

# MBRP20060CT

Preferred Device

## POWERTAP™ II SWITCHMODE™ Power Rectifier

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

- Dual Diode Construction —  
May Be Paralleled for Higher Current Output
- Guardring for Stress Protection
- Low Forward Voltage
- 150°C Operating Junction Temperature

### Mechanical Characteristics:

- Case: Epoxy, Molded with metal heatsink base
- Weight: 80 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant
- Top Terminal Torque: 25-40 lb-in max
- Base Plate Torques:  
See procedure given in the Package Outline Section
- Shipped 25 units per foam
- Marking: B20060T

### MAXIMUM RATINGS

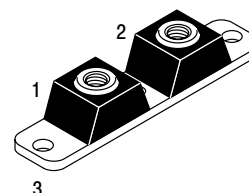
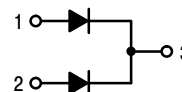
| Rating  | Symbol                          | Value       | Unit             |
|---|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                            | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 60          | V                |
| Average Rectified Forward Current<br>(Rated $V_R$ , $T_C = 140^\circ\text{C}$ )<br>Per Leg<br>Per Device          | $I_{F(AV)}$                     | 100<br>200  | A                |
| Peak Repetitive Forward Current,<br>(Rated $V_R$ , Square Wave,<br>20 kHz, $T_C = 140^\circ\text{C}$ )<br>Per Leg | $I_{FRM}$                       | 200         | A                |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load<br>Conditions Halfwave, Single<br>Phase, 60 Hz) | $I_{FSM}$                       | 1500        | A                |
| Peak Repetitive Reverse Current<br>(2.0 $\mu\text{s}$ , 1.0 kHz)<br>Per Leg                                       | $I_{RRM}$                       | 2.0         | A                |
| Storage Temperature Range   | $T_{stg}$                       | -55 to +150 | $^\circ\text{C}$ |
| Operating Junction Temperature  | $T_J$                           | -55 to +150 | $^\circ\text{C}$ |
| Voltage Rate of Change (Rated $V_R$ )   | $dv/dt$                         | 10,000      | V/ $\mu\text{s}$ |



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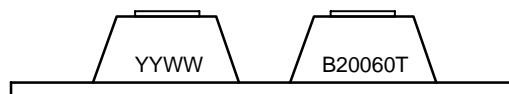
<http://onsemi.com>

### SCHOTTKY BARRIER RECTIFIER 200 AMPERES 60 VOLTS



POWERTAP II  
CASE 357C  
PLASTIC

### MARKING DIAGRAM



B20060T = Device Code  
YY = Year  
WW = Work Week

### ORDERING INFORMATION

| Device      | Package     | Shipping      |
|-------------|-------------|---------------|
| MBRP20060CT | POWERTAP II | 25 Units/Tray |

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

# MBRP20060CT

## THERMAL CHARACTERISTICS (Per Leg)

| Rating                               | Symbol          | Value | Unit                        |
|--------------------------------------|-----------------|-------|-----------------------------|
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 0.6   | $^{\circ}\text{C}/\text{W}$ |

## ELECTRICAL CHARACTERISTICS (Per Leg)

|   |       |              |       |
|---|-------|--------------|-------|
| Instantaneous Forward Voltage (Note 1)<br>( $i_F = 200$ Amps, $T_J = 25^{\circ}\text{C}$ )<br>( $i_F = 200$ Amps, $T_J = 100^{\circ}\text{C}$ ) | $V_F$ | 0.91<br>0.80 | Volts |
| Instantaneous Reverse Current (Note 1)<br>(Rated dc Voltage, $T_J = 125^{\circ}\text{C}$ )<br>(Rated dc Voltage, $T_J = 25^{\circ}\text{C}$ )   | $i_R$ | 50<br>0.5    | mA    |

