

# BAT54HT1G, NSVBAT54HT1G

## Schottky Barrier Diodes

These Schottky barrier diodes are designed for high speed switching applications, circuit protection, and voltage clamping. Extremely low forward voltage reduces conduction loss. Miniature surface mount package is excellent for hand held and portable applications where space is limited.

### Features

- Extremely Fast Switching Speed
- Low Forward Voltage – 0.35 V (Typ) @  $I_F = 10$  mAdc
- Device Marking: JV
- AEC Qualified and PPAP Capable
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant\*

### MAXIMUM RATINGS ( $T_J = 125^\circ\text{C}$ unless otherwise noted)

| Rating          | Symbol | Value | Unit |
|-----------------|--------|-------|------|
| Reverse Voltage | $V_R$  | 30    | 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

| Characteristic                                                                                                  | Symbol          | Max           | Unit                       |
|-----------------------------------------------------------------------------------------------------------------|-----------------|---------------|----------------------------|
| Total Device Dissipation FR-5 Board,<br>(Note 1)<br>$T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$           | 200<br>1.57   | mW<br>mW/ $^\circ\text{C}$ |
| Forward Current (DC)                                                                                            | $I_F$           | 200<br>Max    | mA                         |
| Non-Repetitive Peak Forward Current,<br>$t_p < 10$ msec                                                         | $I_{FSM}$       | 600           | mA                         |
| Repetitive Peak Forward Current<br>Pulse Wave = 1 sec, Duty Cycle = 66%                                         | $I_{FRM}$       | 300           | mA                         |
| Thermal Resistance<br>Junction-to-Ambient                                                                       | $R_{\theta JA}$ | 635           | $^\circ\text{C}/\text{W}$  |
| Junction and Storage Temperature Range                                                                          | $T_J, T_{stg}$  | -55<br>to 150 | $^\circ\text{C}$           |

1. FR-4 Minimum Pad



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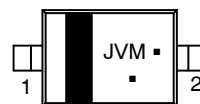
## 30 VOLT SILICON HOT-CARRIER DETECTOR AND SWITCHING DIODES



SOD-323  
CASE 477  
STYLE 1



### MARKING DIAGRAM



JV = Device Code  
M = Date Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

| Device       | Package              | Shipping†              |
|--------------|----------------------|------------------------|
| BAT54HT1G    | SOD-323<br>(Pb-Free) | 3,000 /<br>Tape & Reel |
| NSVBAT54HT1G | SOD-323<br>(Pb-Free) | 3,000 /<br>Tape & Reel |

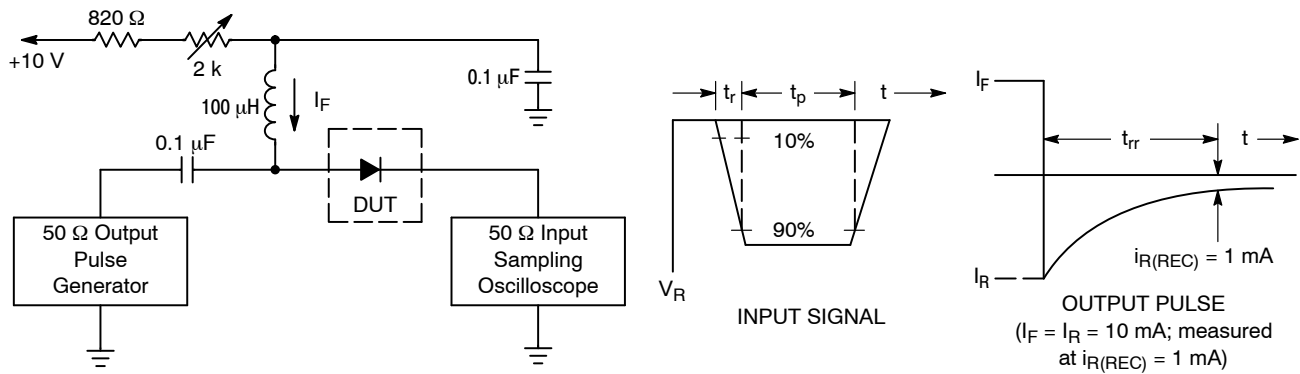
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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

