

# MBR3100

Preferred Device

## Axial Lead Rectifier

...employing the Schottky Barrier principle in a large area metal-to-silicon power diode. State-of-the-art geometry features epitaxial construction with oxide passivation and metal overlap contact. Ideally suited for use as rectifiers in low-voltage, high-frequency inverters, free wheeling diodes, and polarity protection diodes.

- Low Reverse Current
- Low Stored Charge, Majority Carrier Conduction
- Low Power Loss/High Efficiency
- Highly Stable Oxide Passivated Junction
- Guard-Ring for Stress Protection
- Low Forward Voltage
- 150°C Operating Junction Temperature
- High Surge Capacity

### Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 1.1 gram (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 220°C Max. for 10 Seconds, 1/16" from case
- Shipped in plastic bags, 500 per bag
- Available Tape and Reeled, 1500 per reel, by adding a "RL" suffix to the part number
- Polarity: Cathode indicated by Polarity Band
- Marking: B3100

### MAXIMUM RATINGS

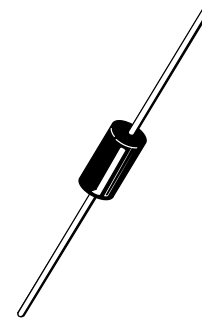
Rating	Symbol	Max	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	100	V
Average Rectified Forward Current $T_A = 100^\circ\text{C}$ ( $R_{\theta JA} = 28^\circ\text{C/W}$ , P.C. Board Mounting, see Note 2.)	$I_O$	3.0	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	$I_{FSM}$	150	A
Operating and Storage Junction Temperature Range (Reverse Voltage Applied)	$T_J, T_{stg}$	-65 to +150	°C
Voltage Rate of Change (Rated $V_R$ )	$dv/dt$	10	V/ns



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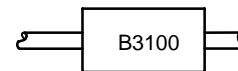
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**SCHOTTKY BARRIER  
RECTIFIER  
3.0 AMPERES  
100 VOLTS**



AXIAL LEAD  
CASE 267-03  
STYLE 1

### MARKING DIAGRAM



B3100 = Device Code

### ORDERING INFORMATION

Device	Package	Shipping
MBR3100	Axial Lead	500 Units/Bag
MBR3100RL	Axial Lead	1500/Tape & Reel

Preferred devices are recommended choices for future use and best overall value.

# MBR3100

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient (see Note 2., Mounting Method 3)	$R_{\theta JA}$	28	$^{\circ}C/W$

## ELECTRICAL CHARACTERISTICS ( $T_L = 25^{\circ}C$ unless otherwise noted)

Characteristic	Symbol	Max	Unit
Maximum Instantaneous Forward Voltage (Note 1.) ( $i_F = 3.0$ Amps, $T_L = 25^{\circ}C$ ) ( $i_F = 3.0$ Amps, $T_L = 100^{\circ}C$ )	$V_F$	0.79 0.69	V
Maximum Instantaneous Reverse Current @ Rated dc Voltage (Note 1.) $T_L = 25^{\circ}C$ $T_L = 100^{\circ}C$	$i_R$	0.6 20	mA

1. Pulse Test: Pulse Width = 300  $\mu s$ , Duty Cycle = 2.0%.

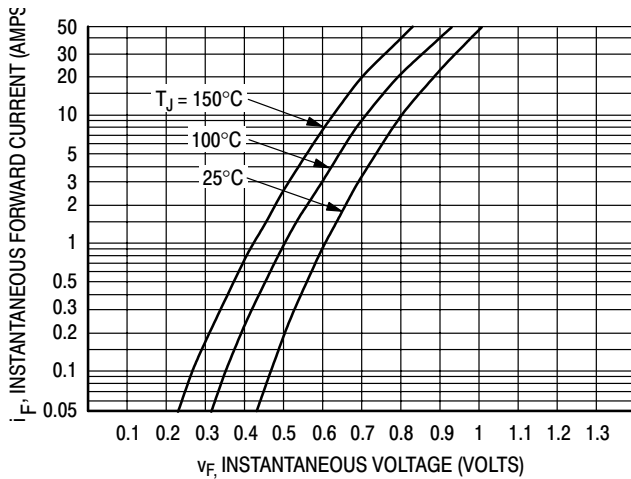


Figure 1. Typical Forward Voltage

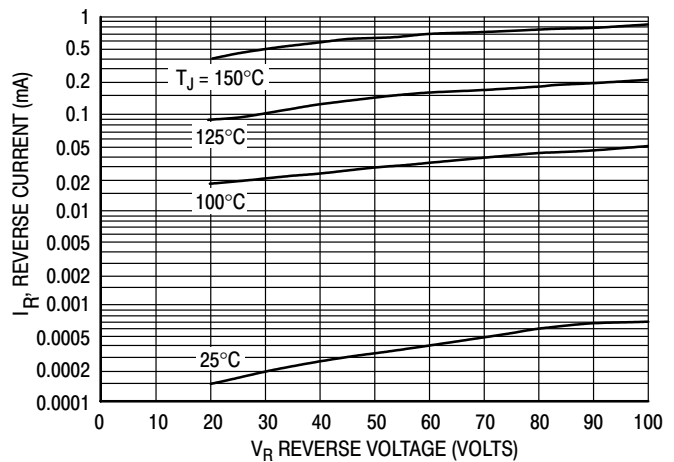


Figure 2. Typical Reverse Current\*

\*The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these curves if  $V_R$  is sufficient below rated  $V_R$ .

