

MBRS320T3G, SBRS8320T3G, MBRS330T3G, NRVBS330T3G, MBRS340T3G, SBRS8340T3G

Surface Mount Schottky Power Rectifier

These devices employ 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
(0.5 V Max @ 3.0 A, $T_J = 25^\circ\text{C}$)
- Excellent Ability to Withstand Reverse Avalanche Energy Transients
- Guard-Ring for Stress Protection
- Device Passes ISO 7637 Pulse #1
- SBRS8 and NRVB Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These are Pb-Free Packages*

Mechanical Characteristics

- Case: Epoxy, Molded, Epoxy Meets UL 94 V-0
- Weight: 217 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
- Polarity: Notch in Plastic Body Indicates Cathode Lead
- Device Meets MSL 1 Requirements
- ESD Ratings:
 - ◆ Machine Model = C (> 400 V)
 - ◆ Human Body Model = 3B (> 8000 V)

*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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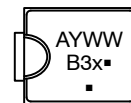
<http://onsemi.com>

**SCHOTTKY BARRIER
RECTIFIERS
3.0 AMPERES
20, 30, 40 VOLTS**



SMC
CASE 403
PLASTIC

MARKING DIAGRAM



B3x = Device Code
x = 2, 3 or 4
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

| Device | Package | Shipping [†] |
|-------------|------------------|------------------------|
| MBRS320T3G | SMC (Pb-Free) | 2,500 / Tape & Reel |
| SBRS8320T3G | SMC (Pb-Free) | 2,500 / Tape & Reel |
| MBRS330T3G | SMC (Pb-Free) | 2,500 / Tape & Reel |
| NRVBS330T3G | SMC (Pb-Free) | 2,500 / Tape & Reel |
| MBRS340T3G | SMC (Pb-Free) | 2,500 / Tape & Reel |
| SBRS8340T3G | SMC (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 Specification Brochure, BRD8011/D.

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MAXIMUM RATINGS

| Rating | Symbol | MBRS320T3G, SBRS8320T3G | MBRS330T3G, NRVBS330T3G | MBRS340T3G, SBRS8340T3G | Unit |
|---|---------------------------------|--|----------------------------|----------------------------|------------------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 20 | 30 | 40 | V |
| Average Rectified Forward Current | $I_{F(AV)}$ | 3.0 @ $T_L = 110^\circ\text{C}$ 4.0 @ $T_L = 105^\circ\text{C}$ | | | A |
| Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz) | I_{FSM} | 80 | | | A |
| Operating Junction Temperature | T_J | - 65 to +150 | | | $^\circ\text{C}$ |
| ISO 7637 Pulse #1 (100 V, 10 Ω) | | 5000 | | | Pulses |
| ESD Ratings: Machine Model = C Human Body Model = 3B | | > 400 > 8000 | | | V |

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.

THERMAL CHARACTERISTICS

| | | | |
|--------------------------------------|-----------------|----|---------------------------|
| Thermal Resistance, Junction-to-Lead | $R_{\theta JL}$ | 11 | $^\circ\text{C}/\text{W}$ |
|--------------------------------------|-----------------|----|---------------------------|

ELECTRICAL CHARACTERISTICS

| | | | |
|---|-------|-----------|----|
| Maximum Instantaneous Forward Voltage (Note 1) ($I_F = 3.0\text{ A}$, $T_J = 25^\circ\text{C}$) | V_F | 0.50 | V |
| Maximum Instantaneous Reverse Current (Note 1) (Rated dc Voltage, $T_J = 25^\circ\text{C}$) (Rated dc Voltage, $T_J = 100^\circ\text{C}$) | i_R | 2.0 20 | mA |

