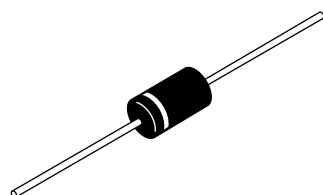


Schottky Rectifier, 1 A


DO-204AL


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

PRODUCT SUMMARY

$I_{F(AV)}$	1 A
V_R	100 V

DESCRIPTION

The MBR1100 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.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	1.0	A
V_{RRM}		100	V
I_{FSM}	$t_p = 5 \mu s$ sine	200	A
V_F	1 Apk, $T_J = 125^\circ C$	0.68	V
T_J	Range	- 40 to 150	$^\circ C$

VOLTAGE RATINGS

PARAMETER	SYMBOL	MBR1100	UNITS
Maximum DC reverse voltage	V_R	100	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 $T_C = 85^\circ C$, rectangular waveform	10	A
Maximum peak one cycle non-repetitive surge current See fig. 6	I_{FSM}	5 μs sine or 3 μs rect. pulse	200	
		10 ms sine or 6 ms rect. pulse	50	
Non-repetitive avalanche energy	E_{AS}	$T_J = 25^\circ C$, $I_{AS} = 0.5$ A, $L = 8$ mH	1.0	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	0.5	A

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	$V_{FM}^{(1)}$	1 A	$T_J = 25\text{ }^{\circ}\text{C}$	0.85	V
		2 A		0.96	
		1 A	$T_J = 125\text{ }^{\circ}\text{C}$	0.68	
		2 A		0.78	
Maximum reverse leakage current See fig. 2	$I_{RM}^{(1)}$	$T_J = 25\text{ }^{\circ}\text{C}$	$V_R = \text{Rated } V_R$	0.5	mA
		$T_J = 125\text{ }^{\circ}\text{C}$		1.0	
Typical junction capacitance	C_T	$V_R = 5\text{ }V_{DC}$, (test signal range 100 kHz to 1 MHz) $25\text{ }^{\circ}\text{C}$		35	pF
Typical series inductance	L_S	Measured lead to lead 5 mm from package body		8.0	nH
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	V/μs

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	°C
Maximum thermal resistance, junction to lead	$R_{thJL}^{(2)}$	DC operation See fig. 4	80	°C/W
Approximate weight			0.33	g
			0.012	oz.
Marking device		Case style DO-204AL (DO-41) (JEDEC)	MBR1100	

