MBRP20060CT

Preferred Device

POWERTAP™ II SWITCHMODE™ Power Rectifier

These state−of−the−art devices use the Schottky Barrier principle with a platinum barrier metal.

Features

- Dual Diode Construction − May Be Paralleled for Higher Current Output
- Guardring for Stress Protection
- Low Forward Voltage
- 150°C Operating Junction Temperature
- Pb−Free Package is Available*

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

MAXIMUM RATINGS

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

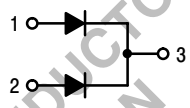
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

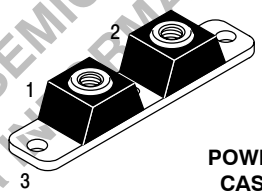
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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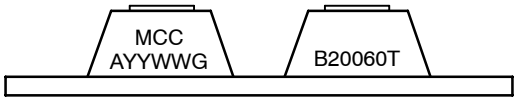
SCHOTTKY BARRIER RECTIFIER 200 AMPERES, 60 VOLTS





POWERTAP II
CASE 357C
PLASTIC

MARKING DIAGRAM



B20060T	= Specific Device Code
MCC	= Mold Compound Code
A	= Assembly Location
YY	= Year
WW	= Work Week
G	= Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping
MBRP20060CT	POWERTAP II	25 Units/Tray
MBRP20060CTG	POWERTAP II (Pb−Free)	25 Units/Tray

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

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THERMAL CHARACTERISTICS (Per Leg)

Rating	Symbol	Value	Unit
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	0.6	°C/W

ELECTRICAL CHARACTERISTICS (Per Leg)

Instantaneous Forward Voltage (Note 1) (i_F = 200 Amps, T_J = 25°C) (i_F = 200 Amps, T_J = 100°C)	v_F	 0.91 0.80	V
Instantaneous Reverse Current (Note 1) (Rated dc Voltage, T_J = 125°C) (Rated dc Voltage, T_J = 25°C)	i_R	 50 0.5	mA

