Bulletin PD-2.318 rev. B 01/03

International
IOR Rectifier

MBR1535CT
MBR1545CT

SCHOTTKY RECTIFIER 15 Amp

Major Ratings and Characteristics

Characteristics	MBR15..CT	Units
$I_{F(AV)}$ Rectangular waveform	15	A
V_{RRM}	35/45	V
I_{FSM} @ tp = 5 µs sine	690	A
V_F @ 7.5 Apk, T_J = 125°C	0.57	V
T_J	- 65 to 150	°C

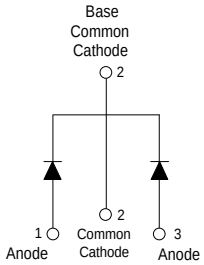
Description/ Features

The MBR15..CT center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. 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-220 package
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

Case Styles

MBR15..CT



TO-220AB

Voltage Ratings

	Part number	MBR1535CT	MBR1545CT
V_R	Max. DC Reverse Voltage (V)	35	45
V_{RWM}	Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

	Parameters	Value	Units	Conditions	
$I_{F(AV)}$	Max. Average Forward Current (Per Leg)	7.5	A	@ T_C = 105 °C, (Rated V_R)	
	(Per Device)	15			
I_{FSM}	Max. Peak One Cycle Non Repetitive Surge	690	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
		150		Surge applied at rated load condition halfwave single phase 60Hz	
E_{AS}	Non-Repetitive Avalanche Energy	7	mJ	(Per Leg) T_J = 25 °C, I_{AS} = 2 Amps, L = 3.5 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 x V_R typical	

Electrical Specifications

	Parameters	Value	Units	Conditions	
V_{FM}	Max. Forward Voltage Drop (1)	0.84	V	@ 15A	T_J = 25 °C
		0.57	V	@ 7.5A	T_J = 125 °C
		0.72	V	@ 15A	
I_{RM}	Max. Instantaneus Reverse Current (1)	0.1	mA	T_J = 25 °C	Rated DC voltage
		15	mA	T_J = 125 °C	
C_T	Max. Junction Capacitance	400	pF	V_R = 5V_{DC}, (test signal range 100Khz to 1Mhz) 25°C	
L_S	Typical Series Inductance	8.0	nH	Measured from top of terminal to mounting plane	
dv/dt	Max. Voltage Rate of Change (Rated V_R)	10000	V/ µs		

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

Thermal-Mechanical Specifications

	Parameters		Value	Units	Conditions
T_J	Max. Junction Temperature Range		-65 to 150	°C	
T_{stg}	Max. Storage Temperature Range		-65 to 175	°C	
R_{thJC}	Max. Thermal Resistance Junction to Case		3.0	°C/W	DC operation
R_{thCS}	Typical Thermal Resistance, Case to Heatsink		0.50	°C/W	Mounting surface, smooth and greased
R_{thJA}	Max. Thermal Resistance Junction		60	°C/W	DC operation
wt	Approximate Weight		2 (0.07)	g (oz.)	
T	Mounting Torque	Min.	6 (5)	Kg-cm (lbf-in)	
		Max.	12 (10)		
	Case Style		TO-220AB		JEDEC

