

International
IOR Rectifier

MBR150
MBR160

SCHOTTKY RECTIFIER

1.0 Amp

Major Ratings and Characteristics

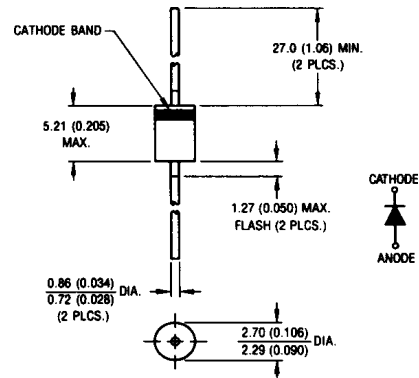
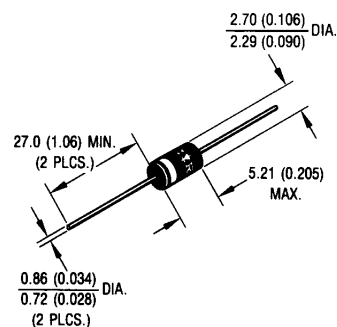
Characteristics	MBR150 MBR160	Units
$I_{F(AV)}$ Rectangular waveform	1.0	A
V_{RRM}	50/60	V
I_{FSM} @ $t_p = 5 \mu s$ sine	150	A
V_F @ 1 Apk, $T_J = 125^\circ C$	0.65	V
T_J range	-40 to 150	$^\circ C$

Description/ Features

The MBR150, MBR160 axial leaded Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- Low profile, axial leaded outline
- 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

CASE STYLE AND DIMENSIONS



Conform to JEDEC Outline DO-204AL (DO-41)

Dimensions in millimeters and inches

Voltage Ratings

Part number	MBR150	MBR160
V_R Max. DC Reverse Voltage (V)	50	60
V_{RWM} Max. Working Peak Reverse Voltage (V)		

Absolute Maximum Ratings

Parameters	Value	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current * See Fig. 4	1.0	A	50% duty cycle @ $T_C = 75^\circ\text{C}$, rectangular wave form
I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 6	150	A	5 μs Sine or 3 μs Rect. pulse
	25		10ms Sine or 6ms Rect. pulse
E_{AS} Non-Repetitive Avalanche Energy	2.0	mJ	$T_J = 25^\circ\text{C}$, $I_{AS} = 1$ Amps, $L = 4$ mH
I_{AR} Repetitive Avalanche Current	1.0	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} Max. Forward Voltage Drop * See Fig. 1 (1)	0.75	V	@ 1A
	0.9	V	@ 2A
	1.0	V	@ 3A
	0.65	V	@ 1A
	0.75	V	@ 2A
	0.82	V	@ 3A
I_{RM} Max. Reverse Leakage Current * See Fig. 2 (1)	0.5	mA	$T_J = 25^\circ\text{C}$
	5	mA	$T_J = 100^\circ\text{C}$
	10	mA	$T_J = 125^\circ\text{C}$
C_T Typical Junction Capacitance	55	pF	$V_R = 5V_{DC}$ (test signal range 100Khz to 1Mhz) 25°C
L_S Typical Series Inductance	8.0	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(*)	-40 to 150	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-40 to 150	$^\circ\text{C}$	
R_{thJL} Max. Thermal Resistance Junction to Lead (**)	80	$^\circ\text{C/W}$	DC operation (*See Fig. 4)
wt Approximate Weight	0.33(0.012)	g (oz.)	
Case Style	DO-204AL(DO-41)		

(*) $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{th(j-a)}}$ thermal runaway condition for a diode on its own heatsink

