

International
IOR Rectifier

40CPQ080PbF
40CPQ100PbF

SCHOTTKY RECTIFIER

40 Amp

$$I_{F(AV)} = 40\text{Amp}$$

$$V_R = 80 - 100\text{V}$$

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	40	A
V_{RRM}	80/100	V
I_{FSM} @ $t_p = 5 \mu\text{s}$ sine	2950	A
V_F @ 20 Apk, $T_J = 125^\circ\text{C}$ (per leg)	0.61	V
T_J	-55 to 175	$^\circ\text{C}$

Description/ Features

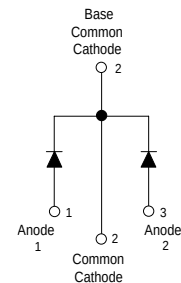
The 40CPQ...PbF center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175°C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 175°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	40CPQ080	40CPQ100
V_R Max. DC Reverse Voltage (V)	80	100
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 @ $T_C = 145^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	2950	A	5 μs Sine or 3 μs Rect. pulse
	300		10ms Sine or 6ms Rect. pulse
E_{AS} Non-Repetitive Avalanche Energy (Per Leg)	11.25	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 2\text{Amps}$, $L = 5.6\text{mH}$
I_{AR} Repetitive Avalanche Current (Per Leg)	0.75	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	40CPQ	Units	Conditions
V_{FM} Max. Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.77	V	@ 20A
	0.91	V	@ 40A
	0.61	V	@ 20A
	0.75	V	@ 40A
I_{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	1.25	mA	$T_J = 25^\circ\text{C}$
	15	mA	$T_J = 125^\circ\text{C}$
C_T Max. Junction Capacitance (Per Leg)	600	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 (Rated V_R)	10000	V/ μs	

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

Thermal-Mechanical Specifications

Parameters		40CPQ	Units	Conditions	
T _J	Max. Junction Temperature Range	-55 to 175	°C		
T _{stg}	Max. Storage Temperature Range	-55 to 175	°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		40CPQ080			
		40CPQ100			