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

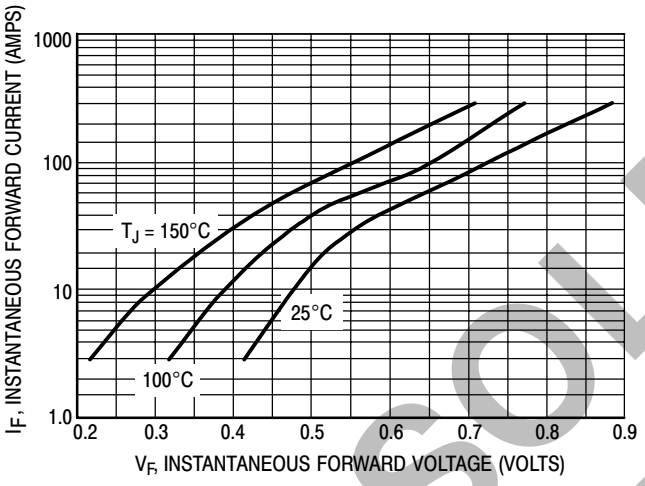


Figure 1. Typical Forward Voltage

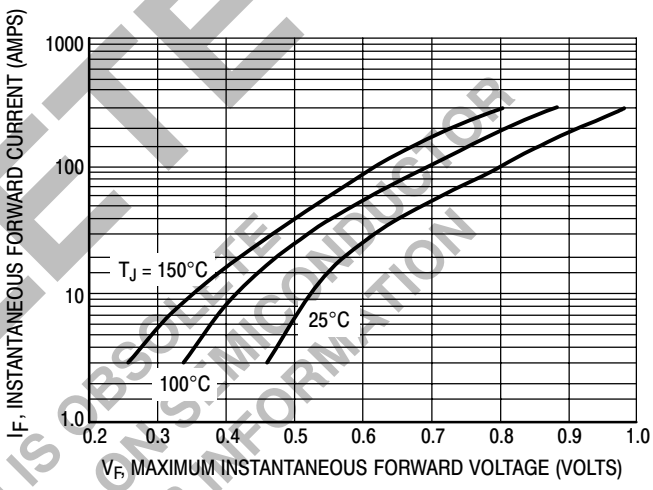


Figure 2. Maximum Forward Voltage

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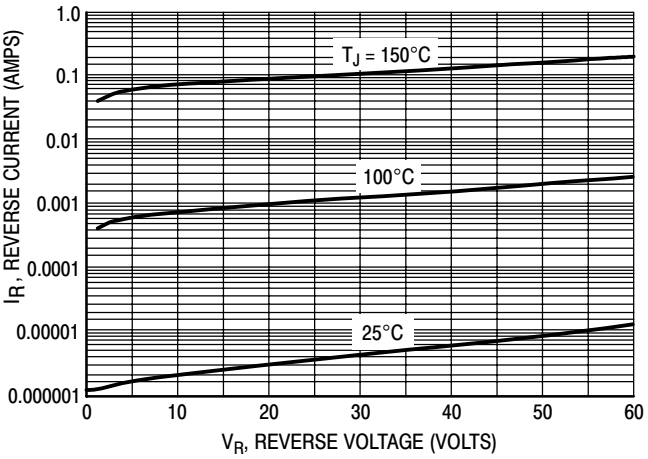


Figure 3. Typical Reverse Current

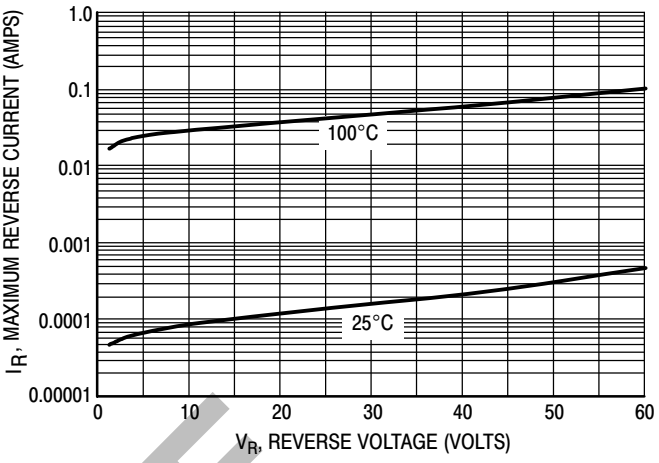


Figure 4. Maximum Reverse Current

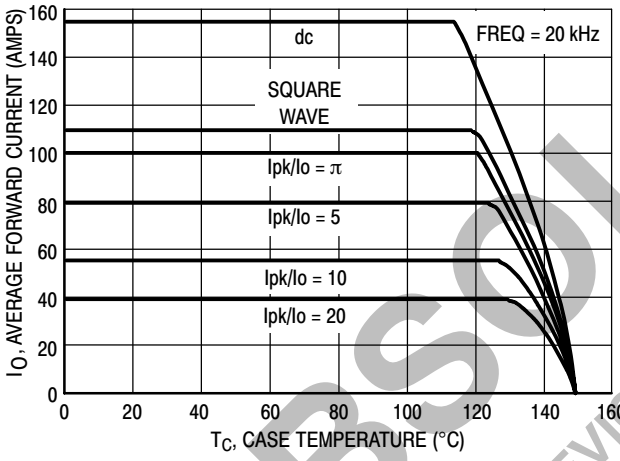


Figure 5. Current Derating (PER LEG)

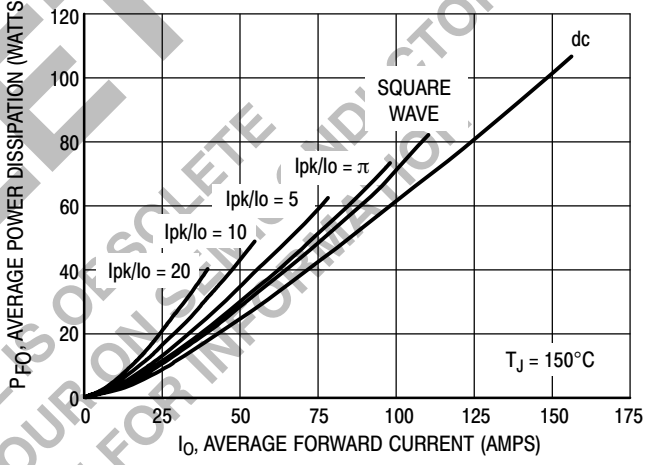


Figure 6. Forward Power Dissipation (PER LEG)

