

# BAT54T1G

## 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 Volts (Typ) @  $I_F = 10$  mAdc
- 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, FR-5 Board (Note 1)<br>@ $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_F$                 | 400<br>3.2  | mW<br>mW/ $^\circ\text{C}$ |
| Thermal Resistance,<br>Junction-to-Case   | $R_{\theta\text{JL}}$ | 174         | $^\circ\text{C}/\text{W}$  |
| Thermal Resistance,<br>Junction-to-Ambient  | $R_{\theta\text{JA}}$ | 492         | $^\circ\text{C}/\text{W}$  |
| Forward Current (DC)  | $I_F$                 | 200 Max     | mA                         |
| Non-Repetitive Peak Forward Current<br>$t_p < 10$ msec  | $I_{\text{FSM}}$      | 600         | mA                         |
| Repetitive Peak Forward Current<br>Pulse Wave = 1 sec, Duty Cycle = 66%   | $I_{\text{FRM}}$      | 300         | mA                         |
| Junction Temperature  | $T_J$                 | -55 to 125  | $^\circ\text{C}$           |
| Storage Temperature Range   | $T_{\text{stg}}$      | -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.

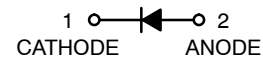
1. FR-5 = 1.0 x 0.75 x 0.062 in.



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## 30 VOLT SCHOTTKY BARRIER DETECTOR AND SWITCHING DIODES



SOD-123  
CASE 425  
STYLE 1

### MARKING DIAGRAM



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

(Note: Microdot may be in either location)

### ORDERING INFORMATION

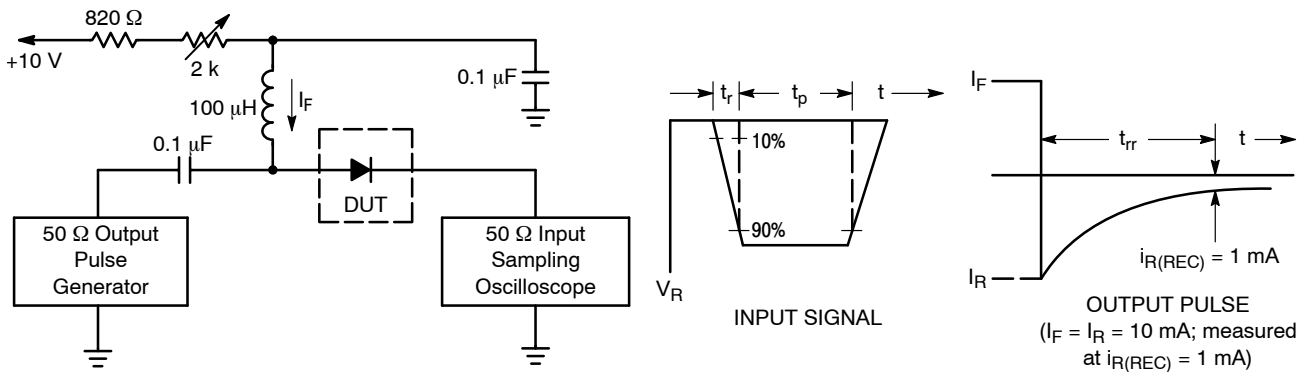
| Device   | Package              | Shipping <sup>†</sup> |
|----------|----------------------|-----------------------|
| BAT54T1G | SOD-123<br>(Pb-Free) | 3000 / Tape & Reel    |

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/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>( $I_F = 0.1 \text{ mAdc}$ )  | $V_F$       | -   | 0.22 | 0.24 | Vdc                |
| Forward Voltage<br>( $I_F = 30 \text{ mAdc}$ )   | $V_F$       | -   | 0.41 | 0.5  | Vdc                |
| Forward Voltage<br>( $I_F = 100 \text{ mAdc}$ )  | $V_F$       | -   | 0.52 | 0.8  | Vdc                |
| Reverse Recovery Time<br>( $I_F = I_R = 10 \text{ mAdc}$ , $I_{R(REC)} = 1.0 \text{ mAdc}$ , Figure 1) | $t_{rr}$    | -   | -    | 5.0  | ns                 |
| Forward Voltage<br>( $I_F = 1.0 \text{ mAdc}$ )  | $V_F$       | -   | 0.29 | 0.32 | Vdc                |
| Forward Voltage<br>( $I_F = 10 \text{ mAdc}$ )   | $V_F$       | -   | 0.35 | 0.40 | Vdc                |



- 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

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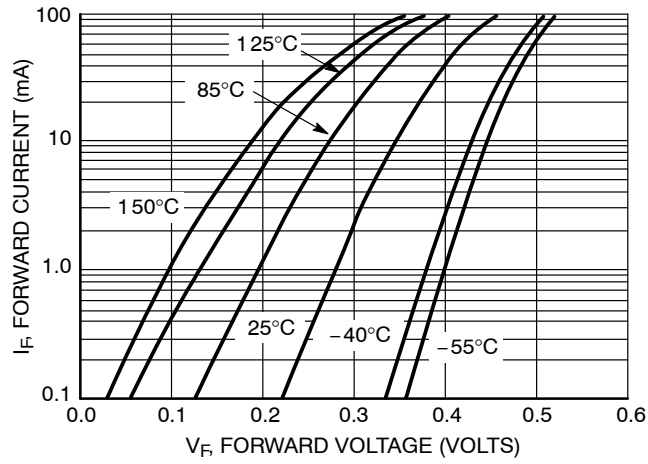


