

International
IOR Rectifier

40CPQ050PbF
40CPQ060PbF

SCHOTTKY RECTIFIER

40 Amp

$I_{F(AV)} = 40\text{Amp}$
 $V_R = 50 - 60\text{V}$

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	40	A
V_{RRM}	50/60	V
I_{FSM} @tp = 5 μ s sine	3200	A
V_F @20 Apk, $T_J = 125^\circ\text{C}$ (per leg)	0.49	V
T_J	-55 to 150	$^\circ\text{C}$

Description/ Features

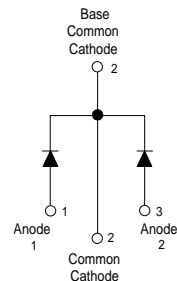
The 40CPQ...PbF center tap Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150 $^\circ\text{C}$ junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 150 $^\circ\text{C}$ 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



40CPQ050PbF, 40CPQ060PbF

Bulletin PD-20782 rev. A 11/06



Voltage Ratings

Part number	40CPQ050	40CPQ060
V _R Max. DC Reverse Voltage (V)	50	60
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 wave form
I _{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	3200	A	Following any rated load condition and with rated V _{RRM} applied
	320		
E _{AS} Non-Repetitive Avalanche Energy (Per Leg)	18	mJ	T _J = 25 °C, I _{AS} = 2 Amps, L = 9.0 mH
I _{AR} Repetitive Avalanche Current (Per Leg)	2	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)	0.53	V	@ 20A
	0.68	V	@ 40A
	0.49	V	@ 20A
	0.64	V	@ 40A
I _{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	1.7	mA	T _J = 25 °C
	96	mA	T _J = 125 °C
C _T Max. Junction Capacitance (Per Leg)	1600	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)	Non-lubricated threads
	Max.	12 (10)	
Case Style	TO-247AC(TO-3P)	JEDEC	
Marking Device	40CPQ050		
	40CPQ060		

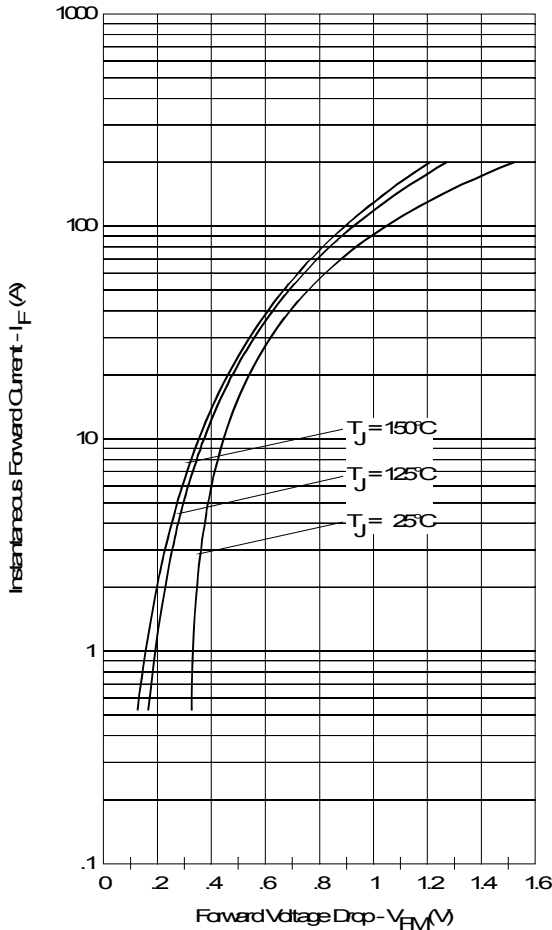


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

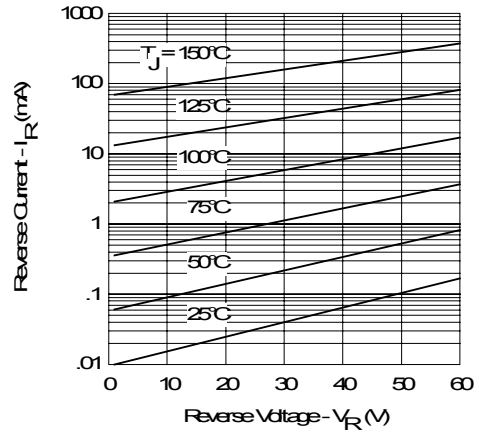


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage (Per Leg)

