

# Surface Mount Schottky Power Rectifier

## MBRS320T3G, SBRS8320T3G, MBRS330T3G, NRVBS330T3G, MBRS340T3G, SBRS8340T3G

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<sub>J</sub> = 25°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 Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

### 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: Polarity Band on Plastic Body Indicates Cathode Lead
- Device Meets MSL 1 Requirements
- ESD Ratings:
  - ◆ Machine Model = C (> 400 V)
  - ◆ Human Body Model = 3B (> 8000 V)

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



SMC 2-LEAD  
CASE 403AC

### 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)

\*\*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

Device	Package	Shipping†
MBRS320T3G	SMC (Pb-Free)	2,500 / Tape & Reel
MBRS330T3G	SMC (Pb-Free)	2,500 / Tape & Reel
MBRS340T3G	SMC (Pb-Free)	2,500 / Tape & Reel
NRVBS330T3G	SMC (Pb-Free)	2,500 / Tape & Reel
SBRS8320T3G*	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.

# MBRS320T3G, SBRS8320T3G, MBRS330T3G, NRVBS330T3G, MBRS340T3G, SBRS8340T3G

## 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 $\Omega$ )		5000			Pulses
ESD Ratings: Machine Model = C Human Body Model = 3B		> 400 > 8000			V

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

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

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  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

## TYPICAL ELECTRICAL CHARACTERISTICS

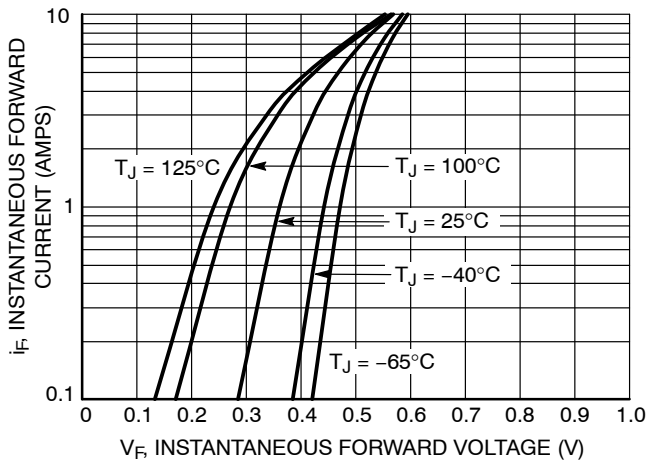


Figure 1. Typical Forward Voltage

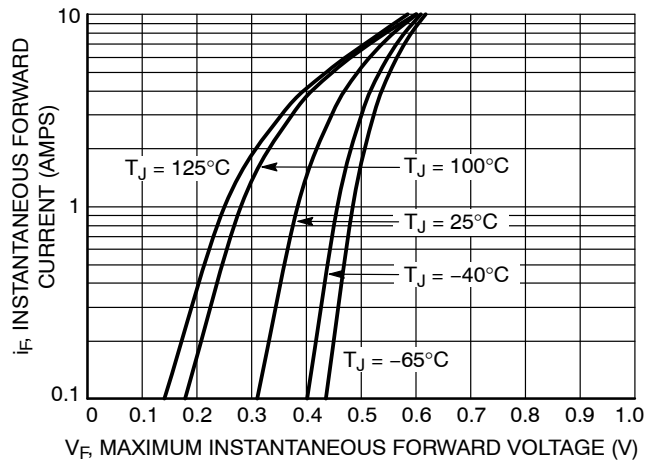
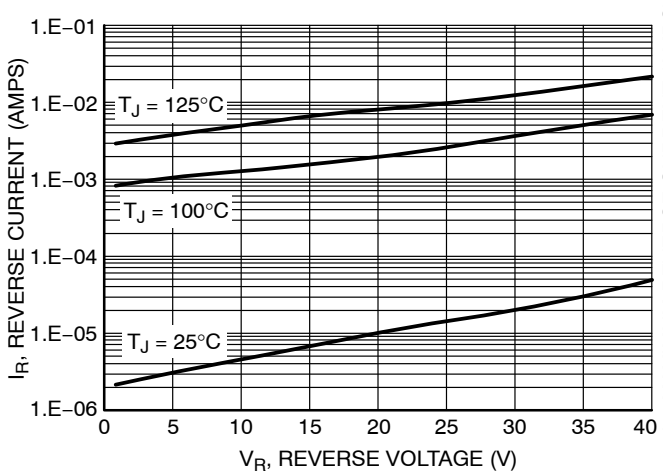


