

International
IR Rectifier

SCHOTTKY RECTIFIER

72CPQ030PbF

70 Amp

$I_{F(AV)} = 70\text{Amp}$
 $V_R = 30\text{V}$

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	70	A
V_{RRM}	30	V
I_{FSM} @ $t_p = 5\mu\text{s}$ sine	2180	A
V_F @ 35Apk , $T_J = 125^\circ\text{C}$ (per leg)	0.43	V
T_J range	-55 to 150	°C

Description/ Features

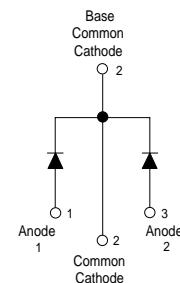
The 72CPQ030PbF center tap Schottky rectifier series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150°C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 150°C T_J operation
- Center tap TO-247 package
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead-Free ("PbF" suffix)

Case Styles



TO-247AC



72CPQ030PbF

Bulletin PD-20799 rev. A 11/06

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 Rectifier

Voltage Ratings

Part number	72CPQ030PbF		
V_R Max. DC Reverse Voltage (V)	30		
V_{RWM} Max. Working Peak Reverse Voltage (V)			

Absolute Maximum Ratings

Parameters	72CPQ	Units	Conditions
$I_{F(AV)}$ Max. Average Forward (Per Leg) Current * See Fig. 5 (Per Device)	35 70	A	50% duty cycle @ $T_J = 125^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	2180	A	5μs Sine or 3μs Rect. pulse
	600		Following any rated load condition and with 10ms Sine or 6ms Rect. pulse
E_{AS} Non-Repetitive Avalanche Energy (Per Leg)	27	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 6$ Amps, $L = 1.5$ mH
I_{AR} Repetitive Avalanche Current (Per Leg)	6	A	Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	72CPQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.51	V	$T_J = 25^\circ\text{C}$
	0.61	V	
	0.43	V	$T_J = 125^\circ\text{C}$
	0.58	V	
I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	1.9	mA	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$
	450	mA	
$V_{F(TO)}$ Threshold Voltage	0.25	V	$T_J = T_J$ max.
r_t Forward Slope Resistance	4.70	mΩ	
C_T Max. Junction Capacitance (Per Leg)	4600	pF	$V_R = \text{rated } V_R$
L_S Typical Series Inductance (Per Leg)	7.5	nH	Measured lead to lead 5mm from package body
dv/dt Max. Voltage Rate of Change	10000	V/μs	(Rated V_R)

(1) Pulse Width < 300μs, Duty Cycle <2%

Thermal-Mechanical Specifications

Parameters	72CPQ	Units	Conditions
T_J Max. Junction Temperature Range	-55 to 150	°C	
T_{sg} Max. Storage Temperature Range	-55 to 150	°C	
R_{thJC} Max. Thermal Resistance Junction to Case (Per Leg) * See Fig. 4	0.8	°C/W	DC operation
R_{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.4	°C/W	DC operation
R_{thCS} Typical Thermal Resistance, Case to Heatsink	0.25	°C/W	Mounting surface, smooth and greased
wt Approximate Weight	6 (0.21)	g (oz.)	
T Mounting Torque	Min.	6 (5)	Kg-cm (lbf-in)
	Max.	12 (10)	
Case Style	TO-247AC(TO-3P)		JEDEC
Marking Information	72CPQ030		

