Bulletin PD-20799 rev. A 11/06

International
IOR Rectifier

72CPQ030PbF

SCHOTTKY RECTIFIER 70 Amp

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

Major Ratings and Characteristics

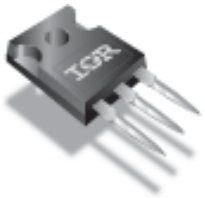
Characteristics		Values	Units
$I_{F(AV)}$	Rectangular waveform	70	A
V_{RRM}		30	V
I_{FSM}	@tp = 5 µs sine	2180	A
V_F	@35Apk, T_J=125°C (per leg)	0.43	V
T_J	range	-55 to 150	°C

Description/ Features

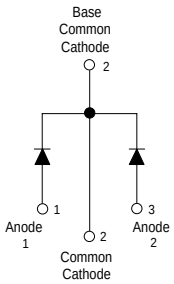
The 72CPQ030PbF center tap Schottky rectifier series has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes,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



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)	35	A	50% duty cycle @ T_C = 125°C, rectangular wave form	
	Current * See Fig. 5 (Per Device)	70			
I_{FSM}	Max. Peak One Cycle Non-Repetitive	2180	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
	Surge Current (Per Leg) * See Fig. 7	600		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)	27	mJ	T_J = 25 °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 x V_R typical	

Electrical Specifications

	Parameters	72CPQ	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.51	V	@ 35A	T_J = 25 °C
		0.61	V	@ 70A	
		0.43	V	@ 35A	T_J = 125 °C
		0.58	V	@ 70A	
I_{RM}	Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	1.9	mA	T_J = 25 °C	V_R = rated V_R
		450	mA	T_J = 125 °C	
$V_{F(TO)}$	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 = 5V_{DC} (test signal range 100Khz to 1Mhz) 25°C	
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_{stg}	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		

