Bulletin PD-20794 rev. A 11/06

International
IOR Rectifier

40L40CWPbF
40L45CWPbF

SCHOTTKY RECTIFIER

2 x 20 Amps

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

Major Ratings and Characteristics

Characteristics		40L..CW	Units
$I_{F(AV)}$	Rectangular waveform	40	A
V_{RRM}		40 - 45	V
I_{FSM}	@ tp = 5 µs sine	1240	A
V_F	@20 Apk, T_J=125°C (per leg, Typical)	0.42	V
T_J		- 55 to 150	°C

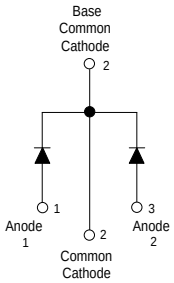
Description/ Features

The 40L..CWPbF 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.

- 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	40L40CWPbF	40L45CWPbF
V_R	Max. DC Reverse Voltage (V)	40	45
V_{RWM}	Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

	Parameters	40L..CW	Units	Conditions
$I_{F(AV)}$	Max. Average Forward (Per Leg)	20	A	50% duty cycle @ T_C = 122 °C, rectangular wave form
	Current * See Fig. 5 (Per Device)	40		
I_{FSM}	Max. Peak One Cycle Non-Repetitive	1240	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	350		10ms Sine or 6ms Rect. pulse
E_{AS}	Non-Repetitive Avalanche Energy (Per Leg)	20	mJ	T_J = 25 °C, I_{AS} = 3 Amps, L = 4.4 mH
I_{AR}	Repetitive Avalanche Current (Per Leg)	3	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	40L..CW Typ.	40L..CW Max.	Units	Conditions
V_{FM}	Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	0.48	0.53	V	@ 20A — T_J = 25 °C
		0.61	0.69	V	@ 40A — T_J = 25 °C
		0.42	0.49	V	@ 20A — T_J = 125 °C
		0.60	0.70	V	@ 40A — T_J = 125 °C
I_{RM}	Reverse Leakage Current	-	1.5	mA	T_J = 25 °C — V_R = rated V_R
	(Per Leg) * See Fig. 2 (1)	20	80	mA	T_J = 100 °C — V_R = rated V_R
$V_{F(TO)}$	Threshold Voltage	0.27		V	T_J = T_J max.
r_t	Forward Slope Resistance	8.72		mΩ	T_J = T_J max.
C_T	Max. Junction Capacitance (Per Leg)	-	1500	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		40L..CW	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)		1.6	°C/W	DC operation * See Fig. 4
R_{thJC}	Max. Thermal Resistance Junction to Case (Per Package)		0.8	°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
	Marking Device		40L40CW		
			40L45CW		

