

# MBRS1100T3G, SBR81100T3G, MBRS190T3G, SBR8190T3G

Preferred Devices

## Schottky Power Rectifier

### Surface Mount Power Package

Schottky Power Rectifiers employ the use of the Schottky Barrier principle in a large area metal-to-silicon power diode. State-of-the-art geometry features epitaxial construction with oxide passivation and metal overlay contact. 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. These state-of-the-art devices have the following features:

#### Features

- Small Compact Surface Mountable Package with J-Bend Leads
- Rectangular Package for Automated Handling
- Highly Stable Oxide Passivated Junction
- High Blocking Voltage – 100 Volts
- 175°C Operating Junction Temperature
- Guardring for Stress Protection
- AEC-Q101 Qualified and PPAP Capable
- SBR8 Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- All Packages are Pb-Free\*

#### Mechanical Characteristics

- Case: Epoxy, Molded
- Weight: 95 mg (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
- Shipped in 12 mm Tape and Reel, 2,500 units per reel
- Cathode Polarity Band



ON Semiconductor®

<http://onsemi.com>

### SCHOTTKY BARRIER RECTIFIER 1.0 AMPERE 90, 100 VOLTS



SMB  
CASE 403A

#### MARKING DIAGRAM



B1 = Device Code  
x = C for MBRS1100T3  
9 for MBRS190T3  
A = Assembly Location  
Y = Year  
WW = Work Week  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

#### 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.

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

# MBRS1100T3G, SBRS81100T3G, MBRS190T3G, SBRS8190T3G

## MAXIMUM RATINGS

| Rating  | Symbol                          | Value       | Unit               |
|---|---------------------------------|-------------|--------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage<br>MBRS190T3<br>MBRS1100T3 | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 90<br>100   | V                  |
| Average Rectified Forward Current<br>$T_L = 163^{\circ}\text{C}$<br>$T_L = 148^{\circ}\text{C}$                   | $I_{F(AV)}$                     | 1.0<br>2.0  | A                  |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)       | $I_{FSM}$                       | 50          | A                  |
| Operating Junction Temperature (Note 1)   | $T_J$                           | -65 to +175 | $^{\circ}\text{C}$ |
| Voltage Rate of Change  | dv/dt                           | 10          | V/ns               |

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.

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

## THERMAL CHARACTERISTICS

| Characteristic   | Symbol          | Value | Unit                 |
|--|-----------------|-------|----------------------|
| Thermal Resistance – Junction-to-Lead ( $T_L = 25^{\circ}\text{C}$ ) | $R_{\theta JL}$ | 22    | $^{\circ}\text{C/W}$ |

## ELECTRICAL CHARACTERISTICS

| Characteristic  | Symbol | Value      | Unit |
|---|--------|------------|------|
| Maximum Instantaneous Forward Voltage (Note 2) ( $I_F = 1.0\text{ A}$ , $T_J = 25^{\circ}\text{C}$ )  | $V_F$  | 0.75       | V    |
| Maximum Instantaneous Reverse Current (Note 2)<br>(Rated dc Voltage, $T_J = 25^{\circ}\text{C}$ )<br>(Rated dc Voltage, $T_J = 100^{\circ}\text{C}$ ) | $I_R$  | 0.5<br>5.0 | mA   |

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

## ORDERING INFORMATION

| Device       | Marking | Package          | Shipping <sup>†</sup> |
|--------------|---------|------------------|-----------------------|
| MBRS1100T3G  | B1C     | SMB<br>(Pb-Free) | 2,500 Tape & Reel     |
| SBRS81100T3G | B1C     | SMB<br>(Pb-Free) | 2,500 Tape & Reel     |
| MBRS190T3G   | B19     | SMB<br>(Pb-Free) | 2,500 Tape & Reel     |
| SBRS8190T3G  | B19     | SMB<br>(Pb-Free) | 2,500 Tape & Reel     |

<sup>†</sup>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.

