

$I_{F(AV)} = 20 \text{ Amp}$   
 $V_R = 80/100V$

**Major Ratings and Characteristics**


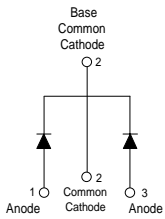

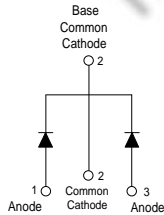
| Characteristics                                 | Values     | Units            |
|---|------------|------------------|
| $I_{F(AV)}$ Rectangular waveform (Per Device)   | 20         | A                |
| $I_{FRM}$ @ $T_C = 133^\circ\text{C}$ (Per Leg) | 20         | A                |
| $V_{RRM}$                                       | 80/ 100    | V                |
| $I_{FSM}$ @ tp = 5 $\mu\text{s}$ sine           | 850        | A                |
| $V_F$ @ 10 Apk, $T_J = 125^\circ\text{C}$       | 0.70       | V                |
| $T_J$ range                                     | -65 to 150 | $^\circ\text{C}$ |

**Description/ Features**

This center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 150° C  $T_J$  operation
- Center tap D<sup>2</sup>Pak and TO-262 packages
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

**Case Styles**

|   |  |
|---|--|
| <p><b>MBRB20...GCT</b></p>   <p><b>D<sup>2</sup>PAK</b></p> | <p><b>MBR20...GCT-1</b></p>   <p><b>TO-262</b></p> |
|---|--|

**Voltage Ratings**

| Parameters   | MBRB2080GCT<br>MBR2080GCT-1 | MBRB2090GCT<br>MBR2090GCT-1 | MBRB20100GCT<br>MBR20100GCT-1 |
|--|-----------------------------|-----------------------------|-------------------------------|
| V <sub>R</sub> Max. DC Reverse Voltage (V)             | 80                          | 90                          | 100                           |
| V <sub>RWM</sub> Max. Working Peak Reverse Voltage (V) |                             |                             |                               |

**Absolute Maximum Ratings**

| Parameters  | Values | Units | Conditions  |
|---|--------|-------|---|
| I <sub>F(AV)</sub> Max. Average Forward Current (Per Leg)<br>(Per Device) | 10     | A     | @ T <sub>C</sub> = 133° C, (Rated V <sub>R</sub> )  |
|   | 20     |       |   |
| I <sub>FRM</sub> Peak Repetitive Forward Current (Per Leg)                | 20     | A     | Rated V <sub>R</sub> , square wave, 20kHz<br>T <sub>C</sub> = 133° C  |
| I <sub>FSM</sub> Non Repetitive Peak Surge Current                        | 850    | A     | 5µs Sine or 3µs Rect. pulse Following any rated load condition and with rated V <sub>RRM</sub> applied<br>Surge applied at rated load conditions halfwave, single phase, 60Hz |
|   | 150    |       |   |
| I <sub>RRM</sub> Peak Repetitive Reverse Surge Current                    | 0.5    | A     | 2.0 µsec 1.0 KHz  |
| E <sub>AS</sub> Non-Repetitive Avalanche Energy (Per Leg)                 | 24     | mJ    | T <sub>J</sub> = 25° C, I <sub>AS</sub> = 2 Amps, L = 12 mH   |

**Electrical Specifications**

| Parameters   | Values | Units | Conditions   |
|--|--------|-------|--|
| V <sub>FM</sub> Max. Forward Voltage Drop (1)          | 0.80   | V     | @ 10A  |
|  | 0.95   | V     | @ 20A  |
|  | 0.70   | V     | @ 10A  |
|  | 0.85   | V     | @ 20A  |
| I <sub>RM</sub> Max. Instantaneous Reverse Current (1) | 0.10   | mA    | T <sub>J</sub> = 25° C   |
|  | 6      | mA    | T <sub>J</sub> = 125° C  |
| V <sub>F(TO)</sub> Threshold Voltage                   | 0.433  | V     | T <sub>J</sub> = T <sub>J</sub> max.                                       |
| r <sub>t</sub> Forward Slope Resistance                | 15.8   | mΩ    |  |
| C <sub>T</sub> Max. Junction Capacitance               | 400    | pF    | V <sub>R</sub> = 5V <sub>DC</sub> (test signal range 100Khz to 1Mhz) 25° C |
| L <sub>S</sub> Typical Series Inductance               | 8.0    | nH    | Measured from top of terminal to mounting plane                            |
| dv/dt Max. Voltage Rate of Change                      | 10000  | V/ µs | (Rated V <sub>R</sub> )  |

