MBR3100

Preferred Device

Axial Lead Rectifier

This device employs 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.

Features

- 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
- 175°C Operating Junction Temperature
- High Surge Capacity
- Pb−Free Packages are Available*

Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 1.1 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Polarity: Cathode indicated by Polarity Band

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°C ($R_{\theta JA}$ = 28°C/W, Refer to P.C. Board Mounting, Note 3)	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 (Note 1) (Reverse Voltage Applied)	T_J, T_{stg}	−65 to +175	°C
Voltage Rate of Change (Rated V_R)	dv/dt	10	V/ns

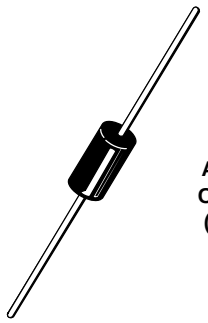
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. The heat generated must be less than the thermal conductivity from Junction−to−Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

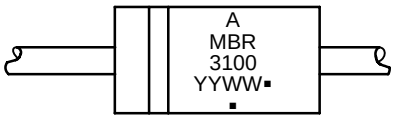
ON Semiconductor®

SCHOTTKY BARRIER RECTIFIER 3.0 AMPERES, 100 VOLTS



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

MARKING DIAGRAM



A = Assembly Location
YY = Year
WW = Work Week
▪ = Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
MBR3100	Axial Lead	500 Units / Bag
MBR3100G	Axial Lead (Pb−Free)	500 Units / Bag
MBR3100RL	Axial Lead	1500/Tape & Reel
MBR3100RLG	Axial Lead (Pb−Free)	1500/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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

THERMAL CHARACTERISTICS

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

ELECTRICAL CHARACTERISTICS (T_L = 25°C unless otherwise noted)

Characteristic	Symbol	Max	Unit
Maximum Instantaneous Forward Voltage (Note 2) (i_F = 3.0 Amps, T_L = 25°C) (i_F = 3.0 Amps, T_L = 100°C)	v_F	 0.79 0.69	V
Maximum Instantaneous Reverse Current @ Rated dc Voltage (Note 2) T_L = 25°C T_L = 100°C	i_R	 0.6 20	mA

2. Pulse Test: Pulse Width = 300 μs, Duty Cycle = 2.0%.

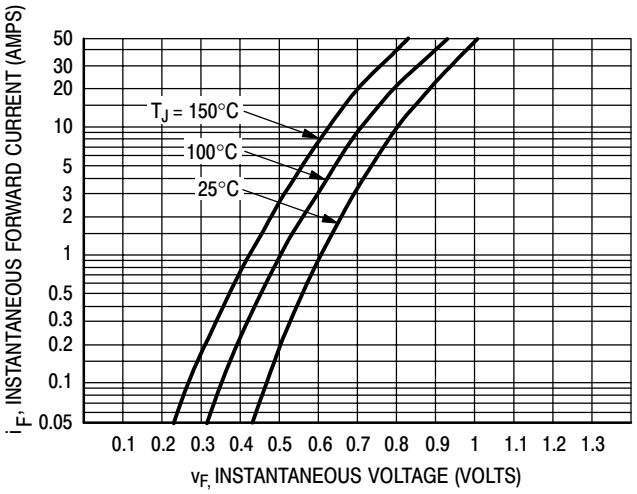


Figure 1. Typical Forward Voltage

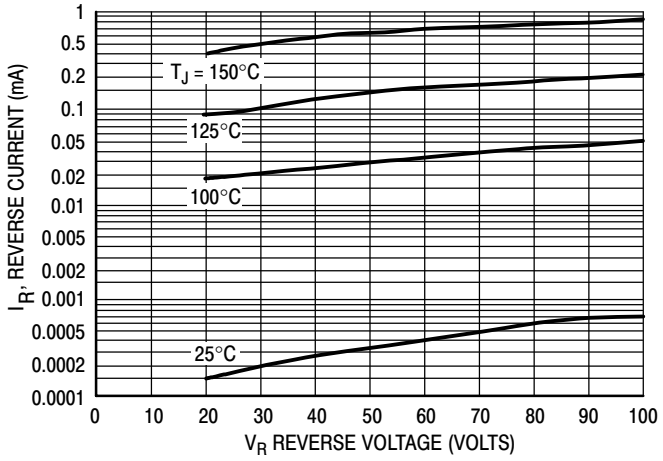


Figure 2. Typical Reverse Current*

*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.

