

# Surface Mount Schottky Power Rectifier

## SMA Power Surface Mount Package

### SS16T3G, SBRA8160T3G, SBRA8160NT3G

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 diodes in surface mount applications where compact size and weight are critical to the system.

#### Features

- Small Compact Surface Mountable Package with J-Bent Leads
- Rectangular Package for Automated Handling
- Highly Stable Oxide Passivated Junction
- Very Low Forward Voltage Drop
- Guardring for Stress Protection
- SBRA8 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: 70 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, 5000 units per 13 inch reel
- Polarity: Cathode Lead Indicated by Polarity Band
- ESD Ratings:
  - ♦ Machine Model = C
  - ♦ Human Body Model = 3B
- Device Meets MSL 1 Requirements

## SCHOTTKY BARRIER RECTIFIER 1.0 AMPERES 60 VOLTS



SMA  
CASE 403D  
PLASTIC

#### MARKING DIAGRAM



SS16 = Specific Device Code  
 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 <sup>†</sup>  |
|---------------|------------------|------------------------|
| SS16T3G       | SMA<br>(Pb-Free) | 5,000 /<br>Tape & Reel |
| SBRA8160T3G*  | SMA<br>(Pb-Free) | 5,000 /<br>Tape & Reel |
| SBRA8160NT3G* | SMA<br>(Pb-Free) | 5,000 /<br>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 Specification Brochure, BRD8011/D.

# SS16T3G, SBRA8160T3G, SBRA8160NT3G

## MAXIMUM RATINGS

| Rating                                                                                                      | Symbol                          | Value       | Unit             |
|-------------------------------------------------------------------------------------------------------------|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                      | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 60          | V                |
| Average Rectified Forward Current<br>(At Rated $V_R$ , $T_C = 105^\circ\text{C}$ )                          | $I_O$                           | 1.0         | A                |
| Non-Repetitive Peak Surge Current<br>(Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | $I_{FSM}$                       | 40          | A                |
| Storage/Operating Case Temperature                                                                          | $T_{stg}, T_C$                  | -55 to +150 | $^\circ\text{C}$ |
| Operating Junction Temperature                                                                              | $T_J$                           | -55 to +150 | $^\circ\text{C}$ |
| Voltage Rate of Change<br>(Rated $V_R$ , $T_J = 25^\circ\text{C}$ )                                         | $dv/dt$                         | 10,000      | V/ $\mu\text{s}$ |

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

| Characteristic                                   | Symbol          | Value | Unit               |
|--------------------------------------------------|-----------------|-------|--------------------|
| Thermal Resistance, Junction-to-Lead (Note 1)    | $R_{\theta JL}$ | 35    | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Ambient (Note 1) | $R_{\theta JA}$ | 86    |                    |

1. Mounted on 2 in Square PC Board with 1 in Square Total Pad Size, PC Board FR4.

## ELECTRICAL CHARACTERISTICS

| Characteristic                                                                                         | Symbol | Value                      |                             | Unit |
|--------------------------------------------------------------------------------------------------------|--------|----------------------------|-----------------------------|------|
| Maximum Instantaneous Forward Voltage (Note 2)<br>( $I_F = 0.1\text{ A}$ )<br>( $I_F = 1.0\text{ A}$ ) | $V_F$  | $T_J = 25^{\circ}\text{C}$ |                             | V    |
|                                                                                                        |        | 0.51<br>0.72               |                             |      |
| Maximum Instantaneous Reverse Current<br>( $V_R = 60\text{ V}$ )                                       | $I_R$  | $T_J = 25^{\circ}\text{C}$ | $T_J = 100^{\circ}\text{C}$ | mA   |
|                                                                                                        |        | 0.2                        | 5.0                         |      |

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.

