

MBR0530T1, MBR0530T3

Preferred Devices

Surface Mount Schottky Power Rectifier

Plastic SOD-123 Package

The MBR0530T1/3 uses the Schottky Barrier principle with a large area metal-to-silicon power diode. Ideally suited for low voltage, high frequency rectification or as free wheeling and polarity protection diodes in surface mount applications where compact size and weight are critical to the system. This package also provides an easy to work with alternative to leadless 34 package style. These state-of-the-art devices have the following features:

Features

- Guardring for Stress Protection
- Low Forward Voltage
- 125°C Operating Junction Temperature
- Epoxy Meets UL 94, V-0 @ 0.125 in
- Package Designed for Optimal Automated Board Assembly
- Pb-Free Packages are Available

Mechanical Characteristics

- Reel Options: MBR0530T1 = 3,000 per 7 in reel/8 mm tape
MBR0530T3 = 10,000 per 13 in reel/8 mm tape
- Polarity Designator: Cathode Band
- Weight: 11.7 mg (approximately)
- Case: Epoxy, Molded
- 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

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 (Rated V_R , $T_L = 100^\circ\text{C}$) | $I_{F(AV)}$ | 0.5 | A |
| Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | I_{FSM} | 5.5 | A |
| Storage Temperature Range | T_{stg} | -65 to +125 | °C |
| Operating Junction Temperature | T_J | -65 to +125 | °C |
| Voltage Rate of Change (Rated V_R) | dv/dt | 1000 | 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.



ON Semiconductor®

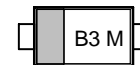
<http://onsemi.com>

SCHOTTKY BARRIER RECTIFIER 0.5 AMPERES 30 VOLTS



SOD-123
CASE 425
STYLE 1

MARKING DIAGRAM



B3 = Device Code
M = Month Code

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 3 of this data sheet.

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

MBR0530T1, MBR0530T3

THERMAL CHARACTERISTICS

| Rating | Symbol | Value | Unit |
|---|-----------------|-------|---------------|
| Thermal Resistance – Junction-to-Ambient (Note 1) | $R_{\theta JA}$ | 206 | $^{\circ}C/W$ |
| Thermal Resistance – Junction-to-Lead | $R_{\theta JL}$ | 150 | $^{\circ}C/W$ |

ELECTRICAL CHARACTERISTICS

| | | | |
|--|-------|---------------|---------|
| Maximum Instantaneous Forward Voltage (Note 2) ($i_F = 0.1$ Amps, $T_J = 25^{\circ}C$) ($i_F = 0.5$ Amps, $T_J = 25^{\circ}C$) | V_F | 0.375 0.43 | V |
| Maximum Instantaneous Reverse Current (Note 2) (Rated dc Voltage, $T_C = 25^{\circ}C$) ($V_R = 15$ V, $T_C = 25^{\circ}C$) | I_R | 130 20 | μA |

- 1 inch square pad size (1 x 0.5 inch for each lead) on FR4 board.
- Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2\%$.

