

International
IOR Rectifier

40CPQ035
40CPQ040
40CPQ045

SCHOTTKY RECTIFIER

40 Amp

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

$$V_R = 30/45\text{V}$$

Major Ratings and Characteristics

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

Description/ Features

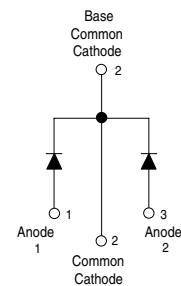
The 40CPQ... center tap Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150°C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, 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

Case Styles



TO-247AC



Voltage Ratings

Part number	40CPQ035	40CPQ040	40CPQ045
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 @ $T_C = 120^{\circ}\text{C}$, rectangular waveform		
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	3500	A	5 μs Sine or 3 μs 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	$T_J = 25^{\circ}\text{C}$, $I_{AS} = 4$ 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. $V_A = 1.5 \times V_R$ 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 (PerLeg)	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 < 300 μs , 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		

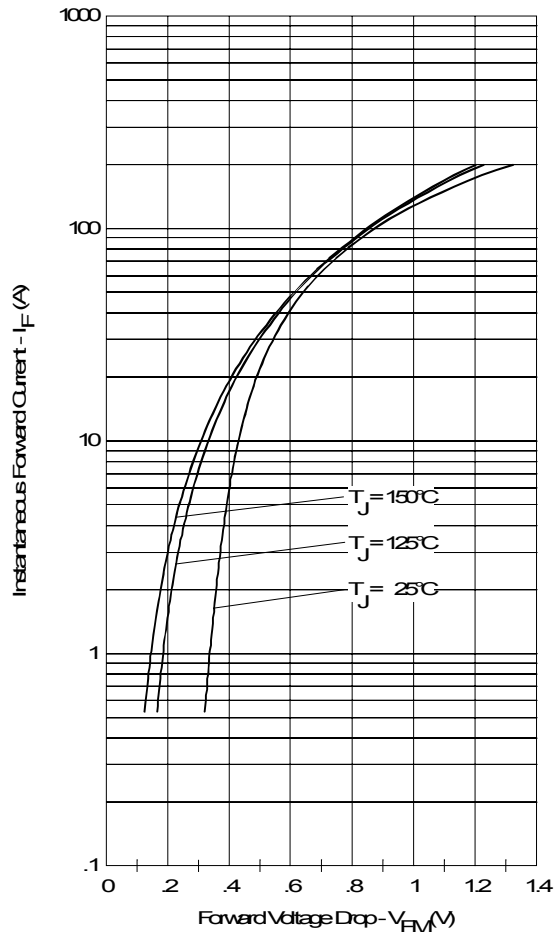


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

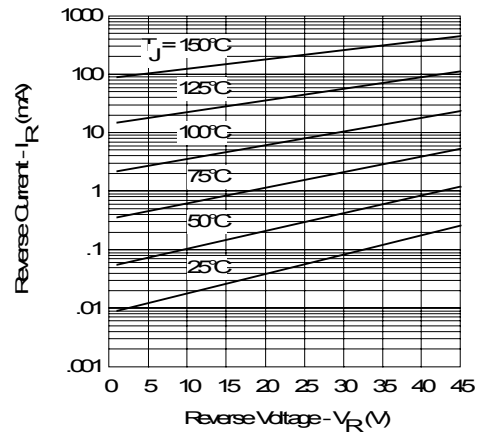


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

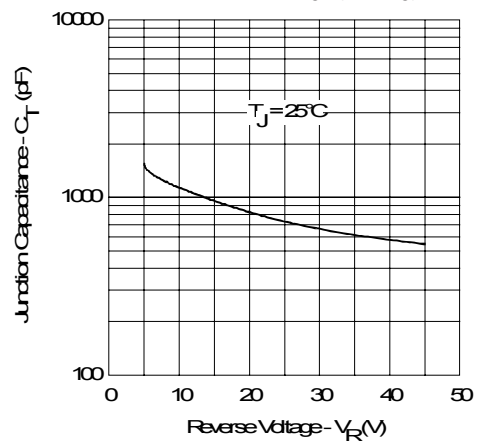


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

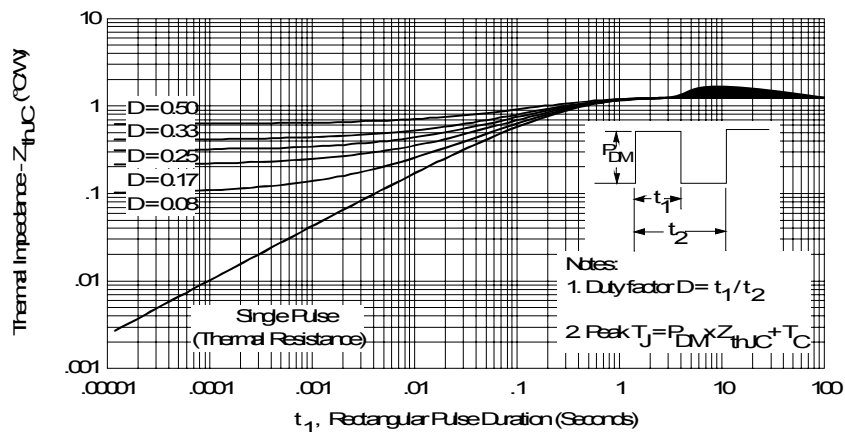


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

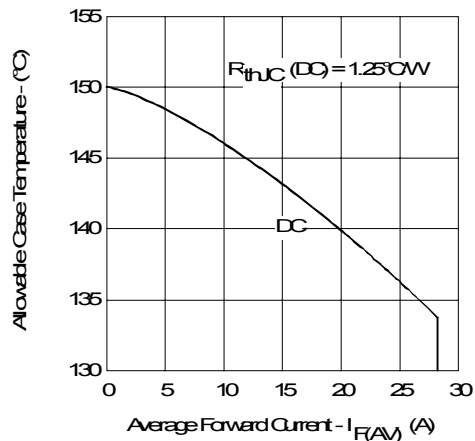


