

International
IR Rectifier

MBR10.. Series
MBRB10.. Series

SCHOTTKY RECTIFIER

10 Amp

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	10	A
I_{FRM} @ $T_C = 135^\circ\text{C}$	20	A
V_{RRM}	35/45	V
I_{FSM} @ $t_p = 5\ \mu\text{s}$ sine	1060	A
V_F @ 10 Apk, $T_J = 125^\circ\text{C}$	0.57	V
T_J range	-65 to 150	$^\circ\text{C}$

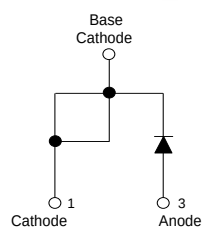
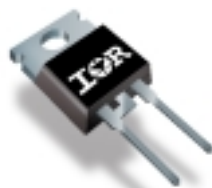
Description/Features

This 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
- TO-220 and D²Pak packages
- 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

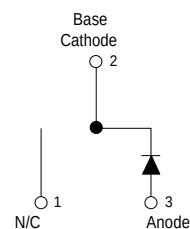
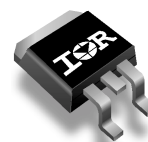
Case Styles

MBR10.. Series



TO-220AC

MBRB10.. Series



D²PAK

MBR10.. Series, MBRB10.. Series

Bulletin PD-2.317 rev. D 07/01

International
IR Rectifier

Voltage Ratings

Part number	MBR1035/MBRB1035	MBR1045/MBRB1045
V_R Max. DC Reverse Voltage (V)	35	45
V_{RRM} Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

Parameters	Values	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current	10	A	@ $T_C = 135^\circ\text{C}$, (Rated V_R)
I_{FRM} Peak Repetitive Forward Current	20	A	Rated V_R , square wave, 20kHz $T_C = 135^\circ\text{C}$
I_{FSM} Non Repetitive Peak Surge Current	1060	A	5 μs Sine or 3 μs Rect. pulse
	150		Following any rated load condition and with rated V_{RRM} applied Surge applied at rated load conditions halfwave, single phase, 60Hz
I_{RRM} Peak Repetitive Reverse Surge Current	1.0	A	2.0 μsec 1.0 KHz

Electrical Specifications

Parameters	Values	Units	Conditions
V_{FM} Max. Forward Voltage Drop (1)	0.84	V	@ 20A $T_J = 25^\circ\text{C}$
	0.57	V	@ 10A $T_J = 125^\circ\text{C}$
	0.72	V	@ 20A $T_J = 125^\circ\text{C}$
I_{RM} Max. Instantaneous Reverse Current (1)	0.1	mA	$T_J = 25^\circ\text{C}$
	15	mA	$T_J = 125^\circ\text{C}$
$V_{F(TO)}$ Threshold Voltage	0.354	V	$T_J = T_J \text{ max.}$
r_f Forward Slope Resistance	17.6	m Ω	
C_T Max. Junction Capacitance	600	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)	1000	V/ μs	

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

Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
T_J Max. Junction Temperature Range	-65 to 150	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-65 to 175	$^\circ\text{C}$	
R_{thJC} Max. Thermal Resistance Junction to Case	2.0	$^\circ\text{C/W}$	DC operation
R_{thCS} Typical Thermal Resistance Case to Heatsink	0.50	$^\circ\text{C/W}$	Mounting surface, smooth and greased Only for TO-220
wt Approximate Weight	2(0.07)	g(oz.)	
T Mounting Torque	Min.	6(5)	Kg-cm (lbf-in)
	Max.	12(10)	

