Bulletin PD-20789 rev. A 11/06

International
IOR Rectifier

40CPQ035PbF
40CPQ040PbF
40CPQ045PbF

SCHOTTKY RECTIFIER

40 Amp

$I_{F(AV)}$ = 40Amp
V_R = 35/ 45V

Major Ratings and Characteristics

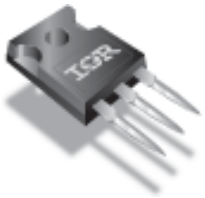
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	40	A
V_{RRM}	35/45	V
I_{FSM} @tp = 5 µs sine	3500	A
V_F @20Apk, T_J=125°C (per leg)	0.43	V
T_J	- 55 to 150	°C

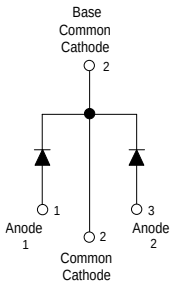
Description/ Features

The 40CPQ...PbF center tap Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. 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
- Very 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	40CPQ035PbF	40CPQ040PbF	40CPQ045PbF
V_R	Max. DC Reverse Voltage (V)	35	40	45
V_{RWM}	Max. Working Peak Reverse Voltage (V)			

Absolute Maximum Ratings

	Parameters	40CPQ...	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current * See Fig. 5	40	A	50% duty cycle @ T_C = 120 °C, rectangular waveform	
I_{FSM}	Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	3500	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
		430		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)	27	mJ	T_J = 25 °C, I_{AS} = 4 Amps, L = 3.4 mH	
I_{AR}	Repetitive Avalanche Current (Per Leg)	4	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	40CPQ...	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.49	V	@ 20A	T_J = 25 °C
		0.59	V	@ 40A	
		0.43	V	@ 20A	T_J = 125 °C
		0.56	V	@ 40A	
I_{RM}	Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	4	mA	T_J = 25 °C	V_R = rated V_R
		150	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance (Per Leg)	1850	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		40CPQ...	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)		1.25	°C/W	DC operation * See Fig. 4
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Package)		0.63	°C/W	DC operation
R_{thCS}	Typical Thermal Resistance, Case to Heatsink		0.24	°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)	Non-lubricated threads
		Max.	12 (10)		
	Case Style		TO-247AC(TO-3P)		JEDEC
	Device Marking		40CPQ035		
			40CPQ040		
			40CPQ045		