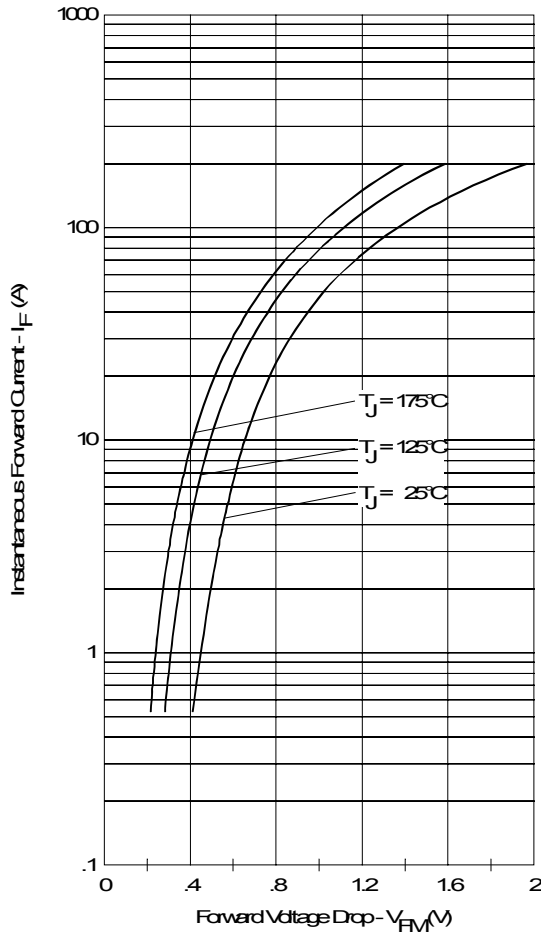


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

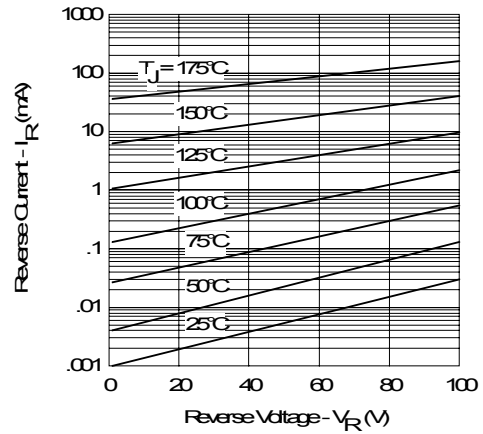


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

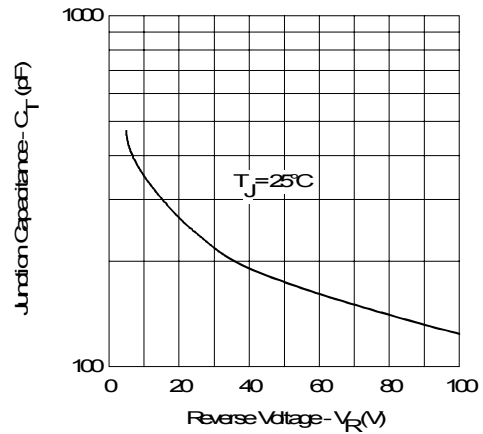


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

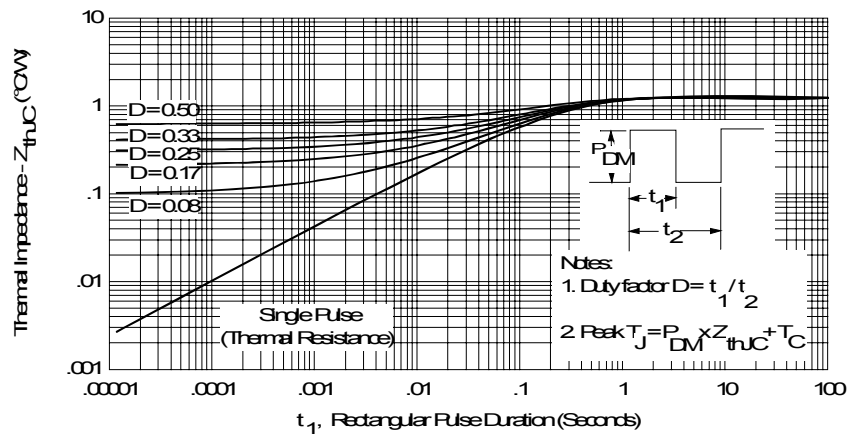


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

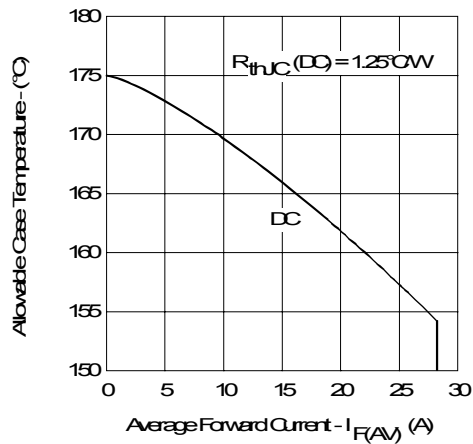


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

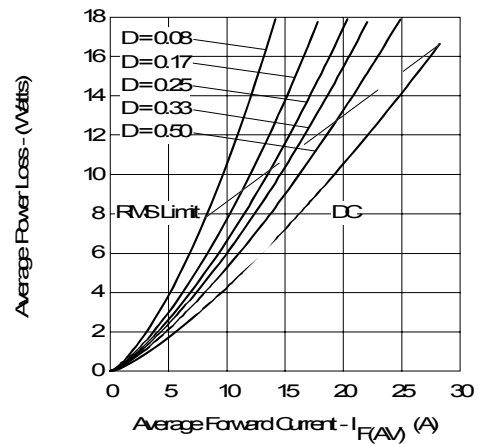


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