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

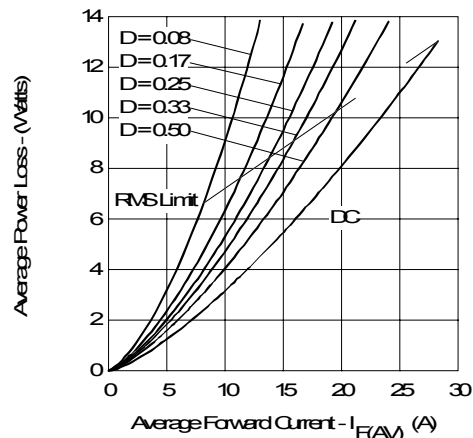


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

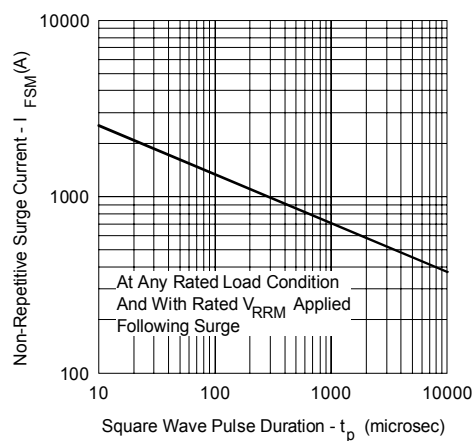


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

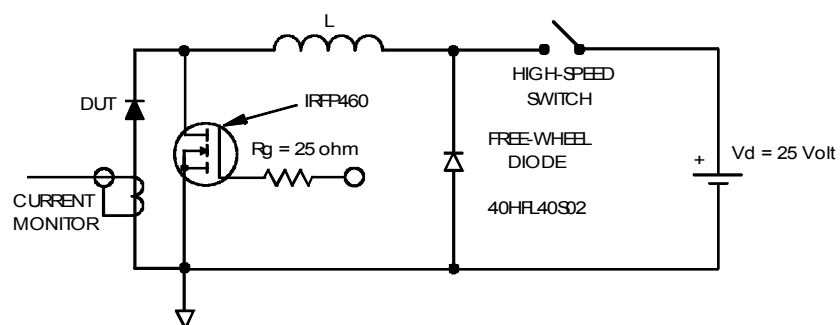
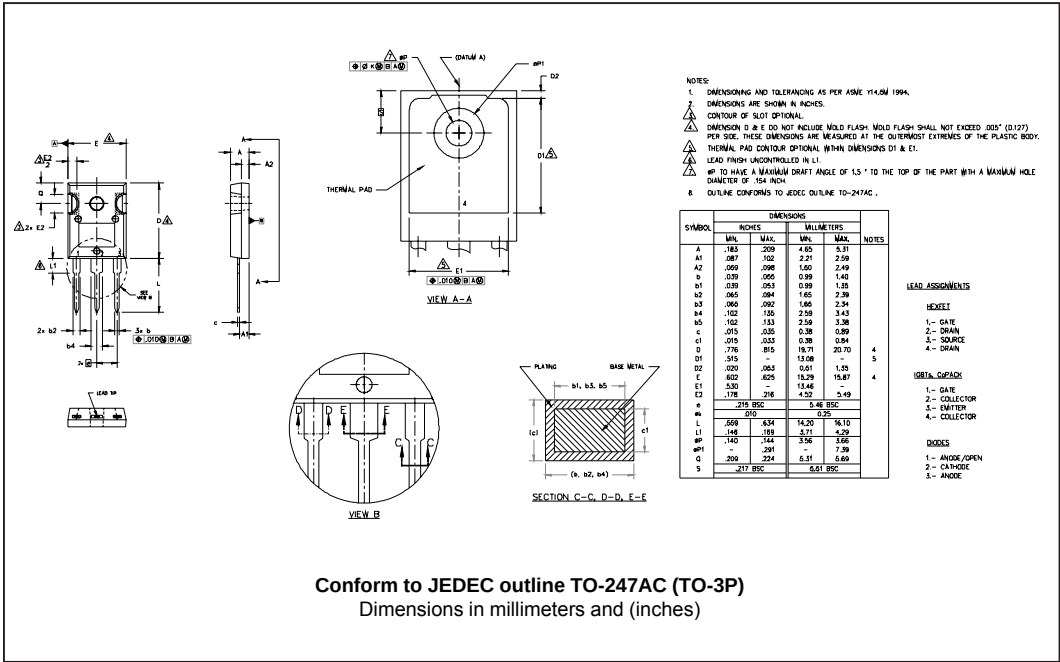
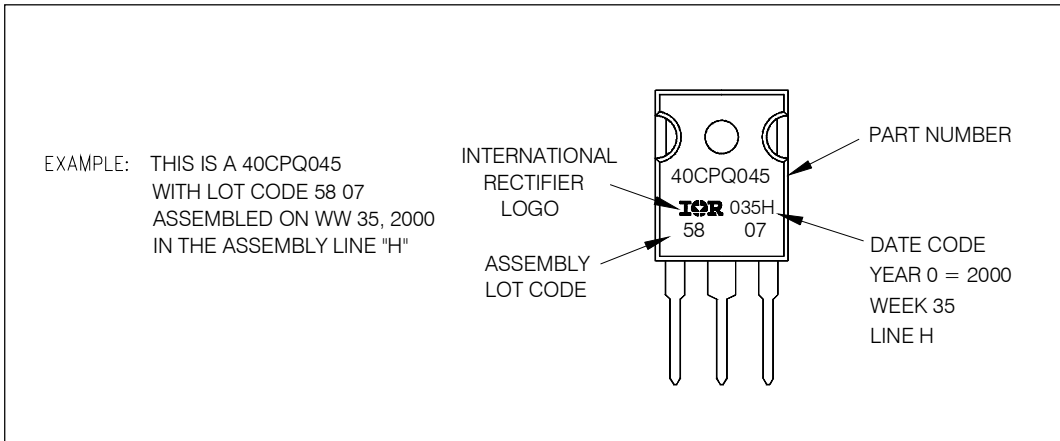


Fig. 8 - Unclamped Inductive Test Circuit

Outline Table



Marking Information



Ordering Information Table

Device Code					
	40	C	P	Q	045 -
	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			
					035 = 35V 040 = 40V 045 = 45V
Tube Standard Pack Quantity : 25 pieces					

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

International
IR Rectifier

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