

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

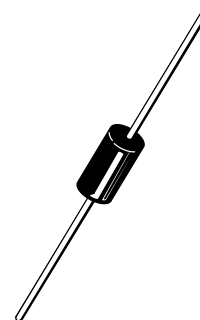
| Rating | Symbol | Max | Unit |
|---|---------------------------------|-------------|------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 100 | V |
| Average Rectified Forward Current $T_A = 100^\circ\text{C}$ ($R_{\theta JA} = 28^\circ\text{C/W}$, 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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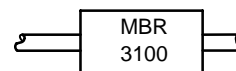
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**SCHOTTKY BARRIER
RECTIFIER
3.0 AMPERES
100 VOLTS**



AXIAL LEAD
CASE 267-05
(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 μs , Duty Cycle = 2.0%.

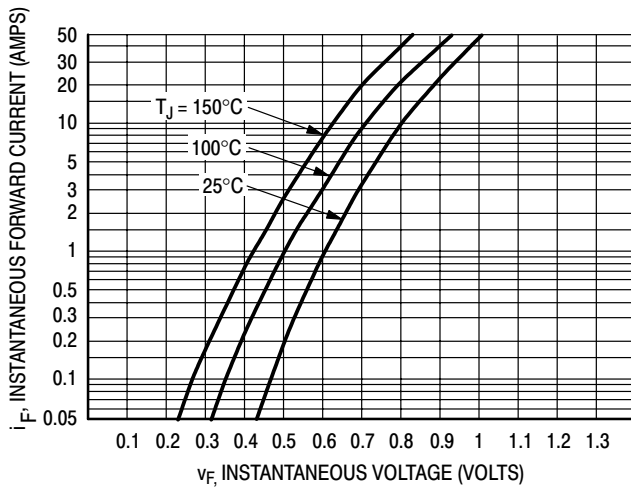


Figure 1. Typical Forward Voltage

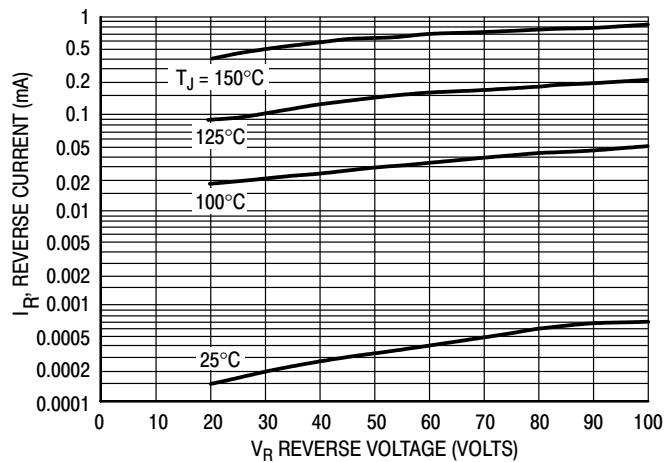


Figure 2. Typical Reverse Current*

*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 .

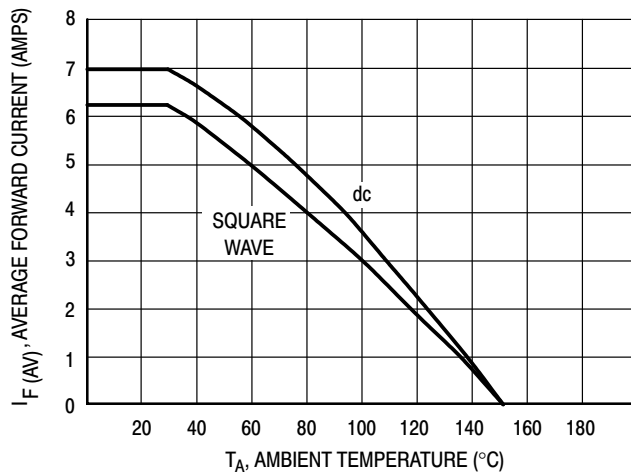


Figure 3. Current Derating
(Mounting Method #3 per Note 2)

