

International IOR Rectifier

MBRB20...CTG MBR20...CTG-1

SCHOTTKY RECTIFIER

20 Amp

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

Major Ratings and Characteristics


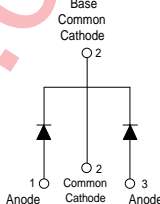

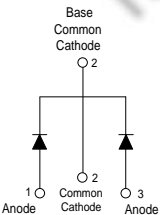
| Characteristics | Values | Units |
|--|------------|------------------|
| $I_{F(AV)}$ Rectangular waveform (Per Device) | 20 | A |
| I_{FRM} @ $T_C = 133^\circ\text{C}$ (PerLeg) | 20 | A |
| V_{RRM} | 80/ 100 | V |
| I_{FSM} @ tp = 5 μs sine | 850 | A |
| V_F @ 10Apk, $T_J = 125^\circ\text{C}$ | 0.70 | 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 D²Pak 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>MBRB20...CTG</p>  <p>Base Common Cathode 2</p>  <p>1 Anode 2 Common Cathode 3 Anode</p> <p>D²PAK</p> | <p>MBR20...CTG-1</p>  <p>Base Common Cathode 2</p>  <p>1 Anode 2 Common Cathode 3 Anode</p> <p>TO-262</p> |
|--|---|

Voltage Ratings

| Parameters | MBRB2080CTG MBR2080CTG-1 | MBRB2090CTG MBR2090CTG-1 | MBRB20100CTG MBR20100CTG-1 |
|--|-----------------------------|-----------------------------|-------------------------------|
| V _R Max. DC Reverse Voltage (V) | 80 | 90 | 100 |
| V _{RWM} Max. Working Peak Reverse Voltage (V) | | | |

Absolute Maximum Ratings

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

Electrical Specifications

| Parameters | Values | Units | Conditions |
|--|--------|-------|--|
| V _{FM} Max. Forward Voltage Drop (1) | 0.80 | V | @ 10A |
| | 0.95 | V | @ 20A |
| | 0.70 | V | @ 10A |
| | 0.85 | V | @ 20A |
| I _{RM} Max. Instantaneous Reverse Current (1) | 0.10 | mA | T _J = 25° C |
| | 6 | mA | T _J = 125° C |
| V _{F(TO)} Threshold Voltage | 0.433 | V | T _J = T _J max. |
| r _t Forward Slope Resistance | 15.8 | mΩ | |
| C _T Max. Junction Capacitance | 400 | pF | V _R = 5V _{DC} (test signal range 100Khz to 1Mhz) 25° C |
| L _S 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 _R) |

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

Thermal-Mechanical Specifications

| Parameters | Values | Units | Conditions |
|--|---------------|---------|---|
| T _J Max. Junction Temperature Range | -65 to 150 | °C | |
| T _{stg} Max. Storage Temperature Range | -65 to 175 | °C | |
| R _{thJC} Max. Thermal Resistance Junction to Case (Per Leg) | 2.0 | °C/W | DC operation |
| R _{thCS} Typical Thermal Resistance Case to Heatsink | 0.50 | °C/W | Mounting surface, smooth and greased Only for TO-220 |
| R _{thJA} Max. Thermal Resistance Junction to Ambient | 50 | °C/W | DC operation For D2Pak and TO-262 |
| wt Approximate Weight | 2 (0.07) | g (oz.) | |
| T Mounting Torque | Min. | 6 (5) | Non-lubricated threads |
| | Max. | 12 (10) | |
| MarkingDevice | MBRB20100CTG | | Casestyle D ² -Pak |
| | MBR20100CTG-1 | | Casestyle TO-262 |

