# Surface Mount Schottky Power Rectifier

# MBRS140T3G, SBRS8140N

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.

### Features

- Small Compact Surface Mountable Package with J-Bend Leads
- Rectangular Package for Automated Handling
- Highly Stable Oxide Passivated Junction
- Very Low Forward Voltage Drop
  (0.55 V Max @ 1.0 A, $T_J$ = 25 °C)
- Excellent Ability to Withstand Reverse Avalanche Energy Transients
- Guardring for Stress Protection
- ESD Ratings:
  - Human Body Model = 3B (> 8000 V)
  - Machine Model = C (> 400 V)
- SBRS8 Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable*
- These are Pb-Free Devices

### Mechanical Characteristics

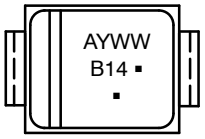
- Case: Epoxy, Molded
- Weight: 95 mg (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260 °C Max. for 10 Seconds
- Cathode Polarity Band

## SCHOTTKY BARRIER RECTIFIER 1.0 AMPERE, 40 VOLTS



**SMB**
**CASE 403A**

### MARKING DIAGRAM




| | |
|---|---|
| B14 | = Specific Device Code |
| A | = Assembly Location** |
| Y | = Year |
| WW | = Work Week |
| ▪ | = Pb-Free Pac |

(Note: Microdot may be in either location)

**The Assembly Location code (A) is front side optional. In cases where the Assembly Location is stamped in the package, the front side assembly code may be blank.

### ORDERING INFORMATION

See detailed ordering, marking and shipping information in the package dimensions section on page 4 of this data sheet.

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## MAXIMUM RATINGS

| Symbol | Rating | Value | Unit |
|---|---|---|---|
| $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | 40 | V |
| $I_{F(AV)}$ | Average Rectified Forward Current<br>$T_L$ = 115 °C | 1.0 | A |
| $I_{FSM}$ | Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | 40 | A |
| $T_J$ | Operating Junction Temperature | −65 to +125 | °C |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

## THERMAL CHARACTERISTICS

| Symbol | Characteristic | Value | Unit |
|---|---|---|---|
| $R_{\theta JL}$ | Thermal Resistance – Junction-to-Lead<br>($T_L$ = 25 °C) | 12 | °C/W |

## ELECTRICAL CHARACTERISTICS

| Symbol | Characteristic | Value | Unit |
|---|---|---|---|
| $V_F$ | Maximum Instantaneous Forward Voltage (Note 1)<br>($i_F$ = 1.0 A, $T_J$ = 25 °C) | 0.6 | V |
| $i_R$ | Maximum Instantaneous Reverse Current (Note 1)<br>(Rated dc Voltage, $T_J$ = 25 °C)<br>(Rated dc Voltage, $T_J$ = 100 °C) | 1.0<br>10 | mA |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