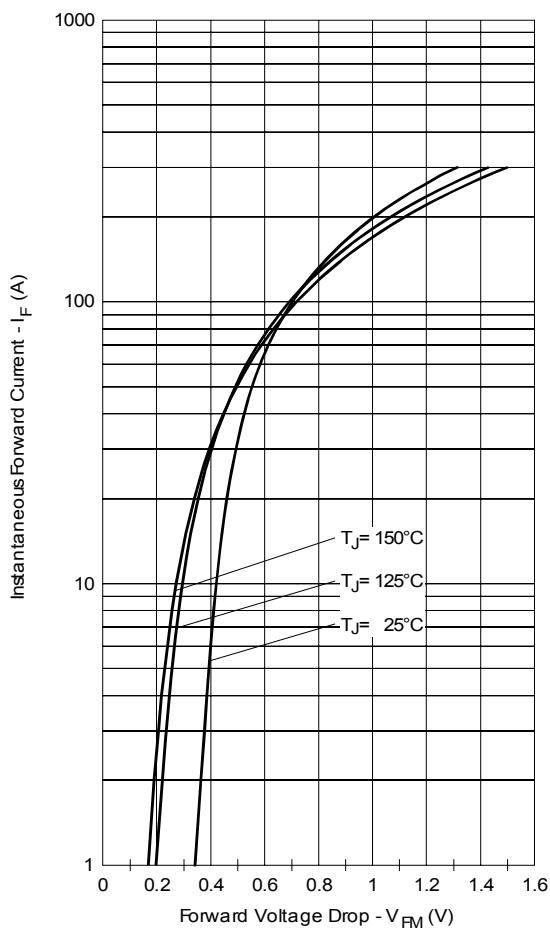


Fig. 1 - Max. Forward Voltage Drop Characteristics
 (Per Leg)

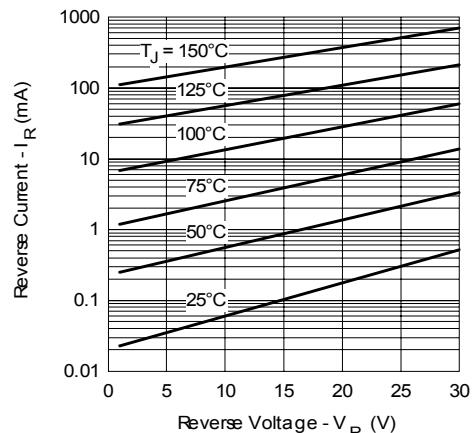


Fig. 2 - Typical Values Of Reverse Current
 Vs. Reverse Voltage (Per Leg)

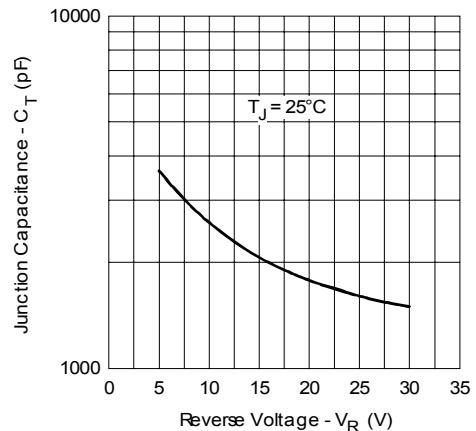


Fig. 3 - Typical Junction Capacitance
 Vs. Reverse Voltage (Per Leg)