(1) Pulse Width < 300µs, Duty Cycle <2%

**Thermal-Mechanical Specifications**

| Parameters   | Values        | Units                         | Conditions  |
|--|---------------|-------------------------------|---|
| T <sub>J</sub> Max. Junction Temperature Range                       | -65 to 150    | °C                            |   |
| T <sub>stg</sub> Max. Storage Temperature Range                      | -65 to 175    | °C                            |   |
| R <sub>thJC</sub> Max. Thermal Resistance Junction to Case (Per Leg) | 2.0           | °C/W                          | DC operation  |
| R <sub>thCS</sub> Typical Thermal Resistance Case to Heatsink        | 0.50          | °C/W                          | Mounting surface, smooth and greased<br>Only for TO-220 |
| R <sub>thJA</sub> Max. Thermal Resistance Junction to Ambient        | 50            | °C/W                          | DC operation<br>For D2Pak and TO-262                    |
| wt Approximate Weight  | 2 (0.07)      | g (oz.)                       |   |
| T Mounting Torque  | Min. 6 (5)    | Kg-cm<br>(lbf-in)             | Non-lubricated threads                                  |
|  | Max. 12 (10)  |                               |   |
| MarkingDevice  | MBRB20100GCT  | Casestyle D <sup>2</sup> -Pak |   |
|  | MBR20100GCT-1 | Casestyle TO-262              |   |

