Bulletin PD-20594 rev. C 12/04

International
IOR Rectifier

MBR350
MBR360

SCHOTTKY RECTIFIER

3.0 Amp

Major Ratings and Characteristics

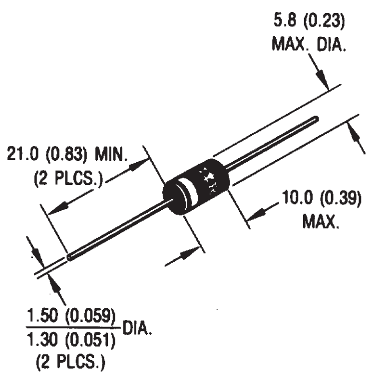
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	3.0	A
V_{RRM}	50/60	V
I_{FSM} @ tp = 5 µs sine	460	A
V_F @ 3 Apk, T_J = 25°C	0.73	V
T_J	- 40 to 150	°C

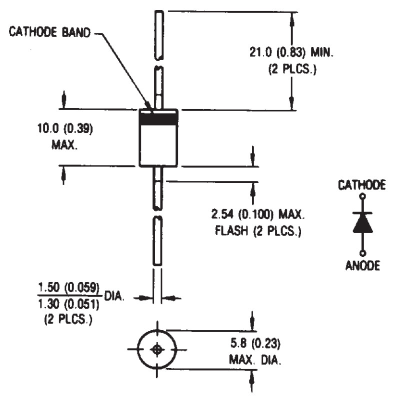
Description/ Features

The MBR350, MBR360 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

CASE STYLE AND DIMENSIONS





Outline C - 16
Dimensions in millimeters and inches

Voltage Ratings

	Part number	MBR350	MBR360
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	3.0	A	50% duty cycle @ T_L = 50°C, rectangular wave form	
I_{FSM}	Max. Peak One Cycle Non-Repetitive	460	A	5µs Sine or 3µs Rect. pulse	Following any rated load condition and with rated V_{RRM} applied
	Surge Current * See Fig. 6	80		10ms Sine or 6ms Rect. pulse	
E_{AS}	Non-Repetitive Avalanche Energy	5.0	mJ	T_J = 25 °C, I_{AS} = 1 Amps, L = 10 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	0.58	V	@ 1.0A	T_J = 25 °C
	* See Fig. 1 (1)	0.73	V	@ 3.0A	
		1.06	V	@ 9.4A	
		0.49	V	@ 1.0A	T_J = 125 °C
		0.64	V	@ 3.0A	
		0.89	V	@ 9.4A	
I_{RM}	Max. Reverse Leakage Current	0.6	mA	T_J = 25 °C	V_R = rated V_R
	* See Fig. 2 (1)	8	mA	T_J = 100 °C	
		15	mA	T_J = 125 °C	
C_T	Typical Junction Capacitance	190	pF	V_R = 5V_{DC} (test signal range 100Khz to 1Mhz) 25°C	
L_S	Typical Series Inductance	9.0	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}	Typical Thermal Resistance Junction to Lead (**)	30	°C/W	DC operation (* See Fig. 4)
wt	Approximate Weight	1.2 (0.042)	g (oz.)	
	Case Style	C - 16		

(*) $\frac{dPtot}{dTj} < \frac{1}{Rth(j\text{-}a)}$ thermal runaway condition for a diode on its own heatsink