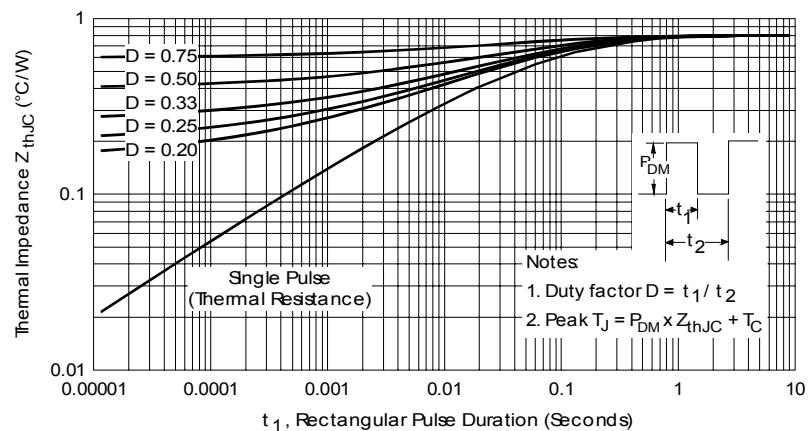


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

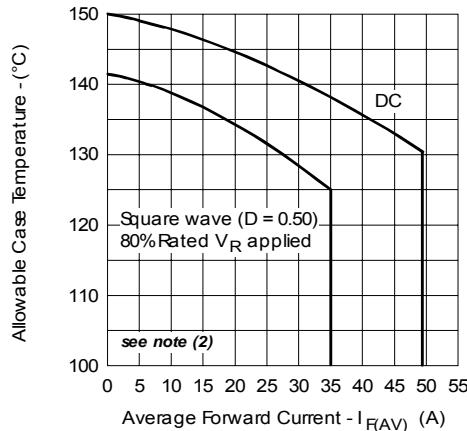


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

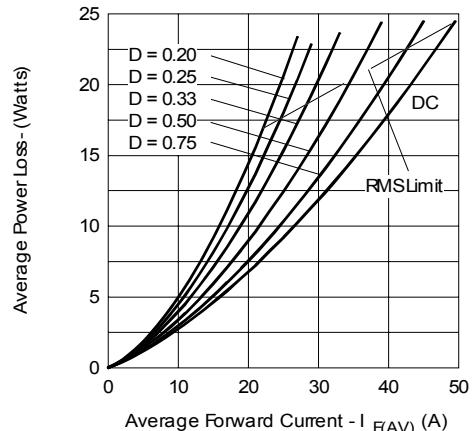


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

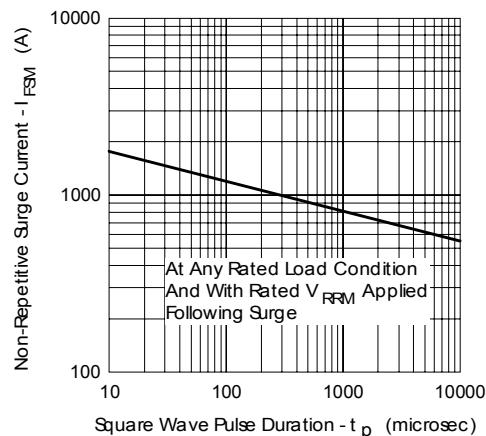


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

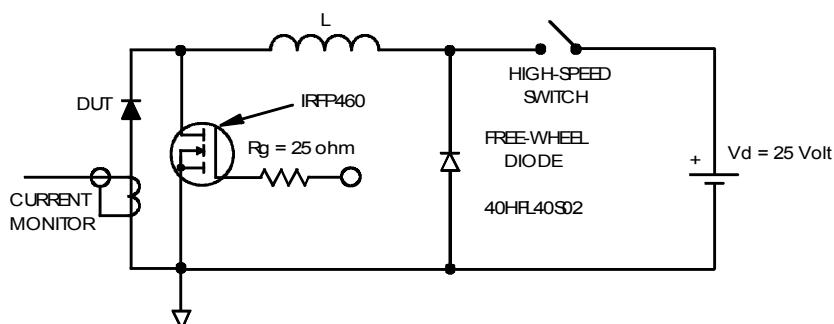
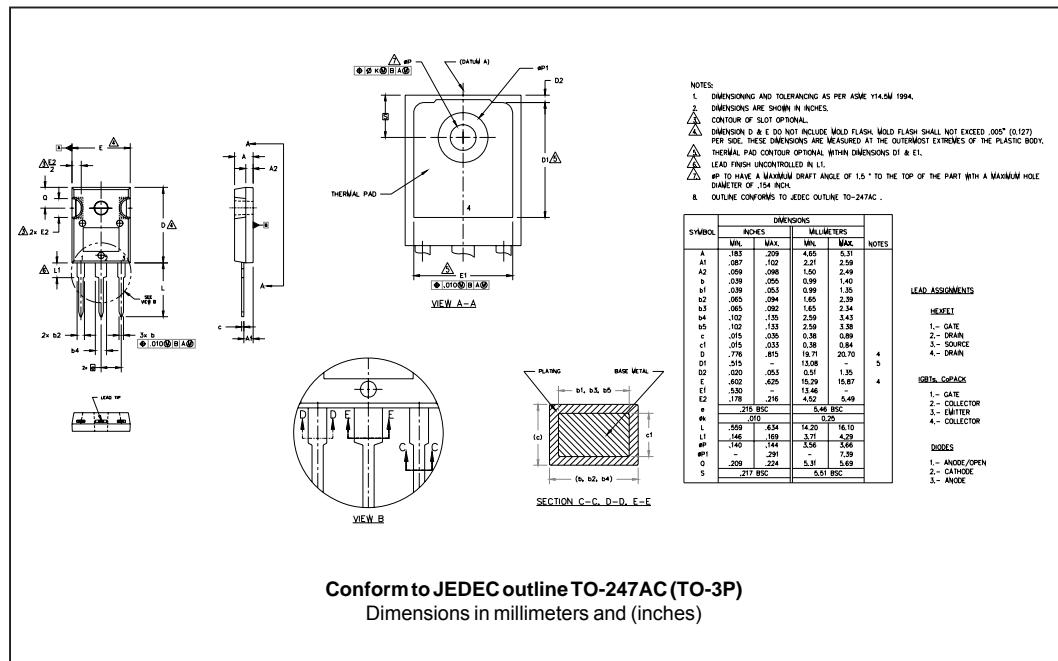