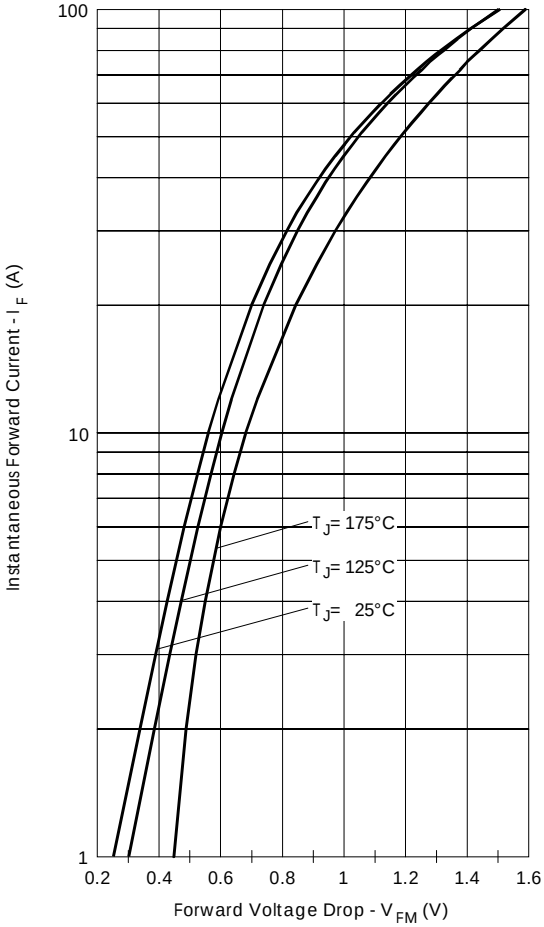


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

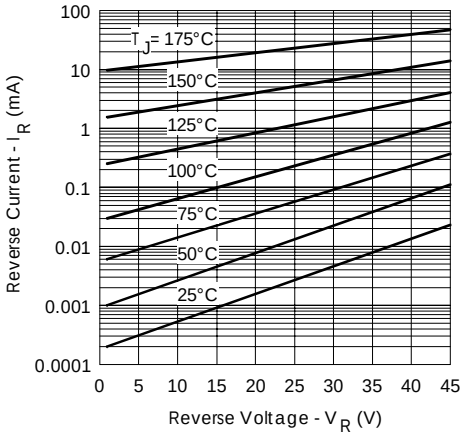


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

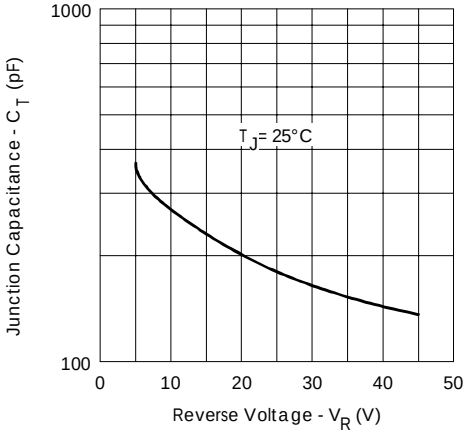


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

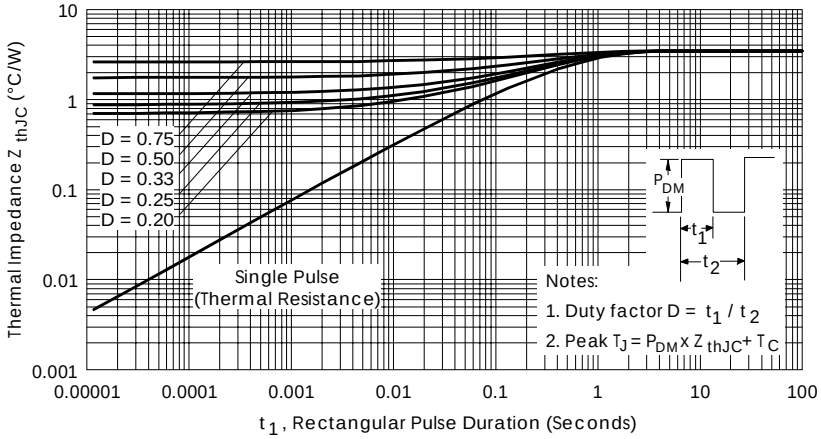


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

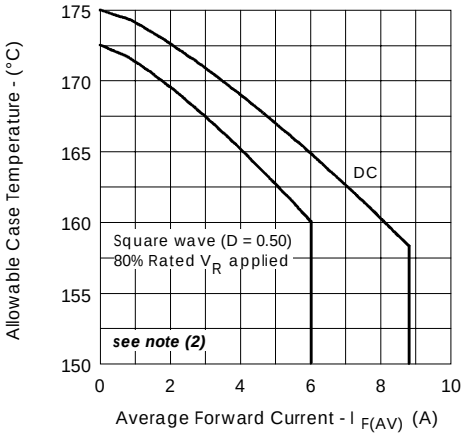


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

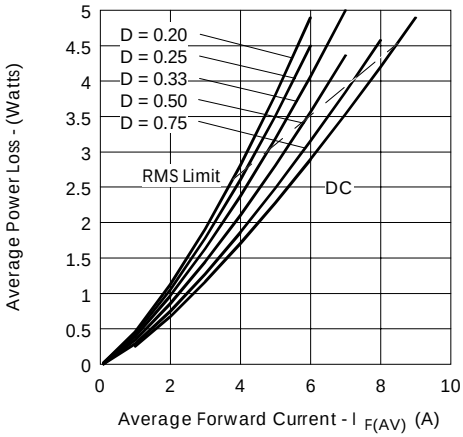


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

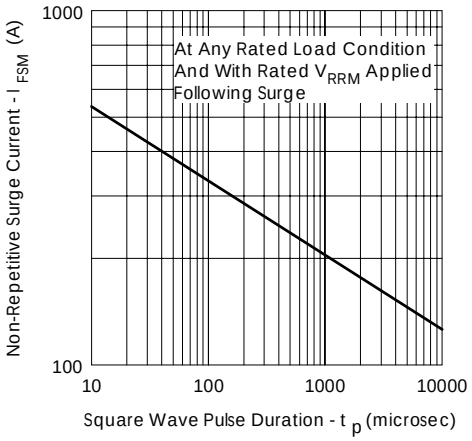


