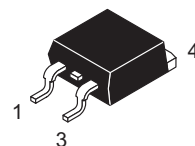
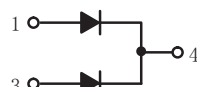


## D<sup>2</sup>PAK Surface Mount Power Package SCHOTTKY BARRIER RECTIFIER 20 AMPERES 100 VOLTS

The D<sup>2</sup>PAK Power Rectifier is a state-of-the-art device that employs the use of the Schottky Barrier principle with a platinum barrier metal.

### Features

- Package Designed for Power Surface Mount Applications
- Center-Tap Configuration
- Guardring for Stress Protection
- Low Forward Voltage
- 175°C Operating Junction Temperature
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Short Heat Sink Tab Manufactured – Not Sheared!
- Similar in Size to Industry Standard TO-220 Package
- Pb-Free Packages are Available



**D<sup>2</sup>PAK  
CASE 418B  
STYLE 3**

### Mechanical Characteristics

- Case: Epoxy, Molded, Epoxy Meets UL 94 V-0
- Weight: 1.7 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Device Meets MSL1 Requirements
- ESD Ratings: Machine Model, C >400 V  
Human Body Model, 3B >8000 V

### MAXIMUM RATINGS (Per Leg)

| Rating                                                                                                      | Symbol      | Value       | Unit             |
|-------------------------------------------------------------------------------------------------------------|-------------|-------------|------------------|
| Peak Repetitive Reverse Voltage                                                                             | $V_{RRM}$   | 100         | V                |
| Working Peak Reverse Voltage                                                                                | $V_{RWM}$   |             |                  |
| DC Blocking Voltage                                                                                         | $V_R$       |             |                  |
| Average Rectified Forward Current<br>(Rated $V_R$ , $T_C = 110^\circ\text{C}$ ) Total Device                | $I_{F(AV)}$ | 10<br>20    | A                |
| Peak Repetitive Forward Current (Rated $V_R$ , Square Wave, 20 kHz, $T_C = 100^\circ\text{C}$ )             | $I_{FRM}$   | 20          | A                |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | $I_{FSM}$   | 150         | A                |
| Peak Repetitive Reverse Surge Current<br>(2.0 $\mu\text{s}$ , 1.0 kHz)                                      | $I_{RRM}$   | 0.5         | A                |
| Storage Temperature Range                                                                                   | $T_{stg}$   | -65 to +175 | °C               |
| Operating Junction Temperature (Note 1)                                                                     | $T_J$       | -65 to +175 | °C               |
| Voltage Rate of Change (Rated $V_R$ )                                                                       | $dv/dt$     | 10,000      | V/ $\mu\text{s}$ |

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. The heat generated must be less than the thermal conductivity from Junction-to-Ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ .

### MARKING DIAGRAM



A = Assembly Location  
Y = Year  
WW = Work Week  
B20100 = Device Code  
G = Pb-Free Package  
AKA = Diode Polarity

### ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

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

## THERMAL CHARACTERISTICS (Per Leg)

| Characteristic                       | Symbol          | Value | Unit                 |
|--------------------------------------|-----------------|-------|----------------------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 2.0   | $^{\circ}\text{C/W}$ |
| Junction-to-Ambient (Note 2)         | $R_{\theta JA}$ | 50    |                      |

## ELECTRICAL CHARACTERISTICS (Per Leg)

|                                                |                                                                                                                                                                                                                        |       |                              |    |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------------------|----|
| Maximum Instantaneous Forward Voltage (Note 3) | $(i_F = 10 \text{ Amp}, T_C = 125^{\circ}\text{C})$<br>$(i_F = 10 \text{ Amp}, T_C = 25^{\circ}\text{C})$<br>$(i_F = 20 \text{ Amp}, T_C = 125^{\circ}\text{C})$<br>$(i_F = 20 \text{ Amp}, T_C = 25^{\circ}\text{C})$ | $v_F$ | 0.75<br>0.85<br>0.85<br>0.95 | V  |
| Maximum Instantaneous Reverse Current (Note 3) | (Rated dc Voltage, $T_J = 125^{\circ}\text{C}$ )<br>(Rated dc Voltage, $T_J = 25^{\circ}\text{C}$ )                                                                                                                    | $i_R$ | 6.0<br>0.1                   | mA |