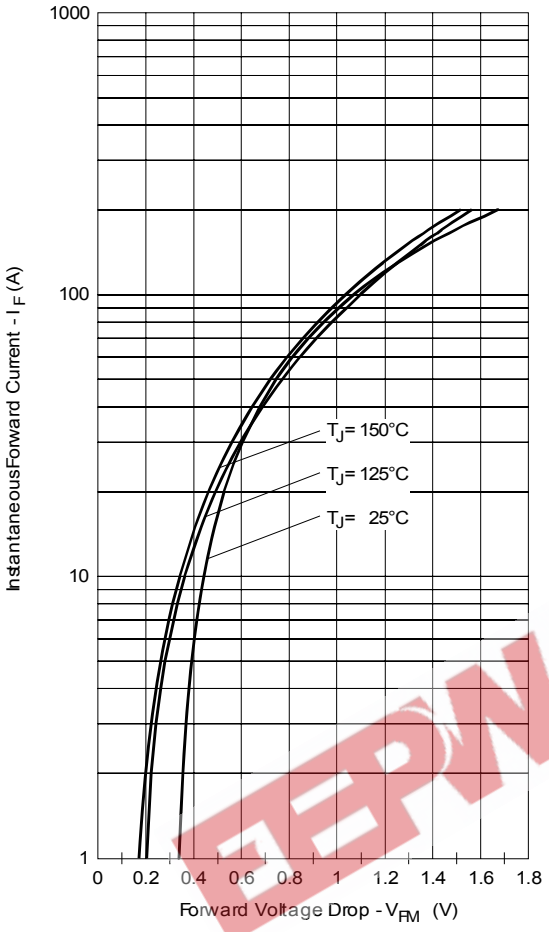


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

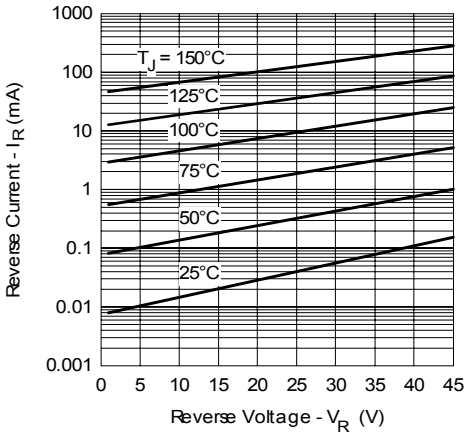


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

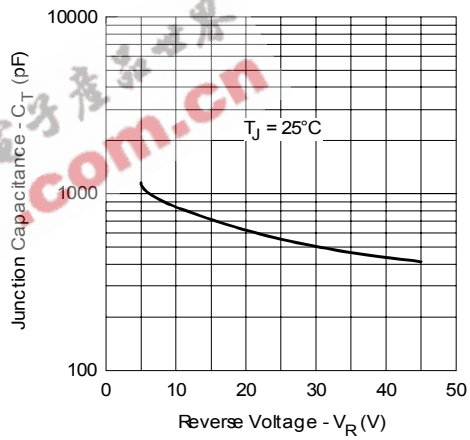


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

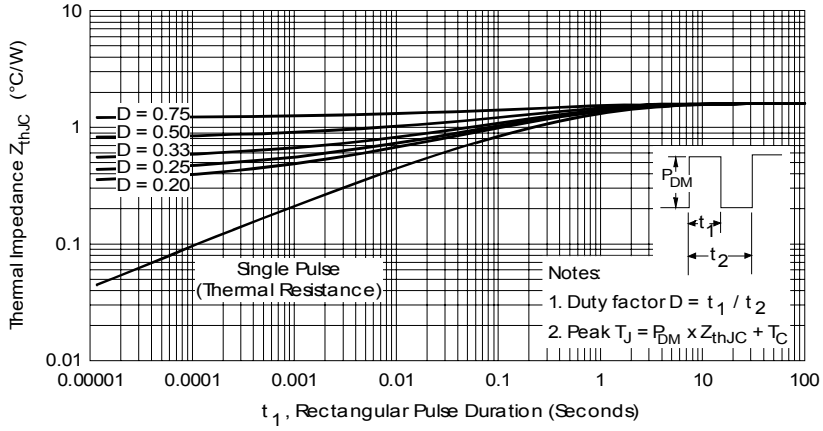


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

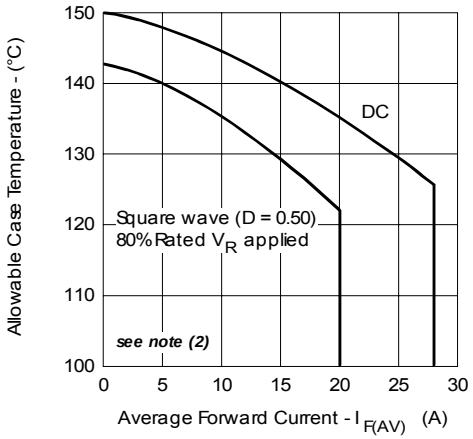


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

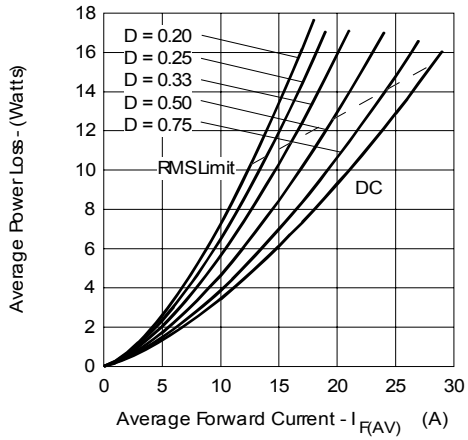


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

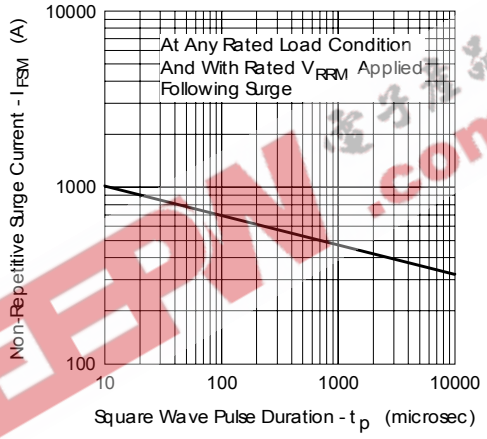


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

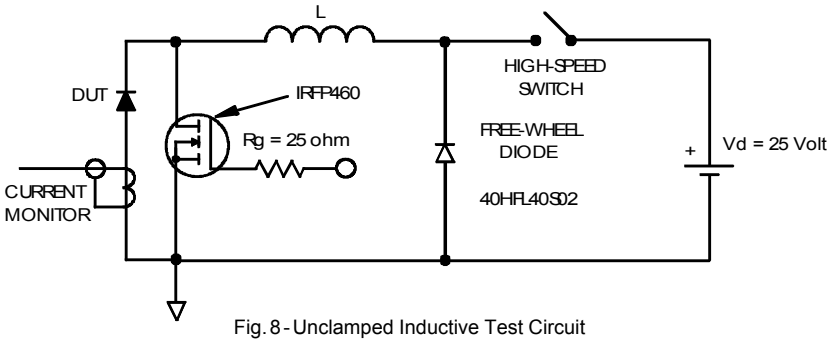