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

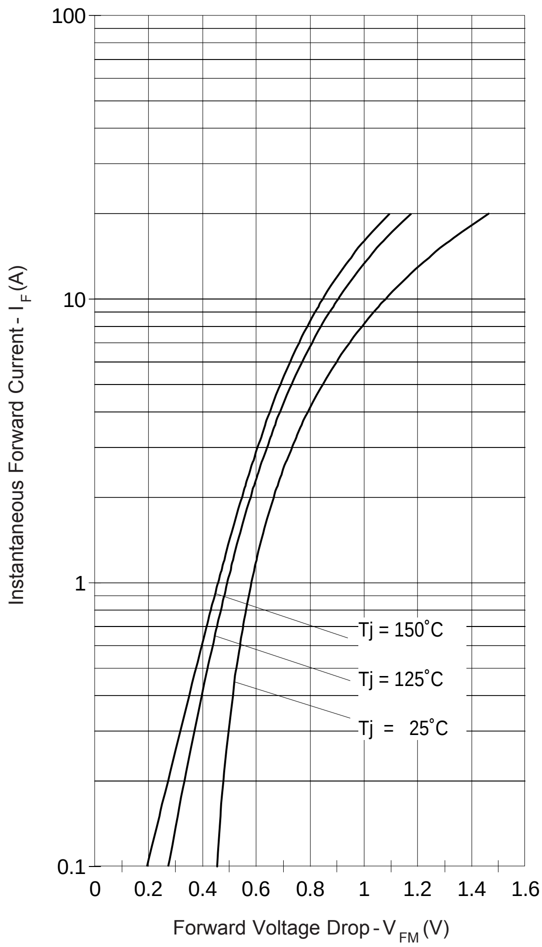


Fig. 1 - Max. Forward Voltage Drop Characteristics

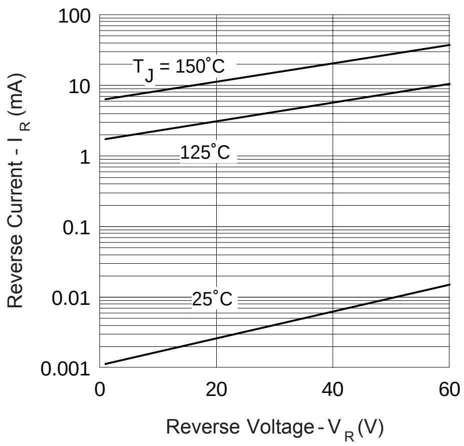


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage

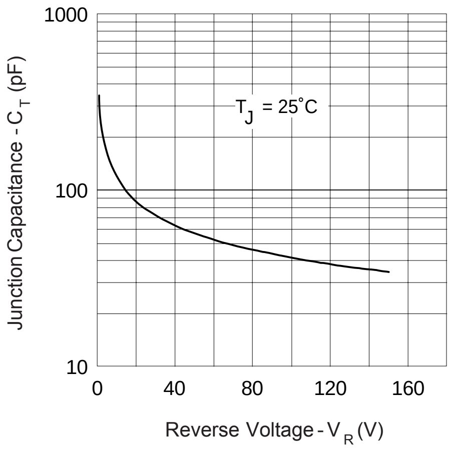


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

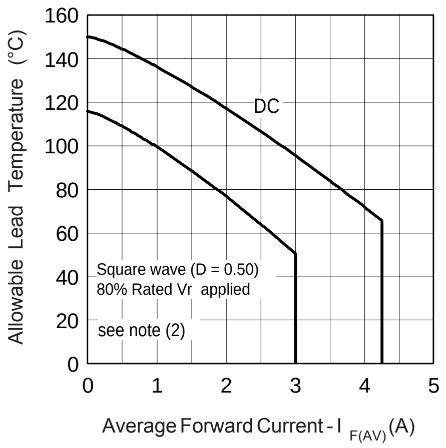


Fig. 4 - Max. Allowable Lead Temperature Vs. Average Forward Current

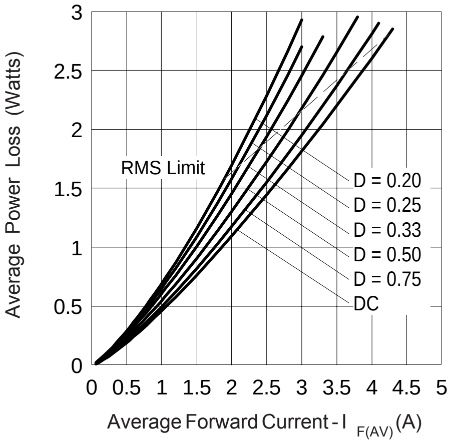


Fig. 5- Forward Power Loss Characteristics

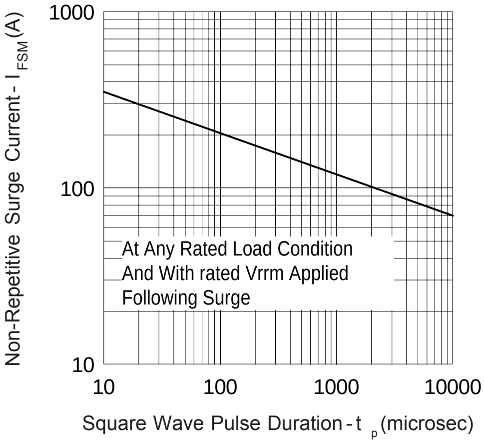


Fig. 6 - Max. Non-Repetitive Surge Current

(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	3	60	TR
1	2	3	4

1 - Schottky MBR Series
2 - Current Rating: 3 = 3A
3 - Voltage Rating: 40 = 40V, 60 = 60V
4 - TR = Tape & Reel package (1200 pcs)
 - = Box package (500 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.

International
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