



MBR40L15CWPbF

SCHOTTKY RECTIFIER

2 x 20 Amps

$I_{F(AV)} = 40\text{Amp}$
 $V_R = 15\text{V}$

Major Ratings and Characteristics

Characteristics	Value	Units
$I_{F(AV)}$ Rectangular waveform	40	A
V_{RRM}	15	V
I_{FSM} @tp=5µs sine	700	A
V_F @20Apk, $T_J=125^\circ\text{C}$ (per leg, Typical)	0.26	V
T_J	-55 to 125	°C

Description/ Features

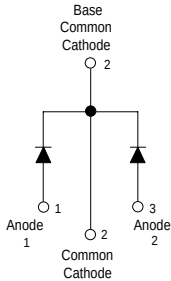
The MBR40L15CWPbF center tap Schottky rectifier module has been optimized for ultra low forward voltage drop specifically for the OR-ing of parallel power supplies. The proprietary barrier technology allows for reliable operation up to 125 °C junction temperature. Typical applications are in parallel switching power supplies, converters, reverse battery protection, and redundant power subsystems.

- 125°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



Voltage Ratings

Part number	MBR40L15CWPbF
V_R Max. DC Reverse Voltage (V) @ $T_J = 100^\circ\text{C}$	15
V_{RWM} Max. Working Peak Reverse Voltage (V) @ $T_J = 100^\circ\text{C}$	

Absolute Maximum Ratings

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

Electrical Specifications

Parameters	Value	Units	Conditions
V_{FM} Forward Voltage Drop (Per Leg) * See Fig. 1 (1)	Typ. Max.		
	- 0.42	V	@ 20A $T_J = 25^\circ\text{C}$
	- 0.52	V	@ 40A
	0.26 0.34	V	@ 20A $T_J = 125^\circ\text{C}$
I_{RM} Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	- 10	mA	$T_J = 25^\circ\text{C}$
	- 600	mA	$T_J = 100^\circ\text{C}$ $V_R = \text{rated } V_R$
$V_{F(TO)}$ Threshold Voltage	0.182	V	$T_J = T_J \text{ max.}$
r_t Forward Slope Resistance	7.6	m Ω	
C_T Max. Junction Capacitance (Per Leg)	- 2000	pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) 25°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/ μs	(Rated V_R)

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

Thermal-Mechanical Specifications

Parameters		Value	Units	Conditions		
T _J	Max. Junction Temperature Range	-55 to 125	°C			
T _{stg}	Max. Storage Temperature Range	-55 to 150	°C			
R _{thJC}	Max. Thermal Resistance Junction to Case (Per Leg)	1.4	°C/W	DC operation	* See Fig. 4	
R _{thJC}	Max. Thermal Resistance Junction to Case (Per Package)	0.7	°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		MBR40L15CW				