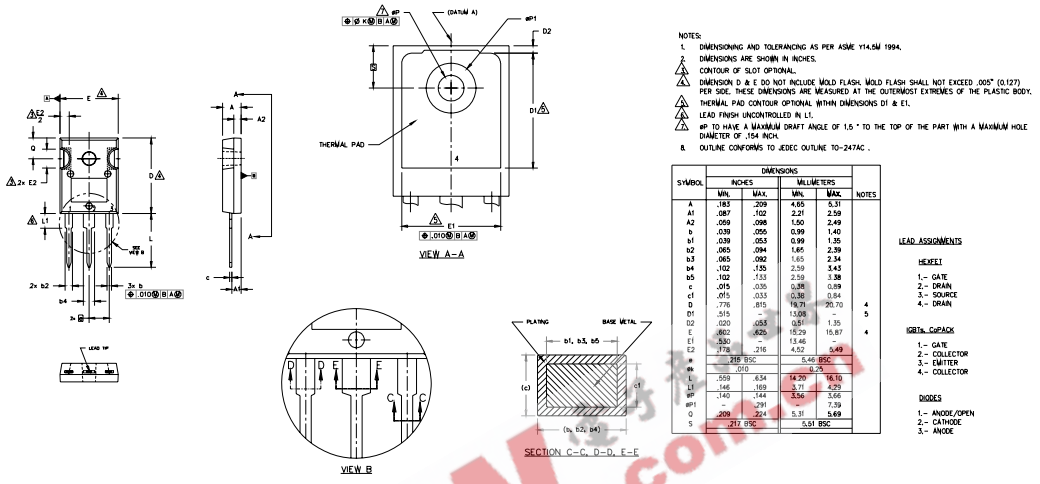


Fig. 8 - Unclamped Inductive Test Circuit

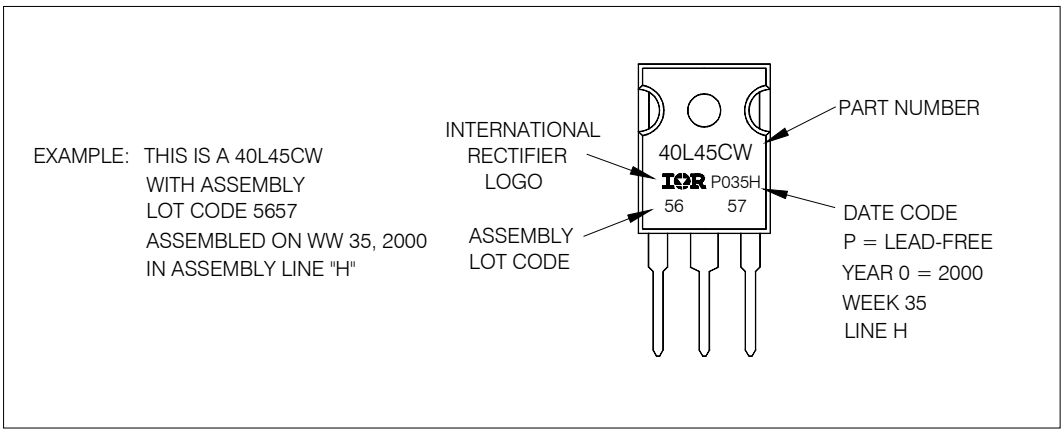
(2) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);
Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1}$ = 80% rated V_R

Outline Table



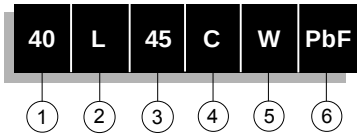
Conform to JEDEC outline TO-247AC (TO-3P)
Dimensions in millimeters and (inches)

Marking Information



Ordering Information Table

Device Code



1	-	Current Rating (40 = 40A)
2	-	Schottky "L" Series
3	-	Voltage Code (40 = 40V, 45 = 45V)
4	-	Circuit Configuration C = Common Cathode
5	-	Package W = TO-247
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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