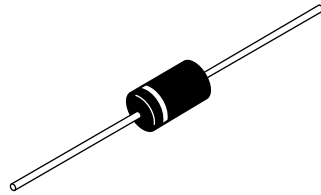


Schottky Rectifier, 3 A


C-16


FEATURES

- Low profile, axial leaded outline
- Very low forward voltage drop
- High frequency operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability
- Lead (Pb)-free plating
- Designed and qualified for industrial level


RoHS
COMPLIANT

DESCRIPTION

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, freewheeling diodes, and reverse battery protection.

PRODUCT SUMMARY

$I_{F(AV)}$	3 A
V_R	50/60 V
V_F at 3 A at 25 °C	0.73 V
I_{RM}	15 mA at 125 °C

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	3.0	A
V_{RRM}		50/60	V
I_{FSM}	$t_p = 5 \mu s$ sine	460	A
V_F	3 Apk, $T_J = 25 \text{ }^\circ\text{C}$	0.73	V
T_J		- 40 to 150	$^\circ\text{C}$

VOLTAGE RATINGS

PARAMETER	SYMBOL	MBR350	MBR360	UNITS
Maximum DC reverse voltage	V_R	50	60	V
Maximum working peak reverse voltage	V_{RWM}			

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current See fig. 4	$I_{F(AV)}$	50 % duty cycle at $T_L = 50 \text{ }^\circ\text{C}$, rectangular waveform	3.0	A
Maximum peak one cycle non-repetitive surge current See fig. 6	I_{FSM}	5 μs sine or 3 μs rect. pulse	460	
		10 ms sine or 6 ms rect. pulse	80	
Non-repetitive avalanche energy	E_{AS}	$T_J = 25 \text{ }^\circ\text{C}$, $I_{AS} = 1 \text{ A}$, $L = 10 \text{ mH}$	5.0	mJ
Repetitive avalanche current	I_{AR}	Current decaying linearly to zero in 1 μs Frequency limited by, T_J maximum $V_A = 1.5 \times V_R$ typical	1.0	A

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	$V_{FM}^{(1)}$	1.0 A	$T_J = 25\text{ }^\circ\text{C}$	0.58	V
		3.0 A		0.73	
		9.4 A		1.06	
		1.0 A	$T_J = 125\text{ }^\circ\text{C}$	0.49	
		3.0 A		0.64	
		9.4 A		0.89	
Maximum reverse leakage current See fig. 2	$I_{RM}^{(1)}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	0.6	mA
		$T_J = 100\text{ }^\circ\text{C}$		8	
		$T_J = 125\text{ }^\circ\text{C}$		15	
Typical junction capacitance	C_T	$V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C		190	pF
Typical series inductance	L_S	Measured lead to lead 5 mm from package body		9.0	nH
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	V/ μ s

Note

(1) Pulse width < 300 μ s, duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction and storage temperature range	$T_J^{(1)}, T_{Stg}$			- 40 to 150	$^\circ\text{C}$
Maximum thermal resistance, junction to lead	$R_{thJL}^{(2)}$	DC operation See fig. 4		30	$^\circ\text{C}/\text{W}$
Approximate weight				1.2	g
				0.042	oz.
Marking device		Case style C-16		MBR350	
				MBR360	