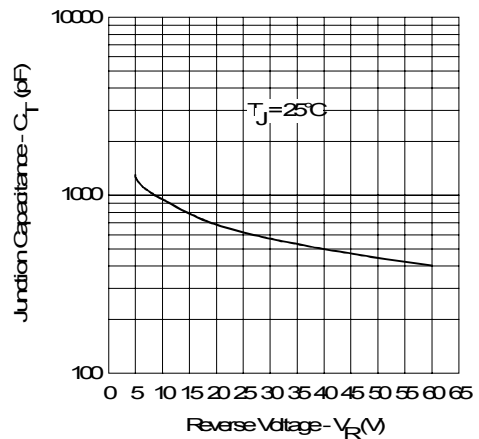


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

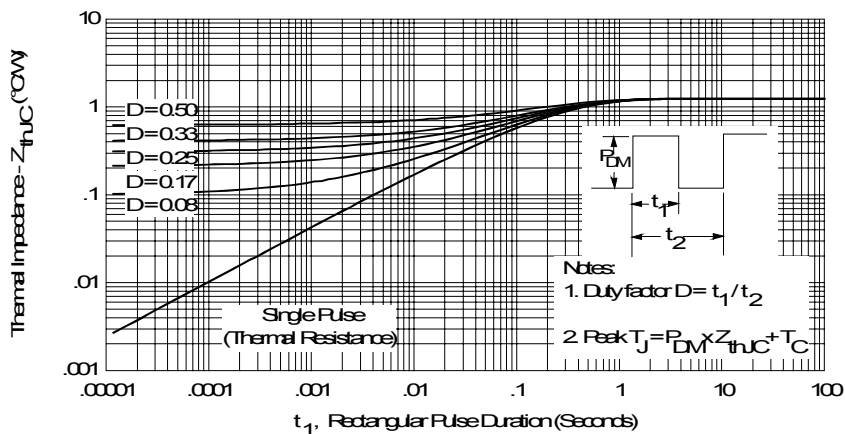


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

40CPQ050PbF, 40CPQ060PbF

Bulletin PD-20782 rev. A 11/06

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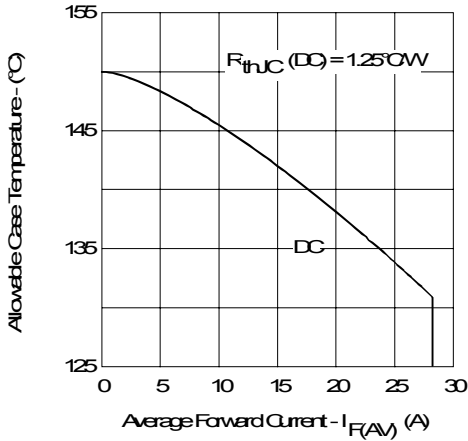


