

# International IR Rectifier

## 40L15CWPbF

SCHOTTKY RECTIFIER

2 x 20 Amps

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

$$V_R = 15\text{V}$$

### Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	40	A
$V_{RRM}$	15	V
$I_{FSM}$ @tp = 5 $\mu$ s sine	700	A
$V_F$ @ 19 Apk, $T_J = 125^\circ\text{C}$ (per leg, Typical)	0.25	V
$T_J$	-55 to 125	$^\circ\text{C}$

### Description/ Features

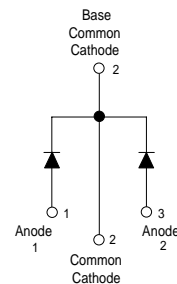
The 40L15CWPbF center tap Schottky rectifier module has been optimized for ultra low forward voltage drop specifically for the OR-ing of parallel power supplies. The proprietary barrier technology allows for reliable operation up to 125  $^\circ\text{C}$  junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

- 125 $^\circ\text{C}$   $T_J$  operation ( $V_R < 5\text{V}$ )
- Center tap module
- Optimized for OR-ing applications
- Ultra low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Lead-Free ("PbF" suffix)

### Case Styles



TO-247AC



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Voltage Ratings

Part number	40L15CWPbF
$V_R$ Max. DC Reverse Voltage (V) @ $T_J = 100\text{ }^\circ\text{C}$	15
$V_{RWM}$ Max. Working Peak Reverse Voltage (V) @ $T_J = 100\text{ }^\circ\text{C}$	

Absolute Maximum Ratings

Parameters	40L15CW	Units	Conditions
$I_{F(AV)}$ Max. Average Forward (Per Leg) Current * See Fig. 5 (Per Device)	20	A	50% duty cycle @ $T_C = 86\text{ }^\circ\text{C}$ , rectangular wave form
	40		
$I_{FSM}$ Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	700	A	5 $\mu$ s Sine or 3 $\mu$ s Rect. pulse 10ms Sine or 6ms Rect. pulse Following any rated load condition and with rated $V_{RRM}$ applied
	330		
$E_{AS}$ Non-Repetitive Avalanche Energy (Per Leg)	10	mJ	$T_J = 25\text{ }^\circ\text{C}$ , $I_{AS} = 2\text{ Amps}$ , $L = 5\text{ mH}$
$I_{AR}$ Repetitive Avalanche Current (Per Leg)	2	A	Current decaying linearly to zero in 1 $\mu$ sec Frequency limited by $T_J$ max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	40L15CW		Units	Conditions	
	Typ.	Max.			
$V_{FM}$ Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	-	0.41	V	@ 19A	$T_J = 25\text{ }^\circ\text{C}$
	-	0.52	V	@ 40A	
	0.25	0.33	V	@ 19A	$T_J = 125\text{ }^\circ\text{C}$
	0.37	0.50	V	@ 40A	
$I_{RM}$ Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	-	10	mA	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{rated } V_R$
	-	600	mA	$T_J = 100\text{ }^\circ\text{C}$	
$V_{F(TO)}$ Threshold Voltage	0.182		V	$T_J = T_J \text{ max.}$	
$r_t$ Forward Slope Resistance	7.6		m $\Omega$		
$C_T$ Max. Junction Capacitance (Per Leg)	-	2000	pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) $25\text{ }^\circ\text{C}$	
$L_S$ Typical Series Inductance (Per Leg)	8	-	nH	Measured lead to lead 5mm from package body	
dv/dt Max. Voltage Rate of Change	10000		V/ $\mu$ s	(Rated $V_R$ )	

(1) Pulse Width < 300 $\mu$ s, Duty Cycle <2%

Thermal-Mechanical Specifications

Parameters	40L15CW	Units	Conditions
$T_J$ Max. Junction Temperature Range	-55 to 125	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
$R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Leg)	1.4	$^\circ\text{C/W}$	DC operation * See Fig. 4
$R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Package)	0.7	$^\circ\text{C/W}$	DC operation
$R_{thCS}$ Typical Thermal Resistance, Case to Heatsink	0.24	$^\circ\text{C/W}$	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	40L15CW		