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

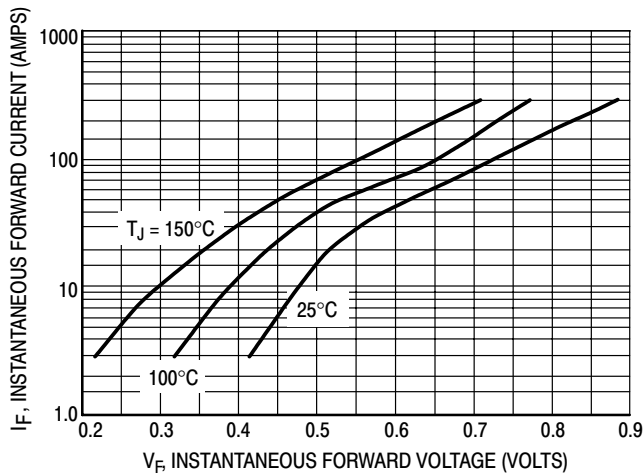


Figure 1. Typical Forward Voltage

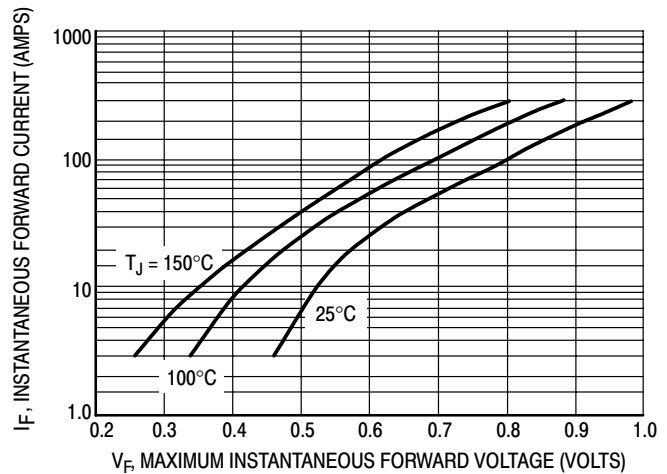


Figure 2. Maximum Forward Voltage

# MBRP20060CT

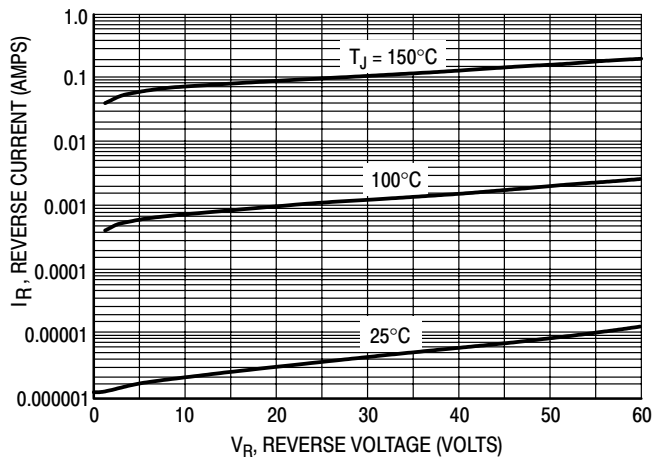


Figure 3. Typical Reverse Current

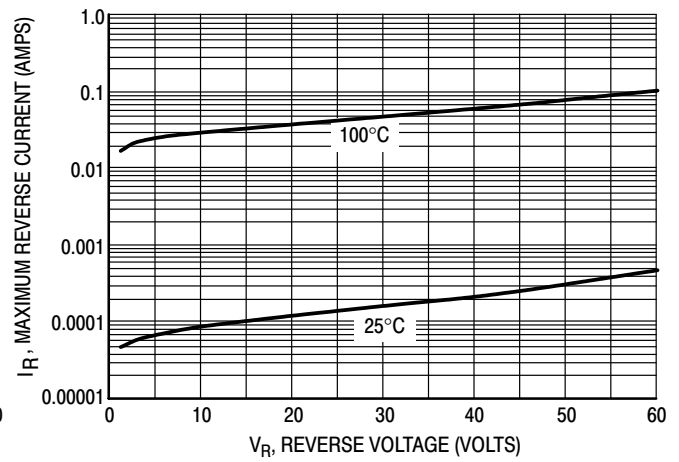


Figure 4. Maximum Reverse Current

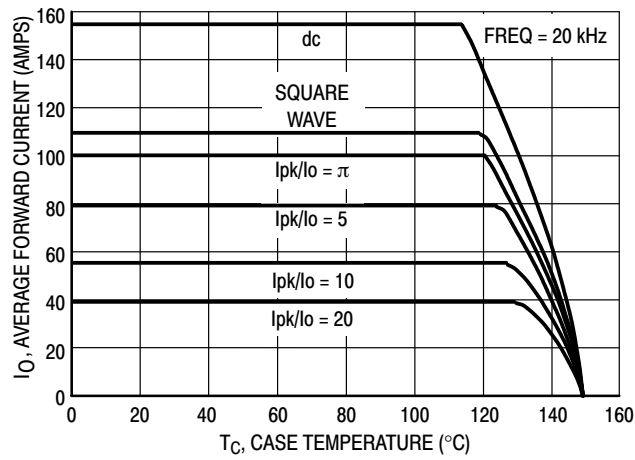


Figure 5. Current Derating (PER LEG)

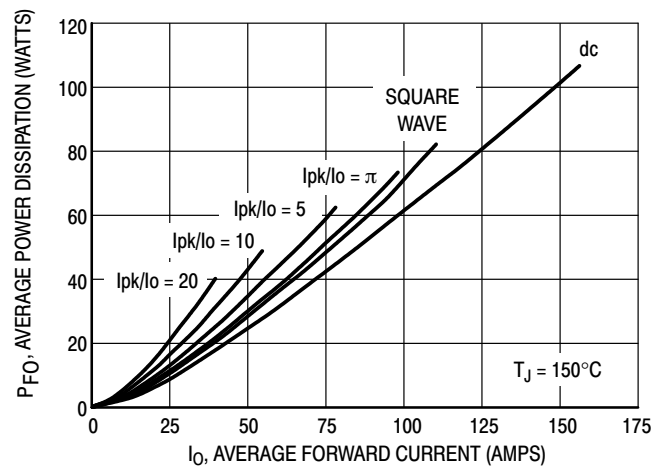


Figure 6. Forward Power Dissipation (PER LEG)