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

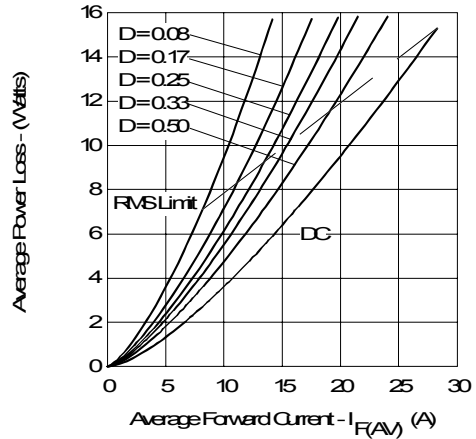


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

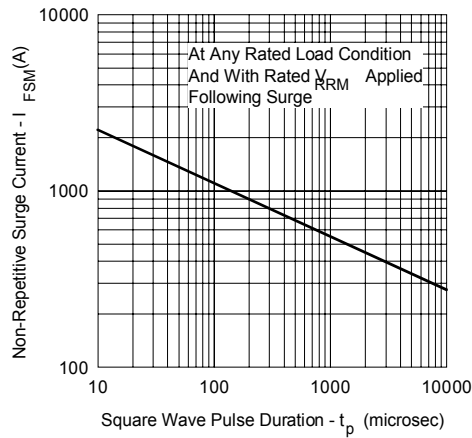


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

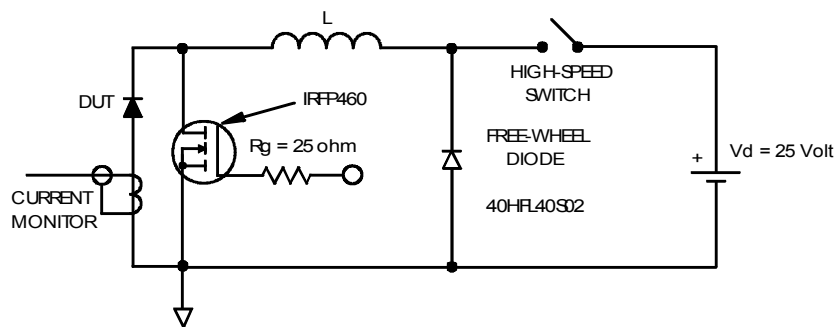
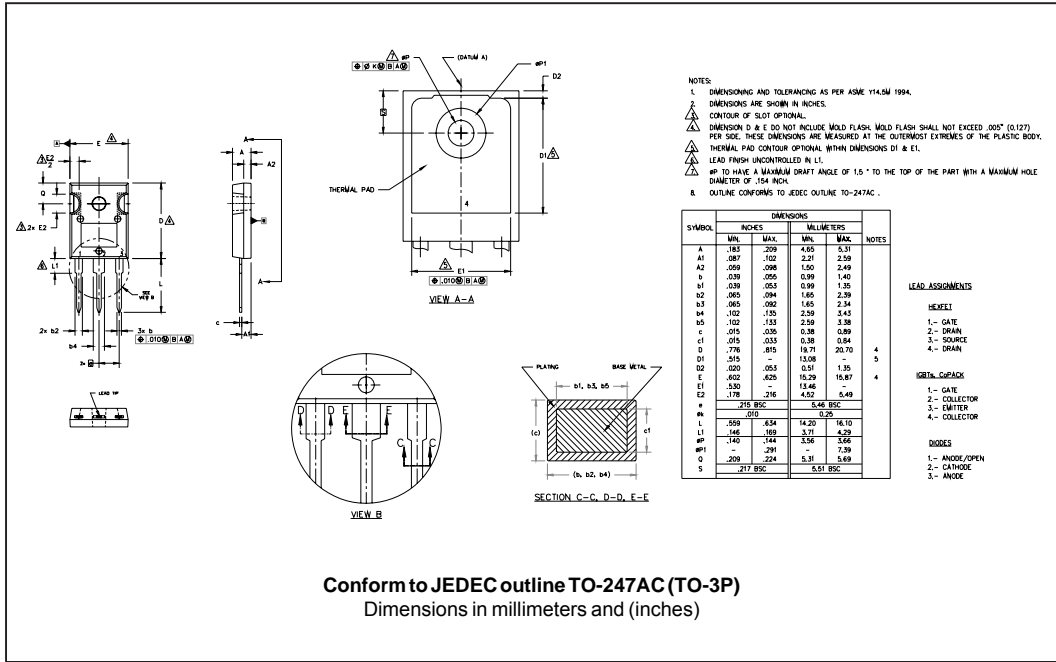
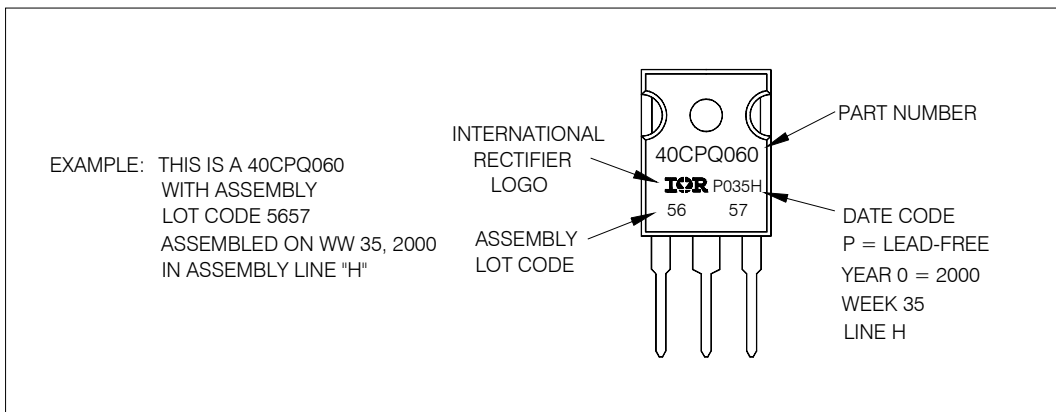


Fig. 8 - Unclamped Inductive Test Circuit

Outline Table



Marking Information



Ordering Information Table

Device Code					
40	C	P	Q	060	PbF
①	②	③	④	⑤	⑥
1	-	Current Rating (40 = 40A)			
2	-	Circuit Configuration C = Common Cathode			
3	-	Package P = TO-247			
4	-	Schottky "Q" Series			
5	-	Voltage Code			
6	-	• none = Standard Production • PbF = Lead-Free			

050 = 50V
060 = 60V

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.