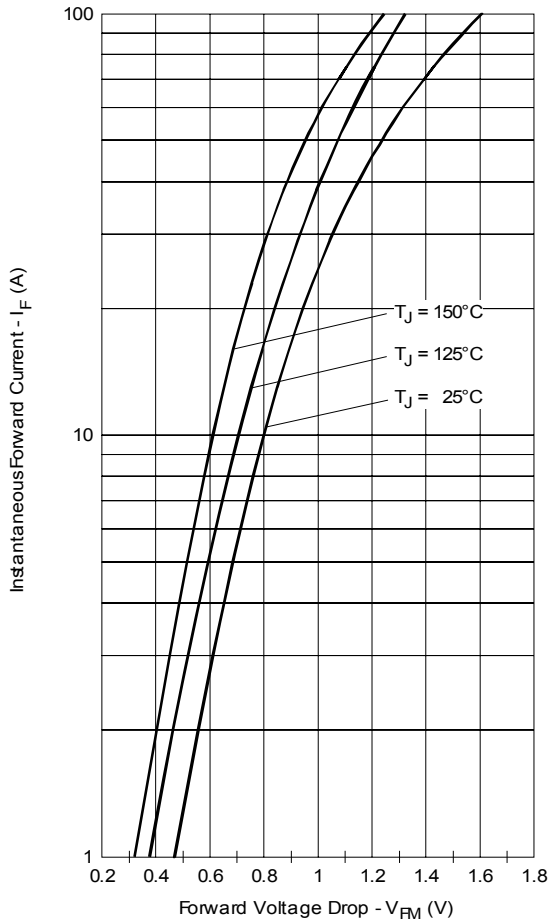


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

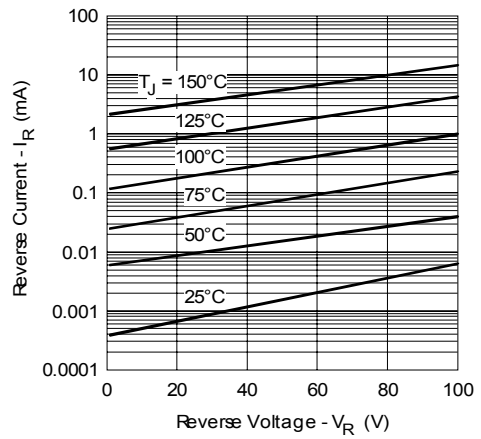


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

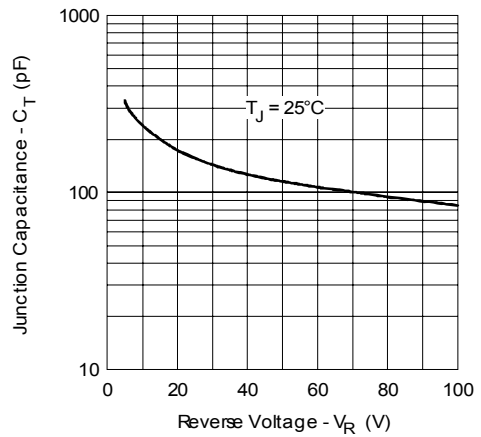


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

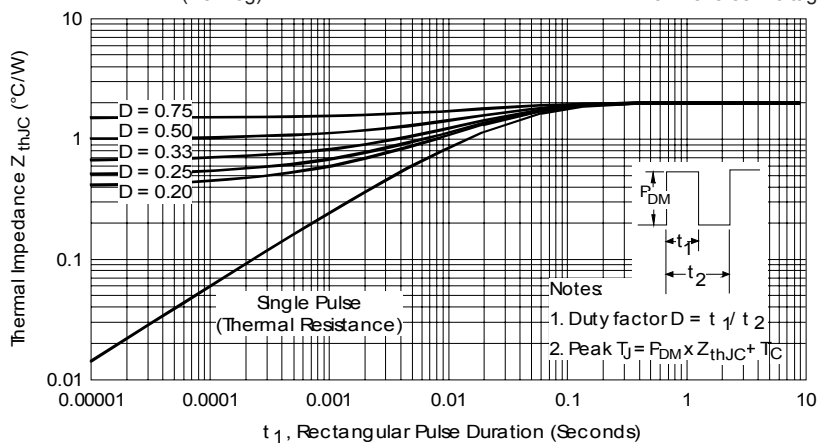


