

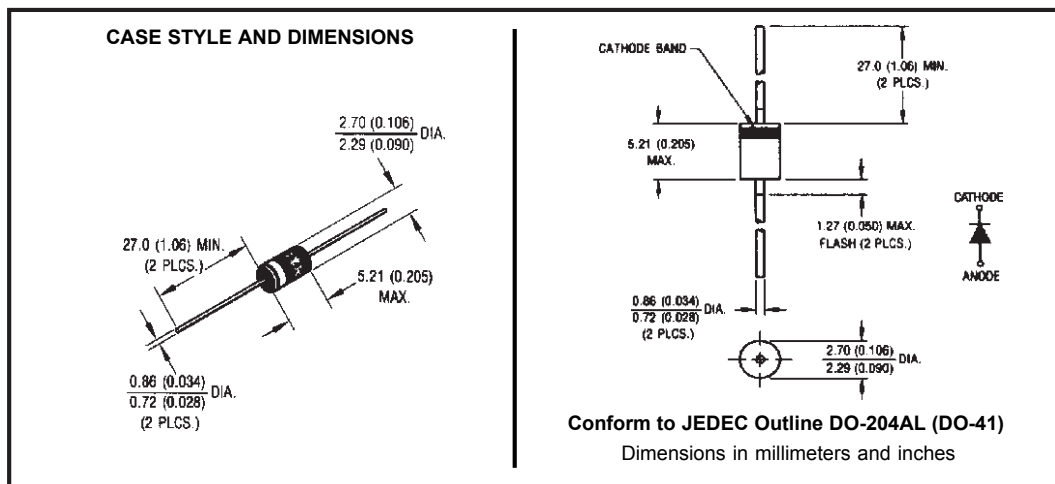
Major Ratings and Characteristics

Characteristics	Values	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
- Lead-Free plating



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°C, rectangular wave form
I _{FSM} Max. Peak One Cycle Non-Repetitive Surge Current * See Fig. 6	150	A	5µs Sine or 3µs Rect. pulse
	25		10ms Sine or 6ms Rect. pulse
E _{AS} Non-Repetitive Avalanche Energy	2.0	mJ	T _J = 25 °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 x 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 °C
	5	mA	T _J = 100°C
	10	mA	T _J = 125 °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 < 300µs, Duty Cycle <2%

Thermal-Mechanical Specifications

Parameters	Value	Units	Conditions
T _J Max. Junction Temperature Range(*)	-40 to 150	°C	
T _{stg} Max. Storage Temperature Range	-40 to 150	°C	
R _{thJL} Max. Thermal Resistance Junction to Lead (**)	80	°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