# MBRS1100T3G, SBRS81100T3G, MBRS190T3G, SBRS8190T3G

## TYPICAL ELECTRICAL CHARACTERISTICS

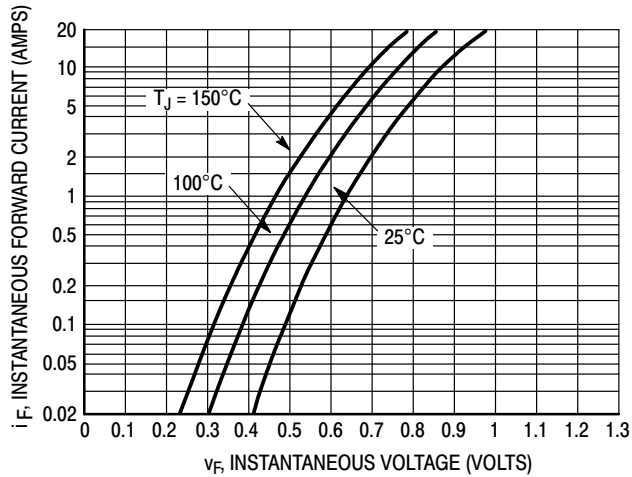


Figure 1. Typical Forward Voltage

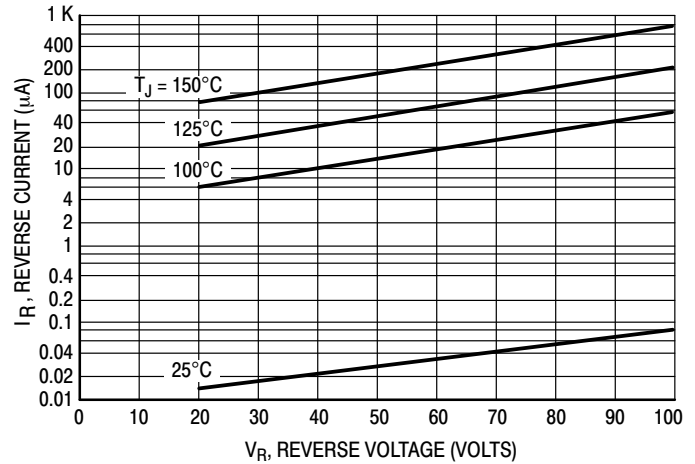


Figure 2. Typical Reverse Current\*

\*The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these curves if  $V_R$  is sufficient below rated  $V_R$ .