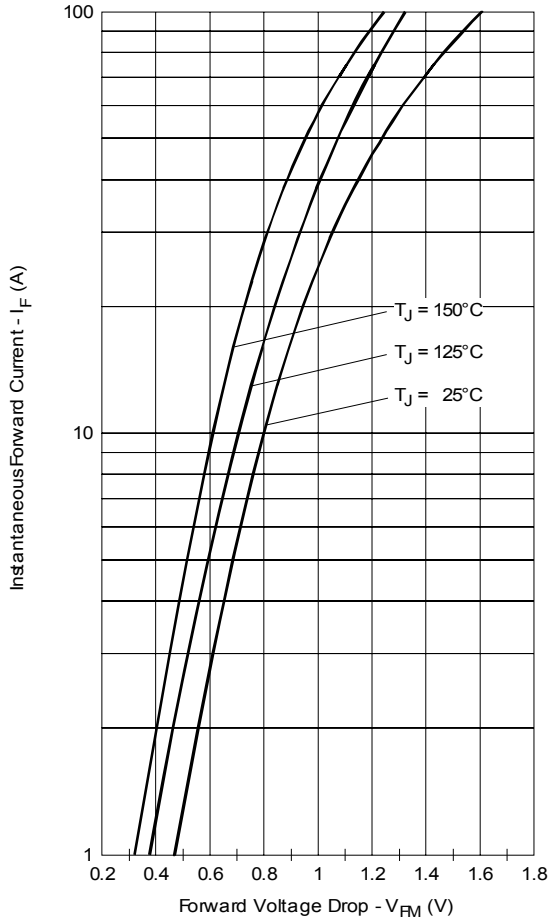


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

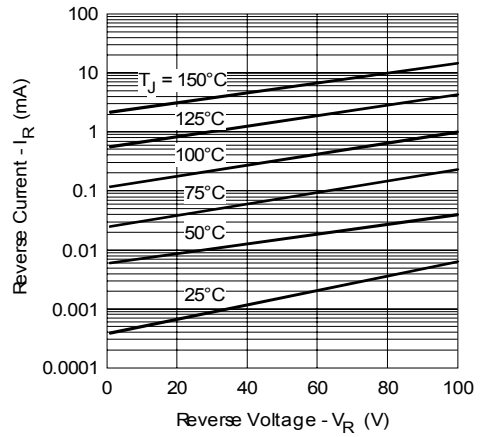


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

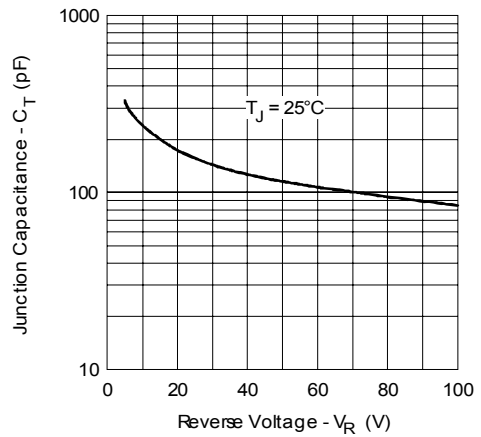


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

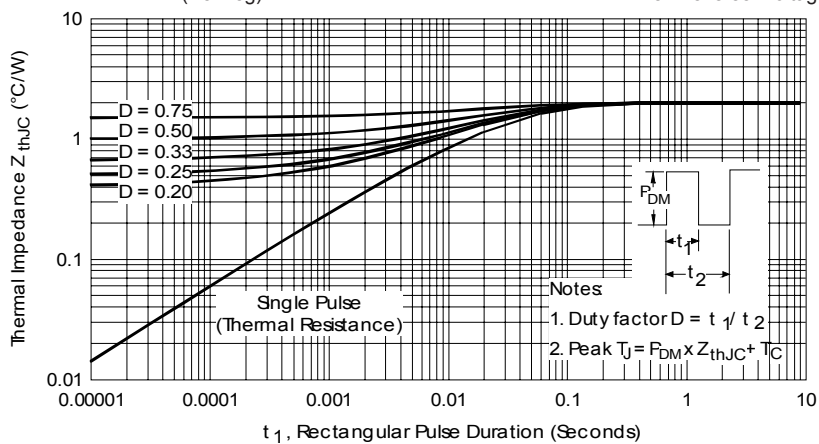


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

