

## Axial Lead Rectifiers

... 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

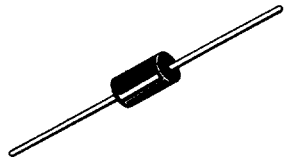
### Mechanical Characteristics:

- 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, 5,000 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: B370, B380, B390, B3100

**MBR370**  
**MBR380**  
**MBR390**  
**MBR3100**

MBR3100 is a  
Motorola Preferred Device

**SCHOTTKY BARRIER  
RECTIFIERS**  
**3.0 AMPERES**  
**70, 80, 90, 100 VOLTS**



**CASE 267-03  
PLASTIC**

### MAXIMUM RATINGS

Rating	Symbol	MBR370	MBR380	MBR390	MBR3100	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	70	80	90	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 1)	$I_O$	3.0				A
Non-Repetitive Peak Surge Current (Surge applied at rated load conditions, half wave, single phase, 60 Hz)	$I_{FSM}$	150				A
Operating and Storage Junction Temperature Range (Reverse Voltage applied)	$T_J, T_{stg}$	-65 to +150				$^\circ\text{C}$
Voltage Rate of Change (Rated $V_R$ )	$dv/dt$	10				V/ns

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient (see Note 1, Mounting Method 3)	$R_{\theta JA}$	28	$^\circ\text{C/W}$

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

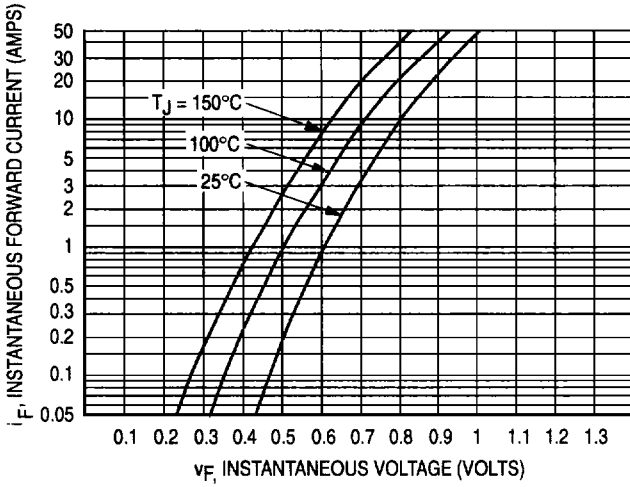
Characteristic	Symbol	Max	Unit
Maximum Instantaneous Forward Voltage* ( $i_F = 3$ Amps, $T_L = 25^\circ\text{C}$ ) ( $i_F = 3$ Amps, $T_L = 100^\circ\text{C}$ )	$v_F$	0.79 0.69	V
Maximum Instantaneous Reverse Current @ Rated dc Voltage* ( $T_L = 25^\circ\text{C}$ ) ( $T_L = 100^\circ\text{C}$ )	$i_R$	0.6 20	mA

\*Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

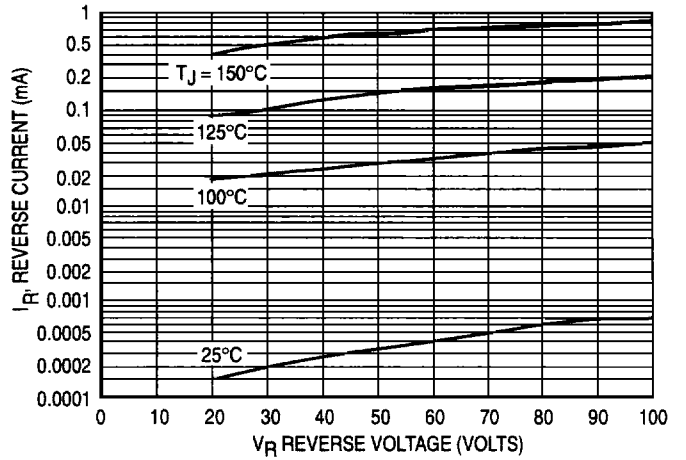
Preferred devices are Motorola recommended choices for future use and best overall value.