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

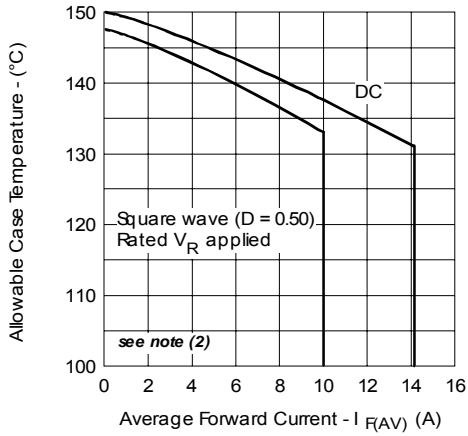


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

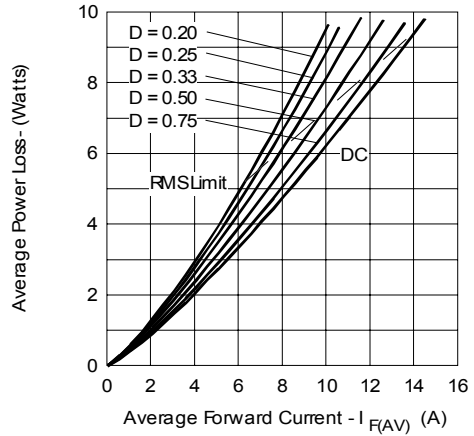


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

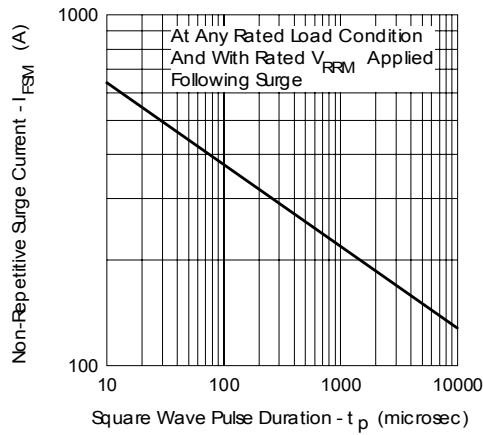
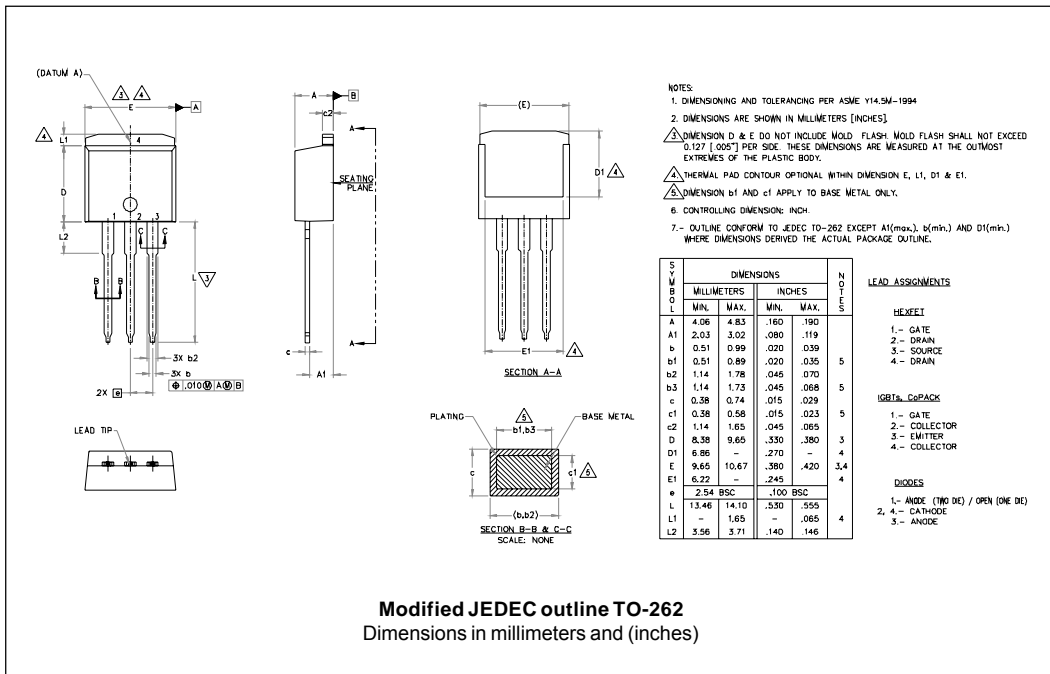
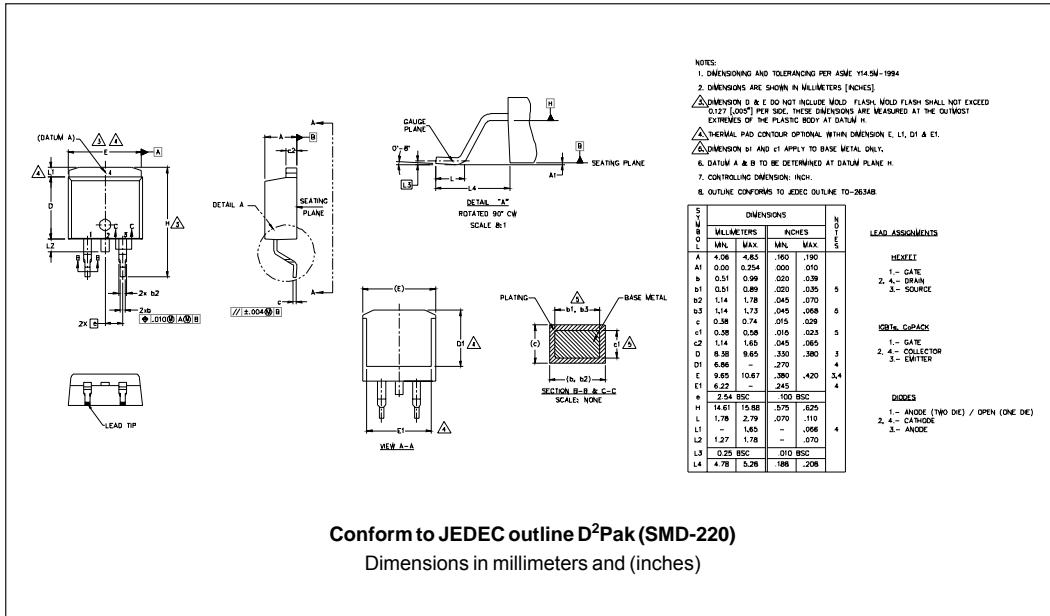


