

# BAS21HT1G, NSVBAS21HT1G, NSVBAS21HT3G

## High Voltage Switching Diode

### Features

- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These are Pb-Free Devices

### MAXIMUM RATINGS

| Symbol          | Rating   | Value | Unit |
|-----------------|--|-------|------|
| $V_R$           | Continuous Reverse Voltage   | 250   | Vdc  |
| $V_{RRM}$       | Repetitive Peak Reverse Voltage  | 250   | Vdc  |
| $I_F$           | Peak Forward Current   | 200   | mAdc |
| $I_{FM(surge)}$ | Peak Forward Surge Current   | 625   | mAdc |
| $I_{FRM}$       | Repetitive Peak Forward Current  | 500   | mA   |
| $I_{FSM}$       | Non-Repetitive Peak Forward Current (Square Wave, $T_J = 25^\circ\text{C}$ prior to surge) |       | A    |
|                 | $t = 1 \mu\text{s}$  | 5.0   |      |
|                 | $t = 1 \text{ms}$  | 2.0   |      |
|                 | $t = 1 \text{s}$   | 0.5   |      |

### THERMAL CHARACTERISTICS

| Symbol          | Characteristic  | Max         | Unit                      |
|-----------------|---|-------------|---------------------------|
| $P_D$           | Total Device Dissipation FR-5 Board, (Note 1) $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | 200         | mW                        |
|                 |   | 1.57        | mW/ $^\circ\text{C}$      |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient   | 635         | $^\circ\text{C}/\text{W}$ |
| $T_J, T_{stg}$  | Junction and Storage Temperature Range  | -55 to +150 | $^\circ\text{C}$          |

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.

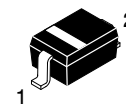
1. FR-5 Minimum Pad



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## HIGH VOLTAGE SWITCHING DIODE



1

SOD-323  
CASE 477  
STYLE 1



JS = Device Code  
M = Date Code\*  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

\*Date Code orientation may vary depending upon manufacturing location.

### ORDERING INFORMATION

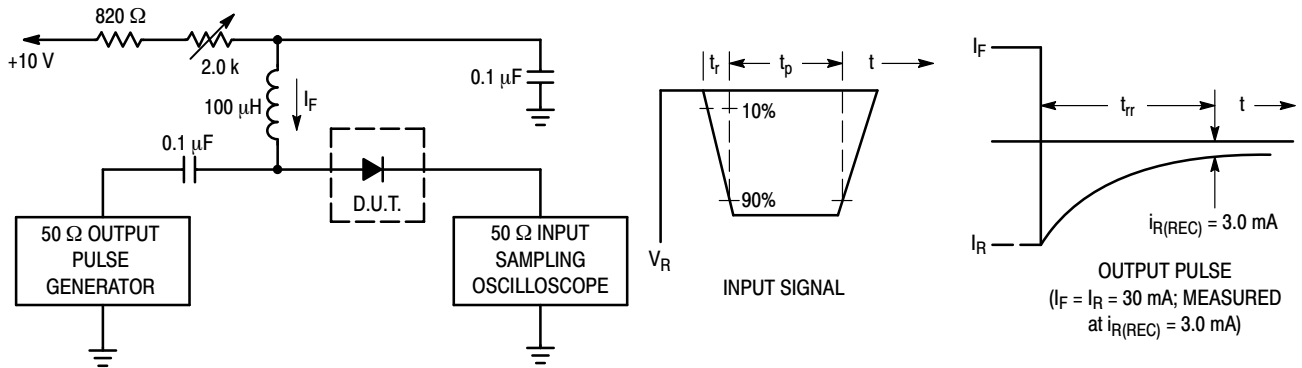
| Device       | Package           | Shipping†           |
|--------------|-------------------|---------------------|
| BAS21HT1G    | SOD-323 (Pb-Free) | 3000 / Tape & Reel  |
| NSVBAS21HT1G | SOD-323 (Pb-Free) | 3000 / Tape & Reel  |
| NSVBAS21HT3G | SOD-323 (Pb-Free) | 10000 / Tape & Reel |

†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.

