

# 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

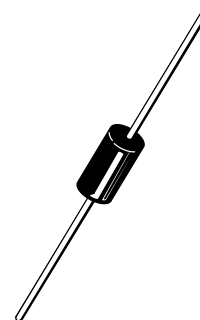
Rating	Symbol	Max	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	100	V
Average Rectified Forward Current $T_A = 100^\circ\text{C}$ ( $R_{\theta JA} = 28^\circ\text{C/W}$ , P.C. Board Mounting, see Note 2)	$I_O$	3.0	A
Non-Repetitive Peak 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



ON Semiconductor®

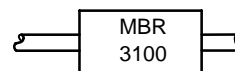
<http://onsemi.com>

**SCHOTTKY BARRIER  
RECTIFIER  
3.0 AMPERES  
100 VOLTS**



AXIAL LEAD  
CASE 267-05  
(DO-201AD)  
STYLE 1

### MARKING DIAGRAM



MBR3100 = 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%.

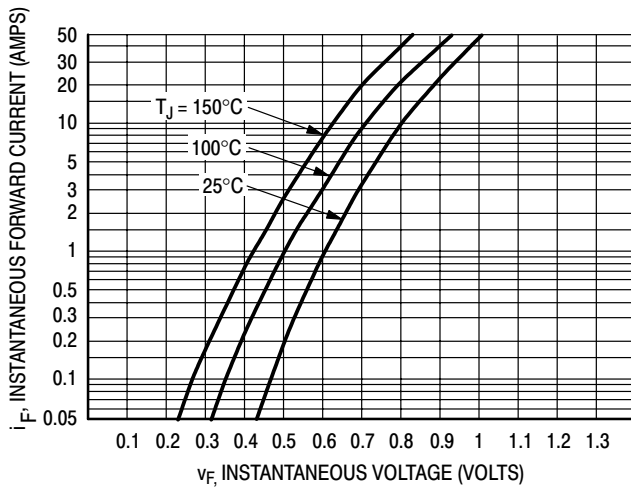


Figure 1. Typical Forward Voltage

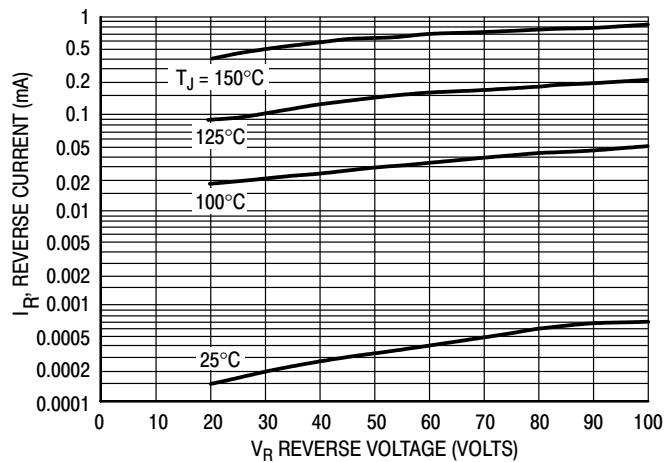


Figure 2. Typical Reverse Current\*

\*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  $V_R$ .

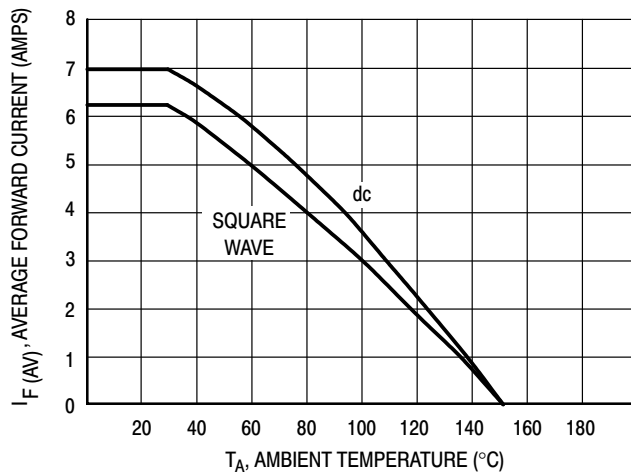


Figure 3. Current Derating  
(Mounting Method #3 per Note 2)

