

# SWITCHMODE™ Power Rectifiers

... using the Schottky Barrier principle with a platinum barrier metal. These state-of-the-art devices have the following features:

- Guard-Ring for Stress Protection
- Low Forward Voltage
- 150°C Operating Junction Temperature
- Guaranteed Reverse Avalanche
- Epoxy Meets UL94, VO at 1/8"
- Low Power Loss/High Efficiency
- High Surge Capacity
- Low Stored Charge Majority Carrier Conduction

## Mechanical Characteristics:

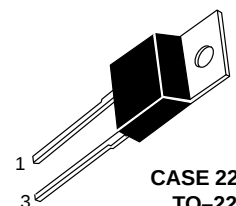
- Case: Epoxy, Molded
- Weight: 1.9 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 50 units per plastic tube
- Marking: B1060, B1070, B1080, B1090, B10100



**MBR1060**  
**MBR1070**  
**MBR1080**  
**MBR1090**  
**MBR10100**

MBR1060 and MBR10100 are  
Motorola Preferred Devices

**SCHOTTKY BARRIER  
RECTIFIERS  
10 AMPERES  
60 to 100 VOLTS**



## MAXIMUM RATINGS

| Rating                                                                                                     | Symbol                          | MBR         |      |      |      |       | Unit             |
|------------------------------------------------------------------------------------------------------------|---------------------------------|-------------|------|------|------|-------|------------------|
|                                                                                                            |                                 | 1060        | 1070 | 1080 | 1090 | 10100 |                  |
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                     | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 60          | 70   | 80   | 90   | 100   | Volts            |
| Average Rectified Forward Current (Rated $V_R$ ) $T_C = 133^\circ\text{C}$                                 | $I_F(AV)$                       | 10          |      |      |      |       | Amps             |
| Peak Repetitive Forward Current<br>(Rated $V_R$ , Square Wave, 20 kHz) $T_C = 133^\circ\text{C}$           | $I_{FRM}$                       | 20          |      |      |      |       | Amps             |
| Nonrepetitive Peak Surge Current<br>(Surge applied at rated load conditions halfwave, single phase, 60 Hz) | $I_{FSM}$                       | 150         |      |      |      |       | Amps             |
| Peak Repetitive Reverse Surge Current (2.0 $\mu\text{s}$ , 1.0 kHz)                                        | $I_{RRM}$                       | 0.5         |      |      |      |       | Amp              |
| Operating Junction Temperature                                                                             | $T_J$                           | -65 to +150 |      |      |      |       | $^\circ\text{C}$ |
| Storage Temperature                                                                                        | $T_{stg}$                       | -65 to +175 |      |      |      |       | $^\circ\text{C}$ |
| Voltage Rate of Change (Rated $V_R$ )                                                                      | $dv/dt$                         | 10,000      |      |      |      |       | V/ $\mu\text{s}$ |

## THERMAL CHARACTERISTICS

|                                                                        |                                    |           |                    |
|------------------------------------------------------------------------|------------------------------------|-----------|--------------------|
| Maximum Thermal Resistance — Junction to Case<br>— Junction to Ambient | $R_{\theta JC}$<br>$R_{\theta JA}$ | 2.0<br>60 | $^\circ\text{C/W}$ |
|------------------------------------------------------------------------|------------------------------------|-----------|--------------------|

## ELECTRICAL CHARACTERISTICS

|                                                                                                                                                                                                                                                 |       |                            |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------|-------|
| Maximum Instantaneous Forward Voltage (1)<br>( $i_F = 10$ Amps, $T_C = 125^\circ\text{C}$ )<br>( $i_F = 10$ Amps, $T_C = 25^\circ\text{C}$ )<br>( $i_F = 20$ Amps, $T_C = 125^\circ\text{C}$ )<br>( $i_F = 20$ Amps, $T_C = 25^\circ\text{C}$ ) | $V_F$ | 0.7<br>0.8<br>0.85<br>0.95 | Volts |
| Maximum Instantaneous Reverse Current (1)<br>(Rated dc Voltage, $T_C = 125^\circ\text{C}$ )<br>(Rated dc Voltage, $T_C = 25^\circ\text{C}$ )                                                                                                    | $i_R$ | 6.0<br>0.10                | mA    |

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

SWITCHMODE is a trademark of Motorola, Inc.

