

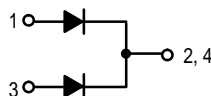
# SWITCHMODE™ Power Rectifiers

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

- 20 Amps Total (10 Amps Per Diode Leg)
- 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:

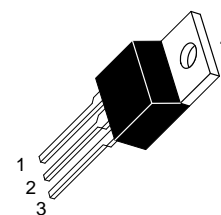
- Case: Epoxy, Molded
- Weight: 1.9 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 50 units per plastic tube
- Marking: B2060, B2070, B2080, B2090, B20100



**MBR2060CT**  
**MBR2070CT**  
**MBR2080CT**  
**MBR2090CT**  
**MBR20100CT**

MBR2060CT and MBR20100CT  
are Motorola Preferred Devices

**SCHOTTKY BARRIER  
RECTIFIERS**  
**20 AMPERES**  
**60-100 VOLTS**



**CASE 221A-06**  
**TO-220AB**  
**PLASTIC**

### MAXIMUM RATINGS PER DIODE LEG

| Rating  | Symbol                          | MBR         |        |        |        |         | Unit                   |
|---|---------------------------------|-------------|--------|--------|--------|---------|------------------------|
|   |                                 | 2060CT      | 2070CT | 2080CT | 2090CT | 20100CT |                        |
| 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<br>(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,<br>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      |        |        |        |         | $\text{V}/\mu\text{s}$ |

### THERMAL CHARACTERISTICS

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

SWITCHMODE is a trademark of Motorola, Inc.

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

**MBR2060CT MBR2070CT MBR2080CT MBR2090CT MBR20100CT****ELECTRICAL CHARACTERISTICS PER DIODE LEG**

| Rating  | Symbol | MBR    |        |                              |        |         | Unit  |
|---|--------|--------|--------|------------------------------|--------|---------|-------|
|   |        | 2060CT | 2070CT | 2080CT                       | 2090CT | 20100CT |       |
| 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, $T_C = 25^\circ\text{C}$ ) | $v_F$  |        |        | 0.75<br>0.85<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>0.1                   |        |         | mA    |