Figure 2. Forward Voltage

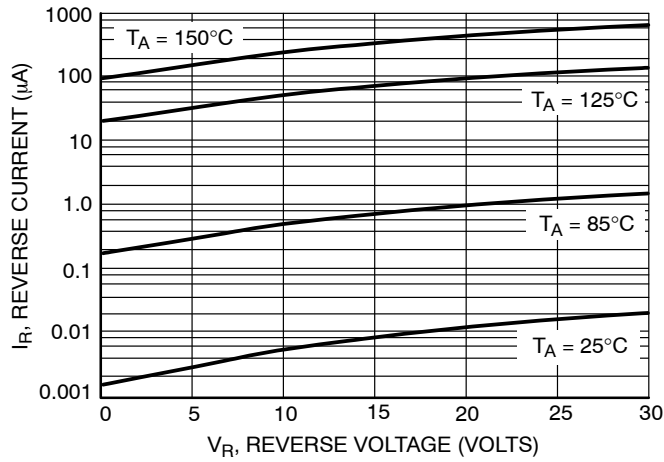


Figure 3. Leakage Current

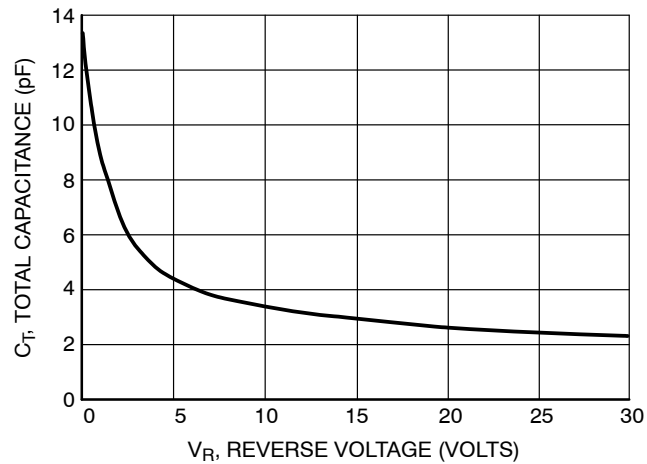
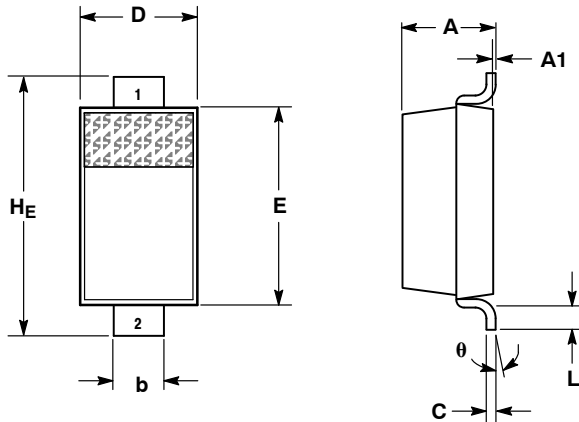


Figure 4. Total Capacitance

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## PACKAGE DIMENSIONS

SOD-123  
CASE 425-04  
ISSUE G



NOTES:

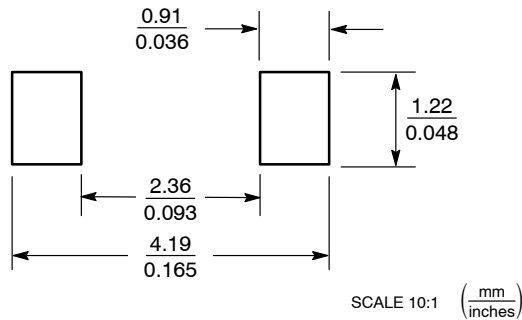
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | MILLIMETERS |      |      | INCHES |       |       |
|-----|-------------|------|------|--------|-------|-------|
|     | MIN         | NOM  | MAX  | MIN    | NOM   | MAX   |
| A   | 0.94        | 1.17 | 1.35 | 0.037  | 0.046 | 0.053 |
| A1  | 0.00        | 0.05 | 0.10 | 0.000  | 0.002 | 0.004 |
| b   | 0.51        | 0.61 | 0.71 | 0.020  | 0.024 | 0.028 |
| c   | ---         | ---  | 0.15 | ---    | ---   | 0.006 |
| D   | 1.40        | 1.60 | 1.80 | 0.055  | 0.063 | 0.071 |
| E   | 2.54        | 2.69 | 2.84 | 0.100  | 0.106 | 0.112 |
| HE  | 3.56        | 3.68 | 3.86 | 0.140  | 0.145 | 0.152 |
| L   | 0.25        | ---  | ---  | 0.010  | ---   | ---   |
| θ   | 0°          | ---  | 10°  | 0°     | ---   | 10°   |

STYLE 1:

- PIN 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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