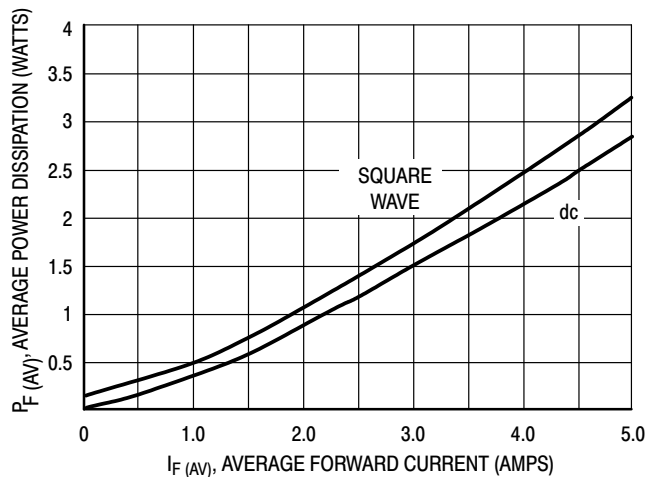
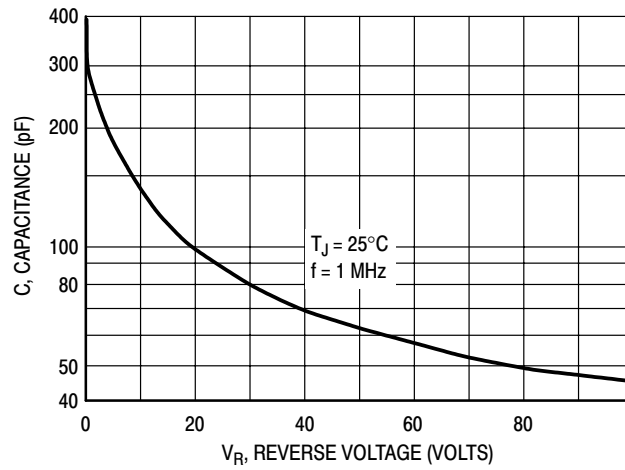


Figure 4. Power Dissipation

# MBR3100



**Figure 5. Typical Capacitance**

## NOTE 2 — MOUNTING DATA

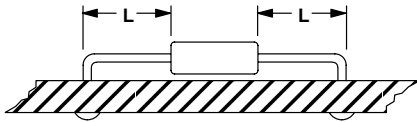
Data shown for thermal resistance junction-to-ambient ( $R_{\theta JA}$ ) for the mountings shown is to be used as typical guideline values for preliminary engineering, or in case the tie point temperature cannot be measured.

### 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				$^{\circ}C/W$

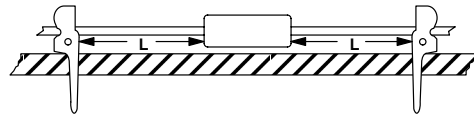
### Mounting Method 1

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



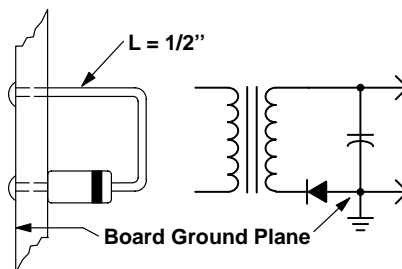
### Mounting Method 2

Vector Push-In Terminals T-28



### Mounting Method 3

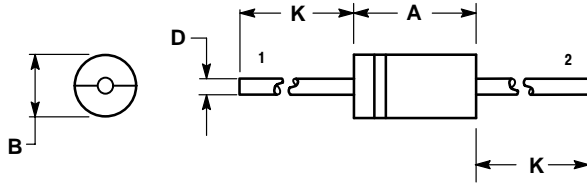
P.C. Board with 2-1/2" X 2-1/2" copper surface.



# MBR3100

## PACKAGE DIMENSIONS


AXIAL LEAD  
CASE 267-05  
(DO-201AD)  
ISSUE G



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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.287	0.374	7.30	9.50
B	0.189	0.209	4.80	5.30
D	0.047	0.051	1.20	1.30
K	1.000	---	25.40	---

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

ON Semiconductor and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer.

## PUBLICATION ORDERING INFORMATION

### Literature Fulfillment:

Literature Distribution Center for ON Semiconductor  
P.O. Box 5163, Denver, Colorado 80217 USA  
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
Email: ONlit@hibbertco.com

N. American Technical Support: 800-282-9855 Toll Free USA/Canada

JAPAN: ON Semiconductor, Japan Customer Focus Center  
2-9-1 Kamimeguro, Meguro-ku, Tokyo, Japan 153-0051  
Phone: 81-3-5773-3850

ON Semiconductor Website: <http://onsemi.com>

For additional information, please contact your local Sales Representative.