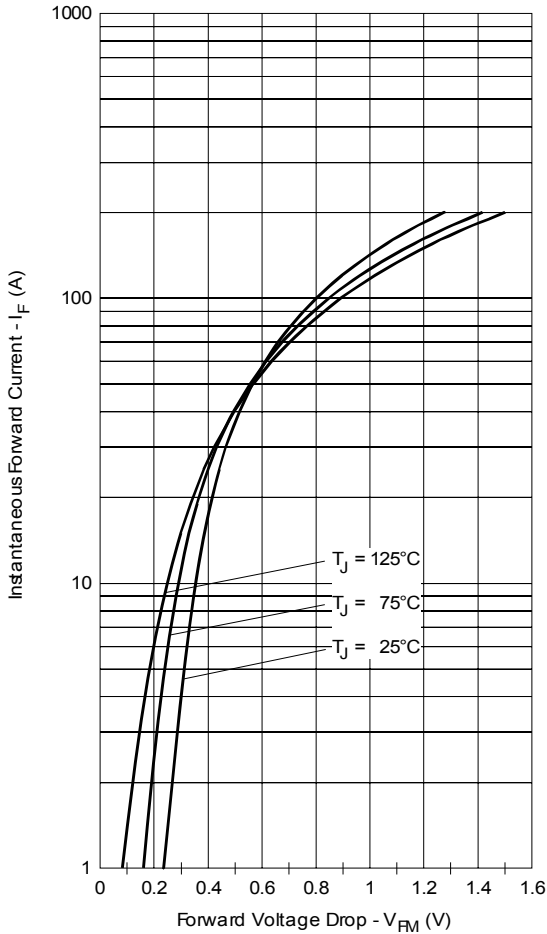


Fig. 1 - Maximum Forward Voltage Drop Characteristics

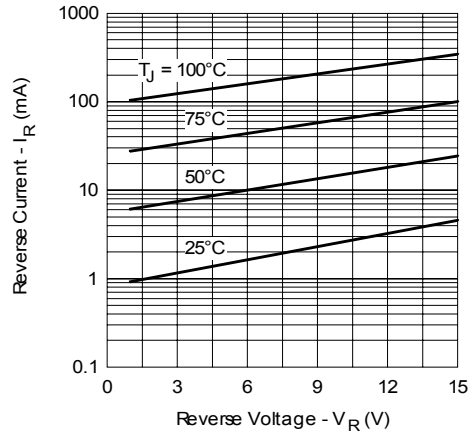


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

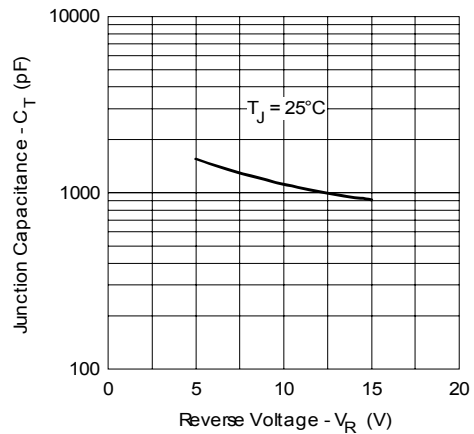


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

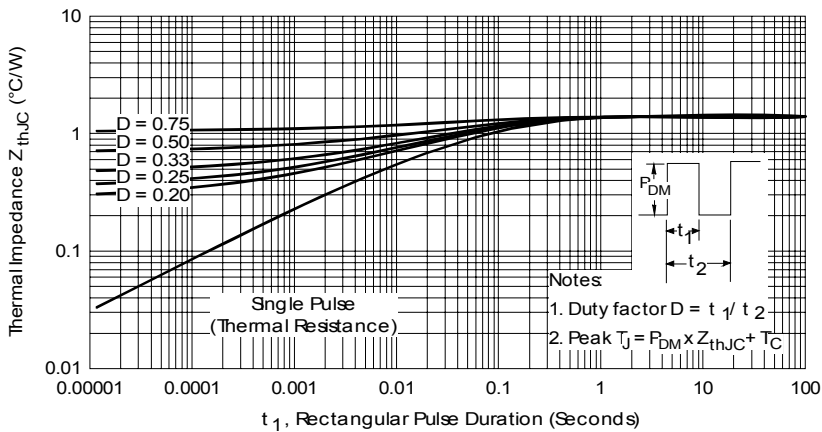


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

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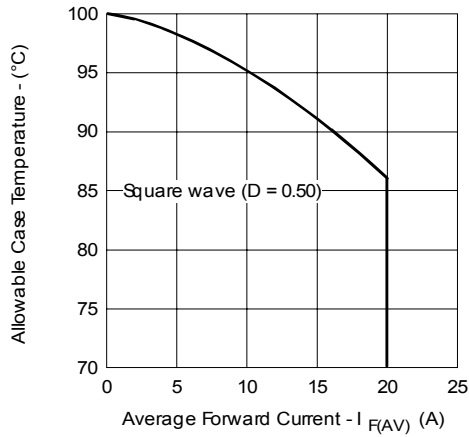


