MBRP20030CTL

Preferred Device

POWERTAP™ II SWITCHMODE™ Power Rectifier

The SWITCHMODE Power Rectifier uses the Schottky Barrier principle with a platinum barrier metal. This state−of−the−art device has the following features:

Features

- Dual Diode Construction − May Be Paralleled for Higher Current Output
- Guardring for Stress Protection
- Low Forward Voltage Drop
- 150°C Operating Junction Temperature
- Recyclable Epoxy
- Guaranteed Reverse Avalanche Energy Capability
- Improved Mechanical Ratings
- These devices are manufactured with a Pb−Free external lead finish only*

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	30	V
Average Rectified Forward Current (At Rated V_R, T_C = 125°C) Per Leg Per Device	$I_{F(AV)}$	 100 200	A
Peak Repetitive Forward Current, (At Rated V_R, Square Wave, 20 kHz, T_C = 100°C)	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 Surge Current (2.0 μs, 1.0 kHz)	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

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.

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

ON Semiconductor®

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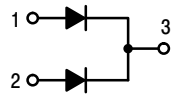
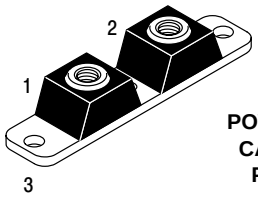
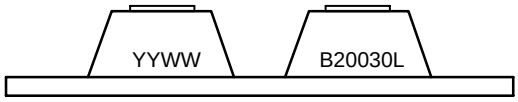
LOW V_F SCHOTTKY BARRIER RECTIFIER 200 AMPERES 30 VOLTS





POWERTAP II
CASE 357C
PLASTIC

MARKING DIAGRAM



B20030L = Device Code
YY = Year
WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping†
MBRP20030CTL	POWERTAP II	25 Units/Tray

†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.

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

THERMAL CHARACTERISTICS

Rating	Symbol	Value	Unit
Thermal Resistance − Junction−to−Case	$R_{\theta JC}$	0.45	°C/W

ELECTRICAL CHARACTERISTICS

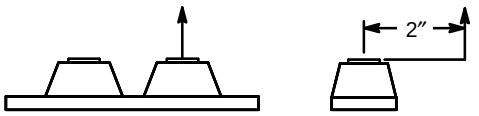
Maximum Instantaneous Forward Voltage (Note 1) (I_F = 200 Amps, T_C = +125°C) (I_F = 200 Amps, T_C = +25°C)	V_F	 0.52 0.60	V
Maximum Instantaneous Reverse Current (Note 1), (Rated dc Voltage, T_C = +25°C)	I_R	5.0	mA

1. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2%.

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

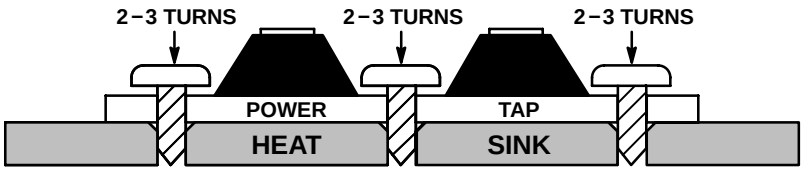
2 in. Lever Pull 50 lbs. max

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.

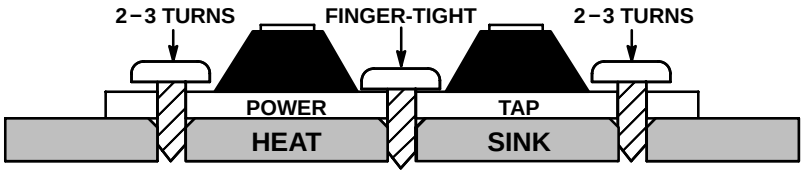
MOUNTING PROCEDURE

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

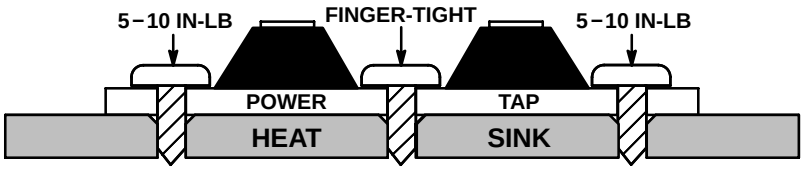
STEP 1:
Locate the POWERTAP on the heatsink and start mounting bolts into the threads by hand (2 or 3 turns).



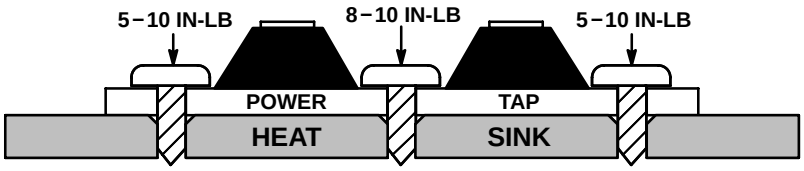
STEP 2:
Finger tighten the center bolt. The bolt may catch on the threads of the heatsink so it is important to make sure the face of the bolt or washer is in contact with the surface of the POWERTAP.



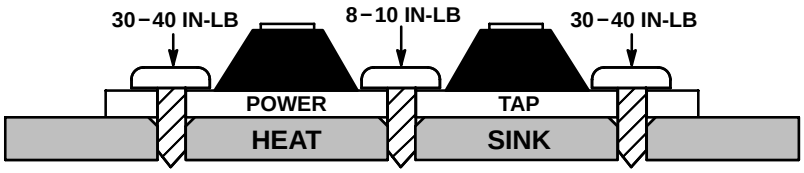
STEP 3:
Tighten each of the end bolts between 5 to 10 in-lb.



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



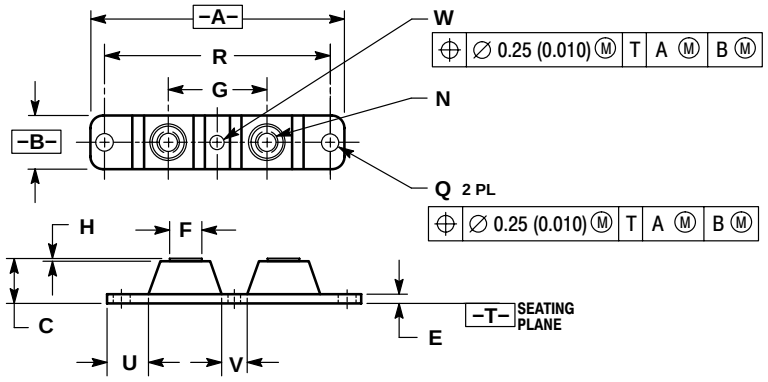
STEP 5:
Finally, tighten the end bolts between 30 to 40 in-lb.



MBRP20030CTL

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

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 61312, Phoenix, Arizona 85082−1312 USA
Phone: 480−829−7710 or 800−344−3860 Toll Free USA/Canada
Fax: 480−829−7709 or 800−344−3867 Toll Free USA/Canada
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2−9−1 Kamimeguro, Meguro−ku, Tokyo, Japan 153−0051
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For additional information, please contact your local Sales Representative.