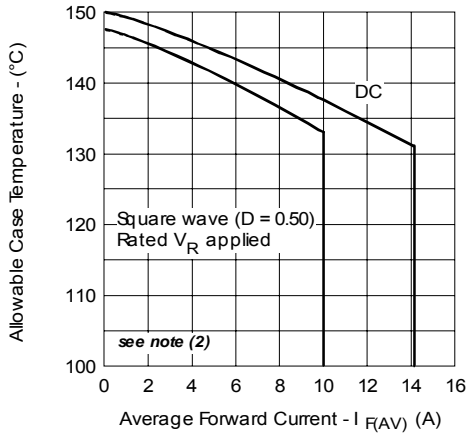


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

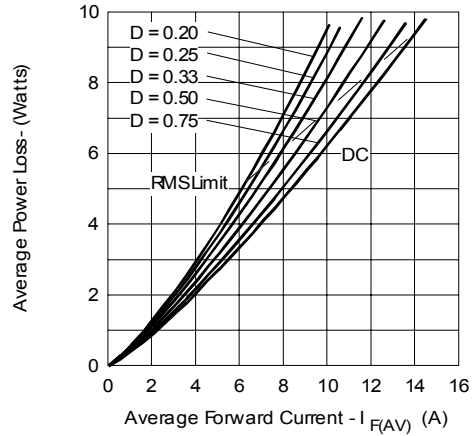


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

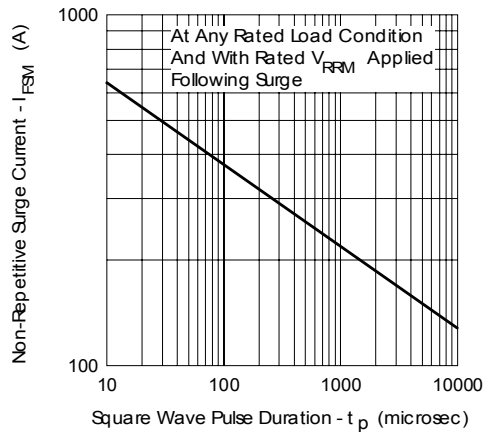
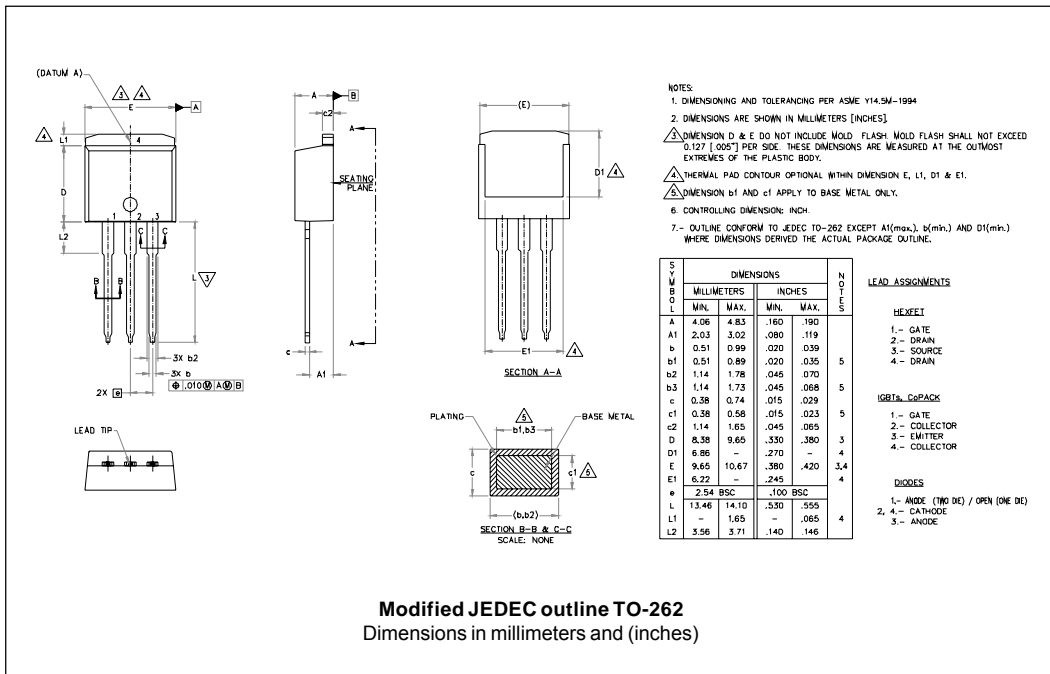
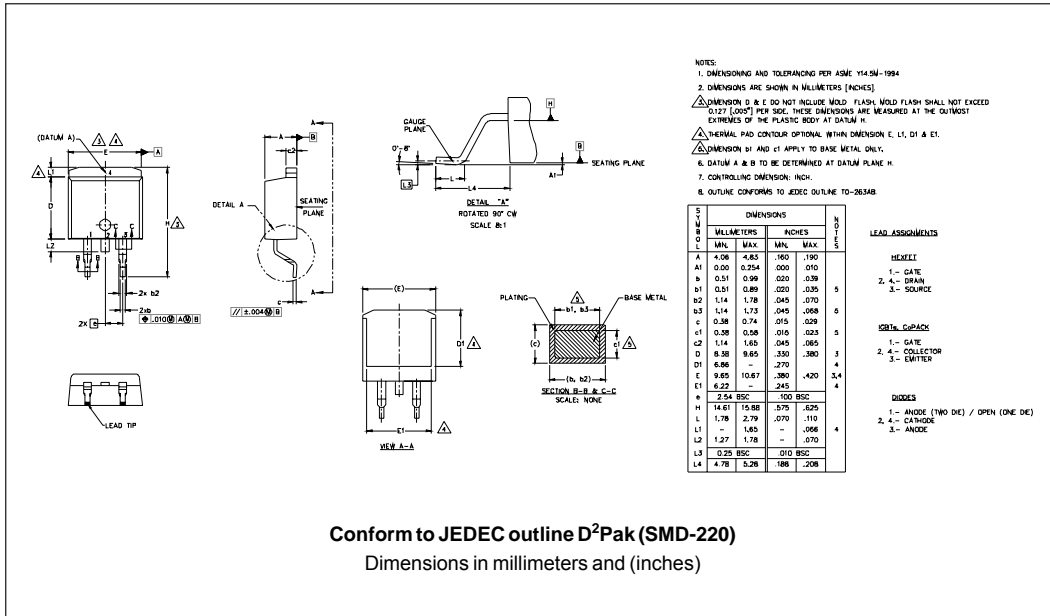


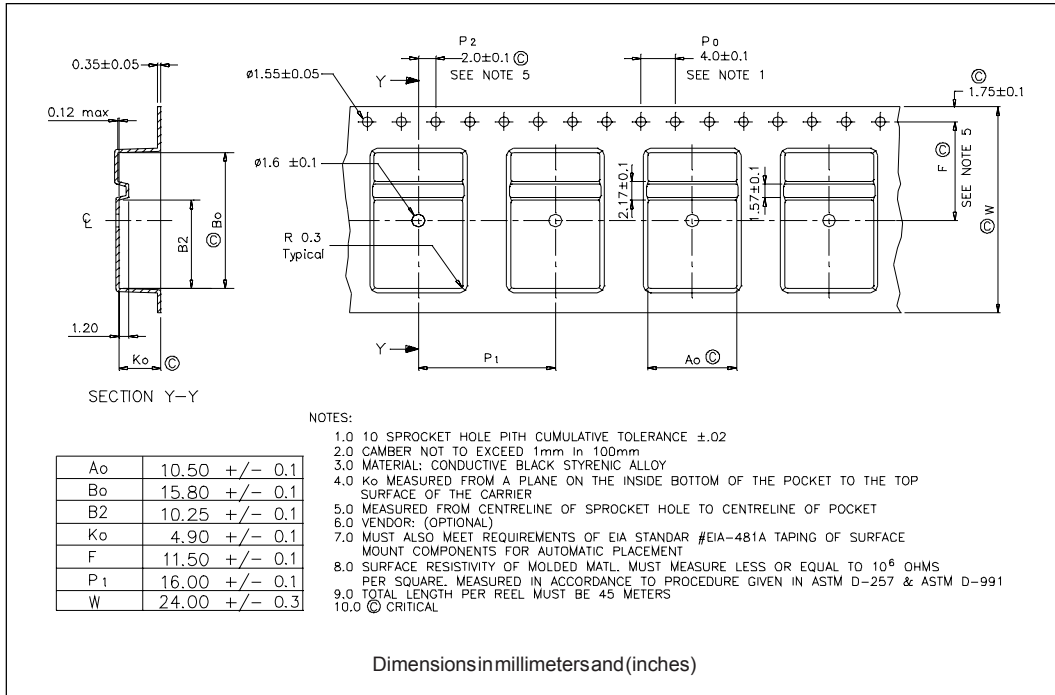
Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