# BAS21HT1G, NSVBAS21HT1G, NSVBAS21HT3G

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

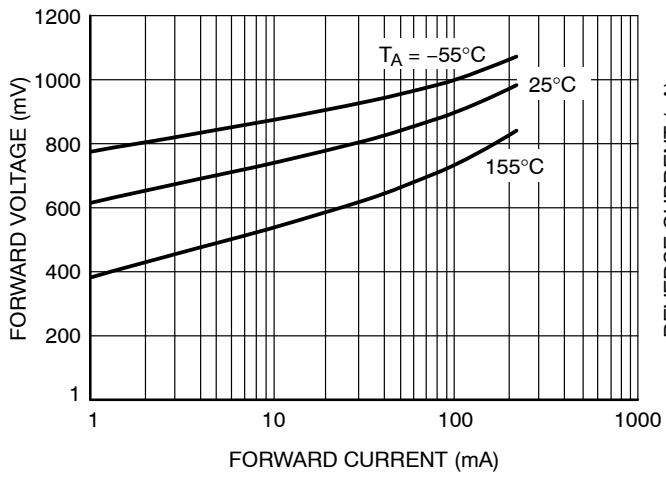
| Characteristic  | Symbol     | Min | Max          | Unit                         |
|---|------------|-----|--------------|------------------------------|
| <b>OFF CHARACTERISTICS</b>  |            |     |              |                              |
| Reverse Voltage Leakage Current<br>( $V_R = 200\text{ Vdc}$ )<br>( $V_R = 200\text{ Vdc}$ , $T_J = 150^\circ\text{C}$ ) | $I_R$      | -   | 0.1<br>100   | $\mu\text{A}$<br>$\text{dc}$ |
| Reverse Breakdown Voltage<br>( $I_{BR} = 100\ \mu\text{A}$ )  | $V_{(BR)}$ | 250 | -            | Vdc                          |
| Forward Voltage<br>( $I_F = 100\ \text{mA}$ )<br>( $I_F = 200\ \text{mA}$ )   | $V_F$      | -   | 1000<br>1250 | mV                           |
| Diode Capacitance<br>( $V_R = 0$ , $f = 1.0\ \text{MHz}$ )  | $C_D$      | -   | 5.0          | pF                           |
| Reverse Recovery Time<br>( $I_F = I_R = 30\ \text{mA}$ , $R_L = 100\ \Omega$ )  | $t_{rr}$   | -   | 50           | ns                           |



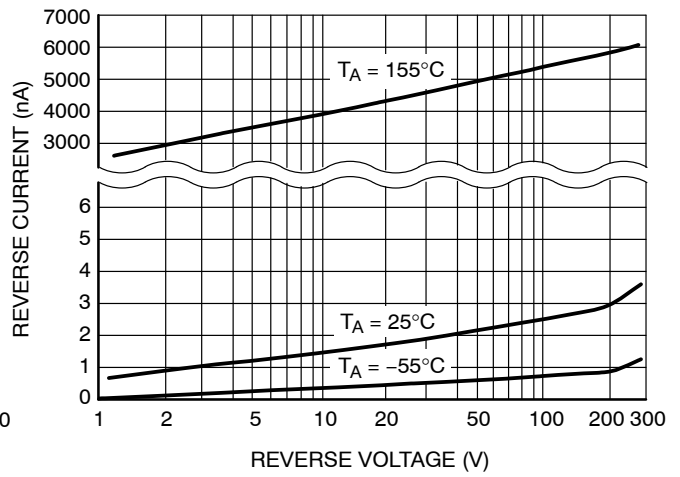
- Notes: 1. A 2.0 k $\Omega$  variable resistor adjusted for a Forward Current ( $I_F$ ) of 30 mA.  
 2. Input pulse is adjusted so  $I_{R(peak)}$  is equal to 30 mA.  
 3.  $t_p \gg t_{rr}$

**Figure 1. Recovery Time Equivalent Test Circuit**

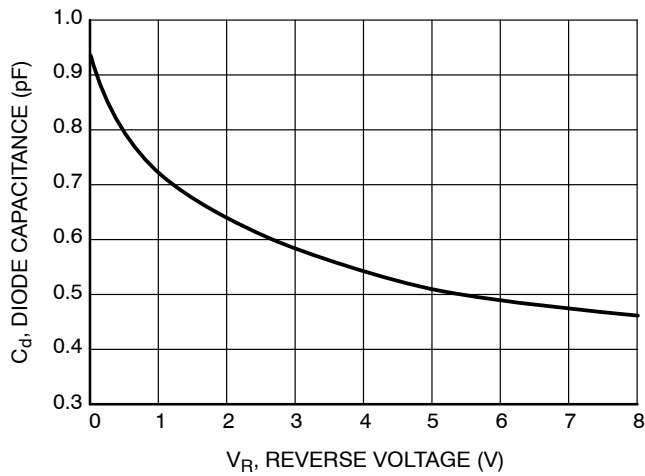
**BAS21HT1G, NSVBAS21HT1G, NSVBAS21HT3G**