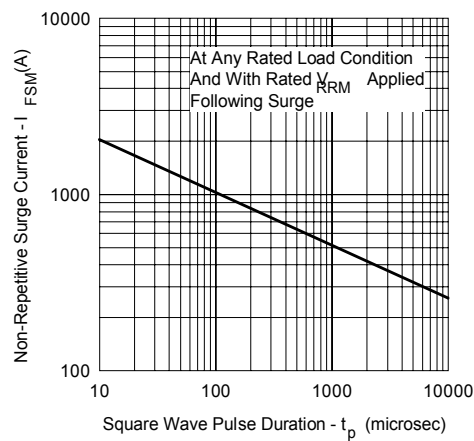


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

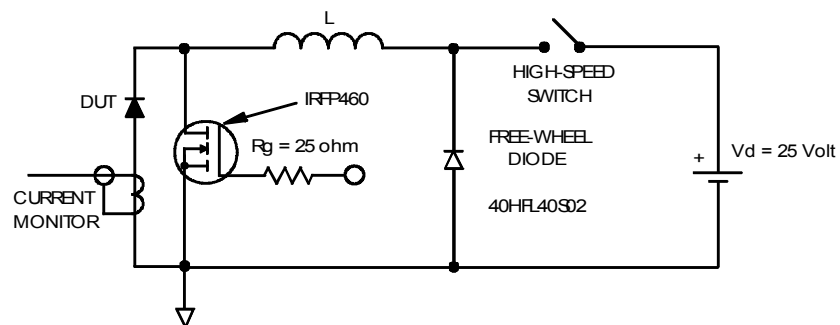
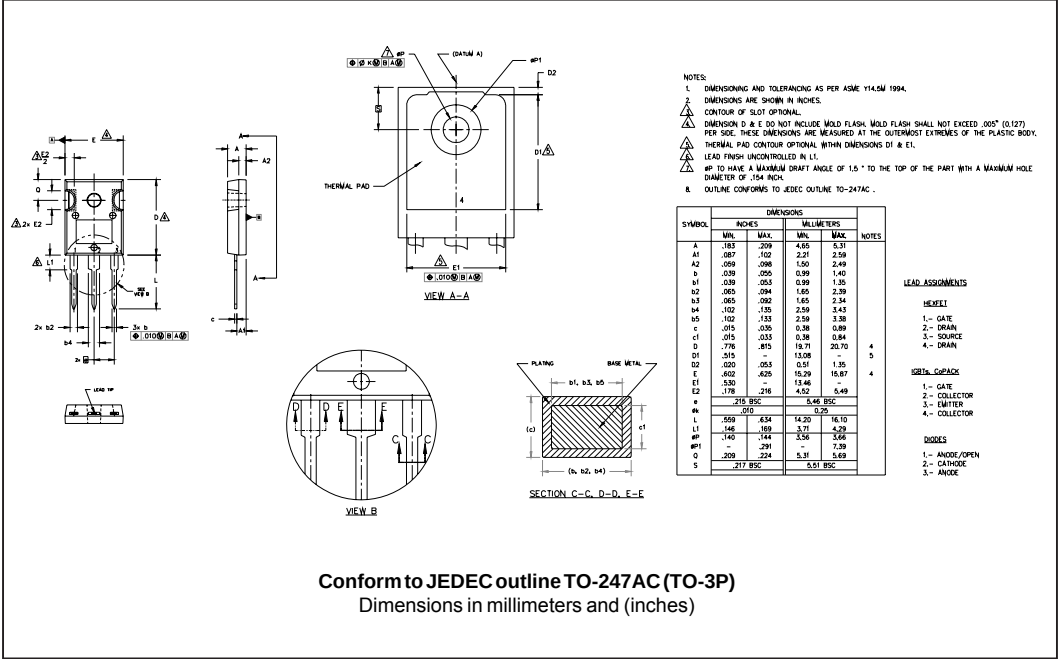
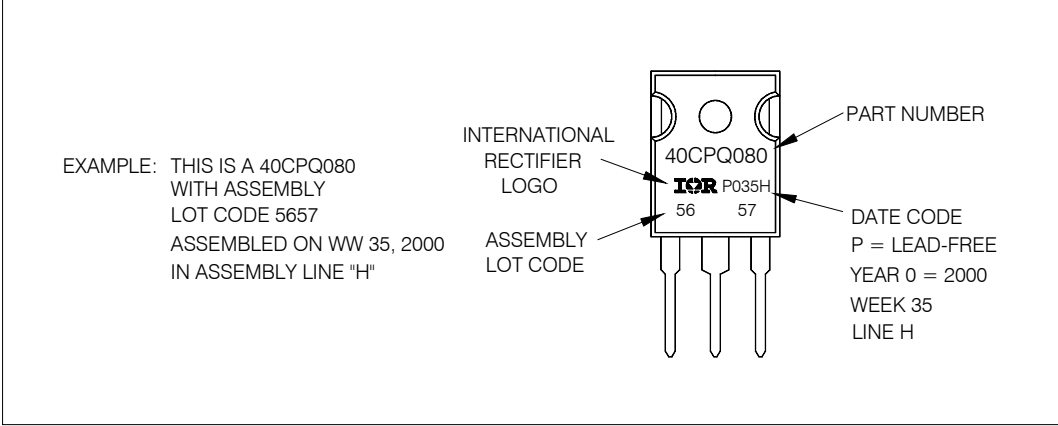


Fig. 8 - Unclamped Inductive Test Circuit

Outline Table



Marking Information



Ordering Information Table

Device Code					
	40	C	P	Q	100 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			
					080 = 80V 100 = 100V
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
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