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

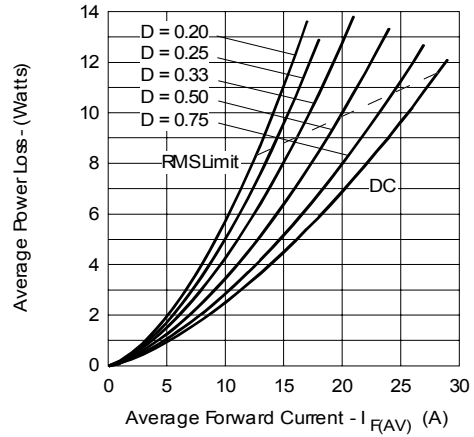


Fig. 6 - Forward Power Loss Characteristics

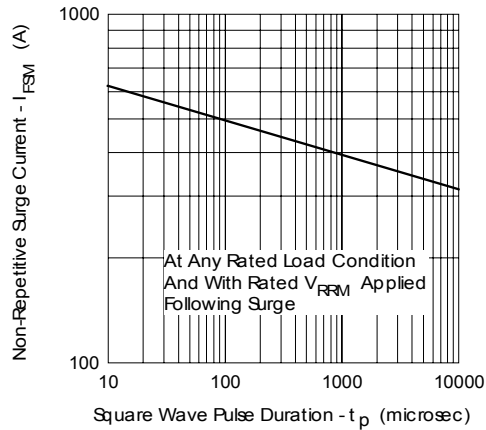


Fig. 7 - Maximum Non-Repetitive Surge Current

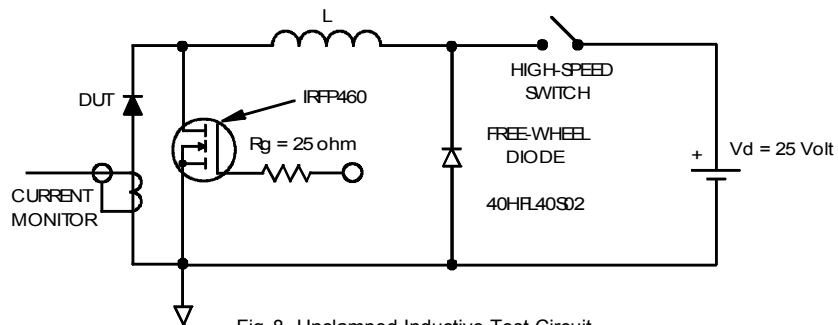
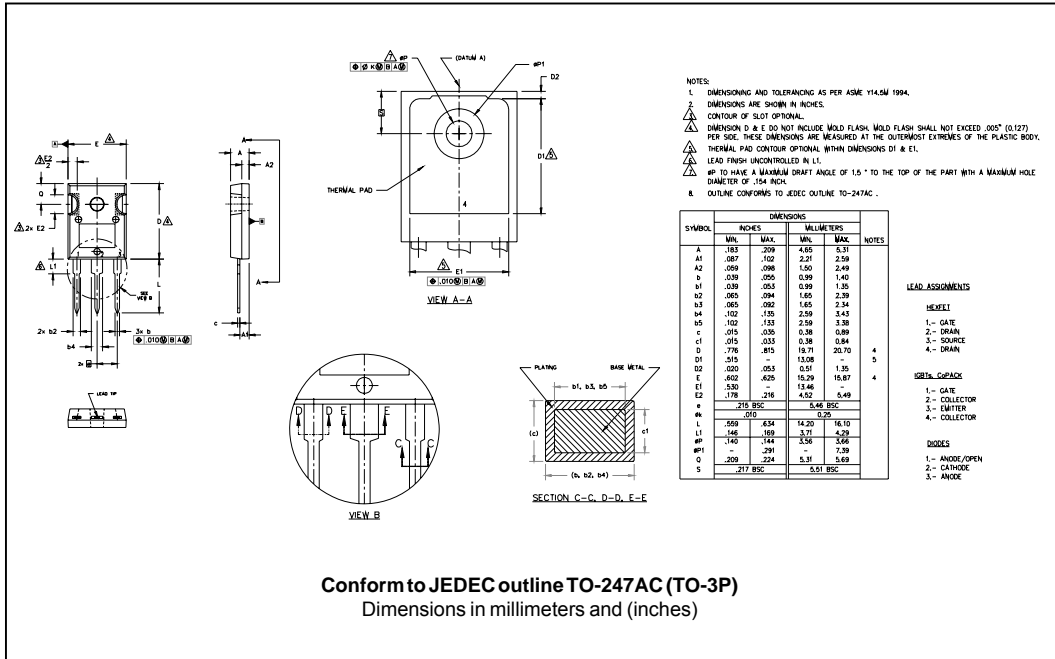
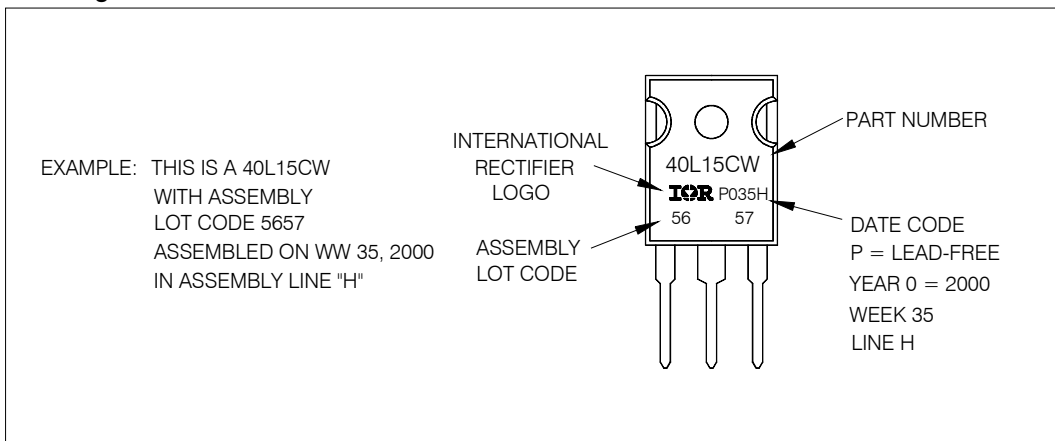


Fig. 8 - Unclamped Inductive Test Circuit

Outline Table



Marking Information



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International  
**IR** Rectifier

### Ordering Information Table

Device Code	
	<b>40 L 15 C W PbF</b>
	① ② ③ ④ ⑤ ⑥
<b>1</b>	- Current Rating (40 = 40A)
<b>2</b>	- Schottky "L" Series
<b>3</b>	- Voltage Code (15 = 15V)
<b>4</b>	- Circuit Configuration C = Common Cathode
<b>5</b>	- Package W = TO-247
<b>6</b>	- <ul style="list-style-type: none"><li>• none = Standard Production</li><li>• PbF = Lead-Free</li></ul>
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  
**IR** Rectifier

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