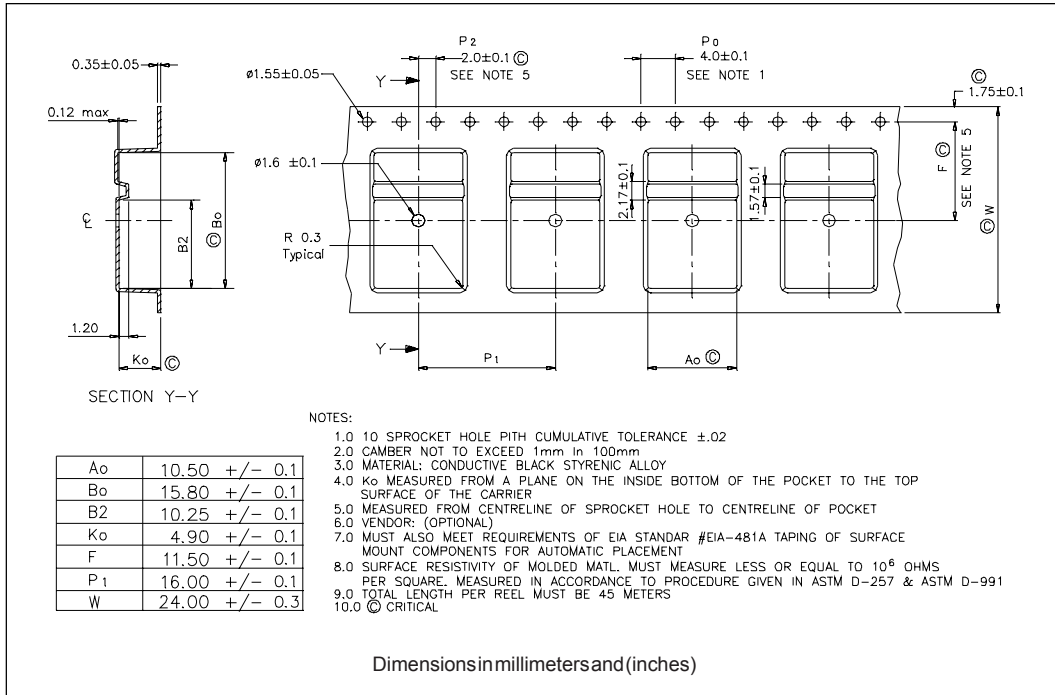
Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

- (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);
 $Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = \text{rated } V_R$