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

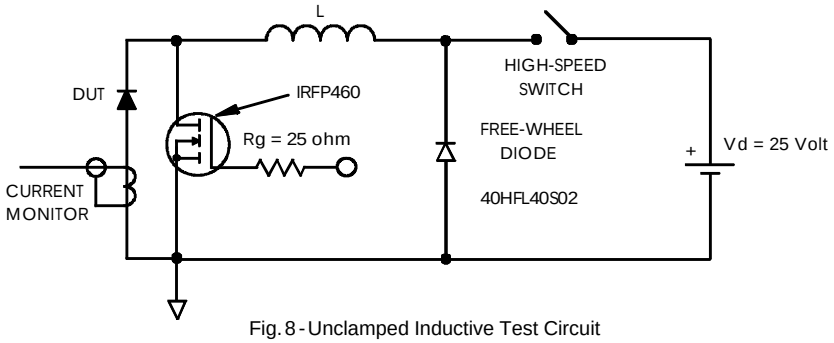
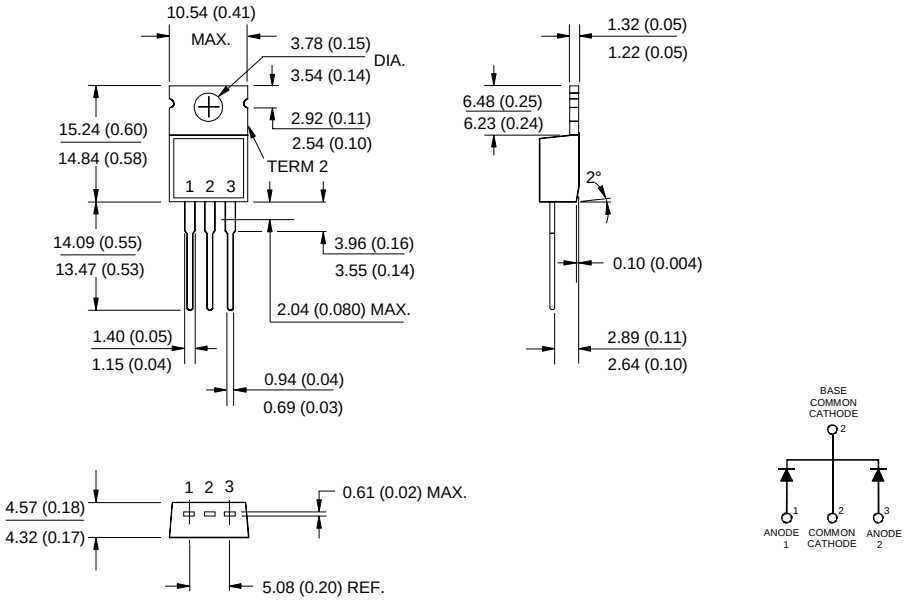


Fig. 8 - Unclamped Inductive Test Circuit

(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

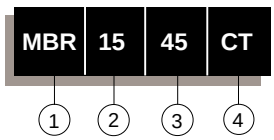
Outline Table



Conform to JEDEC outline TO-220AB
Dimensions in millimeters and (inches)

Ordering Information Table

Device Code



1	-	Essential Part Number
2	-	Current Rating
3	-	Voltage code: Code = V_{RRM} (35 = 35V, 45 = 45V)
4	-	CT = Essential Part Number

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
IOR Rectifier

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