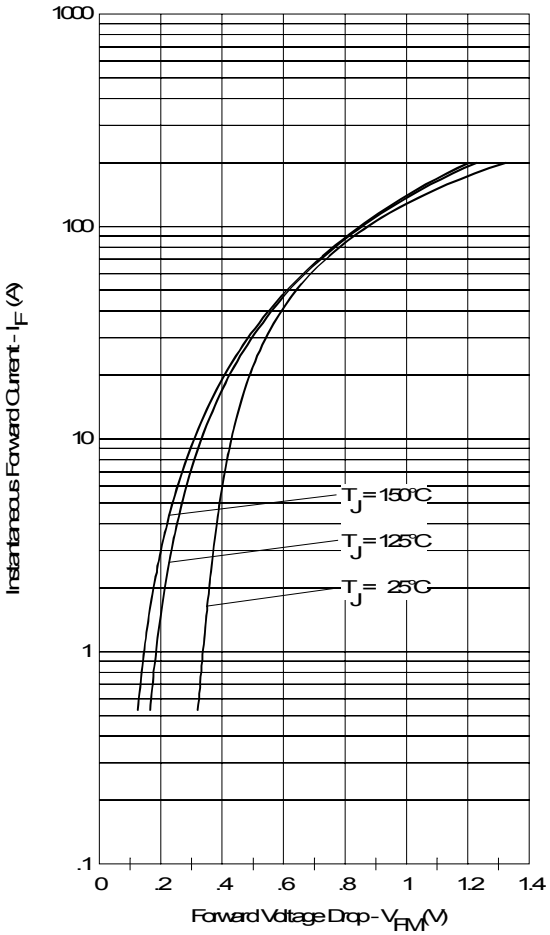


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

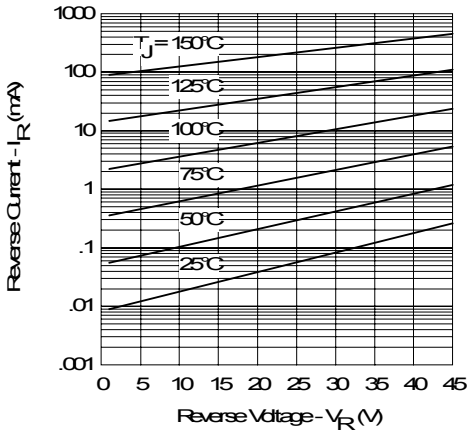


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

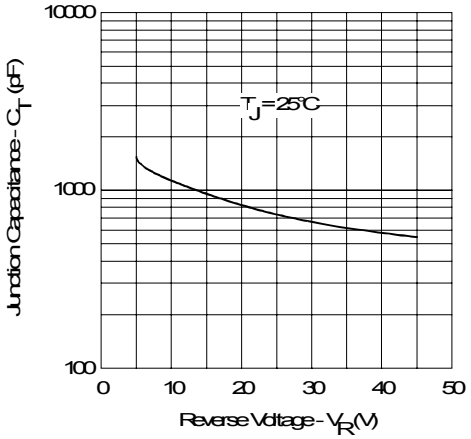


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

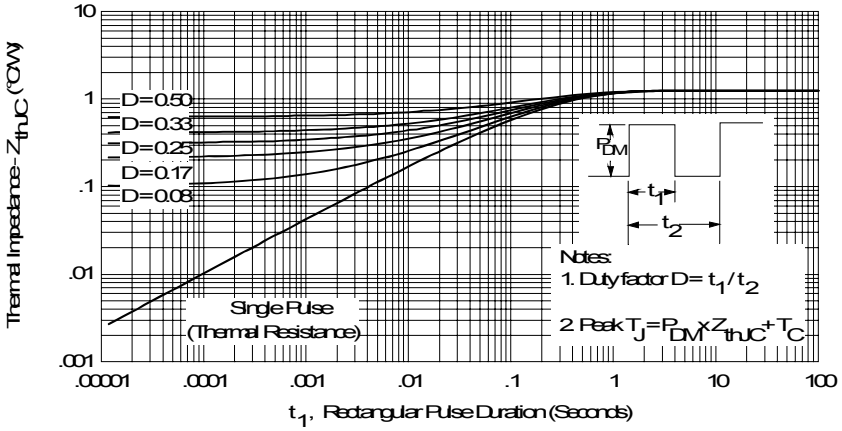


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

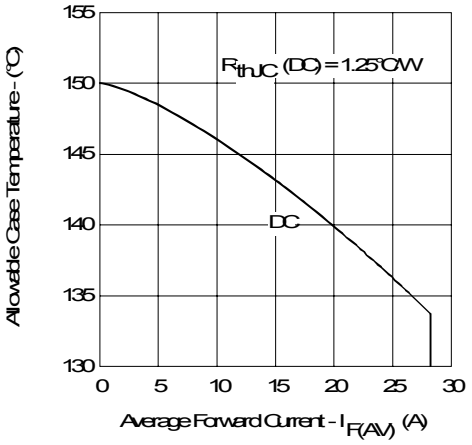


Fig. 5 - Max. Allowable Case Temperature
Vs. Average Forward Current (Per Leg)

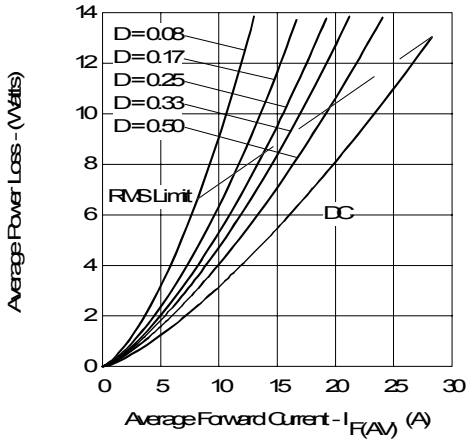


Fig. 6 - Forward Power Loss Characteristics
(Per Leg)