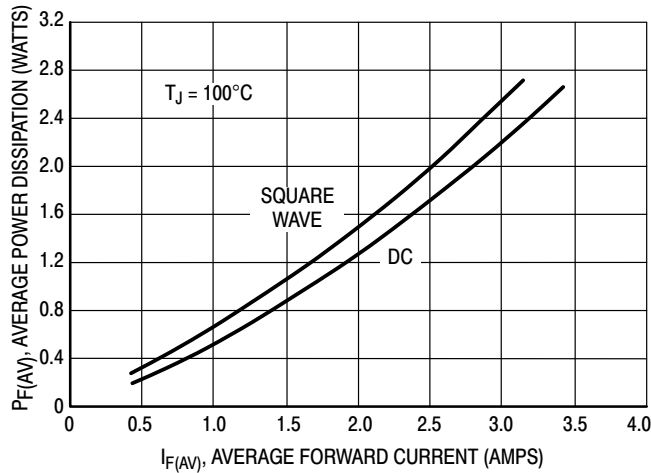


Figure 3. Power Dissipation

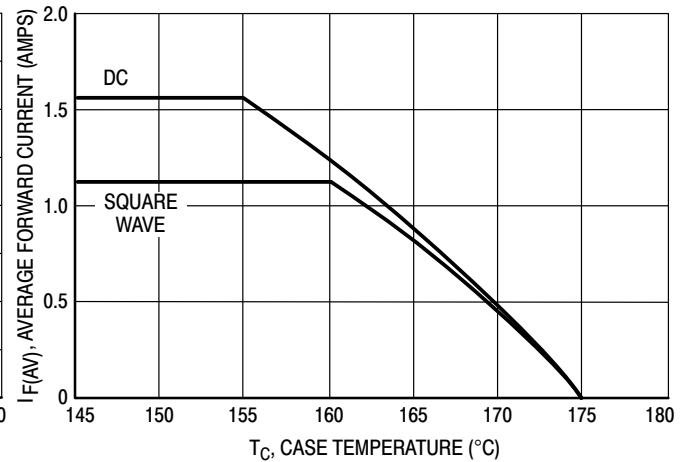


Figure 4. Current Derating, Case, Per Leg

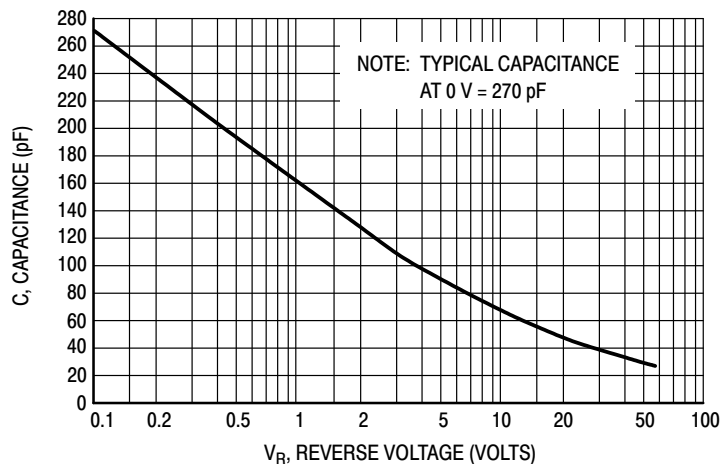
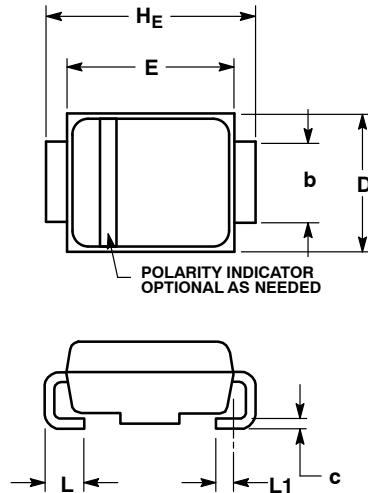


Figure 5. Typical Capacitance

# MBRS1100T3G, SBRS81100T3G, MBRS190T3G, SBRS8190T3G

## PACKAGE DIMENSIONS

### SMB CASE 403A-03 ISSUE H

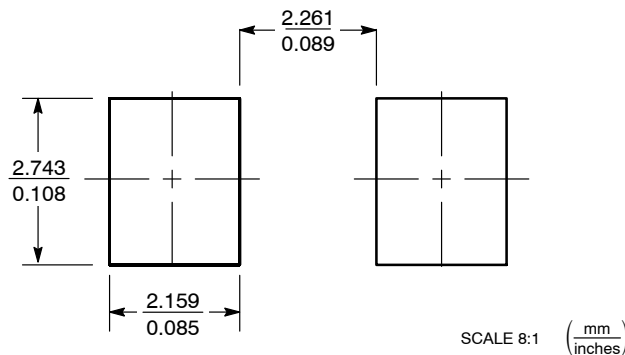


#### NOTES:


1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. D DIMENSION SHALL BE MEASURED WITHIN DIMENSION P.

| DIM | MILLIMETERS |      |      | INCHES    |       |       |
|-----|-------------|------|------|-----------|-------|-------|
|     | MIN         | NOM  | MAX  | MIN       | NOM   | MAX   |
| A   | 1.90        | 2.20 | 2.28 | 0.075     | 0.087 | 0.090 |
| A1  | 0.05        | 0.10 | 0.19 | 0.002     | 0.004 | 0.007 |
| b   | 1.96        | 2.03 | 2.20 | 0.077     | 0.080 | 0.087 |
| c   | 0.15        | 0.23 | 0.31 | 0.006     | 0.009 | 0.012 |
| D   | 3.30        | 3.56 | 3.95 | 0.130     | 0.140 | 0.156 |
| E   | 4.06        | 4.32 | 4.60 | 0.160     | 0.170 | 0.181 |
| HE  | 5.21        | 5.44 | 5.60 | 0.205     | 0.214 | 0.220 |
| L   | 0.76        | 1.02 | 1.60 | 0.030     | 0.040 | 0.063 |
| L1  | 0.51 REF    |      |      | 0.020 REF |       |       |

### 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.

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 5163, Denver, Colorado 80217 USA  
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada  
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada  
Email: [orderlit@onsemi.com](mailto:orderlit@onsemi.com)

N. American Technical Support: 800-282-9855 Toll Free  
USA/Canada  
Europe, Middle East and Africa Technical Support:  
Phone: 421 33 790 2910  
Japan Customer Focus Center  
Phone: 81-3-5817-1050

ON Semiconductor Website: [www.onsemi.com](http://www.onsemi.com)

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

For additional information, please contact your local Sales Representative

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[ON Semiconductor:](#)

[MBRS1100T3](#) [MBRS190T3](#)