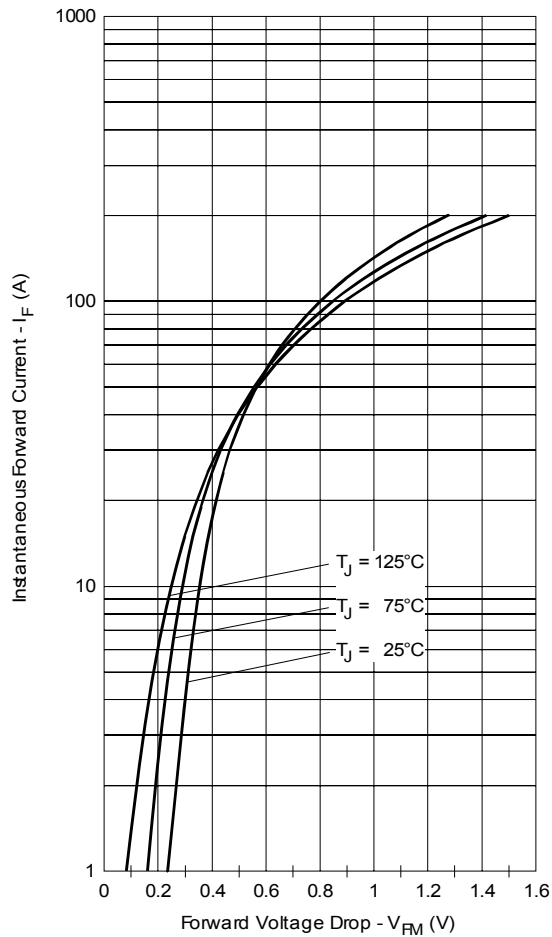


Fig. 1 - Maximum Forward Voltage Drop Characteristics

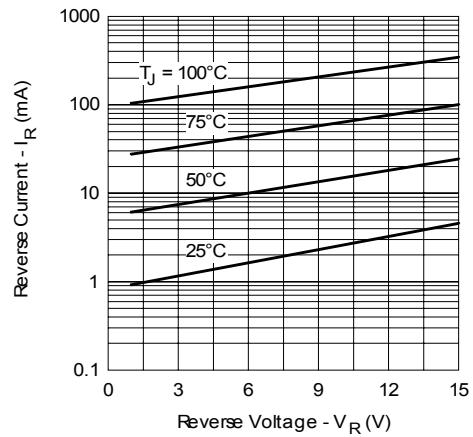


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

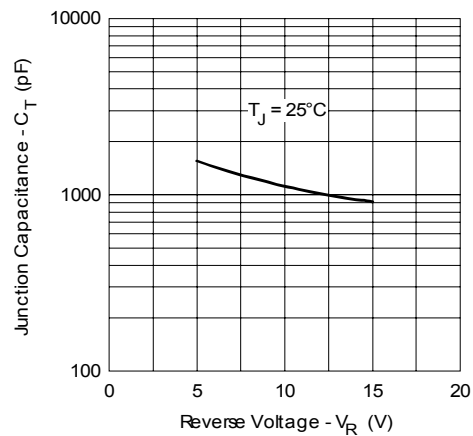


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

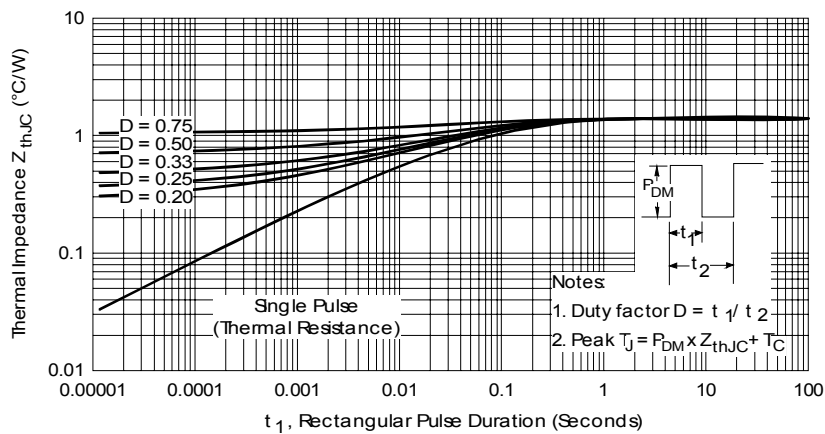


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

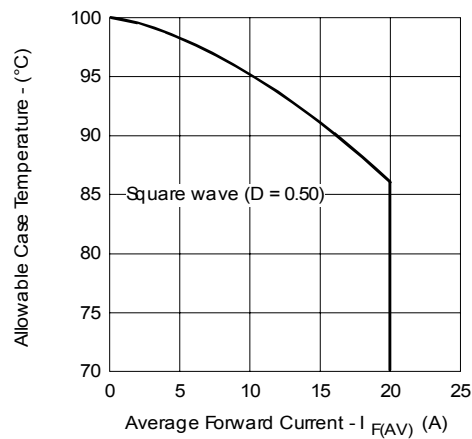


Fig. 5 - Maximum Allowable Case Temperature Vs. Average Forward Current

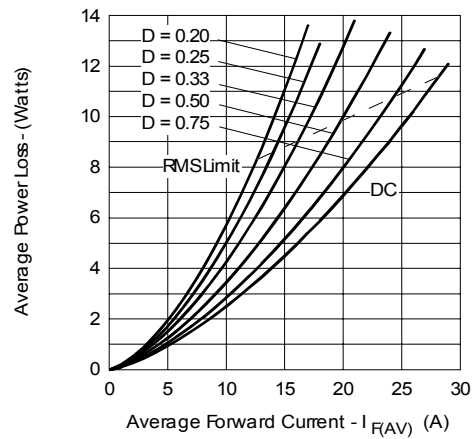


Fig. 6 - Forward Power Loss Characteristics