# MBRP20060CT

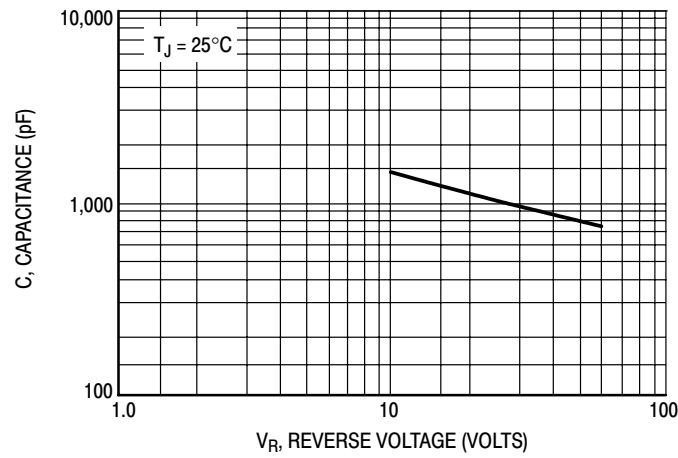


Figure 7. Capacitance

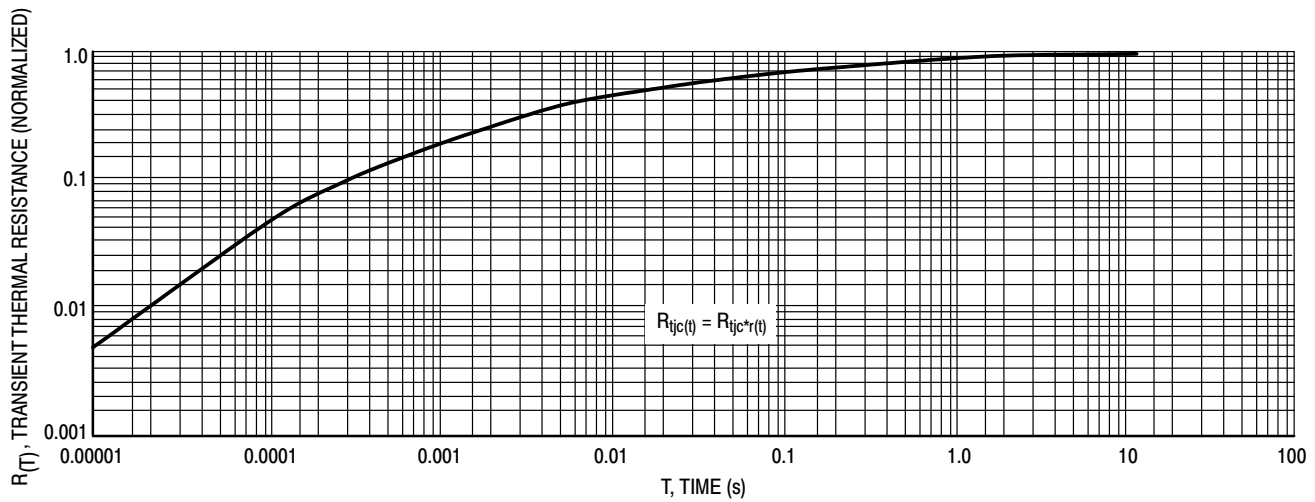


Figure 8. Thermal Response

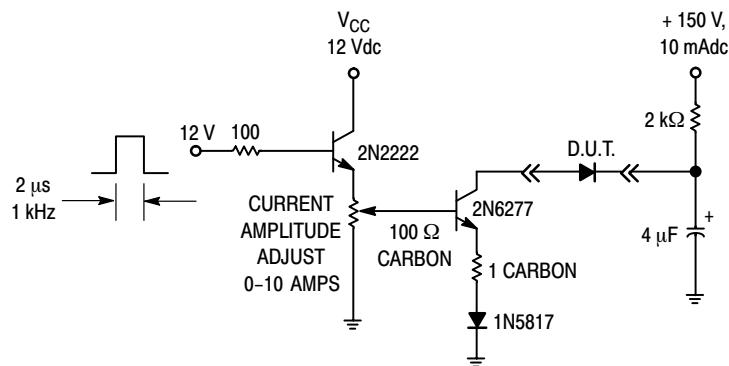


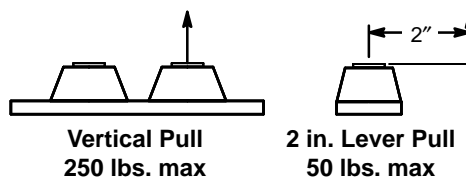
Figure 9. Test Circuit for Repetitive Reverse Current

# MBRP20060CT

## MAXIMUM MECHANICAL RATINGS

|                                  |   |
|----------------------------------|---|
| Terminal Penetration:            | 0.235 max                                 |
| Terminal Torque:                 | 25-40 in-lb max                           |
| Mounting Torque — Outside Holes: | 30-40 in-lb max                           |
| Mounting Torque — Center Hole:   | 8-10 in-lb max                            |
| Seating Plane Flatness           | 1 mil per in.<br>(between mounting holes) |