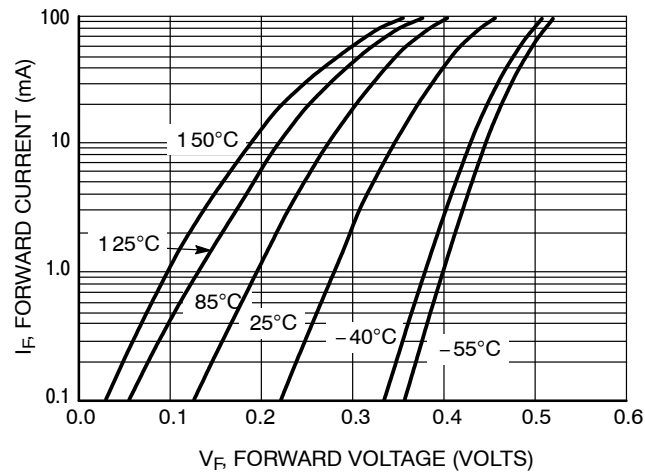
| Characteristic                                                                                              | Symbol      | Min | Typ  | Max  | Unit               |
|-------------------------------------------------------------------------------------------------------------|-------------|-----|------|------|--------------------|
| Reverse Breakdown Voltage<br>( $I_R = 10\ \mu\text{A}$ )                                                    | $V_{(BR)R}$ | 30  | –    | –    | V                  |
| Total Capacitance<br>( $V_R = 1.0\ \text{V}$ , $f = 1.0\ \text{MHz}$ )                                      | $C_T$       | –   | 7.6  | 10   | pF                 |
| Reverse Leakage<br>( $V_R = 25\ \text{V}$ )                                                                 | $I_R$       | –   | 0.5  | 2.0  | $\mu\text{A}_{dc}$ |
| Forward Voltage<br>( $I_F = 0.1\ \text{mA}_{dc}$ )                                                          | $V_F$       | –   | 0.22 | 0.24 | V <sub>dc</sub>    |
| Forward Voltage<br>( $I_F = 30\ \text{mA}_{dc}$ )                                                           | $V_F$       | –   | 0.41 | 0.5  | V <sub>dc</sub>    |
| Forward Voltage<br>( $I_F = 100\ \text{mA}_{dc}$ )                                                          | $V_F$       | –   | 0.52 | 0.8  | V <sub>dc</sub>    |
| Reverse Recovery Time<br>( $I_F = I_R = 10\ \text{mA}_{dc}$ , $I_{R(REC)} = 1.0\ \text{mA}_{dc}$ ) Figure 1 | $t_{rr}$    | –   | –    | 5.0  | ns                 |
| Forward Voltage<br>( $I_F = 1.0\ \text{mA}_{dc}$ )                                                          | $V_F$       | –   | 0.29 | 0.32 | V <sub>dc</sub>    |
| Forward Voltage<br>( $I_F = 10\ \text{mA}_{dc}$ )                                                           | $V_F$       | –   | 0.35 | 0.40 | V <sub>dc</sub>    |



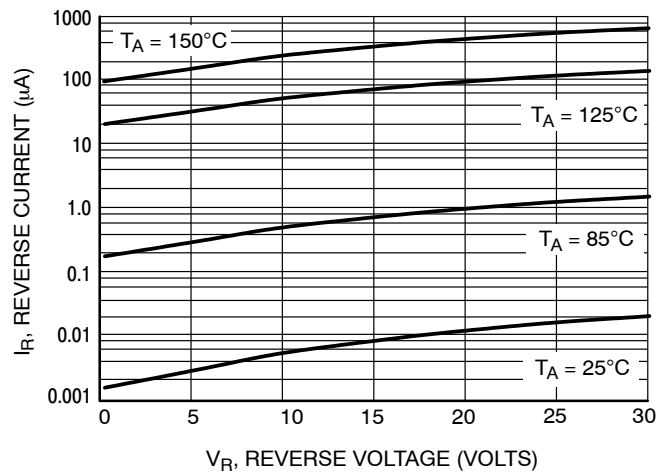
- Notes: 1. A 2.0 kΩ variable resistor adjusted for a Forward Current ( $I_F$ ) of 10 mA.  
 2. Input pulse is adjusted so  $I_{R(peak)}$  is equal to 10 mA.  
 3.  $t_p \gg t_{rr}$

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

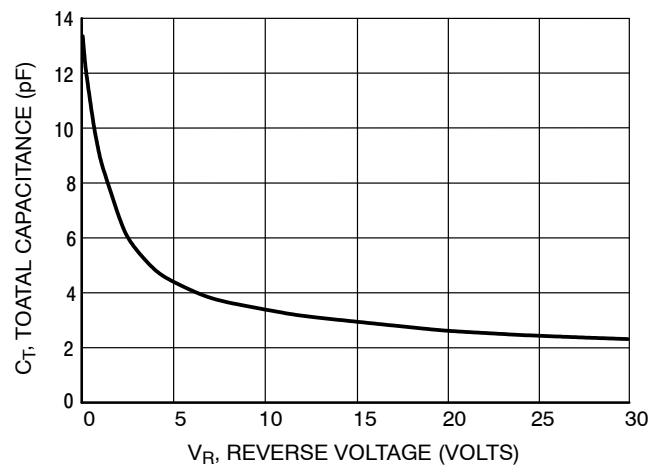
# BAT54HT1G, NSVBAT54HT1G



**Figure 2. Forward Voltage**



**Figure 3. Leakage Current**

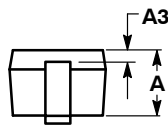
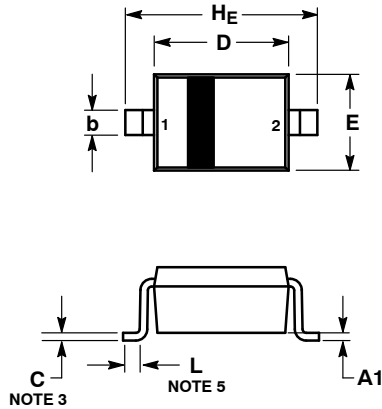


**Figure 4. Total Capacitance**

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## PACKAGE DIMENSIONS

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



### NOTES:

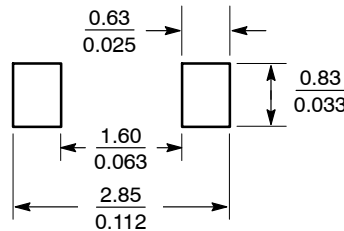
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. LEAD THICKNESS SPECIFIED PER L/F DRAWING WITH SOLDER PLATING.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
5. DIMENSION L IS MEASURED FROM END OF RADIUS.

| 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:

- PIN 1: CATHODE (POLARITY BAND)
- 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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