1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

TYPICAL ELECTRICAL CHARACTERISTICS

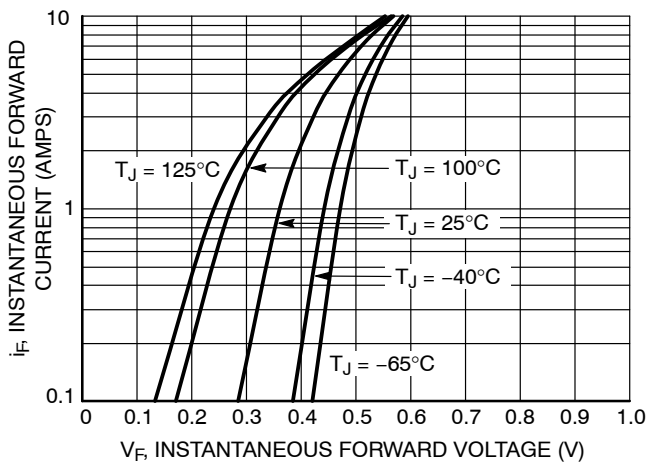


Figure 1. Typical Forward Voltage

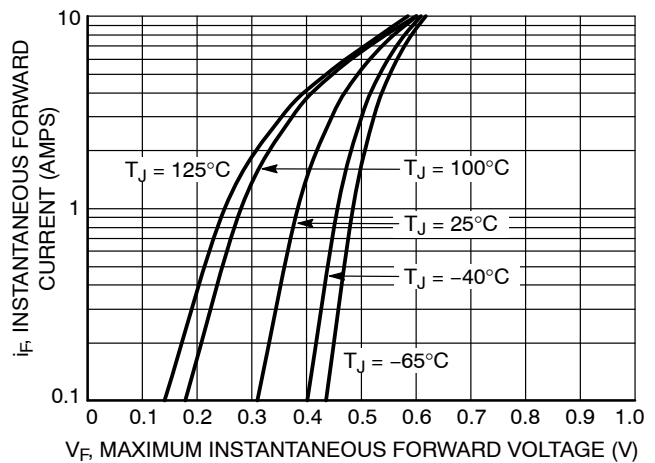


Figure 2. Maximum Forward Voltage

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TYPICAL ELECTRICAL CHARACTERISTICS (continued)