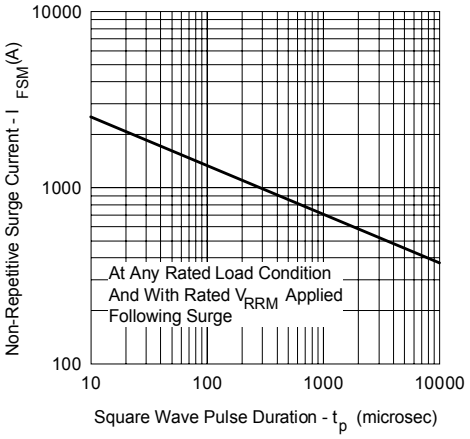


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

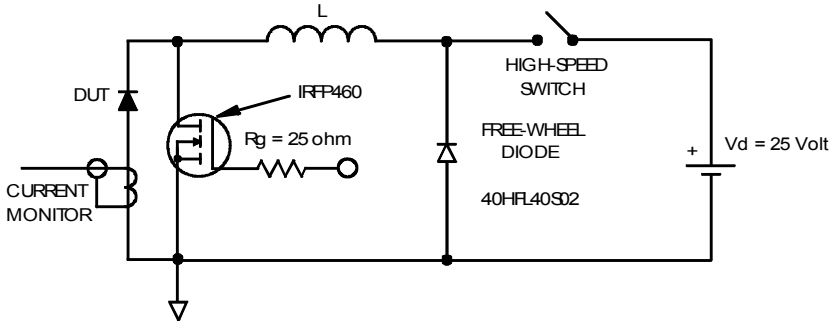
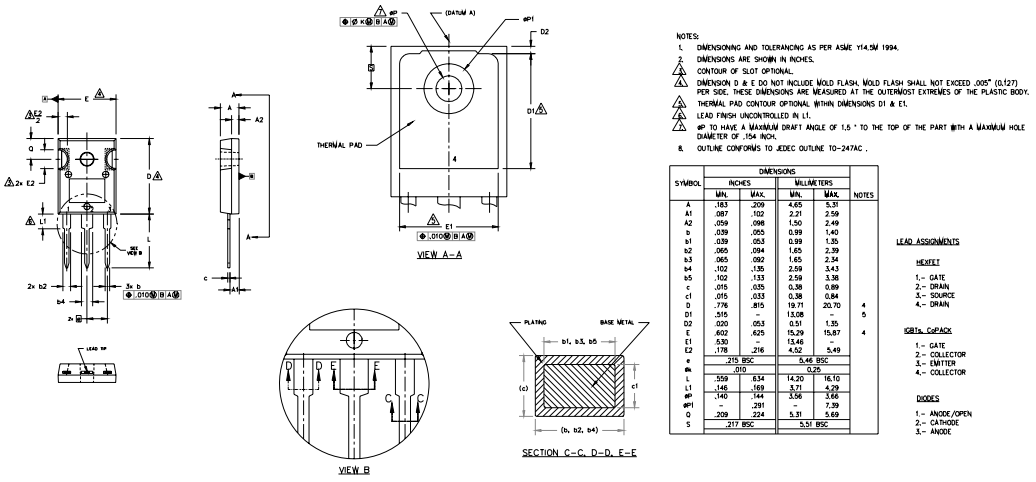


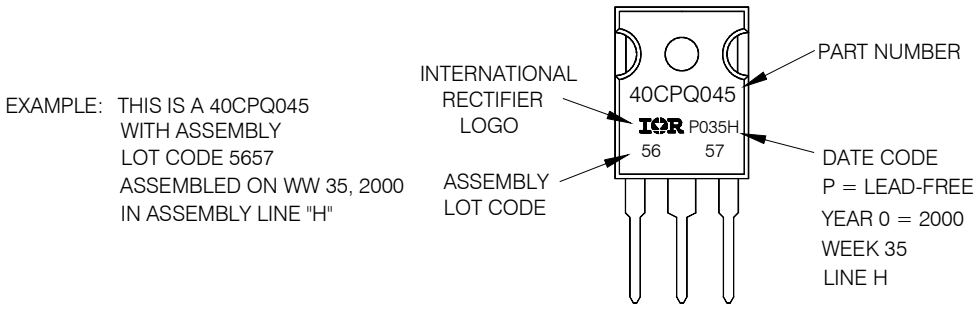
Fig. 8 - Unclamped Inductive Test Circuit

Outline Table



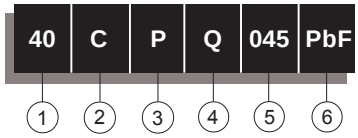
Conform to JEDEC outline TO-247AC (TO-3P)
Dimensions in millimeters and (inches)

Marking Information



Ordering Information Table

Device Code



1 - Current Rating (40 = 40A)

2 - Circuit Configuration
C = Common Cathode

3 - Package
P = TO-247

4 - Schottky "Q" Series

5 - Voltage Code

035 = 35V
040 = 40V
045 = 45V

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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