2. When mounted using minimum recommended pad size on FR-4 board.

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

## ORDERING INFORMATION

| Device         | Package                         | Shipping†               |
|----------------|---------------------------------|-------------------------|
| MBRB20100CT    | D <sup>2</sup> PAK              | 50 Units / Rail         |
| MBRB20100CTG   | D <sup>2</sup> PAK<br>(Pb-Free) | 50 Units / Rail         |
| MBRB20100CTT4  | D <sup>2</sup> PAK              | 800 Units / Tape & Reel |
| MBRB20100CTT4G | D <sup>2</sup> PAK<br>(Pb-Free) | 800 Units / Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

## RATING AND CHARACTERISTICS CURVES (MBRB20100CT)

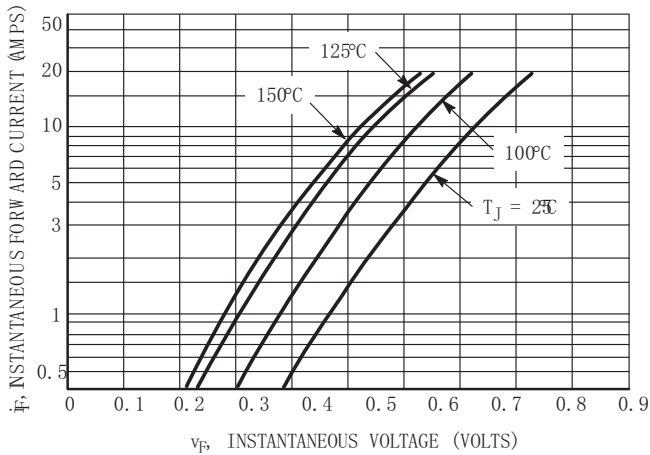


Figure 1. Typical Forward Voltage Per Diode

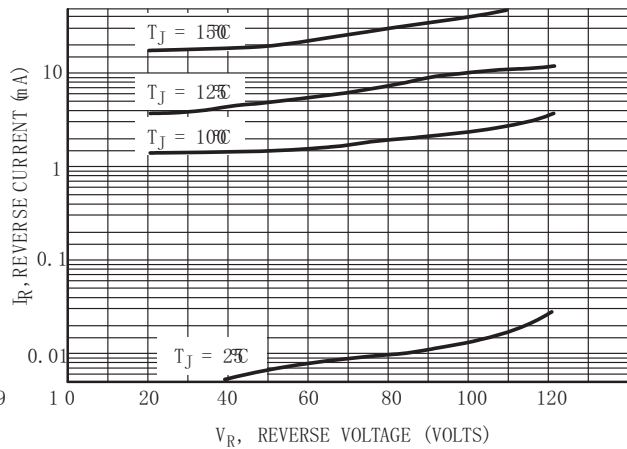


Figure 2. Typical Reverse Current Per Diode

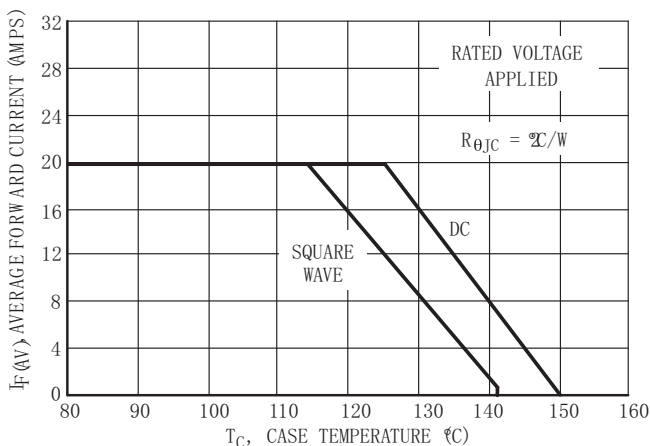


Figure 3. Typical Current Derating, Case, Per Leg

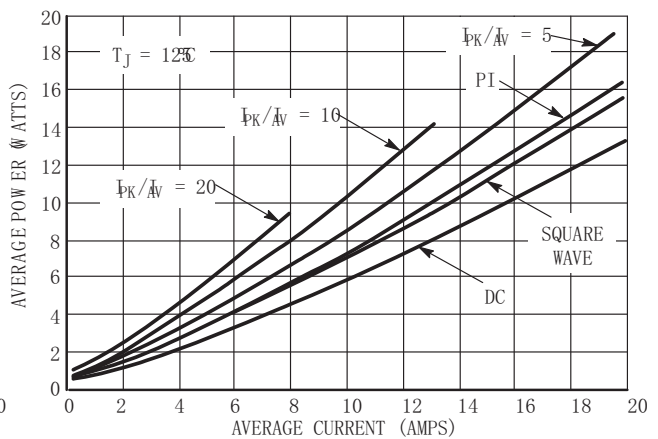
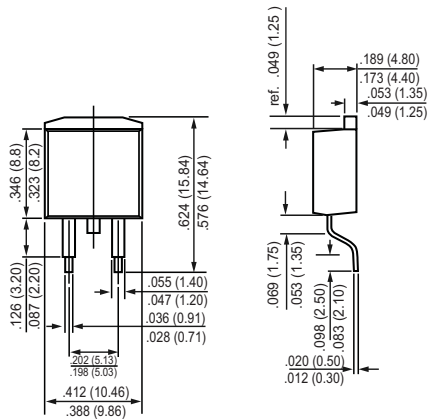
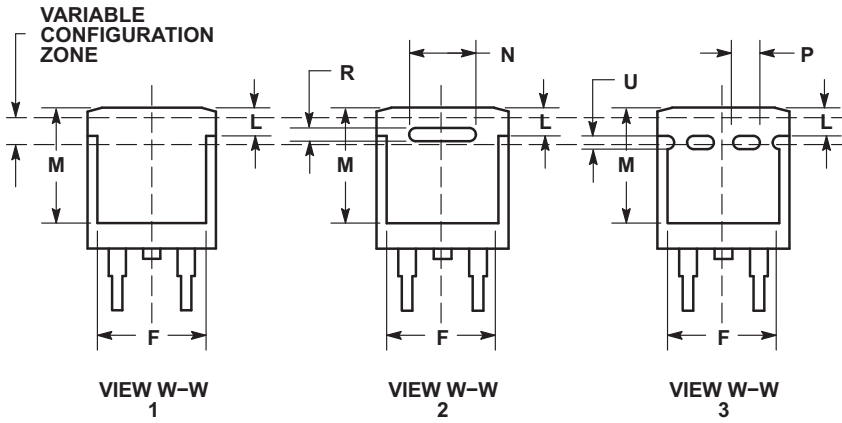


Figure 4. Average Power Dissipation & Average Current

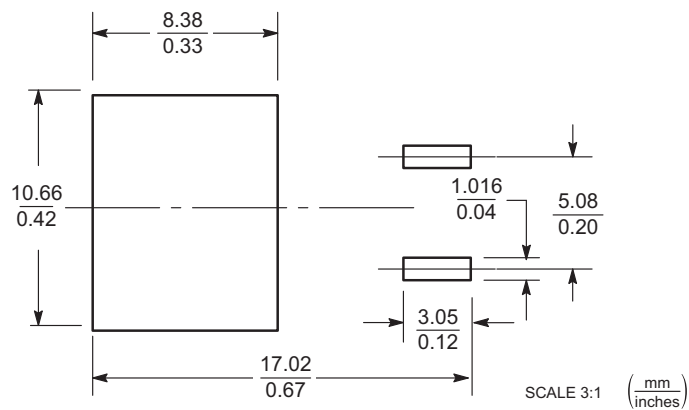
## D<sup>2</sup>PAK



Dimensions in inches and (millimeters)



## SOLDERING FOOTPRINT\*



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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