG2WZT182M◇D105△△△△ |
|                    | 2 200  | 91  | 35  | 0,15 | 5,0 | 9,0  | 64 x 96  | ECG2WZT222M◇D096△△△△ |
|                    |        | 91  | 35  | 0,15 | 5,0 | 12,0 | 64 x 130 | ECG2WZT222M◇D130△△△△ |
|                    | 2 700  | 91  | 35  | 0,15 | 5,0 | 13,1 | 77 x 143 | ECG2WZT222M◇E143△△△△ |
|                    |        | 74  | 30  | 0,15 | 5,0 | 12,7 | 64 x 130 | ECG2WZT272M◇D130△△△△ |
|                    | 3 300  | 61  | 30  | 0,15 | 5,0 | 14,0 | 64 x 130 | ECG2WZT332M◇D130△△△△ |
|                    |        | 61  | 30  | 0,15 | 5,0 | 13,2 | 77 x 105 | ECG2WZT332M◇E105△△△△ |
|                    |        | 61  | 30  | 0,15 | 5,0 | 13,8 | 77 x 115 | ECG2WZT332M◇E115△△△△ |
|                    |        | 61  | 30  | 0,15 | 5,0 | 16,1 | 77 x 143 | ECG2WZT332M◇E143△△△△ |
|                    | 3 900  | 52  | 20  | 0,15 | 5,0 | 13,3 | 64 x 140 | ECG2WZT392M◇D140△△△△ |
|                    | 4 700  | 43  | 16  | 0,15 | 5,0 | 14,0 | 64 x 143 | ECG2WZT472M◇D143△△△△ |
|                    |        | 43  | 16  | 0,15 | 5,0 | 17,0 | 64 x 195 | ECG2WZT472M◇D195△△△△ |
|                    |        | 43  | 16  | 0,15 | 5,0 | 15,0 | 77 x 115 | ECG2WZT472M◇E115△△△△ |
|                    |        | 43  | 16  | 0,15 | 5,0 | 21,0 | 77 x 143 | ECG2WZT472M◇E143△△△△ |
|                    | 5 600  | 36  | 13  | 0,15 | 5,0 | 16,0 | 77 x 130 | ECG2WZT562M◇E130△△△△ |
|                    |        | 36  | 13  | 0,15 | 5,0 | 17,5 | 77 x 143 | ECG2WZT562M◇E143△△△△ |
|                    | 6 800  | 30  | 11  | 0,15 | 5,0 | 18,0 | 77 x 143 | ECG2WZT682M◇E143△△△△ |
|                    |        | 30  | 11  | 0,15 | 5,0 | 19,1 | 77 x 155 | ECG2WZT682M◇E155△△△△ |
|                    |        | 30  | 11  | 0,15 | 5,0 | 21,0 | 77 x 220 | ECG2WZT682M◇E220△△△△ |
|                    |        | 30  | 11  | 0,15 | 5,0 | 20,0 | 90 x 145 | ECG2WZT682M◇F145△△△△ |
|                    | 8 200  | 25  | 12  | 0,15 | 5,0 | 28,2 | 77 x 170 | ECG2WZT822M◇E170△△△△ |
|                    |        | 25  | 12  | 0,15 | 5,0 | 28,5 | 90 x 157 | ECG2WZT822M◇F157△△△△ |
|                    | 10 000 | 20  | 9   | 0,15 | 5,0 | 26,0 | 77 x 220 | ECG2WZT103M◇E220△△△△ |
|                    |        | 20  | 9   | 0,15 | 5,0 | 28,0 | 90 x 171 | ECG2WZT103M◇F171△△△△ |
|                    | 12 000 | 17  | 8   | 0,15 | 5,0 | 33,0 | 90 x 170 | ECG2WZT123M◇F170△△△△ |
|                    |        | 17  | 8   | 0,15 | 5,0 | 34,0 | 90 x 220 | ECG2WZT123M◇F220△△△△ |
|                    | 15 000 | 14  | 7   | 0,15 | 5,0 | 34,0 | 90 x 220 | ECG2WZT153M◇F220△△△△ |
|                    |        | 14  | 6   | 0,15 | 5,0 | 36,0 | 90 x 236 | ECG2WZT153M◇F236△△△△ |
|                    | 18 000 | 14  | 9   | 0,15 | 5,0 | 36,5 | 90 x 180 | ECG2WZT183M◇F180△△△△ |
|                    | 22 000 | 9,1 | 6   | 0,15 | 5,0 | 21,0 | 90 x 236 | ECG2WZT223M◇F236△△△△ |

500V capacitors available on request.

SCREW

Notizenbereich mit horizontalen gestrichelten Linien.









## CAPACITOR COMPETENCE

*since 1958*

### JIANGHAI EUROPE

Electronic Components GmbH



ENGINEERED SOLUTIONS

#### **Jianghai Europe Electronic Components GmbH**

Uerdinger Str. 95 · 47799 Krefeld/Germany

Tel.: +49 (0) 2151-652088-0 · Fax: -88

[info@jianghai-europe.com](mailto:info@jianghai-europe.com)

[www.jianghai-europe.com](http://www.jianghai-europe.com)

#### **Nantong Jianghai Capacitor Co., Ltd.**

No. 79 South Tong Yang Road

226361 Nantong, Jiangsu/China

Tel.: +86-513-8672-6080 · Fax: -3859

[jh@jianghai.com](mailto:jh@jianghai.com)

[www.jianghai.com](http://www.jianghai.com)

#### **Jianghai America Inc.**

3104 Sunrise Ridge LN

Hacienda Heights, CA 91745/USA

Tel.: +1-626-274-1692 · Fax: +1-626-336-6960

[wangjuan@jianghai-america.com](mailto:wangjuan@jianghai-america.com)

[www.jianghai-america.com](http://www.jianghai-america.com)