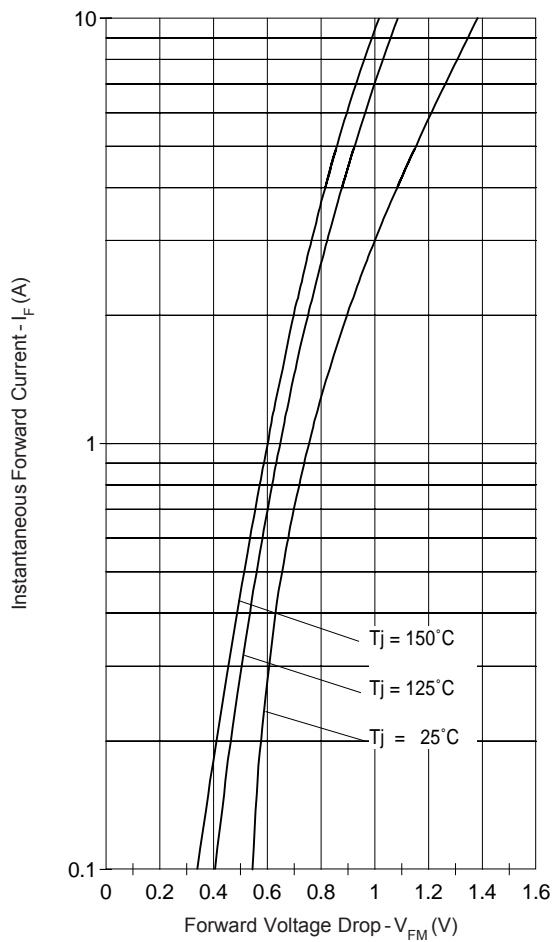


Fig. 1 - Maximum Forward Voltage Drop Characteristics

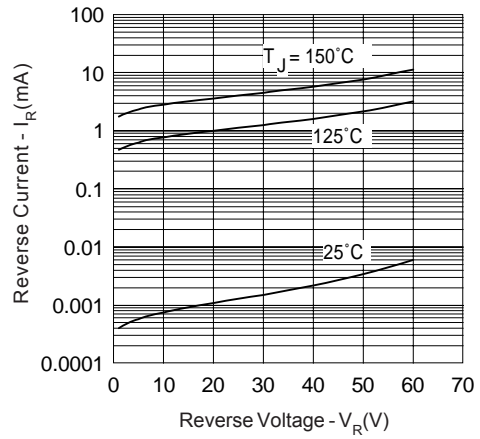


Fig. 2 - Typical Values of Reverse Current Vs. Reverse Voltage

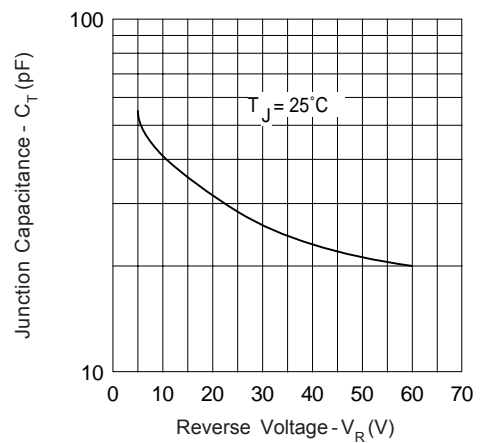


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

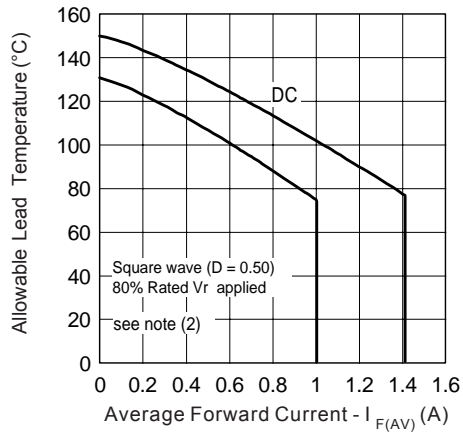


Fig. 4 - Maximum Ambient Temperature Vs. Average Forward Current, Printed Circuit Board Mounted

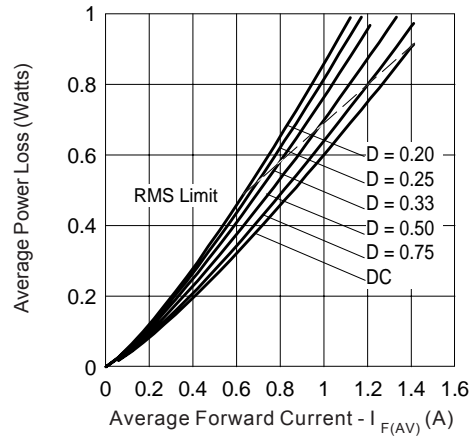


Fig. 5 - Forward Power Loss Characteristics

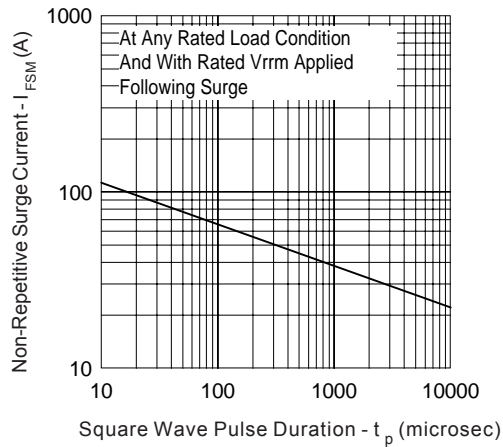


Fig. 6 - Maximum Non-Repetitive Surge Current

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

Ordering Information Table

Device Code			
MBR	1	60	TR
①	②	③	④
1	- Schottky MBR Series		
2	- Current Rating: 1 = 1A		
3	- Voltage Rating	60 = 60V	
4	- TR= Tape & Reel package (5000 pcs)	50 = 50V	
	- = Box package (1000 pcs)		

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.



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