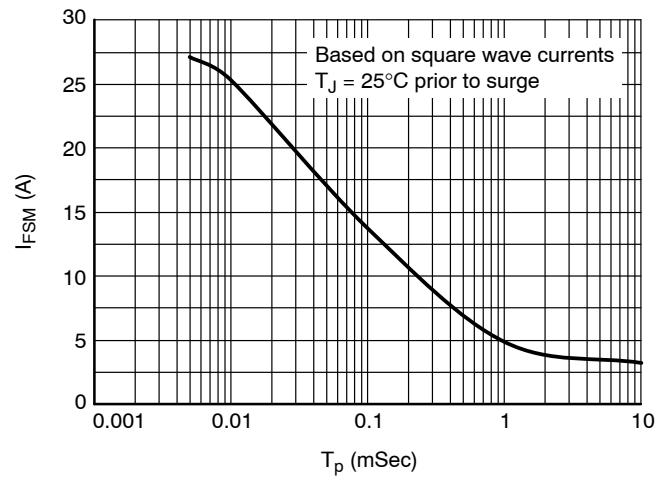
**Figure 2. Forward Voltage**



**Figure 3. Reverse Leakage**



**Figure 4. Diode Capacitance**

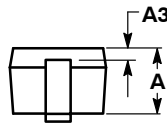
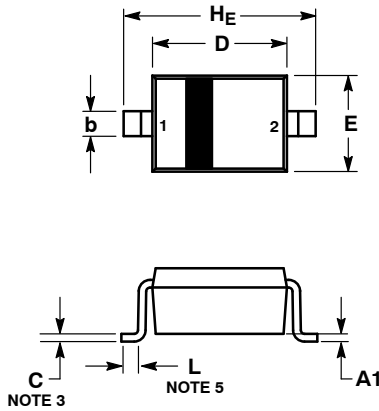


**Figure 5. Maximum Non-repetitive Peak Forward Current as a Function of Pulse Duration**

# BAS21HT1G, NSVBAS21HT1G, NSVBAS21HT3G

## PACKAGE DIMENSIONS

**SOD-323**  
CASE 477-02  
ISSUE G



**NOTES:**

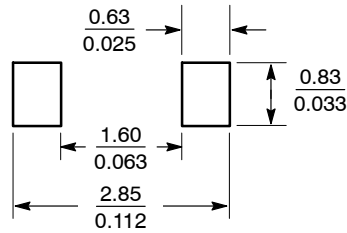
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. LEAD THICKNESS SPECIFIED PER L/F DRAWING WITH SOLDER PLATING.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
5. DIMENSION L IS MEASURED FROM END OF RADIUS.

| DIM | MILLIMETERS |      |       | INCHES    |       |       |
|-----|-------------|------|-------|-----------|-------|-------|
|     | MIN         | NOM  | MAX   | MIN       | NOM   | MAX   |
| A   | 0.80        | 0.90 | 1.00  | 0.031     | 0.035 | 0.040 |
| A1  | 0.00        | 0.05 | 0.10  | 0.000     | 0.002 | 0.004 |
| A3  | 0.15 REF    |      |       | 0.006 REF |       |       |
| b   | 0.25        | 0.32 | 0.4   | 0.010     | 0.012 | 0.016 |
| C   | 0.089       | 0.12 | 0.177 | 0.003     | 0.005 | 0.007 |
| D   | 1.60        | 1.70 | 1.80  | 0.062     | 0.066 | 0.070 |
| E   | 1.15        | 1.25 | 1.35  | 0.045     | 0.049 | 0.053 |
| L   | 0.08        |      |       | 0.003     |       |       |
| HE  | 2.30        | 2.50 | 2.70  | 0.090     | 0.098 | 0.105 |

**STYLE 1:**

1. CATHODE
2. ANODE

### 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.

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