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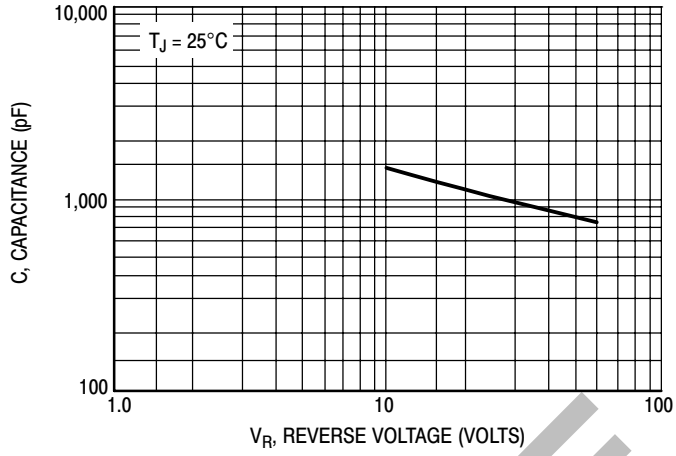


Figure 7. Capacitance

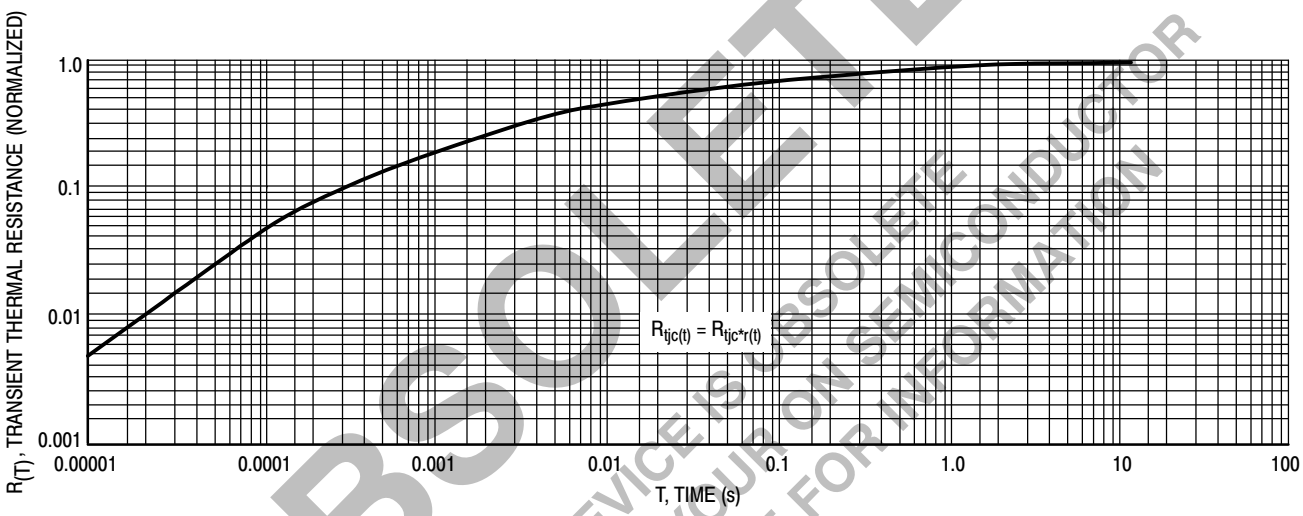


Figure 8. Thermal Response

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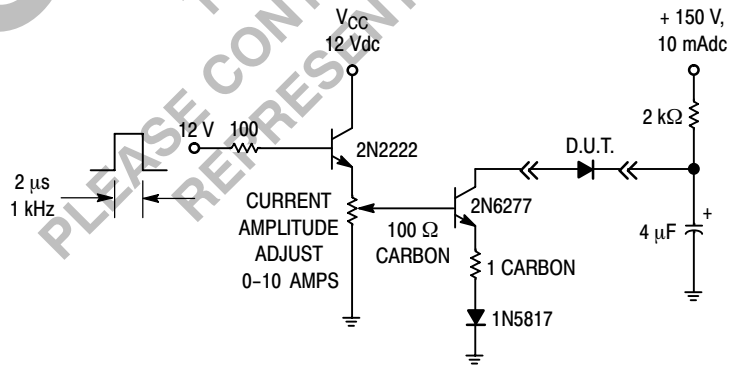
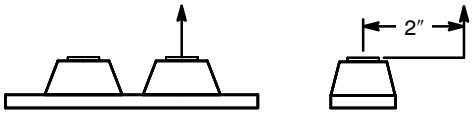


Figure 9. Test Circuit for Repetitive Reverse Current

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. (between mounting holes)