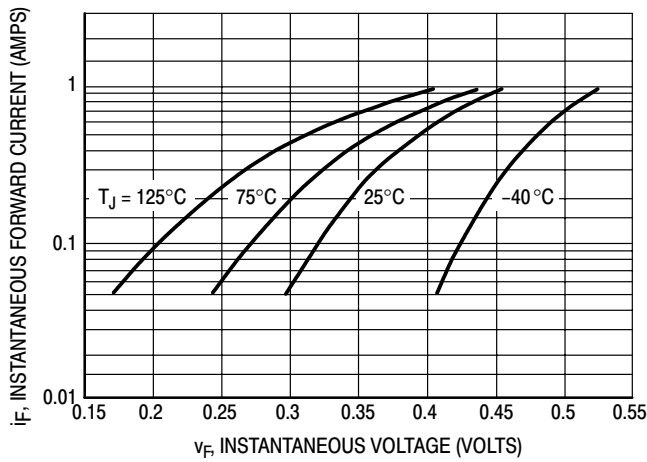


Figure 1. Typical Forward Voltage

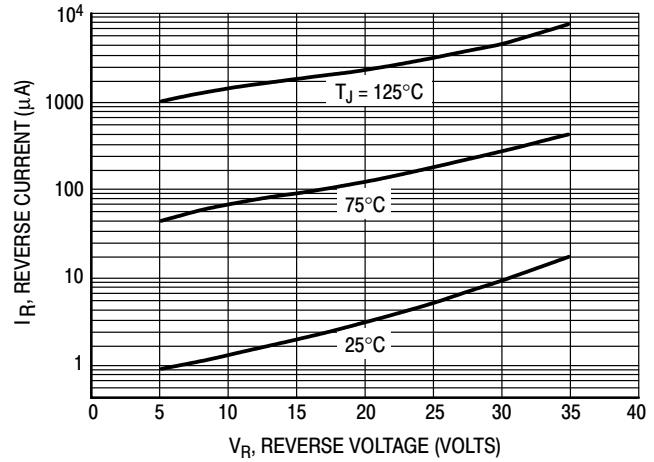


Figure 2. Typical Reverse Current

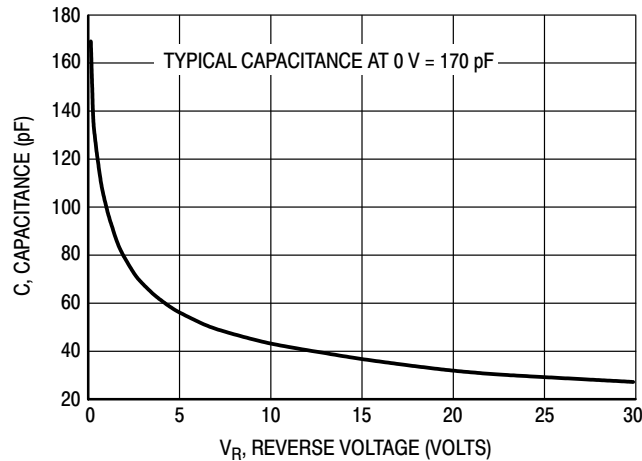


Figure 3. Typical Capacitance

MBR0530T1, MBR0530T3

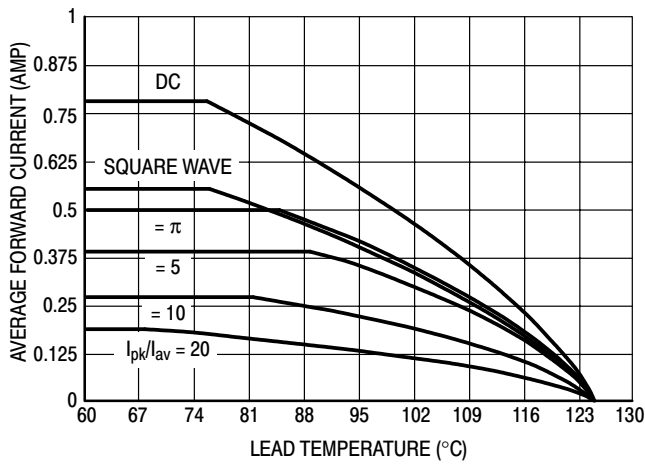


Figure 4. Current Derating (Lead)

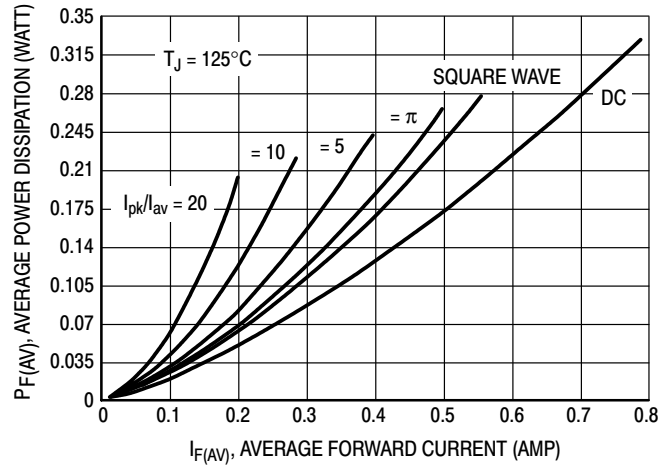


Figure 5. Power Dissipation

ORDERING INFORMATION

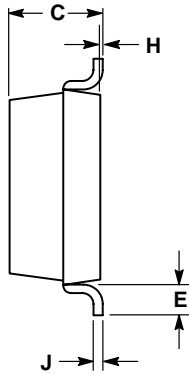
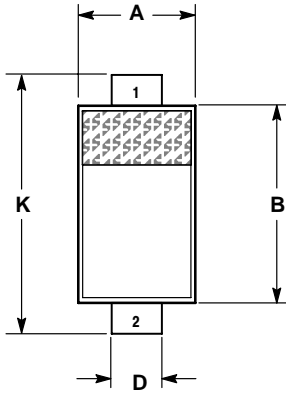
| Device | Package | Shipping† |
|------------|----------------------|--------------------|
| MBR0530T1 | SOD-123 | 3,000 Tape & Reel |
| MBR0530T1G | SOD-123 (Pb-Free) | 3,000 Tape & Reel |
| MBR0530T3 | SOD-123 | 10,000 Tape & Reel |
| MBR0530T3G | SOD-123 (Pb-Free) | 10,000 Tape & Reel |

†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.

MBR0530T1, MBR0530T3

PACKAGE DIMENSIONS

SOD-123
PLASTIC
CASE 425-04
ISSUE C

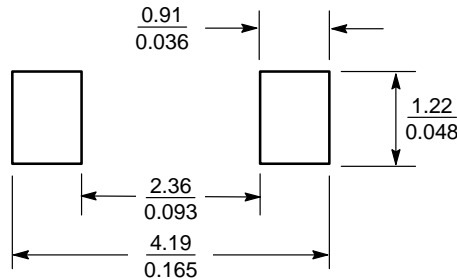


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | 0.055 | 0.071 | 1.40 | 1.80 |
| B | 0.100 | 0.112 | 2.55 | 2.85 |
| C | 0.037 | 0.053 | 0.95 | 1.35 |
| D | 0.020 | 0.028 | 0.50 | 0.70 |
| E | 0.004 | --- | 0.25 | --- |
| H | 0.000 | 0.004 | 0.00 | 0.10 |
| J | --- | 0.006 | --- | 0.15 |
| K | 0.140 | 0.152 | 3.55 | 3.85 |


STYLE 1:
PIN 1. CATHODE
2. ANODE

SOLDERING FOOTPRINT*



SCALE 10:1 $\left(\frac{\text{mm}}{\text{inches}}\right)$

*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 and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

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
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada

Japan: ON Semiconductor, Japan Customer Focus Center
2-9-1 Kamimeguro, Meguro-ku, Tokyo, Japan 153-0051
Phone: 81-3-5773-3850

ON Semiconductor Website: <http://onsemi.com>

Order Literature: <http://www.onsemi.com/litorder>

For additional information, please contact your local Sales Representative.