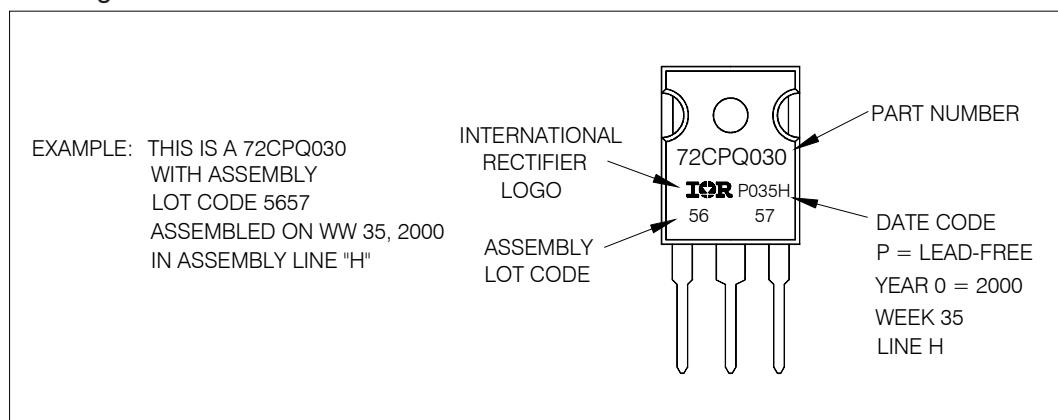
Fig. 8 - Unclamped Inductive Test Circuit

(2) Formula used: $T_C = T_J - (P_d + P_{d,REV}) \times R_{thJC}$;
 $P_d = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);
 $P_{d,REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 80\% \text{ rated } V_R$

Outline Table



Marking Information



72CPQ030PbF

Bulletin PD-20799 rev. A 11/06

International
IR Rectifier

Ordering Information Table

Device Code	72	C	P	Q	030	PbF
	1	2	3	4	5	6
1 - Current Rating (70A)						
2 - Circuit Configuration C = Common Cathode						
3 - Package P = TO-247						
4 - Schottky "Q" Series						
5 - Voltage Code (030 = 30V)						
6 - • none = Standard Production • PbF = Lead-Free						
Tube Standard Pack Quantity : 25 pieces						

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level and Lead-Free.
Qualification Standards can be found on IR's Web site.

International
IR Rectifier

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11/06



Notice

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