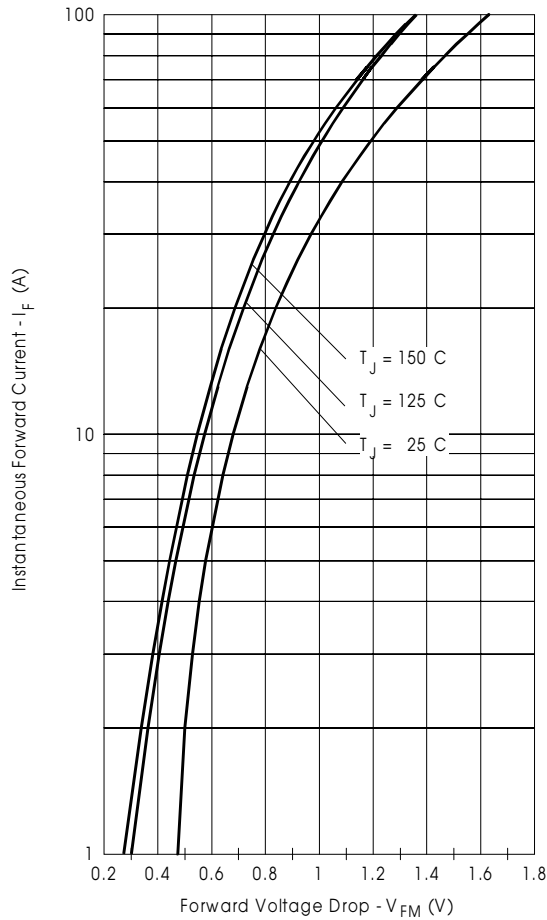


Fig. 1 - Max. Forward Voltage Drop Characteristics

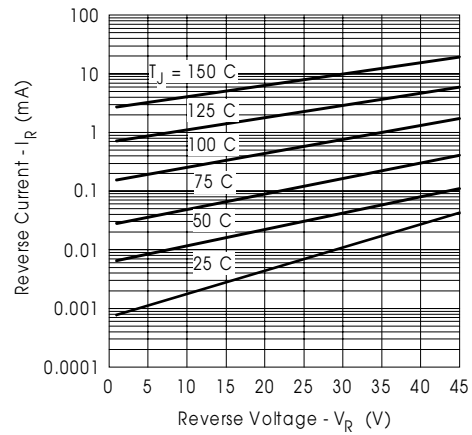


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage

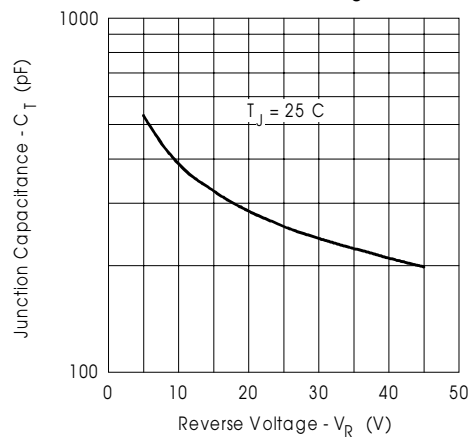


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

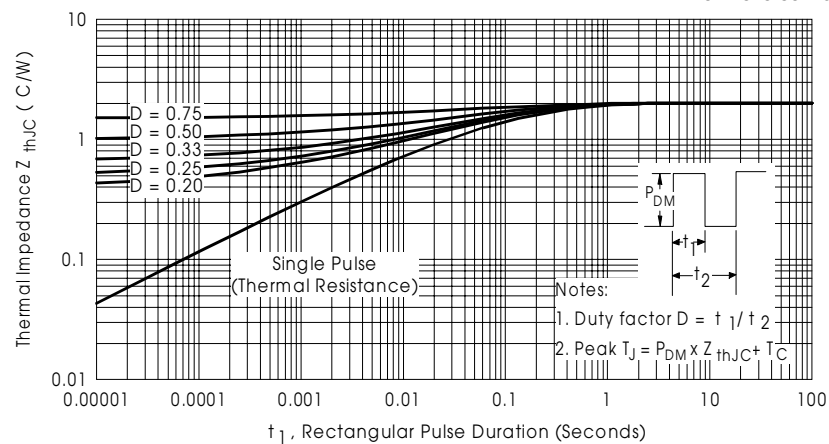


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics