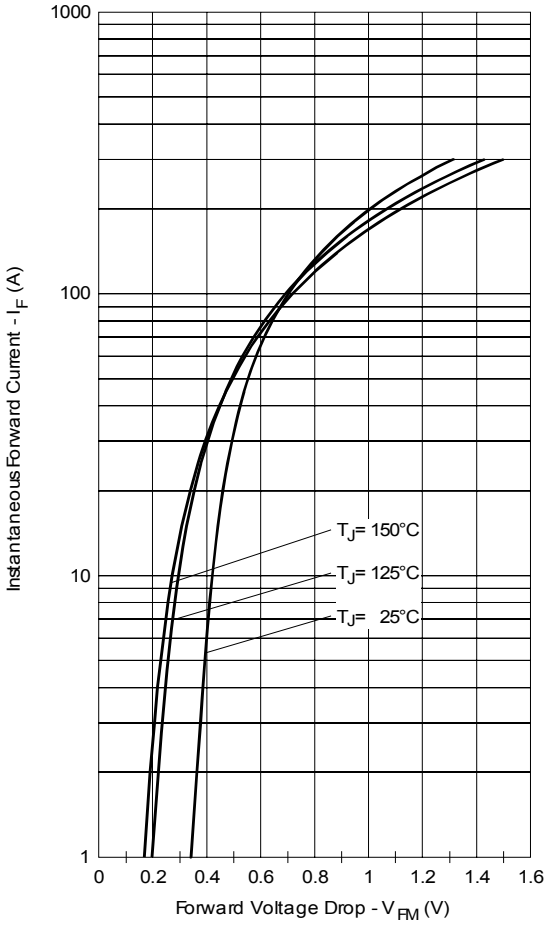


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

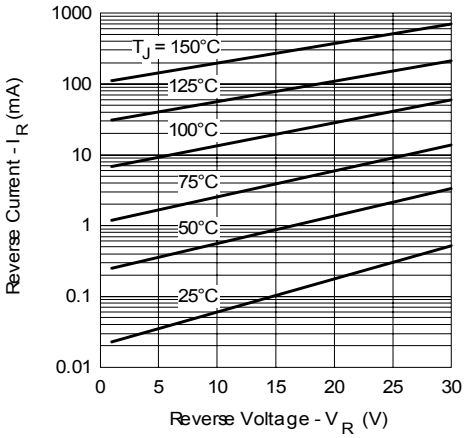


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

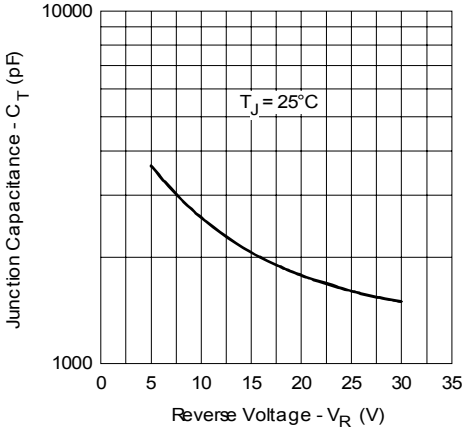


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

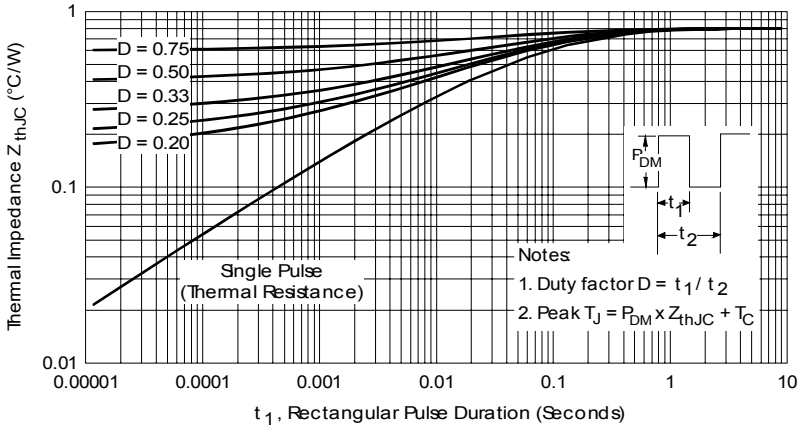


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

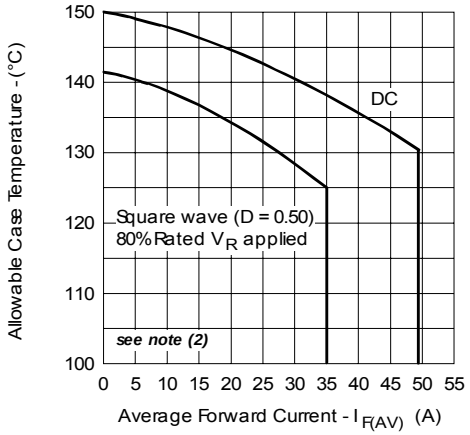


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

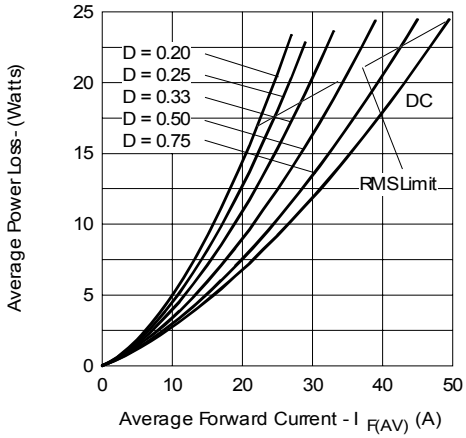


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

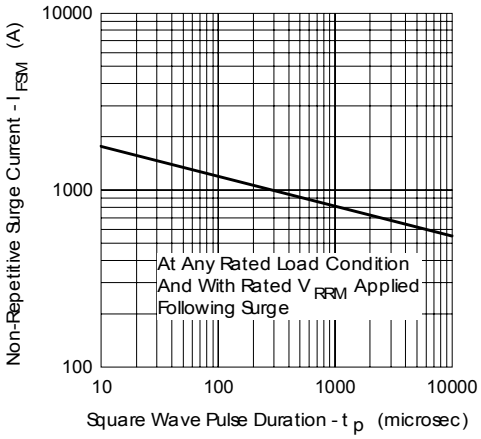


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

