

# BAT54ALT1

Preferred Device

## 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
- Pb-Free Package is Available

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

| Rating   | Symbol    | Value       | Unit                       |
|--|-----------|-------------|----------------------------|
| Reverse Voltage  | $V_R$     | 30          | Volts                      |
| Forward Power Dissipation<br>@ $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_F$     | 225<br>1.8  | mW<br>mW/ $^\circ\text{C}$ |
| Forward Current (DC)   | $I_F$     | 200 Max     | mA                         |
| Junction Temperature   | $T_J$     | 125 Max     | $^\circ\text{C}$           |
| Storage Temperature Range  | $T_{stg}$ | -55 to +150 | $^\circ\text{C}$           |

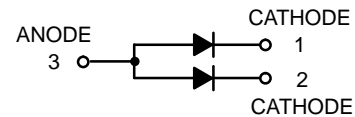
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.



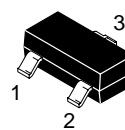
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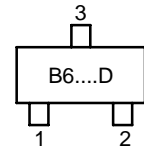
## 30 VOLTS SCHOTTKY BARRIER DETECTOR AND SWITCHING DIODES



### MARKING DIAGRAM



SOT-23  
CASE 318  
STYLE 12



B6 = Specific Device Code  
D = Date Code

### ORDERING INFORMATION

| Device     | Package             | Shipping†        |
|------------|---------------------|------------------|
| BAT54ALT1  | SOT-23              | 3000/Tape & Reel |
| BAT54ALT1G | SOT-23<br>(Pb-Free) | 3000/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.

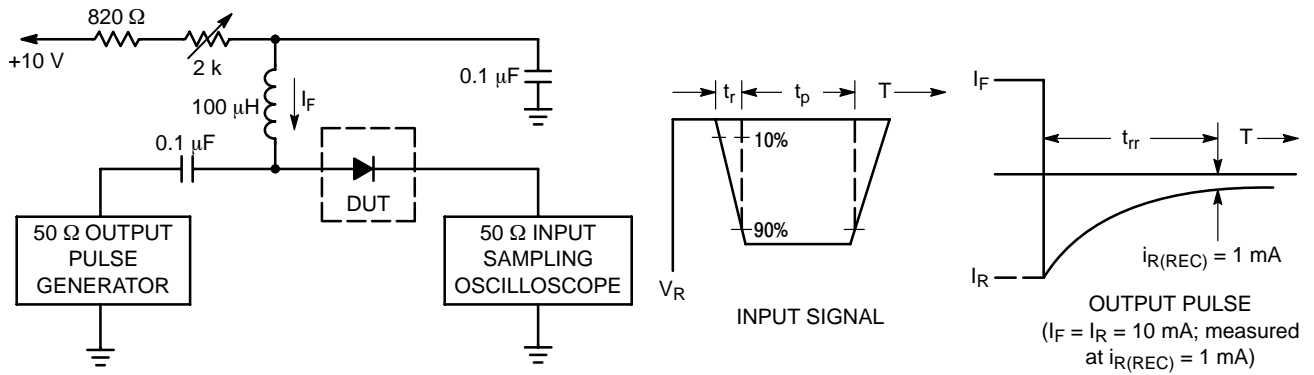
Preferred devices are recommended choices for future use and best overall value.

# BAT54ALT1

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

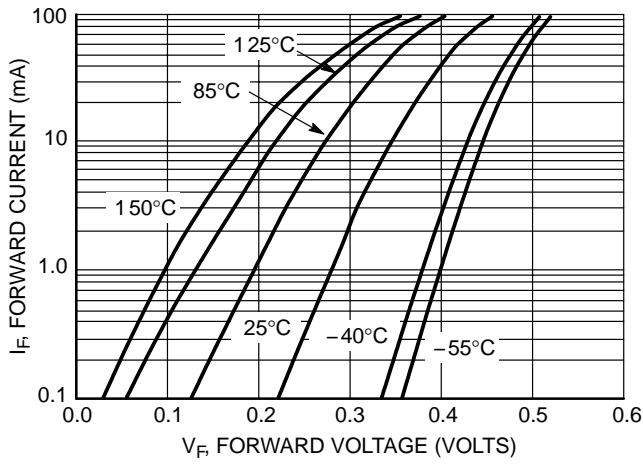
| Characteristic   | Symbol      | Min | Typ  | Max  | Unit          |
|--|-------------|-----|------|------|---------------|
| Reverse Breakdown Voltage ( $I_R = 10 \mu\text{A}$ )   | $V_{(BR)R}$ | 30  | –    | –    | Volts         |
| Total Capacitance ( $V_R = 1.0 \text{ V}$ , $f = 1.0 \text{ MHz}$ )                                | $C_T$       | –   | 7.6  | 10   | pF            |
| Reverse Leakage ( $V_R = 25 \text{ V}$ )   | $I_R$       | –   | 0.5  | 2.0  | $\mu\text{A}$ |
| Forward Voltage ( $I_F = 0.1 \text{ mA}$ )   | $V_F$       | –   | 0.22 | 0.24 | Vdc           |
| Forward Voltage ( $I_F = 30 \text{ mA}$ )  | $V_F$       | –   | 0.41 | 0.5  | Vdc           |
| Forward Voltage ( $I_F = 100 \text{ mA}$ )   | $V_F$       | –   | 0.52 | 0.8  | Vdc           |
| Reverse Recovery Time<br>( $I_F = I_R = 10 \text{ mA}$ , $I_{R(REC)} = 1.0 \text{ mA}$ , Figure 1) | $t_{rr}$    | –   | –    | 5.0  | ns            |
| Forward Voltage ( $I_F = 1.0 \text{ mA}$ )   | $V_F$       | –   | 0.29 | 0.32 | Vdc           |
| Forward Voltage ( $I_F = 10 \text{ mA}$ )  | $V_F$       | –   | 0.35 | 0.40 | Vdc           |
| Forward Current (DC)   | $I_F$       | –   | –    | 200  | mA            |
| Repetitive Peak Forward Current  | $I_{FRM}$   | –   | –    | 300  | mA            |
| Non-Repetitive Peak Forward Current ( $t < 1.0 \text{ s}$ )  | $I_{FSM}$   | –   | –    | 600  | mA            |