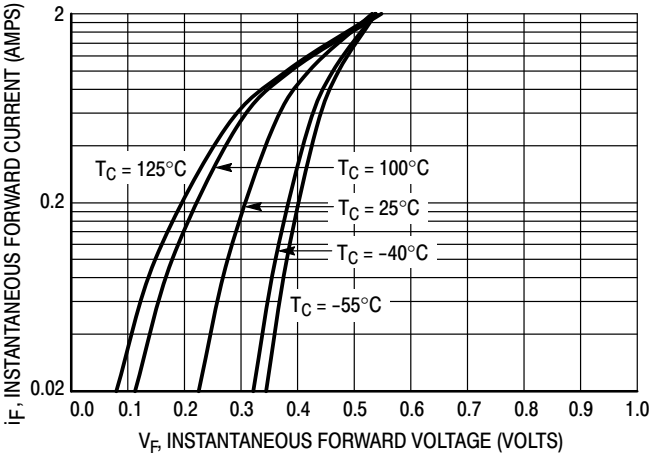



**Figure 1. Typical Forward Voltage**

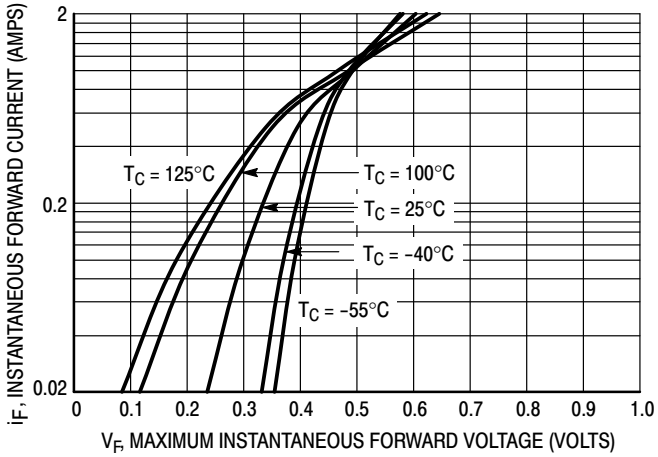



**Figure 2. Maximum Forward Voltage**



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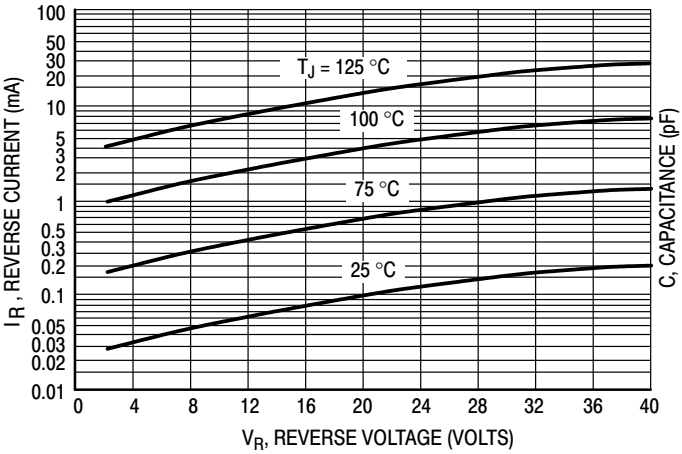