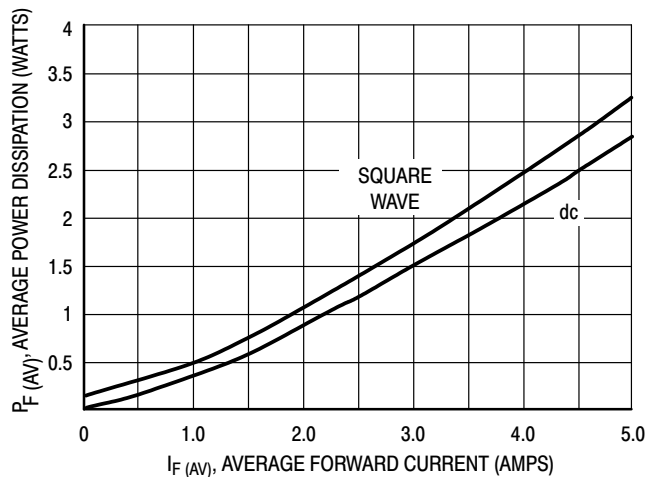


Figure 4. Power Dissipation

MBR3100

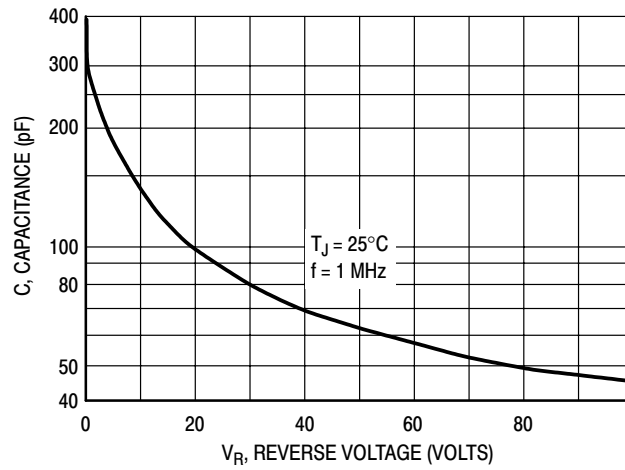


Figure 5. Typical Capacitance

NOTE 2 — MOUNTING DATA

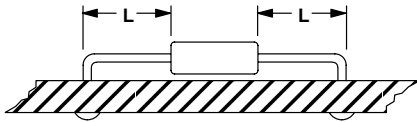
Data shown for thermal resistance junction-to-ambient ($R_{\theta JA}$) for the mountings shown is to be used as typical guideline values for preliminary engineering, or in case the tie point temperature cannot be measured.

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

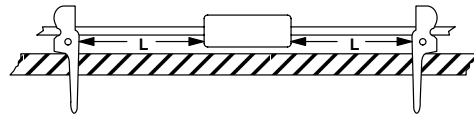
Mounting Method 1

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



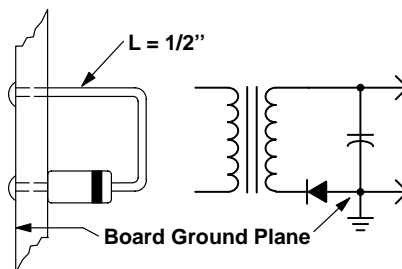
Mounting Method 2

Vector Push-In Terminals T-28



Mounting Method 3

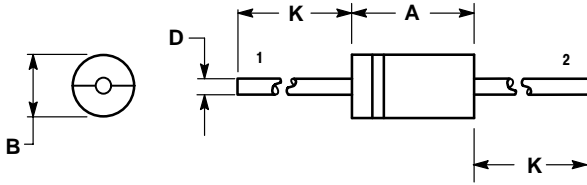
P.C. Board with 2-1/2" X 2-1/2" copper surface.



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)
- PIN 2. ANODE

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