## POWERTAP MECHANICAL DATA APPLIES OVER OPERATING TEMPERATURE



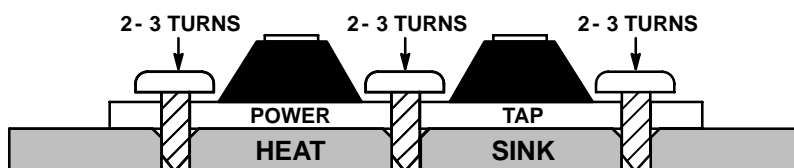
Note: While the POWERTAP is capable of sustaining these vertical and levered tensions, the intimate contact between POWERTAP and heat sink may be lost. This could lead to thermal runaway. The use of very flexible leads is recommended for the anode connections. Use of thermal grease is highly recommended.

## MOUNTING PROCEDURE

The POWERTAP package requires special mounting considerations because of the long longitudinal axis of the copper heat sink. It is important to follow the proper tightening sequence to avoid warping the heat sink, which can reduce thermal contact between the POWERTAP and heat sink.

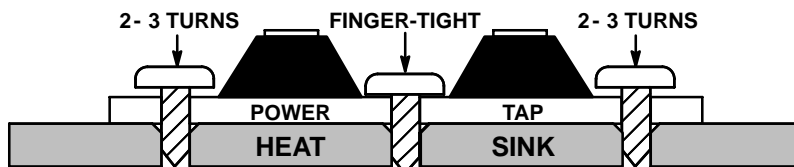
### STEP 1:

Locate the POWERTAP on the heat sink and start mounting bolts into the threads by hand (2 or 3 turns).