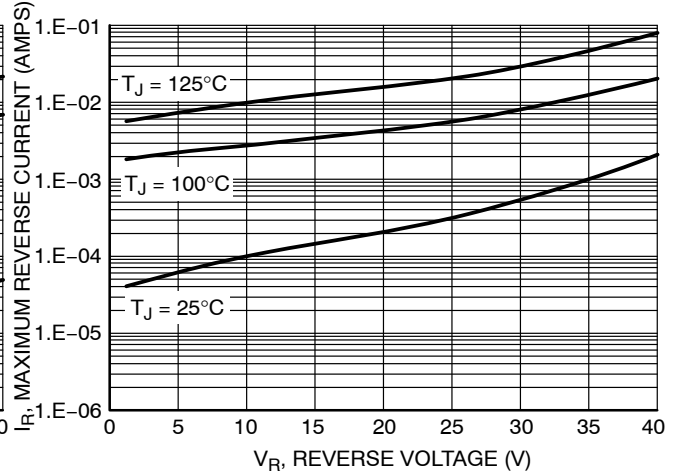
Figure 2. Maximum Forward Voltage

**MBRS320T3G, SBRS8320T3G, MBRS330T3G, NRVBS330T3G, MBRS340T3G, SBRS8340T3G**

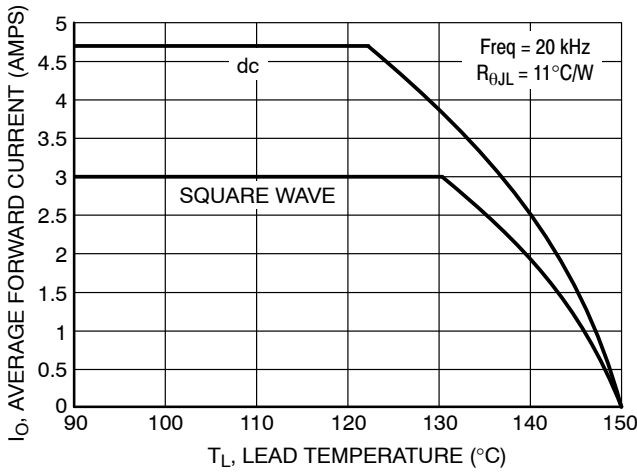
**TYPICAL ELECTRICAL CHARACTERISTICS (continued)**