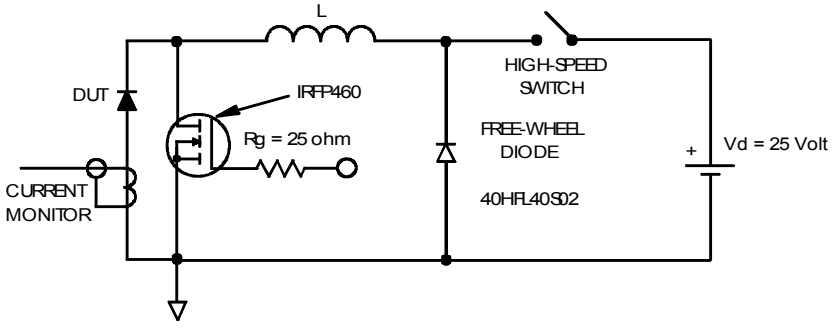
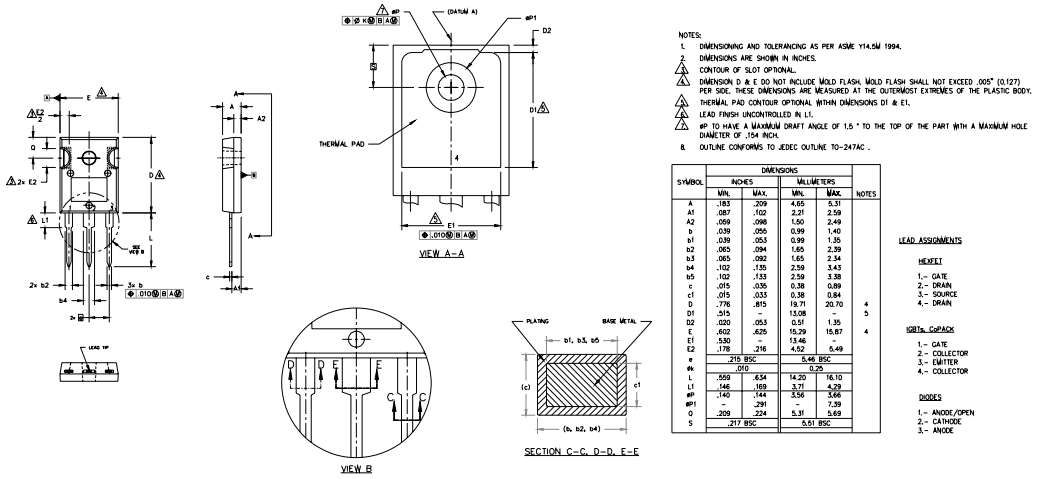


Fig. 8 - Unclamped Inductive Test Circuit

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

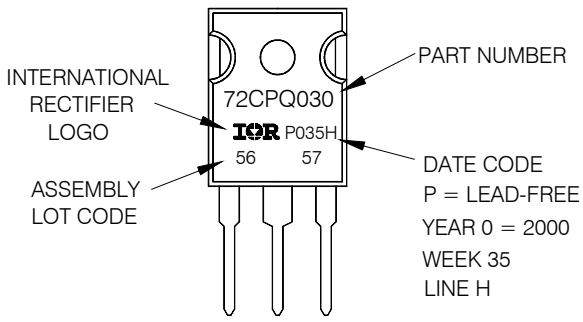
Outline Table



Conform to JEDEC outline TO-247AC (TO-3P)
Dimensions in millimeters and (inches)

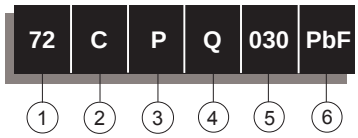
Marking Information

EXAMPLE: THIS IS A 72CPQ030
WITH ASSEMBLY
LOT CODE 5657
ASSEMBLED ON WW 35, 2000
IN ASSEMBLY LINE "H"



Ordering Information Table

Device Code



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
IOR Rectifier

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11/06

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