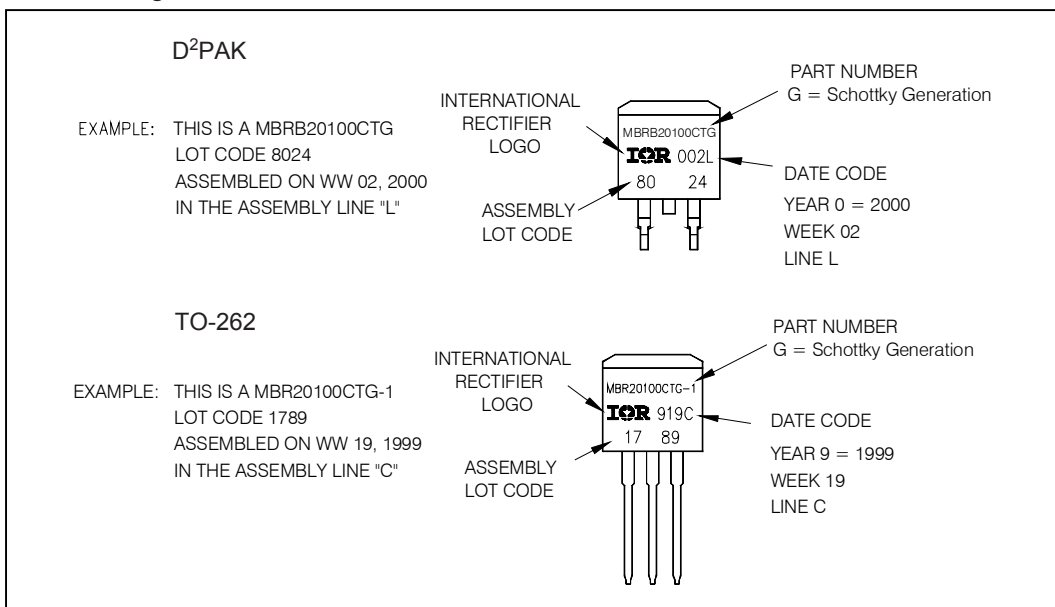
Outline Table



Tape & Reel Information



Part Marking Information



Ordering Information Table

| Device Code | | | | | | | | | | | | | | | | | | | |
|-------------|--|-----|-----|----|-----|----|-----|----|-----|---|---|---|---|---|---|---|---|---|---|
| | <table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;">MBR</td> <td style="padding: 5px;">B</td> <td style="padding: 5px;">20</td> <td style="padding: 5px;">100</td> <td style="padding: 5px;">CT</td> <td style="padding: 5px;">G</td> <td style="padding: 5px;">-1</td> <td style="padding: 5px;">TRL</td> <td style="padding: 5px;">-</td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> <td style="text-align: center;">⑥</td> <td style="text-align: center;">⑦</td> <td style="text-align: center;">⑧</td> <td style="text-align: center;">⑨</td> </tr> </table> | MBR | B | 20 | 100 | CT | G | -1 | TRL | - | ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ |
| MBR | B | 20 | 100 | CT | G | -1 | TRL | - | | | | | | | | | | | |
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ | ⑨ | | | | | | | | | | | |
| 1 | - Essential Part Number | | | | | | | | | | | | | | | | | | |
| 2 | - <ul style="list-style-type: none"> • B = D²Pak • none = TO-262 | | | | | | | | | | | | | | | | | | |
| 3 | - Current Rating (20 = 20A) | | | | | | | | | | | | | | | | | | |
| 4 | - Voltage Ratings | | | | | | | | | | | | | | | | | | |
| 5 | - CT = Essential Part Number | | | | | | | | | | | | | | | | | | |
| 6 | - G = Schottky Generation | | | | | | | | | | | | | | | | | | |
| 7 | - <ul style="list-style-type: none"> • none = D²Pak • -1 = TO-262 | | | | | | | | | | | | | | | | | | |
| 8 | - <ul style="list-style-type: none"> • none = Tube (50 pieces) • TRL = Tape & Reel (Left Oriented - for D²Pak only) • TRR = Tape & Reel (Right Oriented - for D²Pak only) | | | | | | | | | | | | | | | | | | |
| 9 | - <ul style="list-style-type: none"> • none = Standard Production • PbF = Lead-Free (D²Pak tube) • P = Lead-Free (for D²Pak TRR and TRL, and TO-262) | | | | | | | | | | | | | | | | | | |

| | |
|-----|--------|
| 80 | = 80V |
| 90 | = 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.