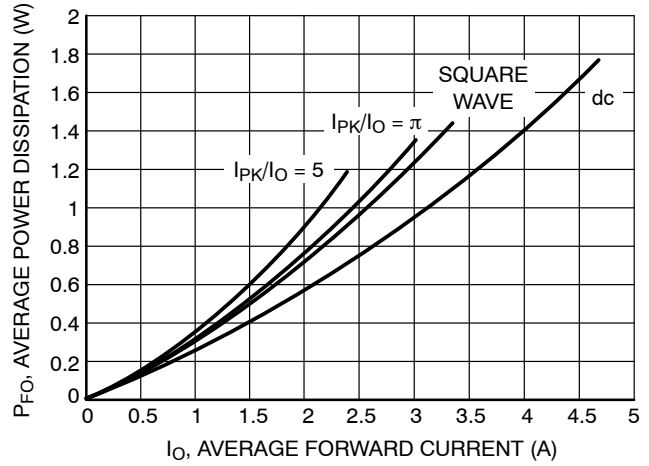
**Figure 3. Typical Reverse Current**



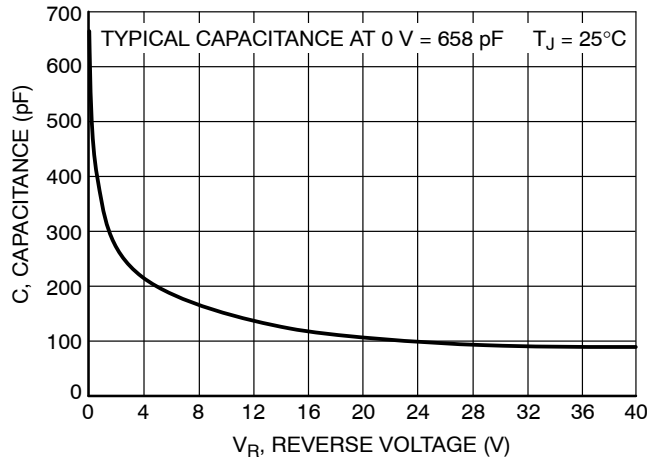
**Figure 4. Maximum Reverse Current**



**Figure 5. Current Derating**



**Figure 6. Forward Power Dissipation**



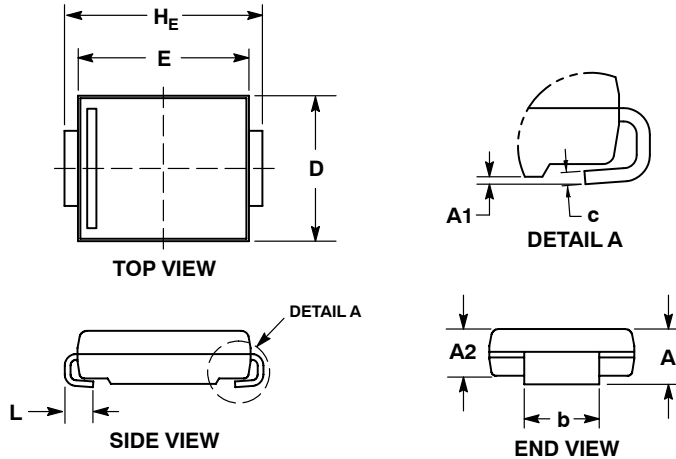
**Figure 7. Typical Capacitance**



SCALE 1:1

SMC 2-LEAD  
CASE 403AC  
ISSUE B

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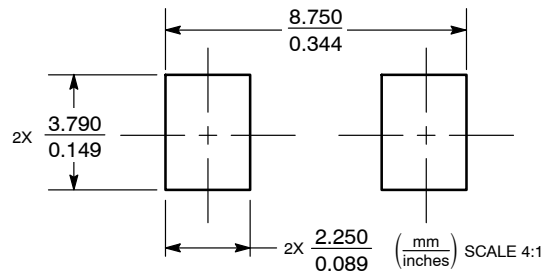


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANME Y14.5M, 1994.
2. CONTROLLING DIMENSION: INCHES.
3. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.254mm PER SIDE.
4. DIMENSIONS D AND E TO BE DETERMINED AT DATUM H.
5. DIMENSION b SHALL BE MEASURED WITHIN THE AREA DETERMINED BY DIMENSION L.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.95	2.61	0.077	0.103
A1	0.05	0.20	0.002	0.008
A2	1.90	2.41	0.075	0.095
b	2.90	3.20	0.114	0.126
c	0.15	0.41	0.006	0.016
D	5.55	6.25	0.219	0.246
E	6.60	7.15	0.260	0.281
HE	7.75	8.15	0.305	0.321
L	0.75	1.60	0.030	0.063

RECOMMENDED  
SOLDERING FOOTPRINT\*



\*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\*



- XXXX = 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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