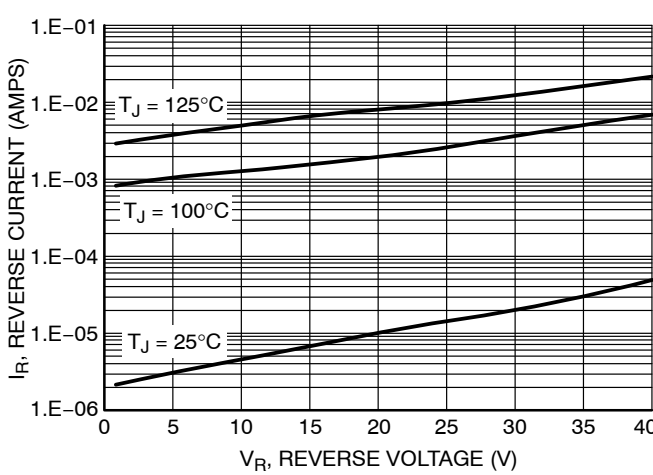


Figure 3. Typical Reverse Current

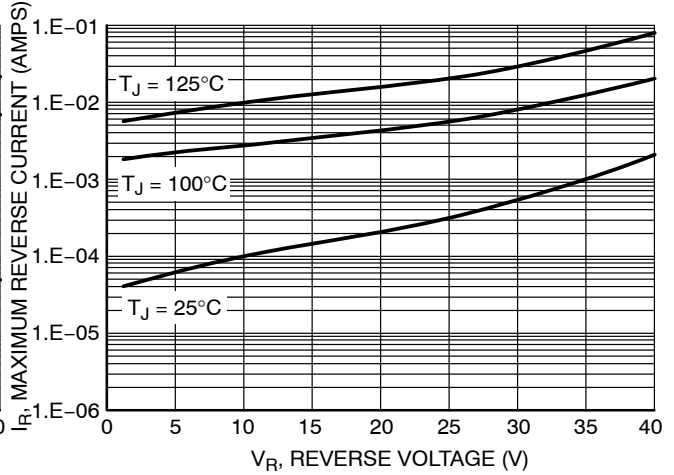


Figure 4. Maximum Reverse Current

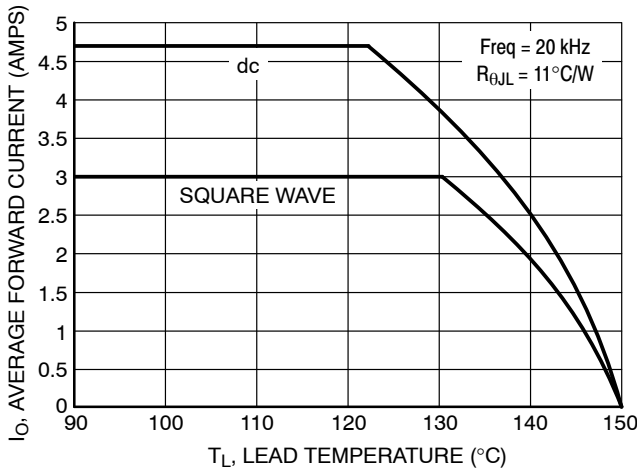


Figure 5. Current Derating

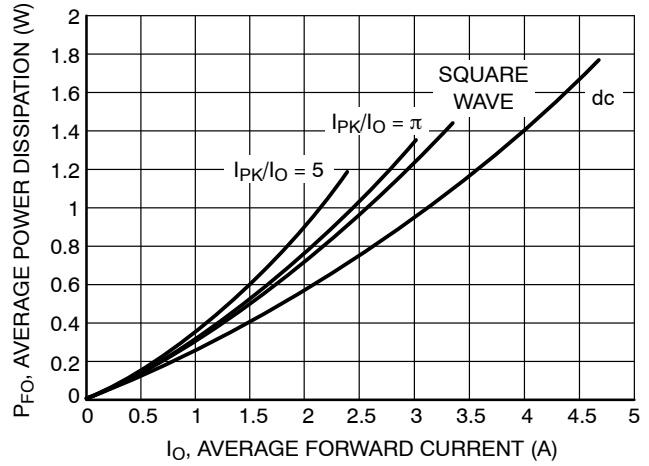


Figure 6. Forward Power Dissipation

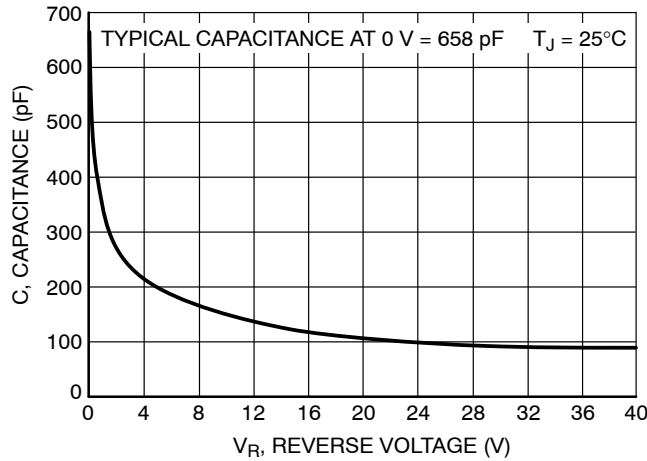
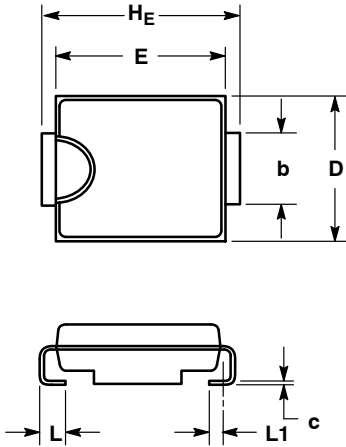


Figure 7. Typical Capacitance

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PACKAGE DIMENSIONS

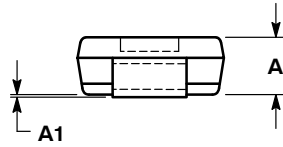
SMC
CASE 403-03
ISSUE E



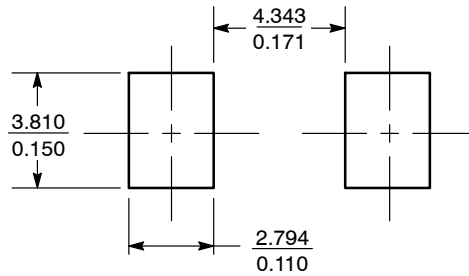
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. D DIMENSION SHALL BE MEASURED WITHIN DIMENSION P.
4. 403-01 THRU -02 OBSOLETE, NEW STANDARD 403-03.

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|-----------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 1.90 | 2.13 | 2.41 | 0.075 | 0.084 | 0.095 |
| A1 | 0.05 | 0.10 | 0.15 | 0.002 | 0.004 | 0.006 |
| b | 2.92 | 3.00 | 3.07 | 0.115 | 0.118 | 0.121 |
| c | 0.15 | 0.23 | 0.30 | 0.006 | 0.009 | 0.012 |
| D | 5.59 | 5.84 | 6.10 | 0.220 | 0.230 | 0.240 |
| E | 6.60 | 6.86 | 7.11 | 0.260 | 0.270 | 0.280 |
| HE | 7.75 | 7.94 | 8.13 | 0.305 | 0.313 | 0.320 |
| L | 0.76 | 1.02 | 1.27 | 0.030 | 0.040 | 0.050 |
| L1 | 0.51 REF | | | 0.020 REF | | |




SOLDERING FOOTPRINT*



SCALE 4:1 $\left(\frac{\text{mm}}{\text{inches}} \right)$

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

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