

# 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.

- Extremely Low  $v_F$
- Low Power Loss/High Efficiency
- Highly Stable Oxide Passivated Junction
- Low Stored Charge, Majority Carrier Conduction

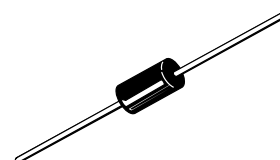
## Mechanical Characteristics:

- 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: B320, B330, B340, B350, B360

**MBR320**  
**MBR330**  
**MBR340**  
**MBR350**  
**MBR360**

MBR340 and MBR360 are  
Motorola Preferred Devices

**SCHOTTKY BARRIER  
RECTIFIERS**  
**3.0 AMPERES**  
**20, 30, 40, 50, 60 VOLTS**



**CASE 267-03  
PLASTIC**

## MAXIMUM RATINGS

Rating	Symbol	MBR320	MBR330	MBR340	MBR350	MBR360	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	20	30	40	50	60	V
Average Rectified Forward Current, $T_A = 65^\circ\text{C}$ ( $R_{\theta JA} = 28^\circ\text{C/W}$ , P.C. Board Mounting, see Note 3)	$I_O$	3.0					A
Non-Repetitive Peak Surge Current (2) (Surge applied at rated load conditions, half wave, single phase 60 Hz, $T_L = 75^\circ\text{C}$ )	$I_{FSM}$	80					A
Operating and Storage Junction Temperature Range (Reverse Voltage applied)	$T_J, T_{stg}$	- 65 to 150°C					°C
Peak Operating Junction Temperature (Forward Current applied)	$T_{J(pk)}$	150					°C

## 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 ( $T_L = 25^\circ\text{C}$ unless otherwise noted) (2)

Characteristic	Symbol	MBR320	MBR330	MBR340	MBR350	MBR360	Unit
Maximum Instantaneous Forward Voltage (1) ( $i_F = 1.0$ Amp) ( $i_F = 3.0$ Amp) ( $i_F = 9.4$ Amp)	$v_F$						V
		0.500			0.600		
		0.600			0.740		
		0.850			1.080		
Maximum Instantaneous Reverse Current @ Rated dc Voltage (1) $T_L = 25^{\circ}\text{C}$ $T_L = 100^{\circ}\text{C}$	$i_R$						mA
		0.60					
		20					

(1) Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle = 2.0%.

(2) Lead Temperature reference is cathode lead 1/32" from case.