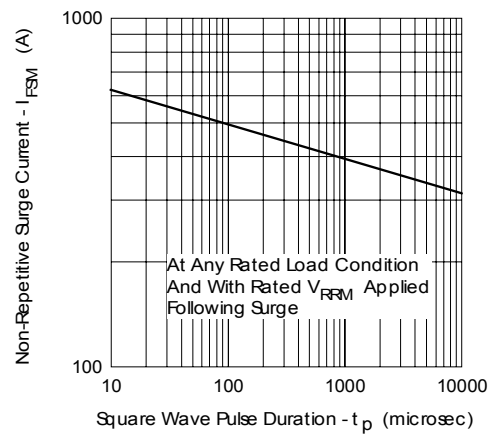


Fig. 7 - Maximum Non-Repetitive Surge Current

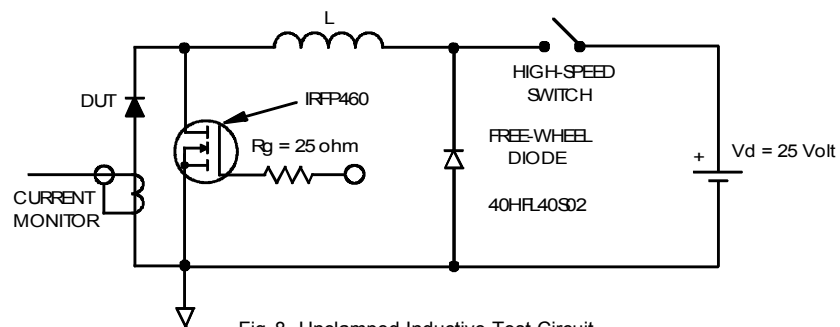
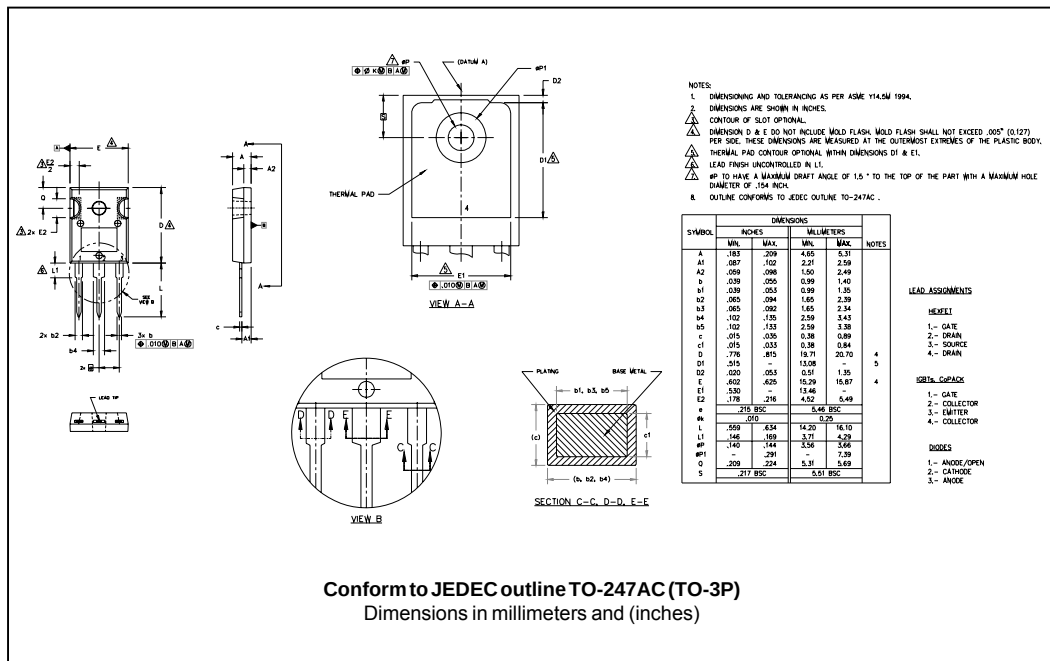
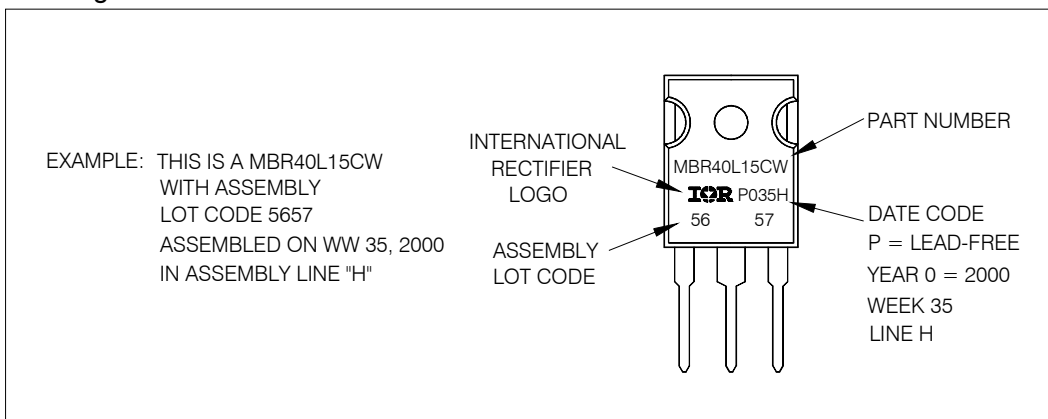


Fig. 8 - Unclamped Inductive Test Circuit

Outline Table



Marking Information



Ordering Information Table

Device Code

MBR	40	L	15	CW	PbF
1	2	3	4	5	6

- 1** - Schottky MBR Series
- 2** - Current Rating (40 = 40A)
- 3** - L = Low Forward Voltage
- 4** - Voltage Rating (15 = 15V)
- 5** - Circuit Configuration :
Center Tap 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.