2. Pulse Test: Pulse Width  $\leq 250\text{ }\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

## TYPICAL CHARACTERISTICS

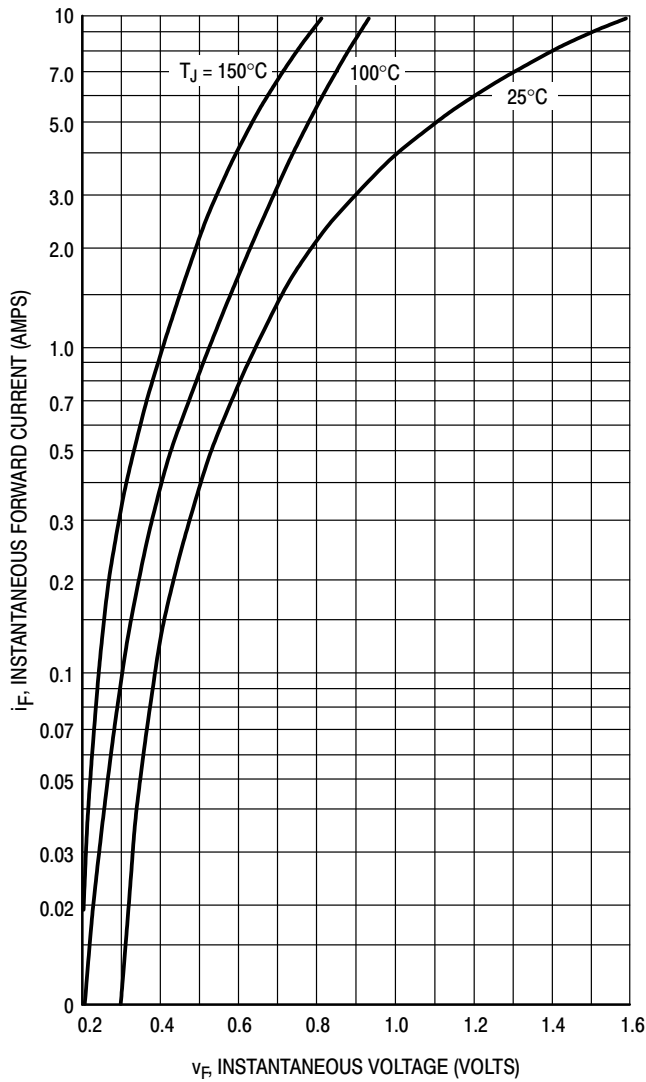


Figure 1. Typical Forward Voltage

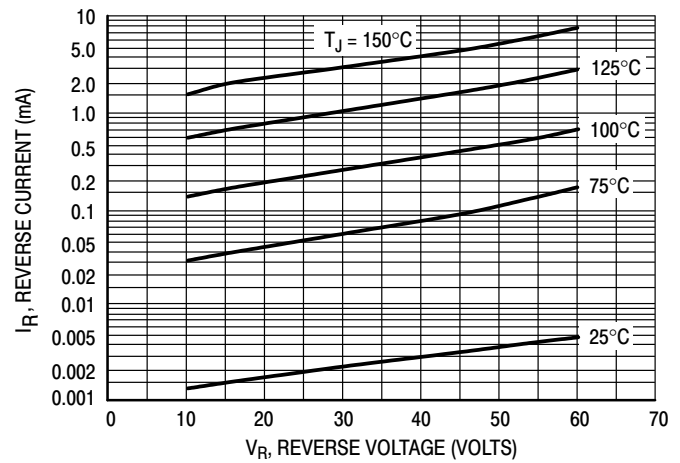


Figure 2. Typical Reverse Current\*

\*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 same curves if  $V_R$  is sufficiently below rated  $V_R$ .