POWERTAP MECHANICAL DATA
APPLIES OVER OPERATING TEMPERATURE



Vertical Pull
250 lbs. max

2 in. Lever Pull
50 lbs. max

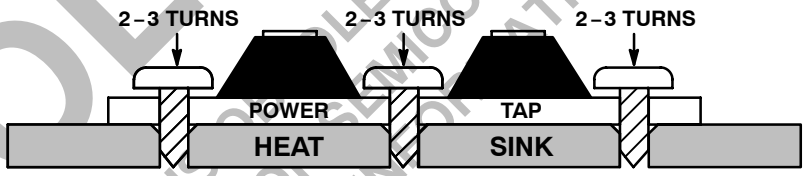
Note: While the POWERTAP is capable of sustaining these vertical and levered tensions, the intimate contact between POWERTAP and heat sink may be lost. This could lead to thermal runaway. The use of very flexible leads is recommended for the anode connections. Use of thermal grease is highly recommended.

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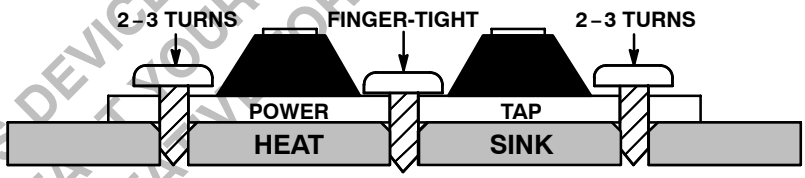
MOUNTING PROCEDURE

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.

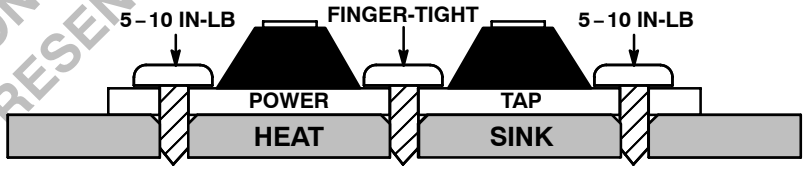
STEP 1:
Locate the POWERTAP on the heat sink and start mounting bolts into the threads by hand (2 or 3 turns).



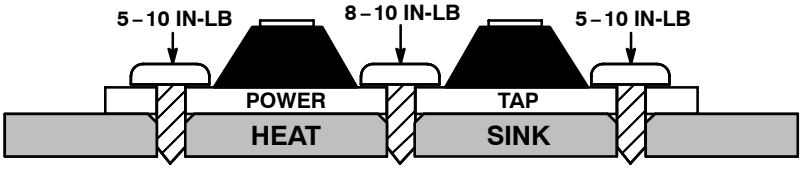
STEP 2:
Finger tighten the center bolt. The bolt may catch on the threads of the heat sink so it is important to make sure the face of the bolt or washer is in contact with the surface of the POWERTAP.



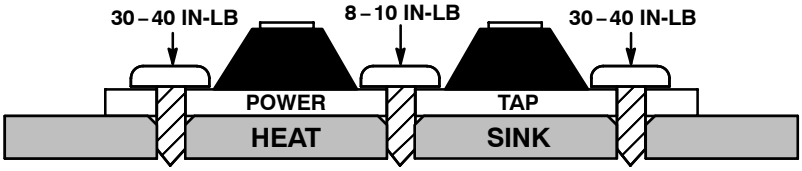
STEP 3:
Tighten each of the end bolts between 5 to 10 in-lb.



STEP 4:
Tighten the center bolt between 8 to 10 in-lb.



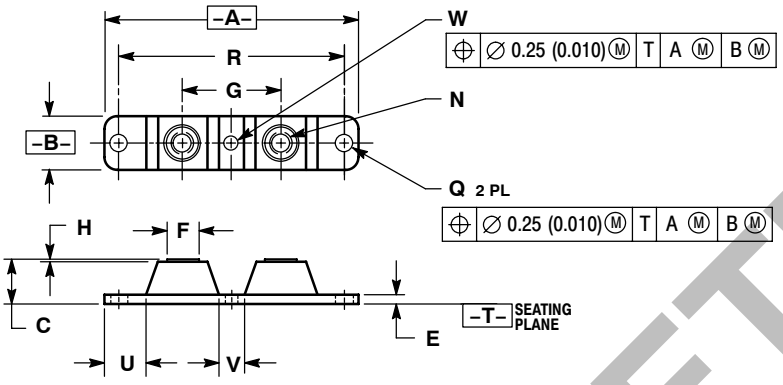
STEP 5:
Finally, tighten the end bolts between 30 to 40 in-lb.



MBRP20060CT

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.

	INCHES		MILLIMETERS	
DIM	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

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