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



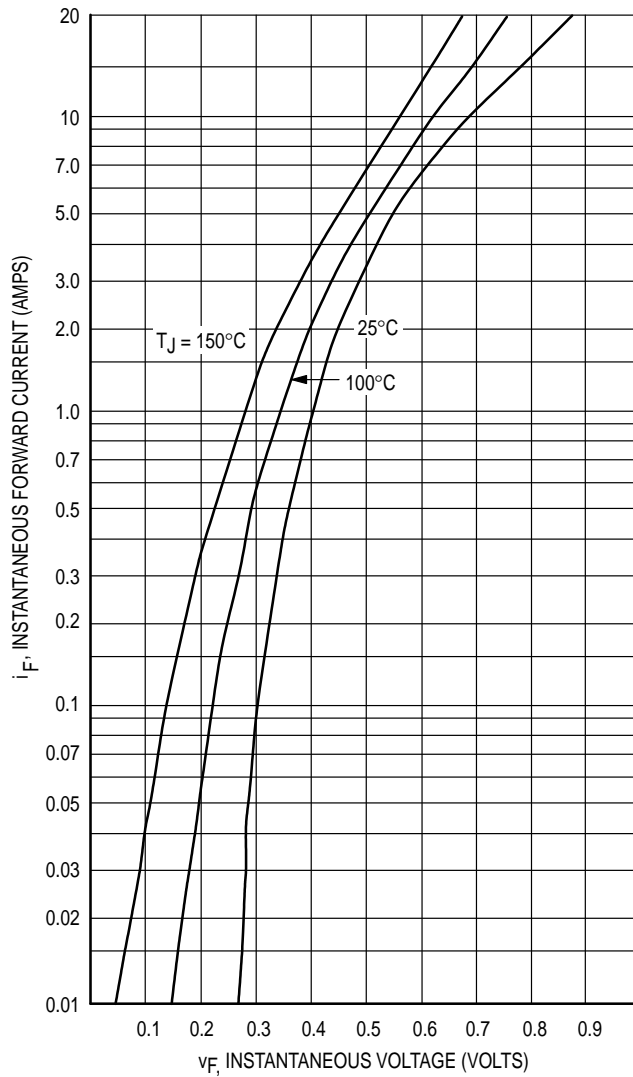


Figure 1. Typical Forward Voltage

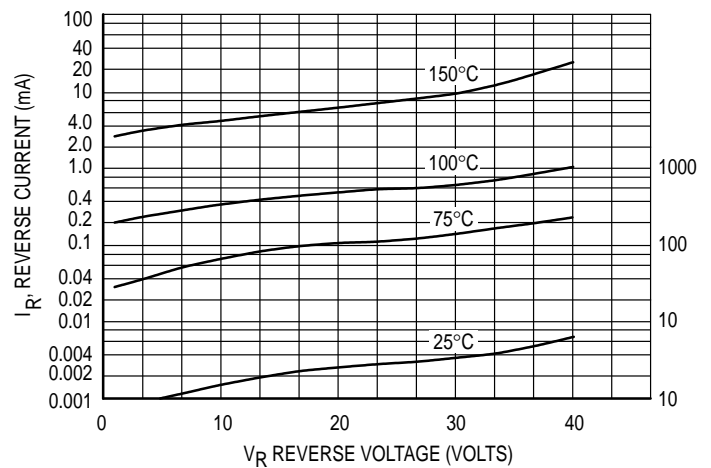


Figure 2. Typical Reverse Current\*

\*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 same curves if  $V_R$  is sufficiently below rated  $V_R$ .

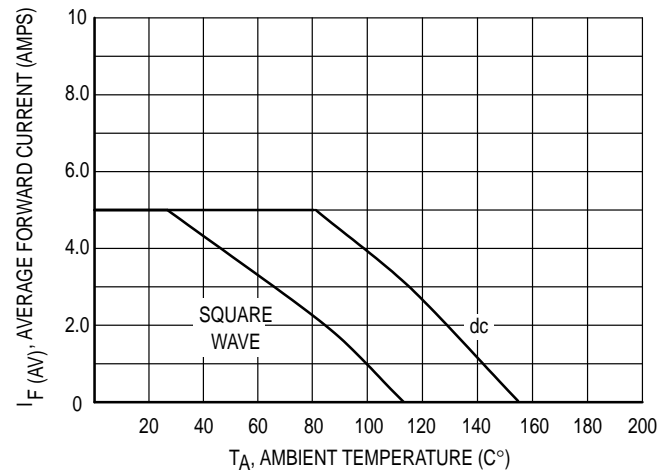


Figure 3. Current Derating  
(Mounting method #3 per note 1)