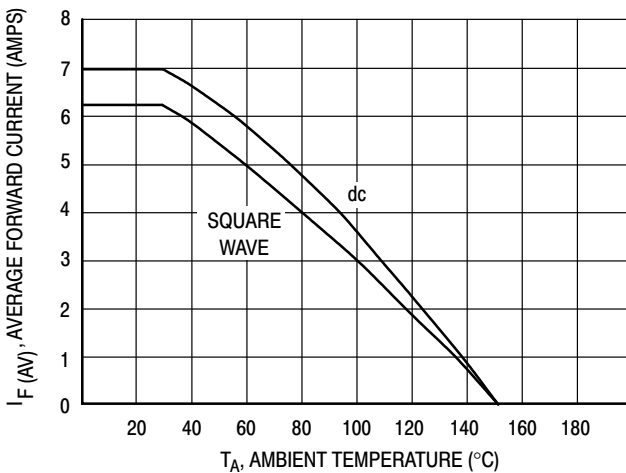


Figure 3. Current Derating  
(Mounting Method #3 per Note 2.)

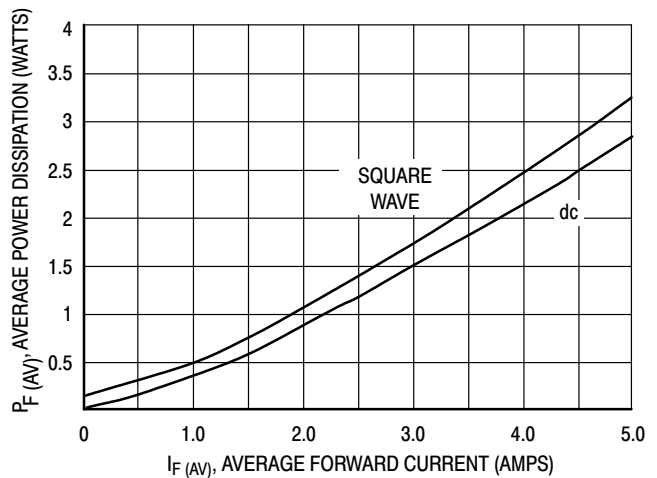
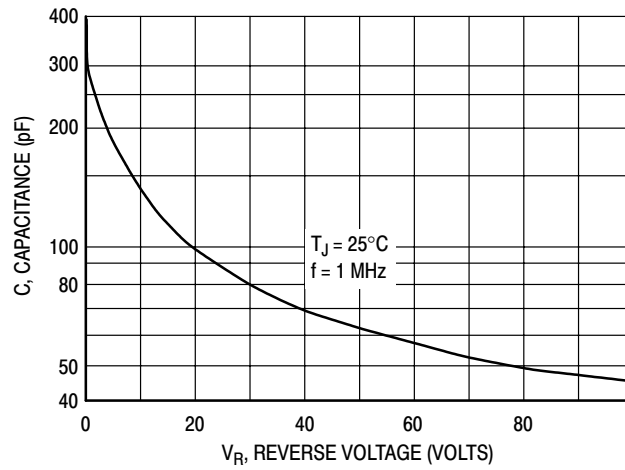


Figure 4. Power Dissipation

# MBR3100



**Figure 5. Typical Capacitance**

## NOTE 2. — MOUNTING DATA

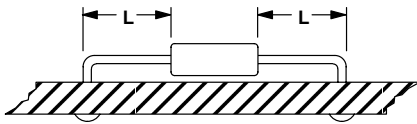
Data shown for thermal resistance junction-to-ambient ( $R_{\theta JA}$ ) for the mountings shown is to be used as typical guideline values for preliminary engineering, or in case the tie point temperature cannot be measured.

### TYPICAL VALUES FOR $R_{\theta JA}$ IN STILL AIR

Mounting Method	Lead Length, L (in)				$R_{\theta JA}$
	1/8	1/4	1/2	3/4	
1	50	51	53	55	$^{\circ}C/W$
2	58	59	61	63	$^{\circ}C/W$
3	28				$^{\circ}C/W$

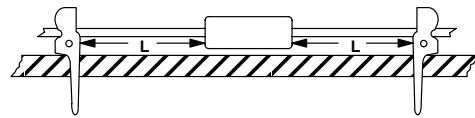
### Mounting Method 1

P.C. Board where available copper surface is small.



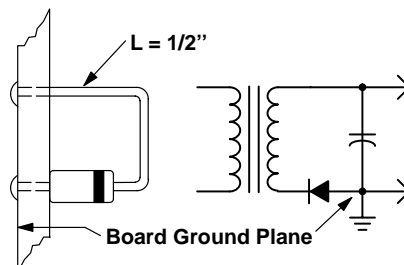
### Mounting Method 2

Vector Push-In  
Terminals T-28



### Mounting Method 3

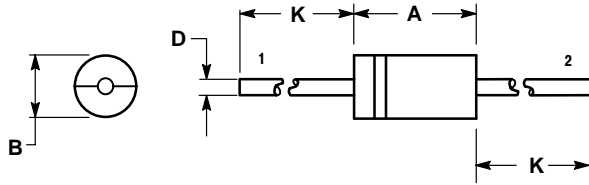
P.C. Board with  
2-1/2" X 2-1/2"  
copper surface.



# MBR3100

## PACKAGE DIMENSIONS

### AXIAL LEAD CASE 267-03 ISSUE G



#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.370	0.380	9.40	9.65
B	0.190	0.210	4.83	5.33
D	0.048	0.052	1.22	1.32
K	1.000	---	25.40	---

#### STYLE 1:

- PIN 1. CATHODE (POLARITY BAND)
- PIN 2. ANODE

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