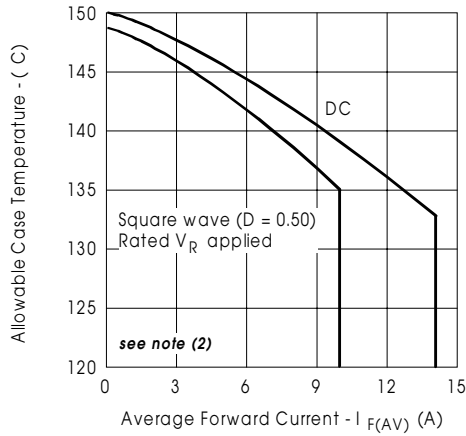


Fig. 5- Max. Allowable Case Temperature Vs. Average Forward Current

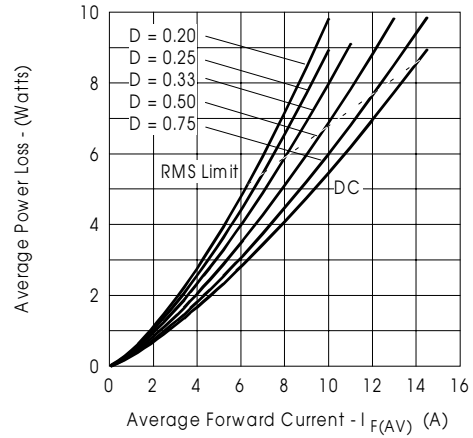


Fig. 6- Forward Power Loss Characteristics

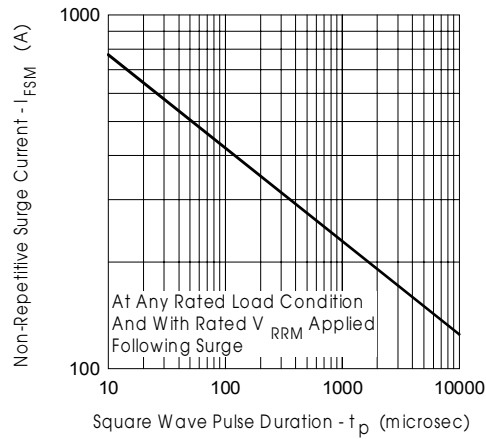


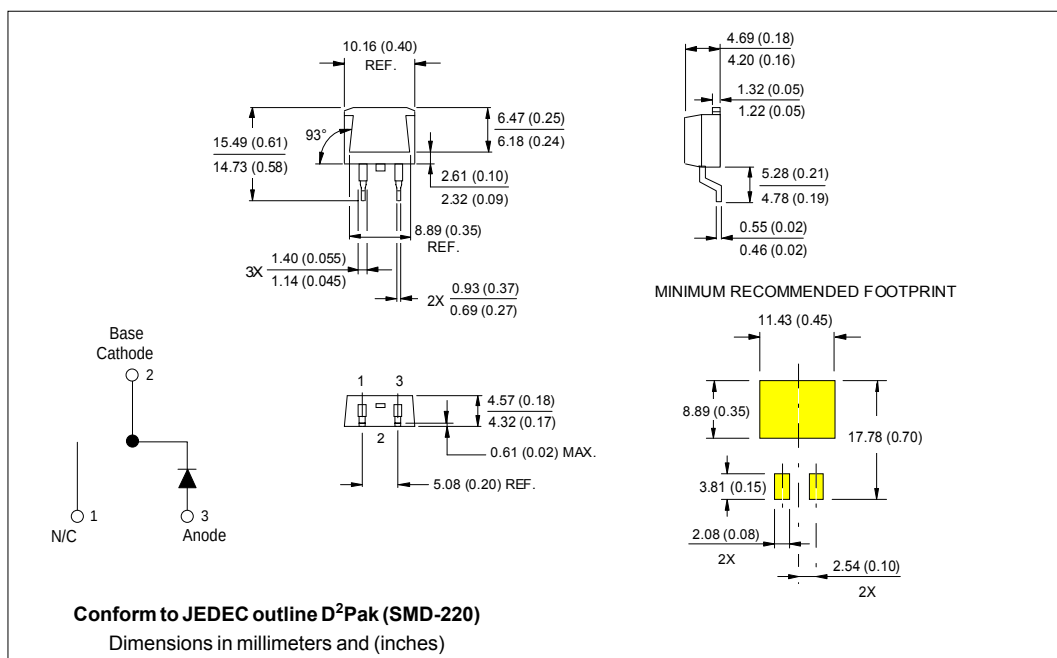
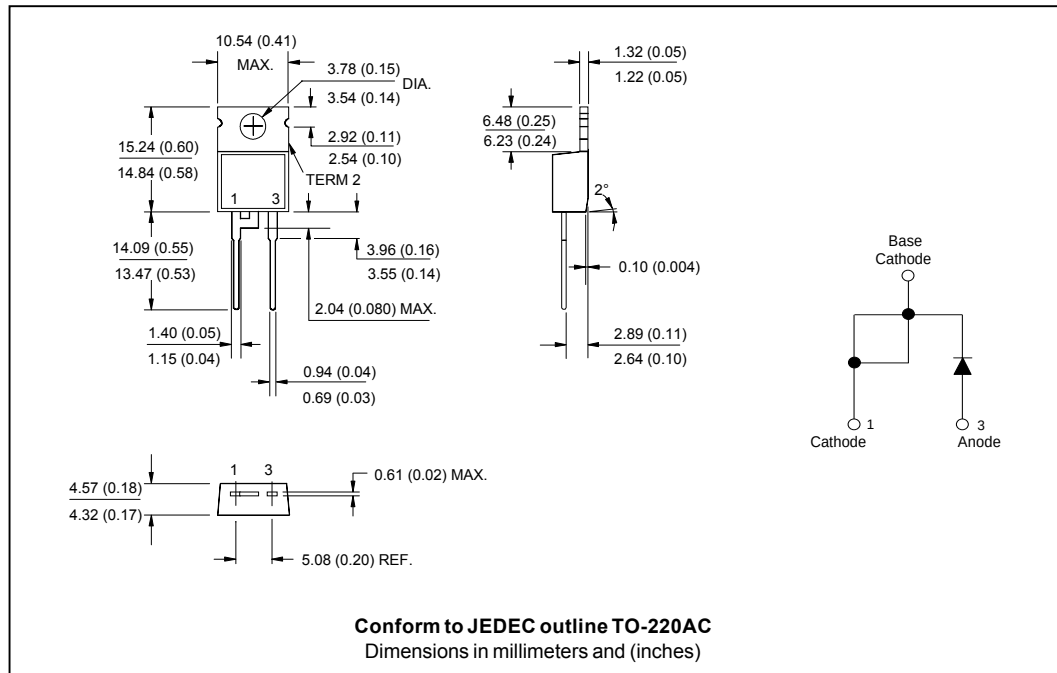
Fig. 7- Max. Non-Repetitive Surge Current