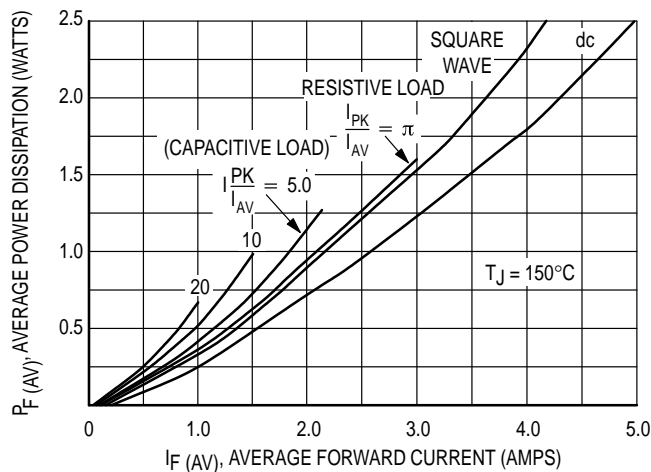


Figure 4. Power Dissipation

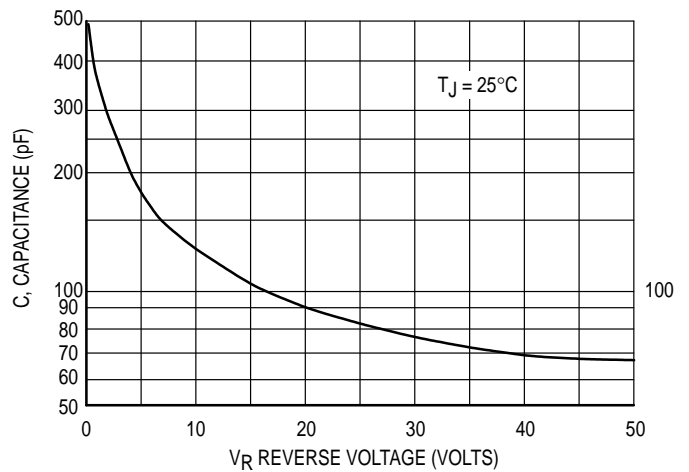


Figure 5. Typical Capacitance

MBR350 AND 360

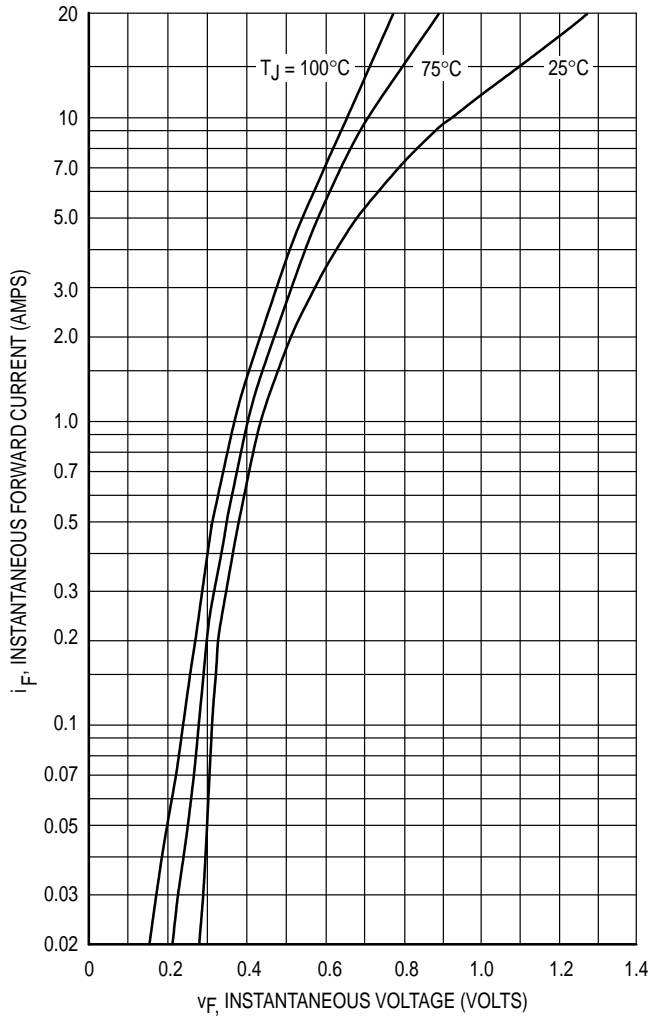


Figure 6. Typical Forward Voltage

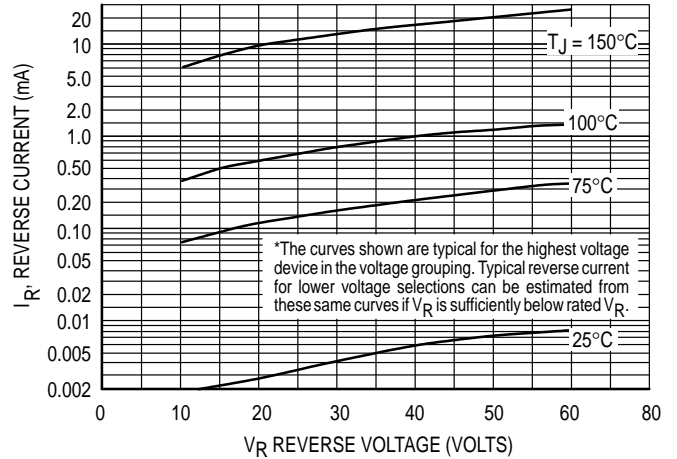


Figure 7. Typical Reverse Current\*

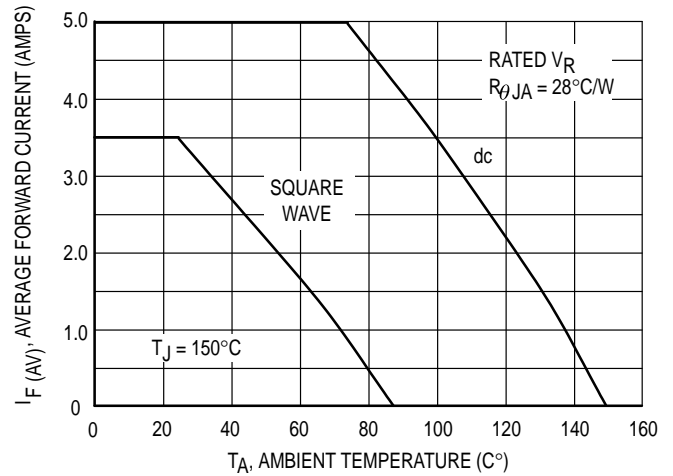


Figure 8. Current Derating Ambient (Mounting method #3 per note 1)