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



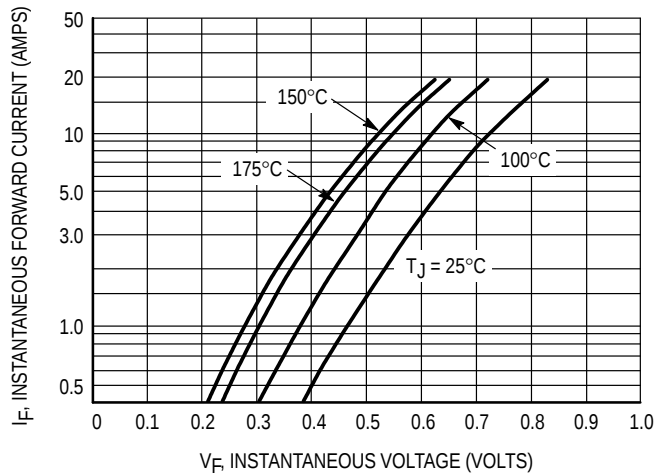


Figure 1. Typical Forward Voltage

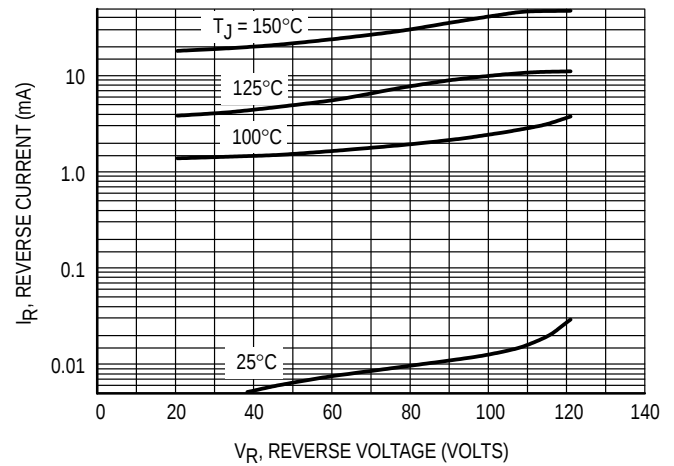


Figure 2. Typical Reverse Current

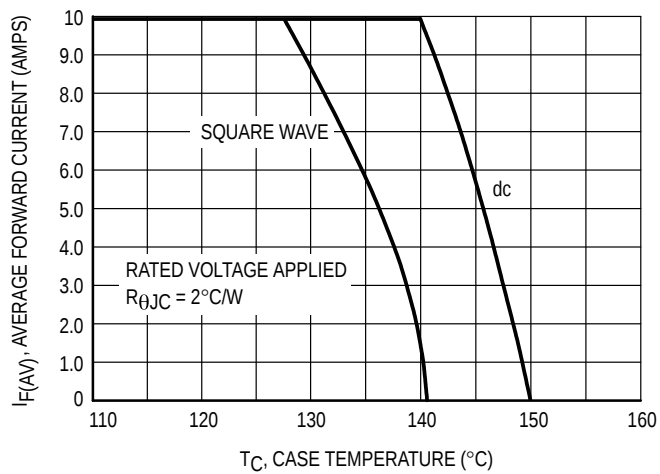


Figure 3. Current Derating, Case

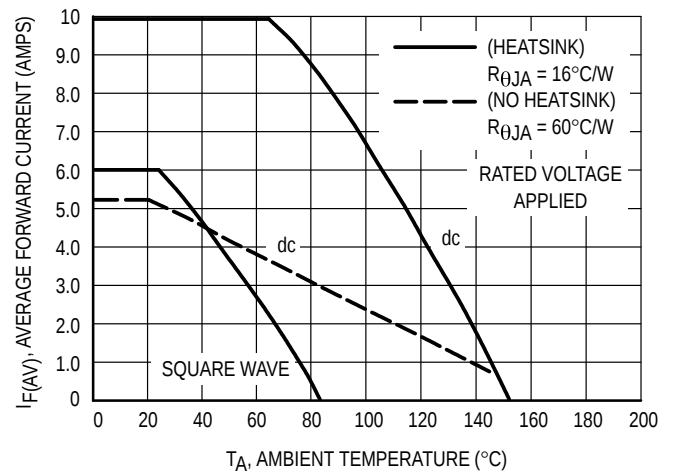


Figure 4. Current Derating, Ambient

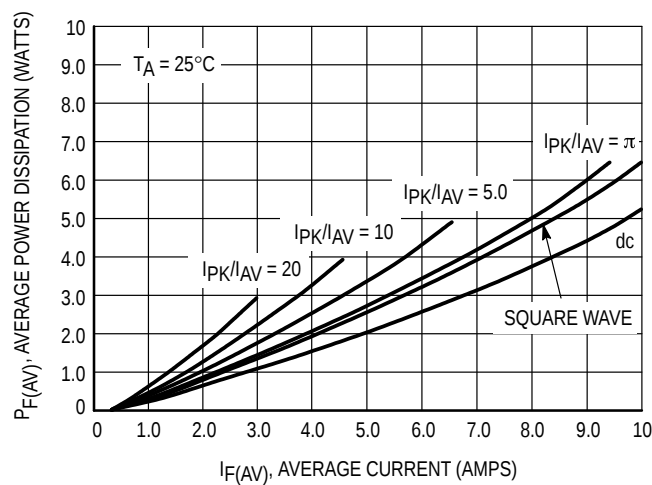
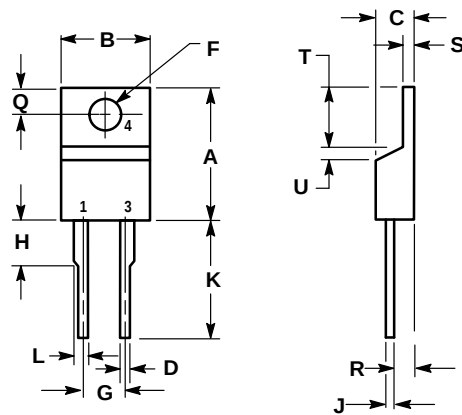


Figure 5. Forward Power Dissipation

**MBR1060 MBR1070 MBR1080 MBR1090 MBR10100**  
**PACKAGE DIMENSIONS**



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

| DIM | INCHES |       | MILLIMETERS |       |
|-----|--------|-------|-------------|-------|
|     | MIN    | MAX   | MIN         | MAX   |
| A   | 0.595  | 0.620 | 15.11       | 15.75 |
| B   | 0.380  | 0.405 | 9.65        | 10.29 |
| C   | 0.160  | 0.190 | 4.06        | 4.82  |
| D   | 0.025  | 0.035 | 0.64        | 0.89  |
| F   | 0.142  | 0.147 | 3.61        | 3.73  |
| G   | 0.190  | 0.210 | 4.83        | 5.33  |
| H   | 0.110  | 0.130 | 2.79        | 3.30  |
| J   | 0.018  | 0.025 | 0.46        | 0.64  |
| K   | 0.500  | 0.562 | 12.70       | 14.27 |
| L   | 0.045  | 0.060 | 1.14        | 1.52  |
| Q   | 0.100  | 0.120 | 2.54        | 3.04  |
| R   | 0.080  | 0.110 | 2.04        | 2.79  |
| S   | 0.045  | 0.055 | 1.14        | 1.39  |
| T   | 0.235  | 0.255 | 5.97        | 6.48  |
| U   | 0.000  | 0.050 | 0.000       | 1.27  |

**CASE 221B-03  
 (TO-220AC)  
 ISSUE B**

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