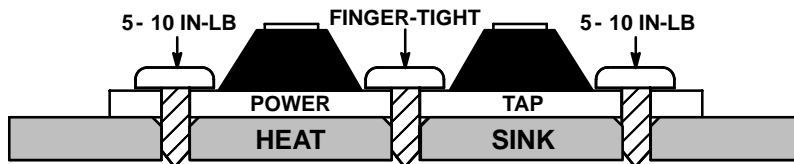
### STEP 2:

Finger tighten the center bolt. The bolt may catch on the threads of the heat sink so it is important to make sure the face of the bolt or washer is in contact with the surface of the POWERTAP.



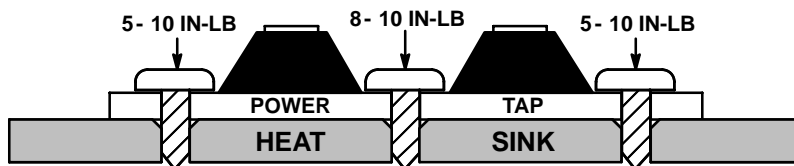
### STEP 3:

Tighten each of the end bolts between 5 to 10 in-lb.



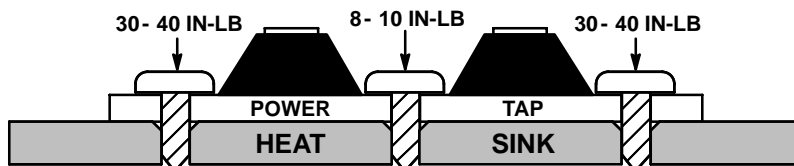
### STEP 4:

Tighten the center bolt between 8 to 10 in-lb.



### STEP 5:

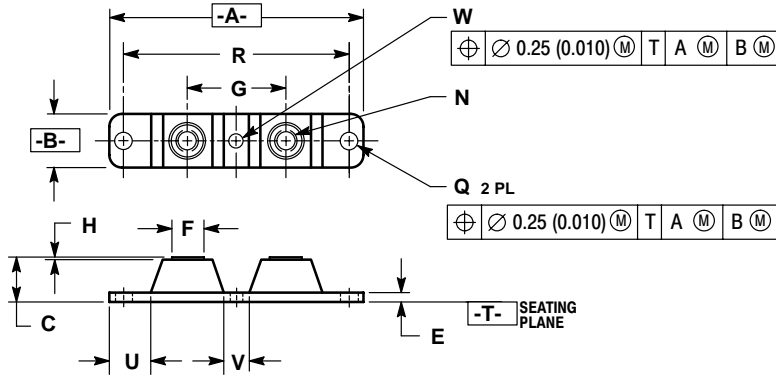
Finally, tighten the end bolts between 30 to 40 in-lb.



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## PACKAGE DIMENSIONS

CASE 357C-03  
POWERTAP  
PLASTIC PACKAGE  
ISSUE E




### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. TERMINAL PENETRATION: 5.97 (0.235) MAXIMUM.

| DIM | INCHES       |              | MILLIMETERS |       |
|-----|--------------|--------------|-------------|-------|
|     | MIN          | MAX          | MIN         | MAX   |
| A   | 3.450        | 3.635        | 87.63       | 92.33 |
| B   | 0.700        | 0.810        | 17.78       | 20.57 |
| C   | 0.615        | 0.640        | 15.63       | 16.26 |
| E   | 0.120        | 0.130        | 3.05        | 3.30  |
| F   | 0.435        | 0.445        | 11.05       | 11.30 |
| G   | 1.370        | 1.380        | 34.80       | 35.05 |
| H   | 0.007        | 0.030        | 0.18        | 0.76  |
| N   | 1/4-20UNC-2B | 1/4-20UNC-2B |             |       |
| Q   | 0.270        | 0.285        | 6.86        | 7.23  |
| R   | 31.50 BSC    | 80.01 BSC    |             |       |
| U   | 0.600        | 0.630        | 15.24       | 16.00 |
| V   | 0.330        | 0.375        | 8.39        | 9.52  |
| W   | 0.170        | 0.190        | 4.32        | 4.82  |

## **Notes**

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