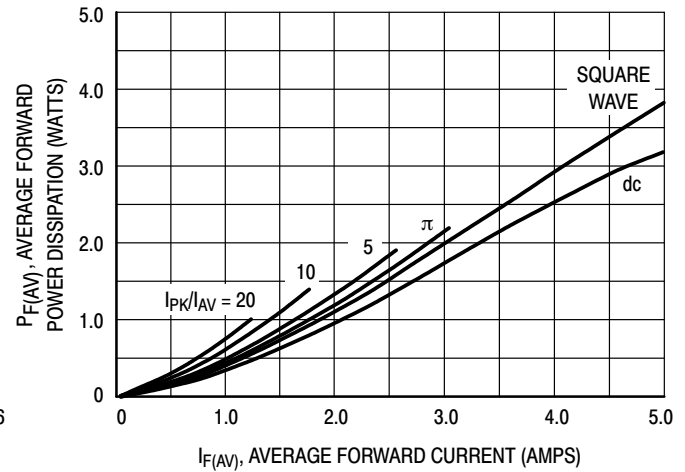


Figure 3. Forward Power Dissipation

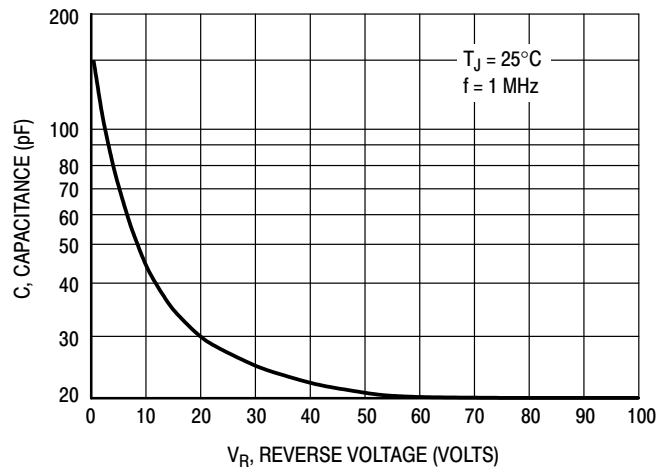


Figure 4. Typical Capacitance

# MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS

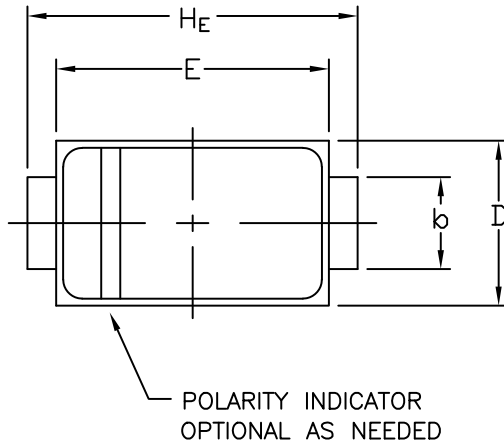


STYLE 1    STYLE 2

SCALE 1:1

## SMA CASE 403D ISSUE J

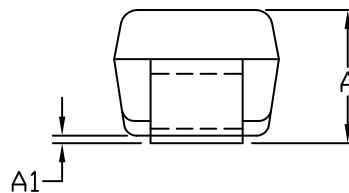
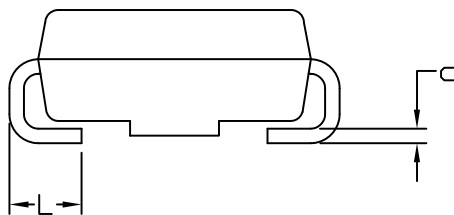
DATE 22 OCT 2021



### NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCHES
3. DIMENSION  $b$  SHALL BE MEASURED WITHIN DIMENSION  $L$ .

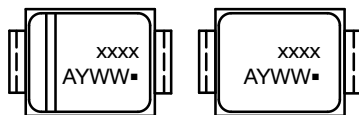
| DIM            | MILLIMETERS |      |      | INCHES |       |       |
|----------------|-------------|------|------|--------|-------|-------|
|                | MIN.        | NOM. | MAX. | MIN.   | NOM.  | MAX.  |
| A              | 1.97        | 2.10 | 2.20 | 0.078  | 0.083 | 0.087 |
| A1             | 0.05        | 0.10 | 0.20 | 0.002  | 0.004 | 0.008 |
| b              | 1.27        | 1.45 | 1.63 | 0.050  | 0.057 | 0.064 |
| c              | 0.15        | 0.28 | 0.41 | 0.006  | 0.011 | 0.016 |
| D              | 2.29        | 2.60 | 2.92 | 0.090  | 0.103 | 0.115 |
| E              | 4.06        | 4.32 | 4.57 | 0.160  | 0.170 | 0.180 |
| H <sub>E</sub> | 4.83        | 5.21 | 5.59 | 0.190  | 0.205 | 0.220 |
| L              | 0.76        | 1.14 | 1.52 | 0.030  | 0.045 | 0.060 |



STYLE 1:  
PIN 1. CATHODE (POLARITY BAND)  
2. ANODE

STYLE 2:  
NO POLARITY

### GENERIC MARKING DIAGRAM\*

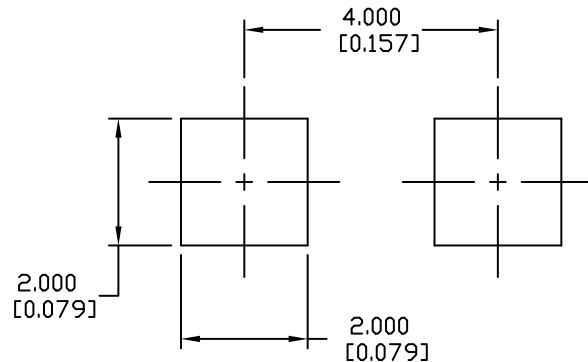


STYLE 1

STYLE 2

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

\*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.



### RECOMMENDED MOUNTING FOOTPRINT

|                  |             |                                                                                                                                                                                  |
|------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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