**Figure 3. Typical Reverse Current**

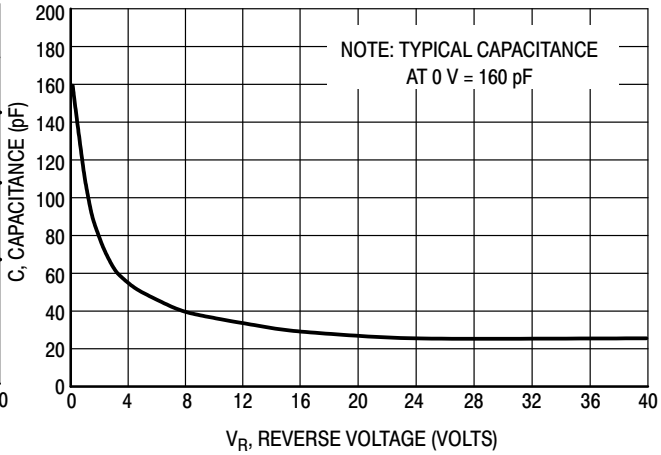



**Figure 4. Typical Capacitance**

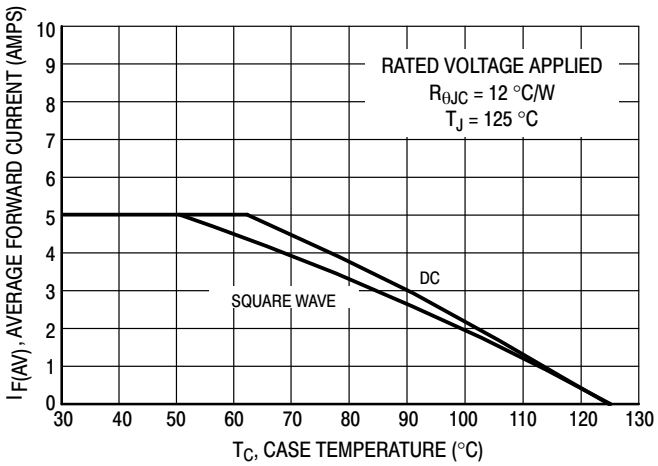



**Figure 5. Current Derating (Case)**

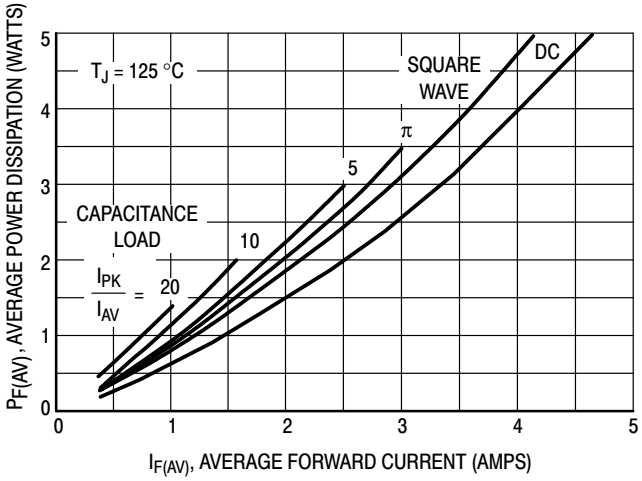



**Figure 6. Power Dissipation**



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## DEVICE ORDERING INFORMATION

| Device | Package | Shipping† |
|---|---|---|
| MBRS140T3G | SMB (Pb-Free) | 2,500 / Tape & Reel |
| SBRS8140NT3G* | SMB (Pb-Free) | 2,500 / 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.



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## REVISION HISTORY

| Revision | Description of Changes | Date |
|---|---|---|
| 15 | Removed EOL devices from datasheet. | 11/18/2025 |

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.



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CASE 403A−03
ISSUE J

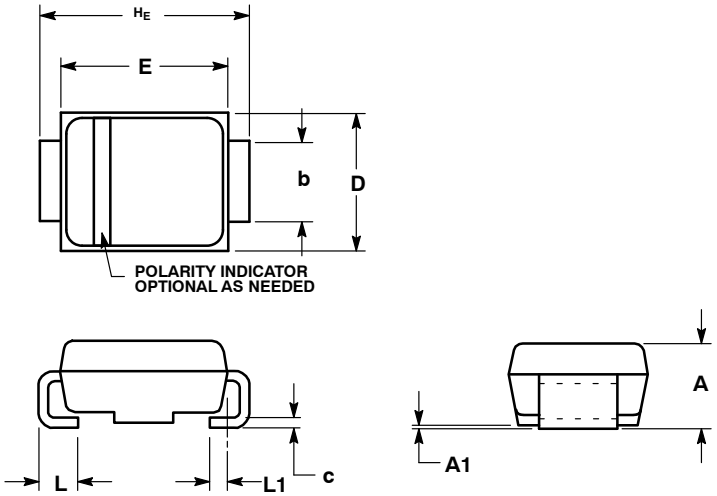
DATE 19 JUL 2012



**SCALE 1:1**
**Polarity Band**



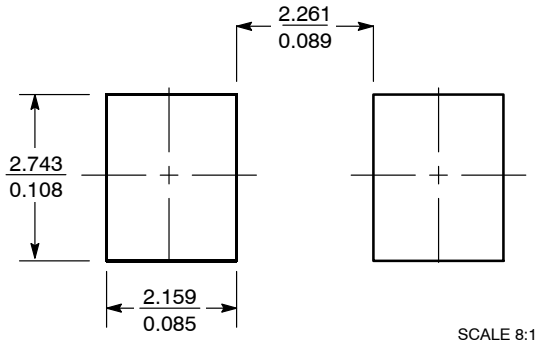
**SCALE 1:1**
**Non−Polarity Band**




NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION b SHALL BE MEASURED WITHIN DIMENSION L1.

| | MILLIMETERS | | | INCHES | | |
|---|---|---|---|---|---|---|
| DIM | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 1.95 | 2.30 | 2.47 | 0.077 | 0.091 | 0.097 |
| A1 | 0.05 | 0.10 | 0.20 | 0.002 | 0.004 | 0.008 |
| 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 |
| $H_E$ | 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 | | |

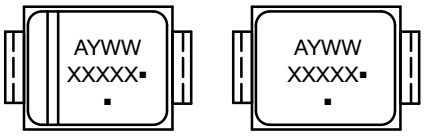
## SOLDERING FOOTPRINT*




SCALE 8:1 (mm / inches)

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

## GENERIC MARKING DIAGRAM*




**Polarity Band** **Non−Polarity Band**

XXXXX = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

| | | |
|---|---|---|
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| **DESCRIPTION:** | **SMB** | **PAGE 1 OF 1** |

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