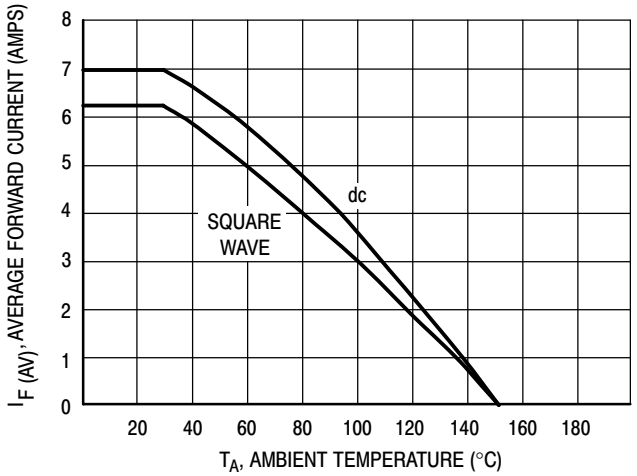


Figure 3. Current Derating (Mounting Method #3 per Note 3)

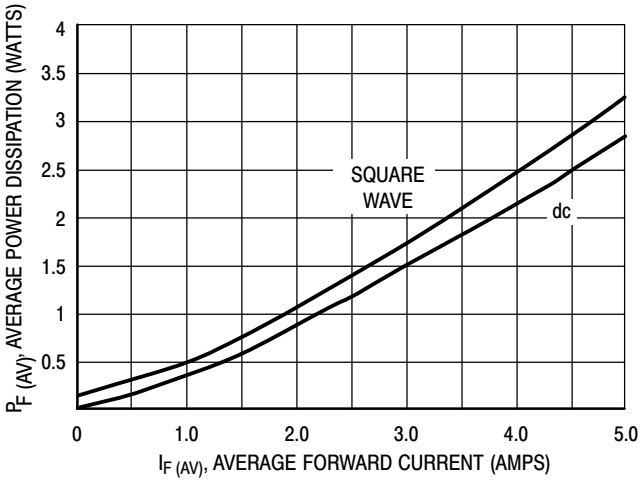


Figure 4. Power Dissipation

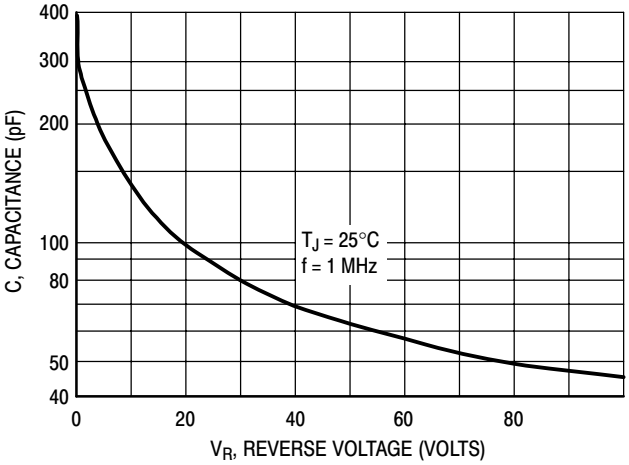


Figure 5. Typical Capacitance

NOTE 3 — MOUNTING DATA

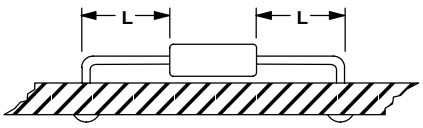
Data shown for thermal resistance junction−to−ambient ($R_{\theta JA}$) for the mountings shown is to be used as typical guideline values for preliminary engineering, or in case the tie point temperature cannot be measured.

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	°C/W
2	58	59	61	63	°C/W
3	28				°C/W

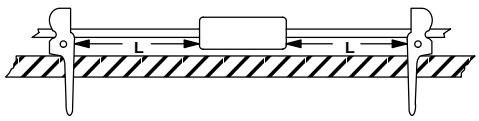
Mounting Method 1

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



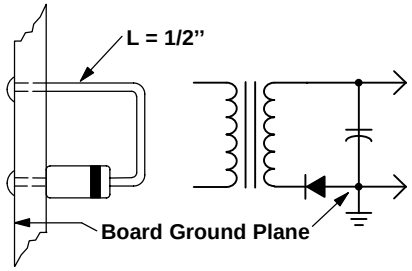
Mounting Method 2

Vector Push−In Terminals T−28



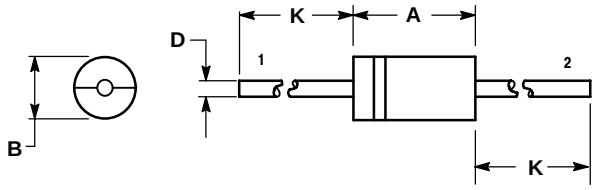
Mounting Method 3

P.C. Board with 2−1/2″ X 2−1/2″ copper surface.



PACKAGE DIMENSIONS

AXIAL LEAD
CASE 267−05
ISSUE G



NOTES:
1. DIMENSIONS AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. 267−04 OBSOLETE, NEW STANDARD 267−05.

	INCHES		MILLIMETERS	
DIM	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