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

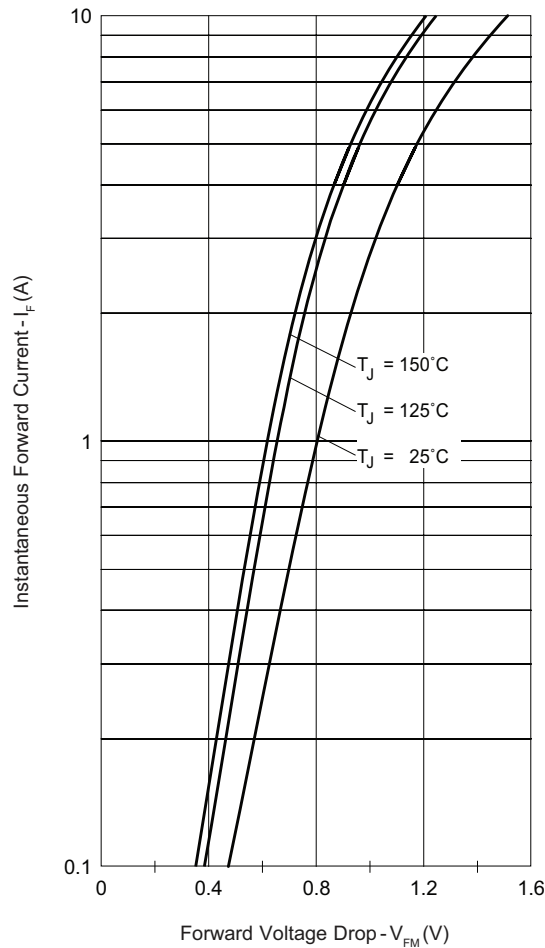


Fig. 1 - Maximum Forward Voltage Drop Characteristics

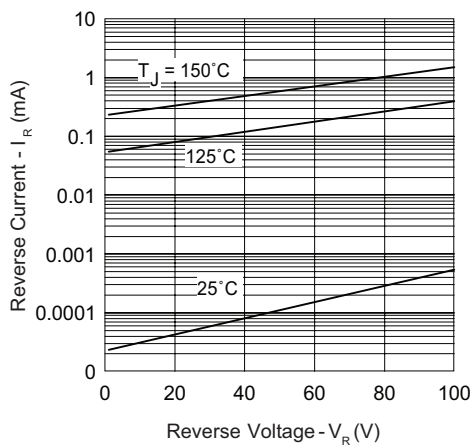


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

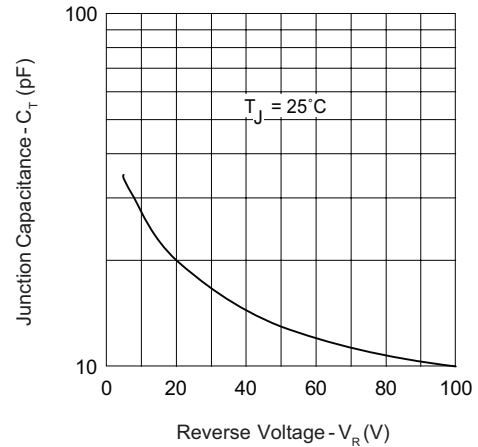


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

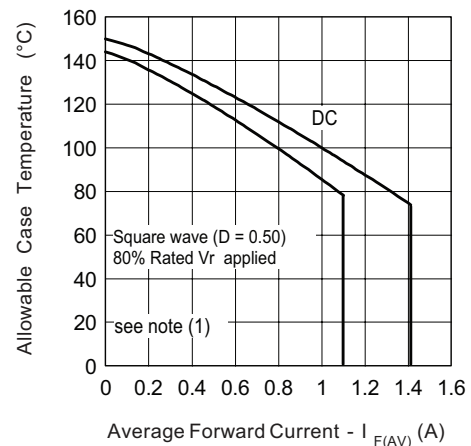


Fig. 4 - Maximum Allowable Case Temperature vs. Average Forward Current

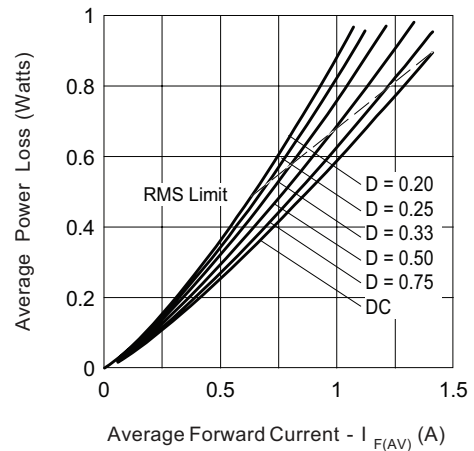


Fig. 5 - Forward Power Loss Characteristics

Note

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

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

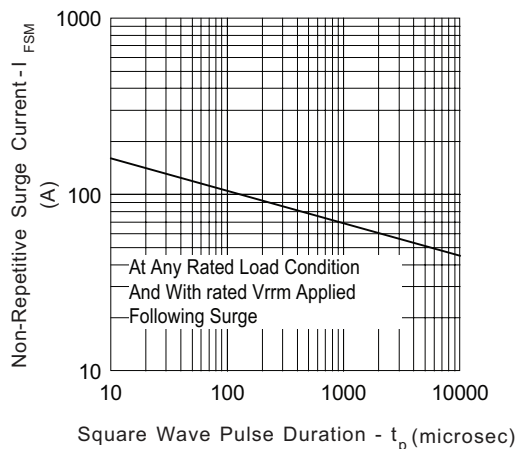


Fig. 6 - Maximum Non-Repetitive Surge Current

ORDERING INFORMATION TABLE

Device code

MBR	1	100	TR
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① ② ③ ④

- 1** - Schottky MBR series
- 2** - Current rating: 1 = 1 A
- 3** - Voltage rating: 100 = 100 V
- 4** - TR = Tape and reel package (5000 pcs)
None = Box package (1000 pcs)

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95241
Part marking information	http://www.vishay.com/doc?95304
Packaging information	http://www.vishay.com/doc?95308



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