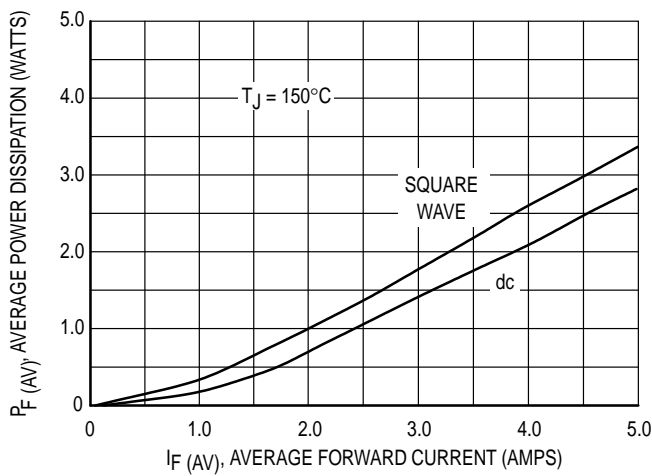


Figure 9. Power Dissipation

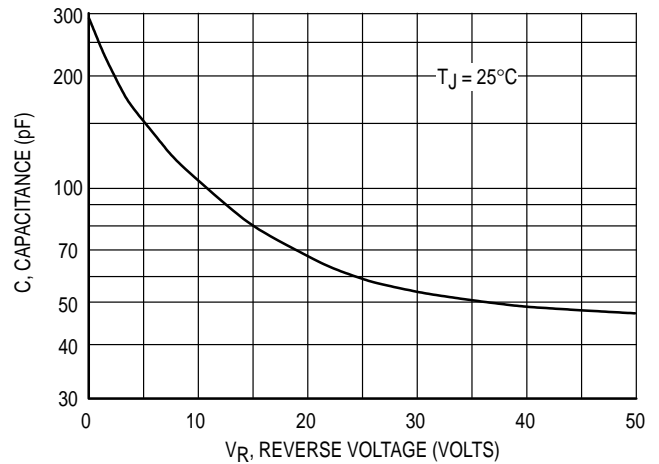


Figure 10. Typical Capacitance

**NOTE 1 — MOUNTING DATA**

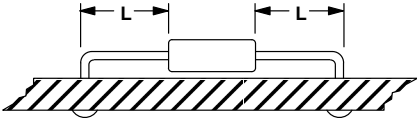
Data shown for thermal resistance junction-to-ambient ( $R_{\theta JA}$ ) for the mountings shown is to be used as typical guideline values for preliminary engineering, or in case the tie point temperature cannot be measured.

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

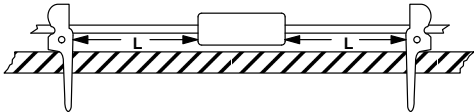
**Mounting Method 1**

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



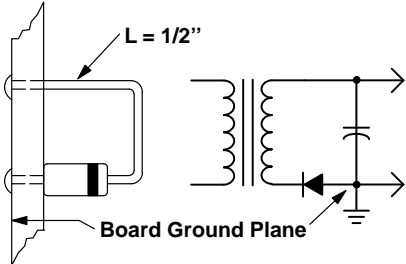
**Mounting Method 2**

Vector Push-In  
Terminals T-28

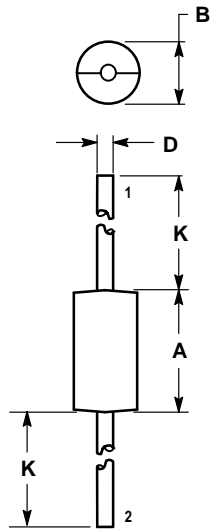


**Mounting Method 3**

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



**MBR320 MBR330 MBR340 MBR350 MBR360**  
**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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**MBR320/D**