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

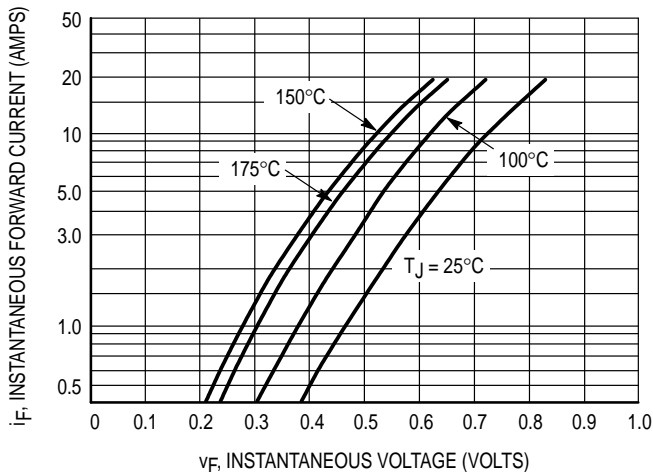


Figure 1. Typical Forward Voltage Per Diode

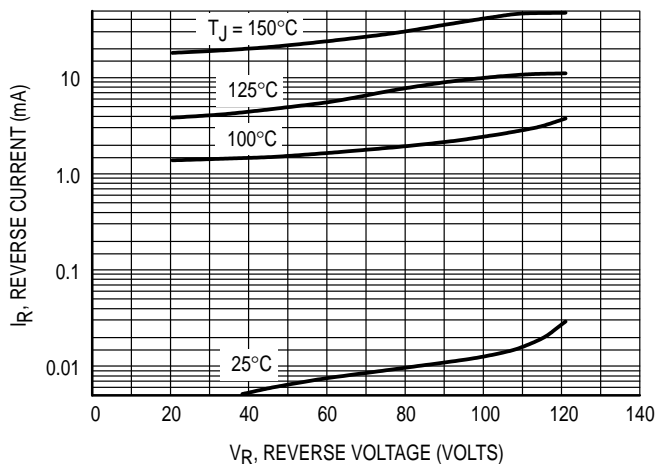


Figure 2. Typical Reverse Current Per Diode

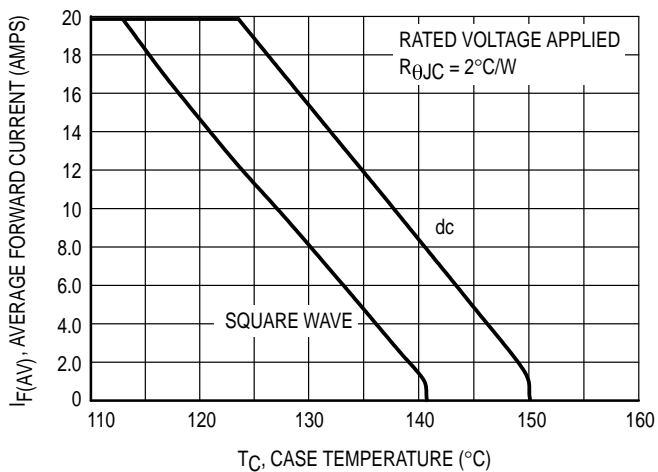


Figure 3. Current Derating, Case

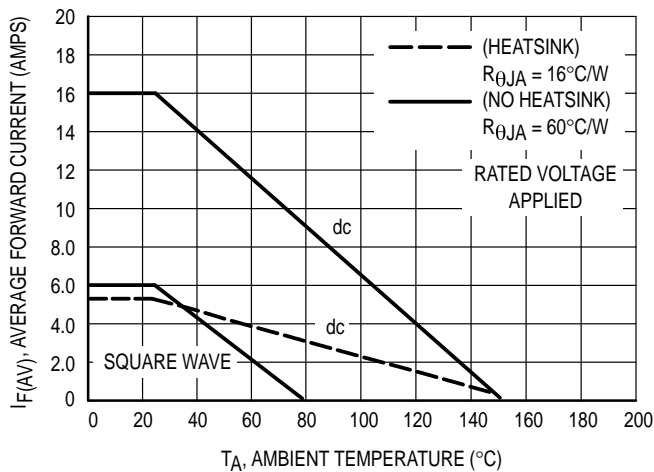


Figure 4. Current Derating, Ambient

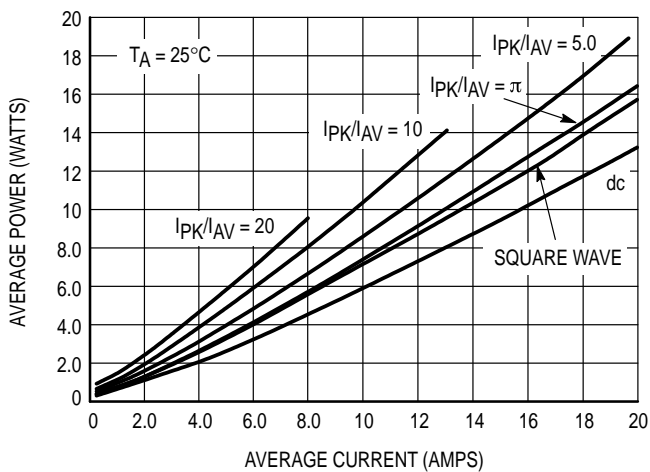
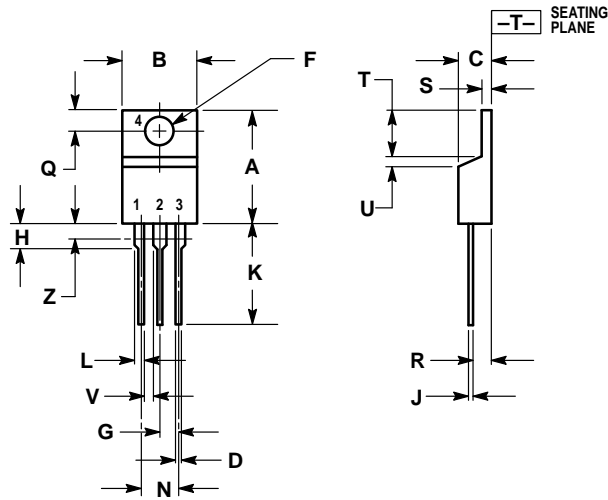


Figure 5. Average Power Dissipation and Average Current

**MBR2060CT MBR2070CT MBR2080CT MBR2090CT MBR20100CT**


**PACKAGE DIMENSIONS**



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

| DIM | INCHES |       | MILLIMETERS |       |
|-----|--------|-------|-------------|-------|
|     | MIN    | MAX   | MIN         | MAX   |
| A   | 0.570  | 0.620 | 14.48       | 15.75 |
| B   | 0.380  | 0.405 | 9.66        | 10.28 |
| C   | 0.160  | 0.190 | 4.07        | 4.82  |
| D   | 0.025  | 0.035 | 0.64        | 0.88  |
| F   | 0.142  | 0.147 | 3.61        | 3.73  |
| G   | 0.095  | 0.105 | 2.42        | 2.66  |
| H   | 0.110  | 0.155 | 2.80        | 3.93  |
| J   | 0.018  | 0.025 | 0.46        | 0.64  |
| K   | 0.500  | 0.562 | 12.70       | 14.27 |
| L   | 0.045  | 0.060 | 1.15        | 1.52  |
| N   | 0.190  | 0.210 | 4.83        | 5.33  |
| Q   | 0.100  | 0.120 | 2.54        | 3.04  |
| R   | 0.080  | 0.110 | 2.04        | 2.79  |
| S   | 0.045  | 0.055 | 1.15        | 1.39  |
| T   | 0.235  | 0.255 | 5.97        | 6.47  |
| U   | 0.000  | 0.050 | 0.00        | 1.27  |
| V   | 0.045  | —     | 1.15        | —     |
| Z   | —      | 0.080 | —           | 2.04  |

**CASE 221A-06  
(TO-220AB)  
ISSUE Y**

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