

# BAT54AWT1G, SBAT54AWT1G

## 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) @  $I_F = 10$  mA
- AEC Qualified and PPAP Capable
- S 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                          |
| Forward Power Dissipation<br>@ $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_F$     | 200<br>1.6  | mW<br>mW/ $^\circ\text{C}$ |
| Forward Current (DC)                                                                       | $I_F$     | 200 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,<br>Duty Cycle = 66%                 | $I_{FRM}$ | 300         | mA                         |
| Junction Temperature                                                                       | $T_J$     | -55 to 125  | $^\circ\text{C}$           |
| Storage Temperature Range                                                                  | $T_{stg}$ | -55 to +150 | $^\circ\text{C}$           |

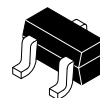
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



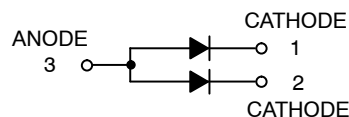
ON Semiconductor®

<http://onsemi.com>

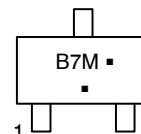
## 30 VOLT SCHOTTKY BARRIER DETECTOR AND SWITCHING DIODES



SOT-323  
CASE 419  
STYLE 4



### MARKING DIAGRAM



B7 = 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†         |
|-------------|----------------------|-------------------|
| BAT54AWT1G  | SOT-323<br>(Pb-Free) | 3,000/Tape & Reel |
| SBAT54AWT1G | SOT-323<br>(Pb-Free) | 3,000/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) (EACH DIODE)

| 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 | Vdc              |
| Forward Voltage<br>( $I_F = 30\ \text{mA}$ dc)                                                         | $V_F$       | –   | 0.41 | 0.5  | Vdc              |
| Forward Voltage<br>( $I_F = 100\ \text{mA}$ dc)                                                        | $V_F$       | –   | 0.52 | 0.8  | Vdc              |
| 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 | Vdc              |
| Forward Voltage<br>( $I_F = 10\ \text{mA}$ dc)                                                         | $V_F$       | –   | 0.35 | 0.40 | Vdc              |

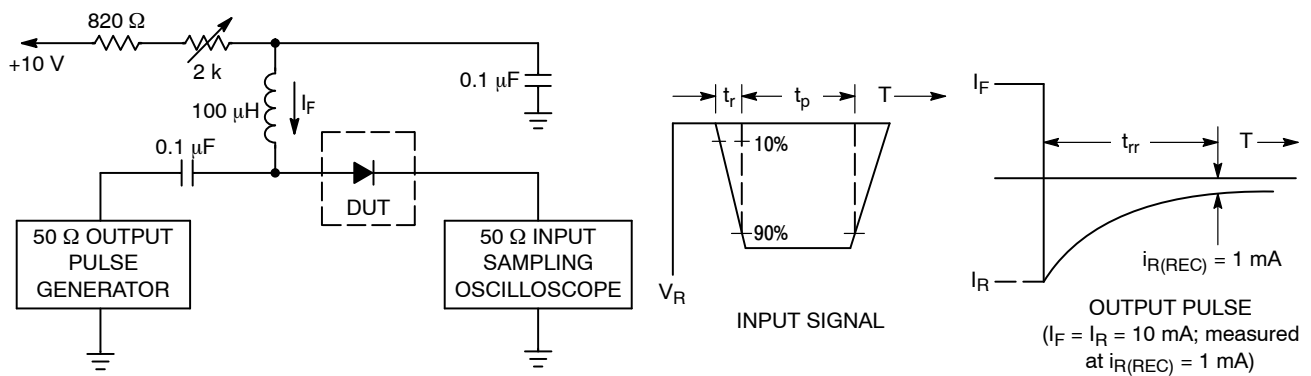
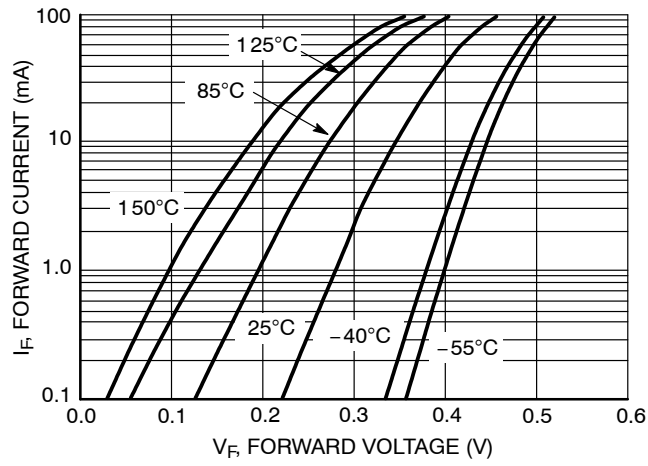
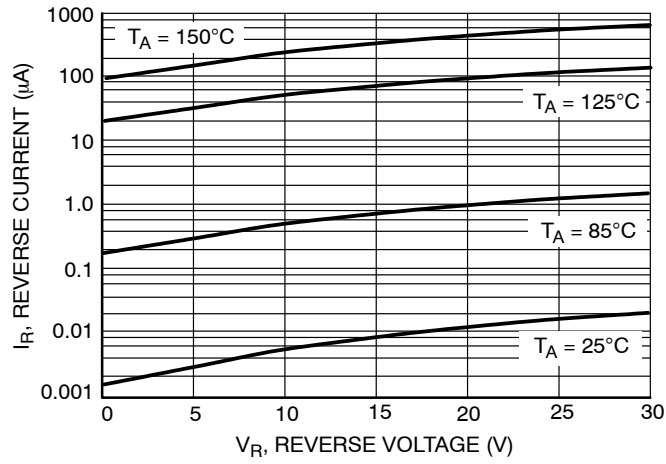