\*MOTOROLA\*

**MBR370 MBR380 MBR390 MBR3100**

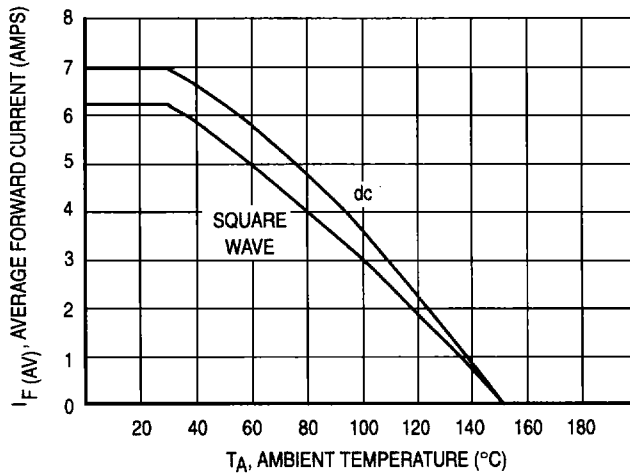


**Figure 1. Typical Forward Voltage**

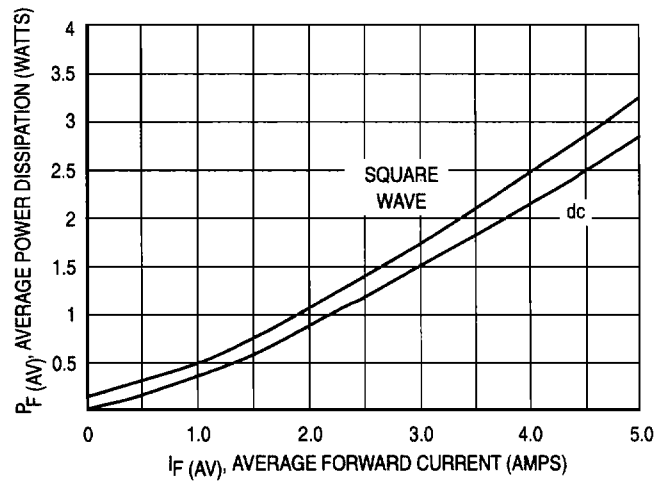


**Figure 2. Typical Reverse Current\***

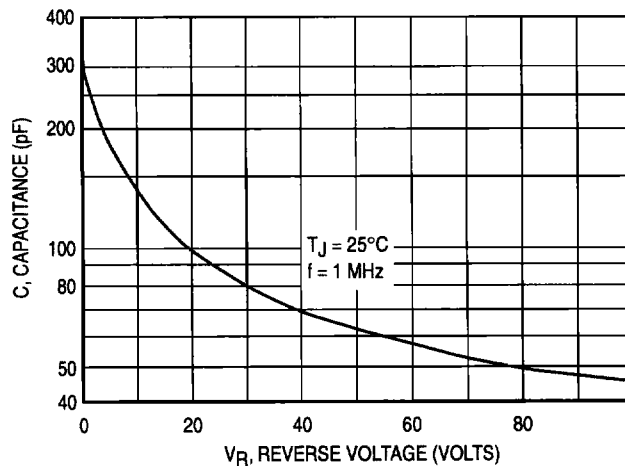
\*The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these curves if  $V_R$  is sufficient below rated  $V_R$ .



**Figure 3. Current Derating  
(Mounting method #3 per note 1)**



**Figure 4. Power Dissipation**



**Figure 5. Typical Capacitance**

**NOTE 1 — MOUNTING DATA**

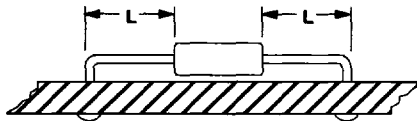
Data shown for thermal resistance junction-to-ambient ( $R_{\theta JA}$ ) for the mountings shown is to be used as typical guideline values for preliminary engineering, or in case the tie point temperature cannot be measured.

**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	$^{\circ}\text{C}/\text{W}$
2	58	59	61	63	$^{\circ}\text{C}/\text{W}$
3	28				$^{\circ}\text{C}/\text{W}$

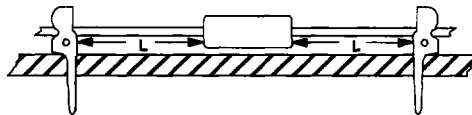
**Mounting Method 1**

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



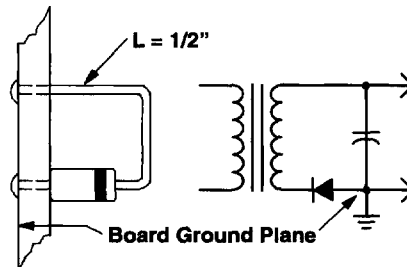
**Mounting Method 2**

Vector Push-In  
Terminals T-28

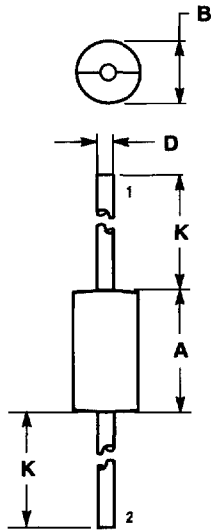


**Mounting Method 3**

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



**PACKAGE DIMENSIONS**



- 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  
 2. ANODE

**CASE 267-03  
 ISSUE C**

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