(**) Mounted 1 inch square PCB, Thermal Probe connected to lead 2mm from package

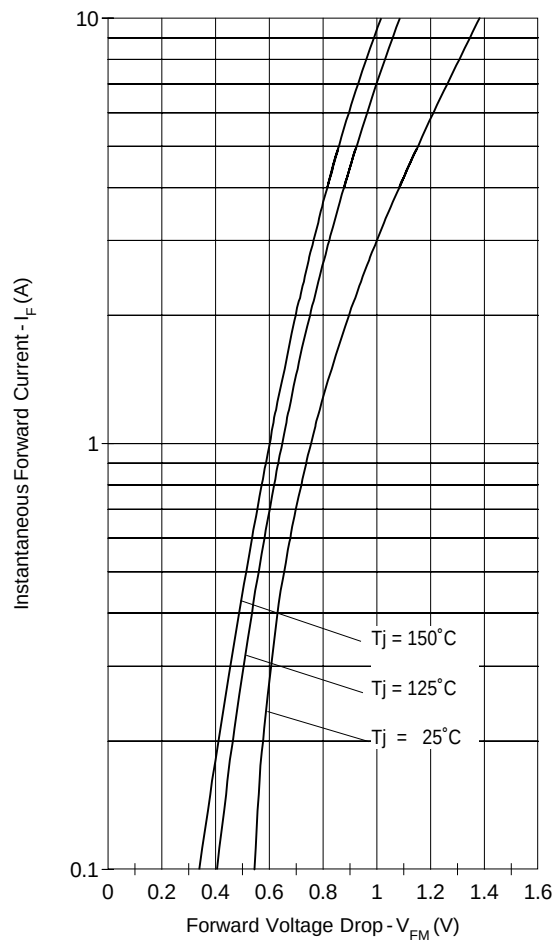


Fig. 1 - Maximum Forward Voltage Drop Characteristics

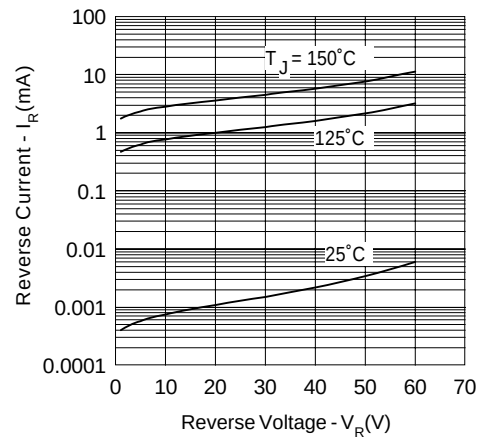


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

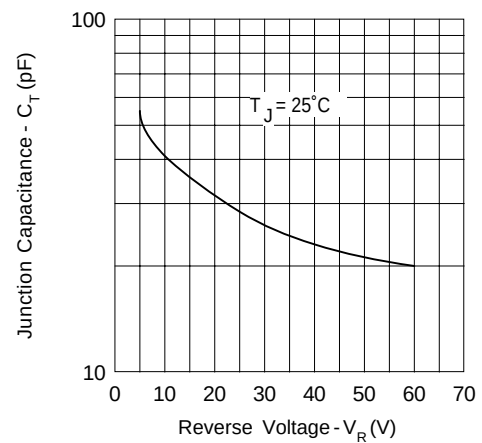


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

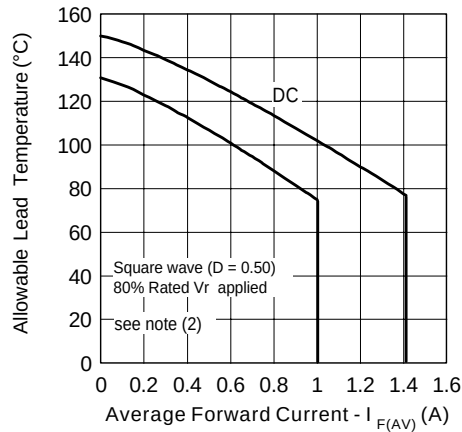


Fig. 4 - Maximum Ambient Temperature Vs. Average Forward Current, Printed Circuit Board Mounted

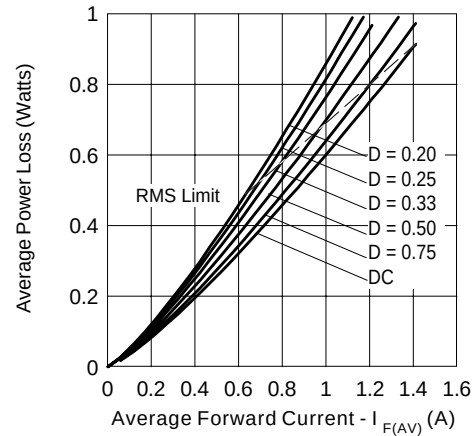


Fig. 5 - Forward Power Loss Characteristics

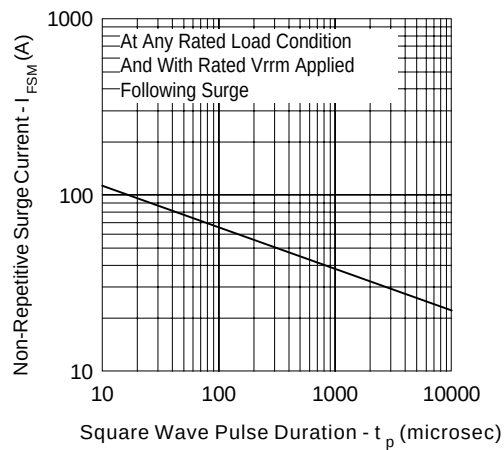


Fig. 6 - Maximum Non-Repetitive Surge Current

(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 = $V_{R1} \times I_{R1} (1 - D)$; $I_{R1} @ V_{R1} = 80\%$ rated V_R

Ordering Information Table

Device Code

MBR

1

60

TR

①

②

③

④

1

2

3

4

- Schottky MBR Series

- Current Rating: 1 = 1A

- Voltage Rating

- TR = Tape & Reel package (5000 pcs)

- = Box package (1000 pcs)

60 = 60V

50 = 50V

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.