Figure 1. Recovery Time Equivalent Test Circuit

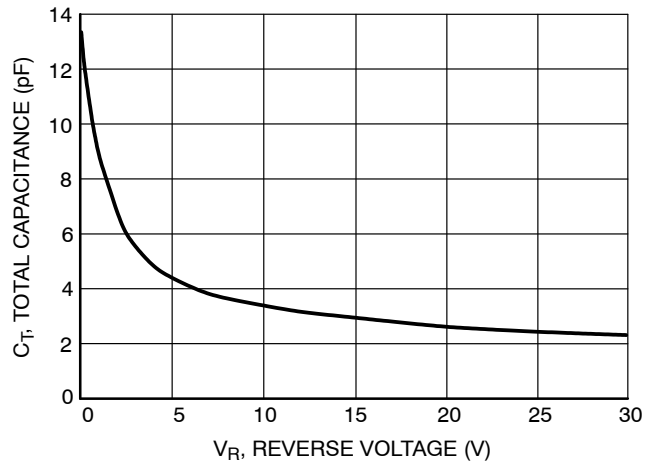
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**Figure 2. Forward Voltage**



**Figure 3. Leakage Current**

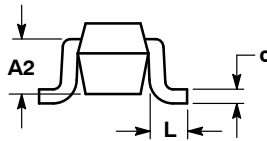
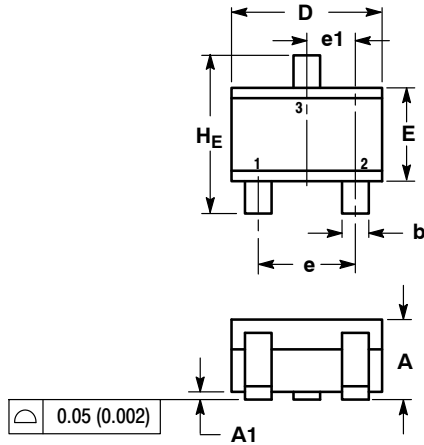


**Figure 4. Total Capacitance**

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## PACKAGE DIMENSIONS

SOT-323 (SC-70)  
CASE 419-04  
ISSUE N



### NOTES:

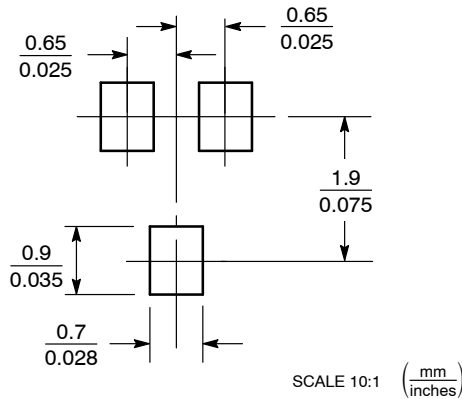
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | MILLIMETERS |      |      | INCHES    |       |       |
|-----|-------------|------|------|-----------|-------|-------|
|     | MIN         | NOM  | MAX  | MIN       | NOM   | MAX   |
| A   | 0.80        | 0.90 | 1.00 | 0.032     | 0.035 | 0.040 |
| A1  | 0.00        | 0.05 | 0.10 | 0.000     | 0.002 | 0.004 |
| A2  | 0.70 REF    |      |      | 0.028 REF |       |       |
| b   | 0.30        | 0.35 | 0.40 | 0.012     | 0.014 | 0.016 |
| c   | 0.10        | 0.18 | 0.25 | 0.004     | 0.007 | 0.010 |
| D   | 1.80        | 2.10 | 2.20 | 0.071     | 0.083 | 0.087 |
| E   | 1.15        | 1.24 | 1.35 | 0.045     | 0.049 | 0.053 |
| e   | 1.20        | 1.30 | 1.40 | 0.047     | 0.051 | 0.055 |
| e1  | 0.65 BSC    |      |      | 0.026 BSC |       |       |
| L   | 0.20        | 0.38 | 0.56 | 0.008     | 0.015 | 0.022 |
| HE  | 2.00        | 2.10 | 2.40 | 0.079     | 0.083 | 0.095 |

### STYLE 4:

1. CATHODE
2. CATHODE
3. 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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BAT54AWT1/D



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