- (2) Formula used:  $T_c = T_j - (Pd + Pd_{REV}) \times R_{thJC}$ ;  
 $Pd = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$  (see Fig. 6);  
 $Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$ ;  $I_R @ V_{R1} = \text{rated } V_R$

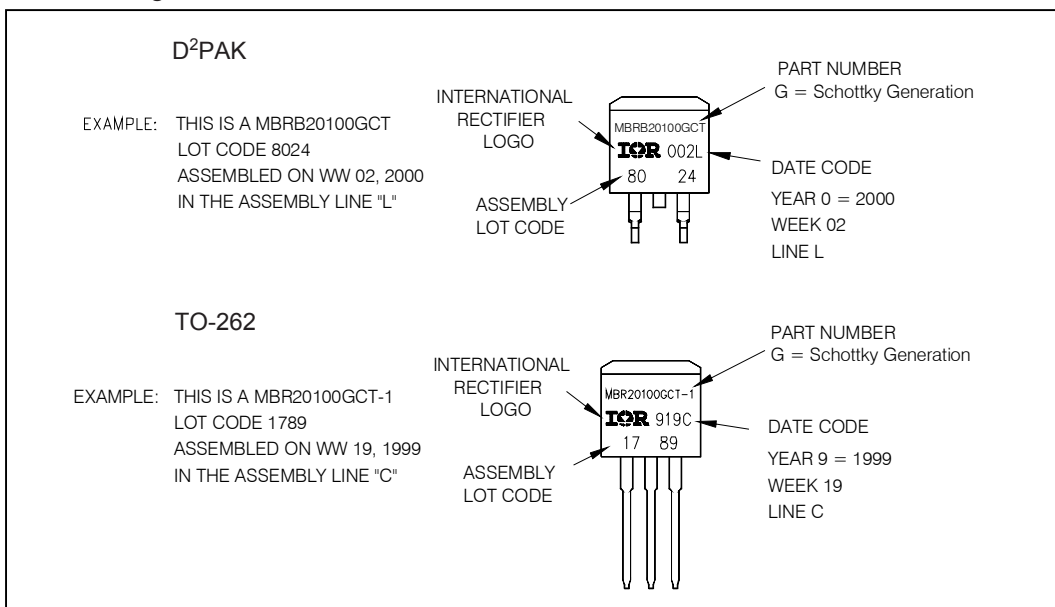
Outline Table



**Tape & Reel Information**



**Part Marking Information**



Ordering Information Table

| Device Code |  |
|-------------|--|
|             | <b>MBR B 20 100 G CT -1 TRL -</b>  |
|             | ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨  |
| <b>1</b>    | - Essential Part Number  |
| <b>2</b>    | - B = Surface Mount  |
| <b>3</b>    | - Current Rating (20 = 20A)  |
| <b>4</b>    | - Voltage Ratings  |
| <b>5</b>    | - G = Schottky Generation  |
| <b>6</b>    | - CT = Essential Part Number   |
| <b>7</b>    | - -1 = TO-262  |
| <b>8</b>    | - <ul style="list-style-type: none"> <li>• none = Tube (50 pieces)</li> <li>• TRL = Tape &amp; Reel (Left Oriented - for D<sup>2</sup>Pak only)</li> <li>• TRR = Tape &amp; Reel (Right Oriented - for D<sup>2</sup>Pak only)</li> </ul> |
| <b>9</b>    | - <ul style="list-style-type: none"> <li>• none = Standard Production</li> <li>• PbF = Lead-Free</li> </ul>  |

080 = 80V  
 090 = 90V  
 100 = 100V

Data and specifications subject to change without notice.  
 This product has been designed and qualified for Industrial Level.  
 Qualification Standards can be found on IR's Web site.