(2) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$;

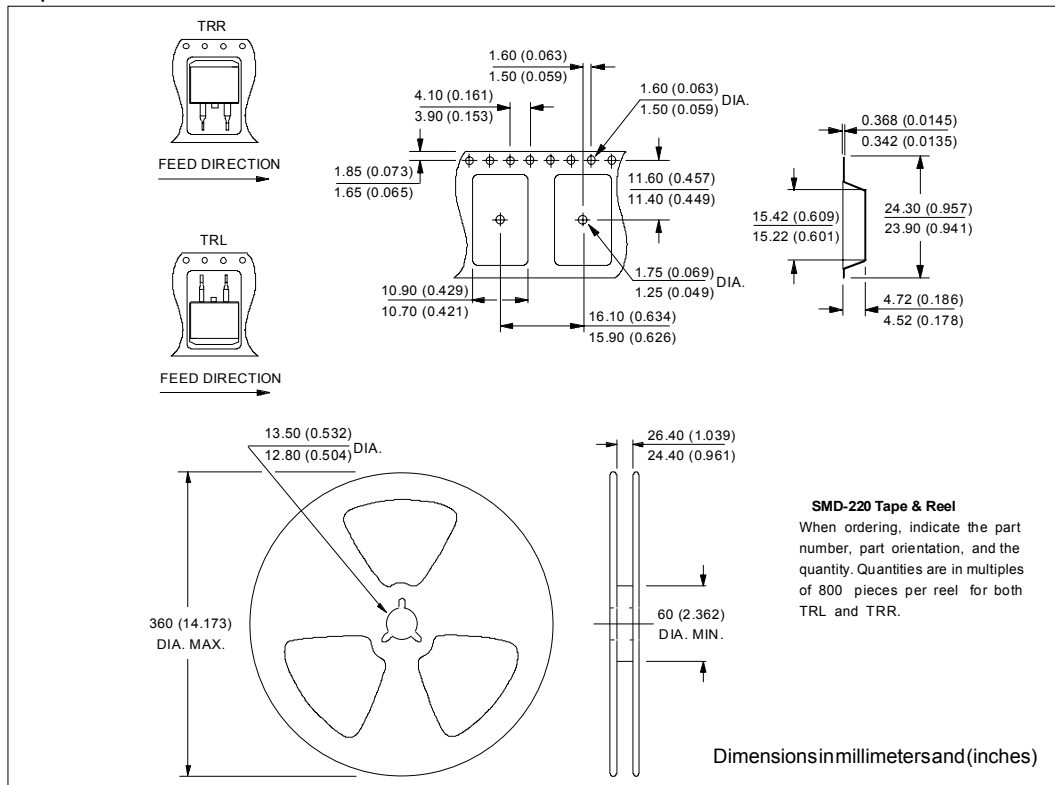
P_d = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

$P_{d_{REV}}$ = Inverse Power Loss = $V_{R1} \times I_{R1} (1 - D)$; $I_{R1} @ V_{R1}$ = rated V_R

Outline Table



Tape & Reel Information



Ordering Information Table

Device Code			
MBR	B	10	45
1	2	3	4
1	- Essential Part Number		
2	- B = Surface Mount None = TO-220		
3	- Current Rating		
4	- Voltage code: Code = V_{RRM}		
			35 = 35V 45 = 45V

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

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 07/01