Notes

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

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

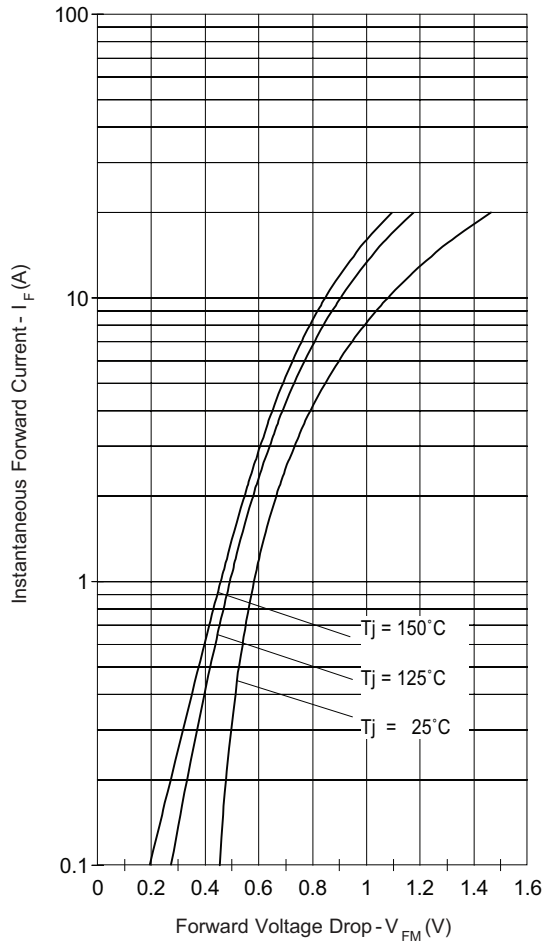


Fig. 1 - Maximum Forward Voltage Drop Characteristics

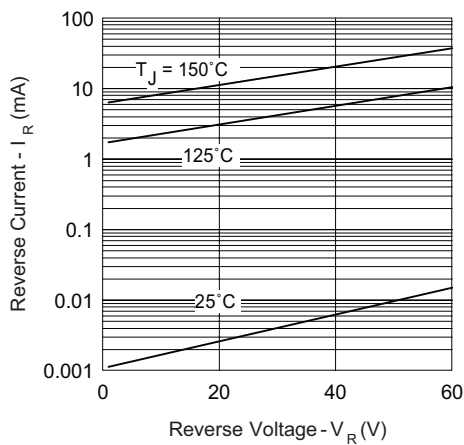


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

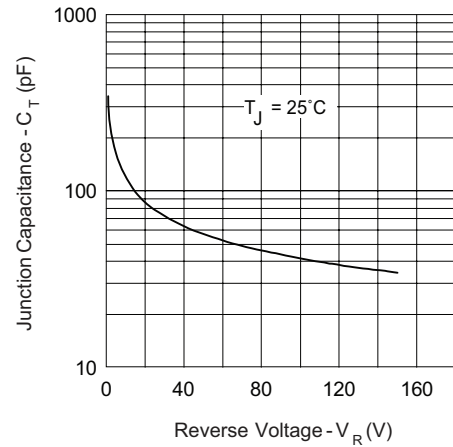


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

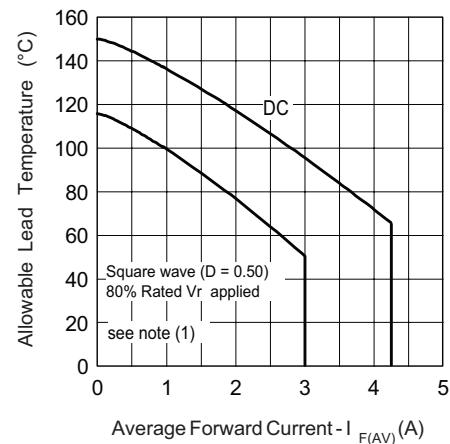


Fig. 4 - Maximum Allowable Lead Temperature vs. Average Forward Current

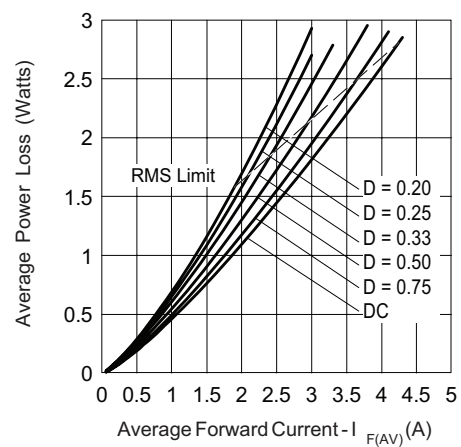


Fig. 5 - Forward Power Loss Characteristics

Note

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

Pd = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6); Pd_{REV} = Inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at $V_{R1} = 80\%$ rated V_R

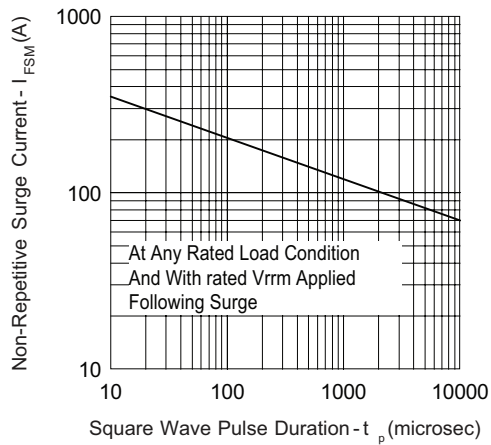


Fig. 6 - Maximum Non-Repetitive Surge Current

ORDERING INFORMATION TABLE

Device code	MBR	3	60	TR		
	①	②	③	④		
	1	-	Schottky MBR series			
	2	-	Current rating: 3 = 3 A			
	3	-	Voltage rating	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>50 = 50 V</td> </tr> <tr> <td>60 = 60 V</td> </tr> </table>	50 = 50 V	60 = 60 V
50 = 50 V						
60 = 60 V						
	4	-	TR = Tape and reel package (1200 pcs)			
			None = Box package (500 pcs)			

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95242
Part marking information	http://www.vishay.com/doc?95304
Packaging information	http://www.vishay.com/doc?95309



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