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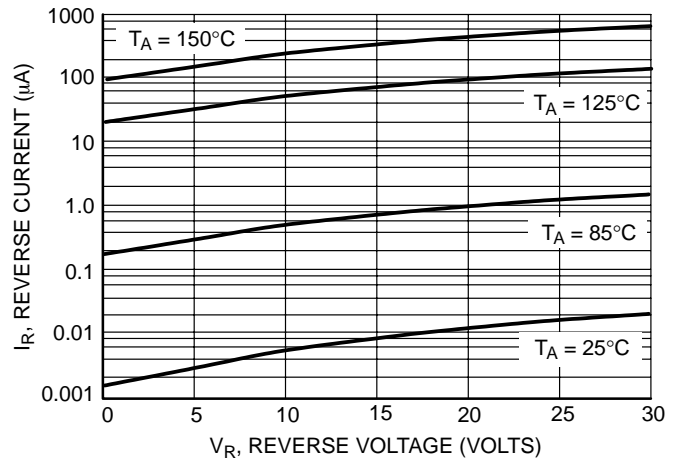


- Notes: 1. A 2.0 kΩ variable resistor adjusted for a Forward Current ( $I_F$ ) of 10 mA.  
 2. Input pulse is adjusted so  $I_{R(\text{peak})}$  is equal to 10 mA.  
 3.  $t_p \gg t_{rr}$

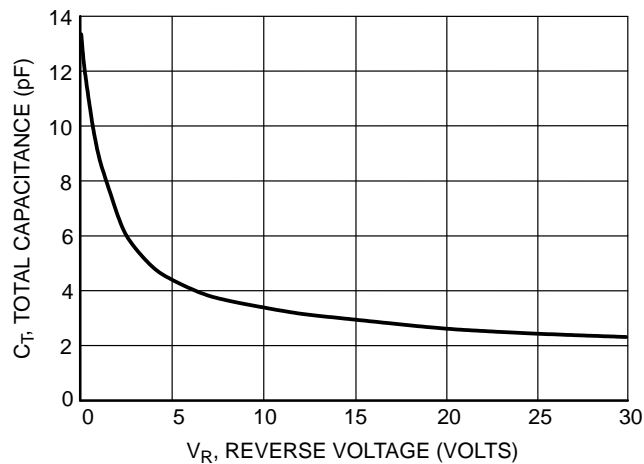
**Figure 1. Recovery Time Equivalent Test Circuit**



**Figure 2. Forward Voltage**



**Figure 3. Leakage Current**

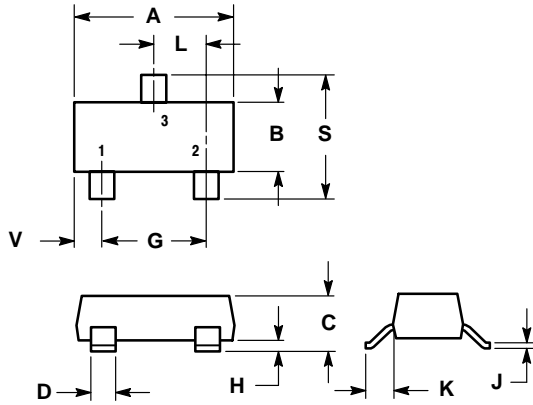


**Figure 4. Total Capacitance**

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## PACKAGE DIMENSIONS

SOT-23 (TO-236)  
CASE 318-09  
ISSUE AI



NOTES:

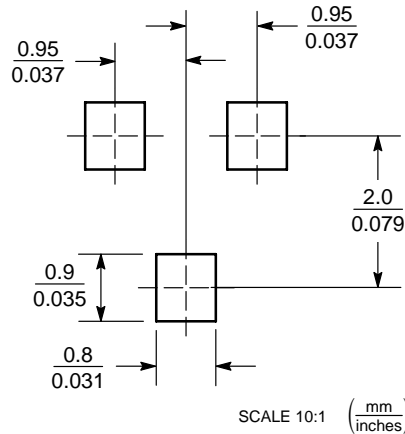
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. 318-01, -02, AND -06 OBSOLETE, NEW STANDARD 318-09.

| DIM | INCHES |        | MILLIMETERS |       |
|-----|--------|--------|-------------|-------|
|     | MIN    | MAX    | MIN         | MAX   |
| A   | 0.1102 | 0.1197 | 2.80        | 3.04  |
| B   | 0.0472 | 0.0551 | 1.20        | 1.40  |
| C   | 0.0385 | 0.0498 | 0.99        | 1.26  |
| D   | 0.0140 | 0.0200 | 0.36        | 0.50  |
| G   | 0.0670 | 0.0826 | 1.70        | 2.10  |
| H   | 0.0040 | 0.0098 | 0.10        | 0.25  |
| J   | 0.0034 | 0.0070 | 0.085       | 0.177 |
| K   | 0.0180 | 0.0236 | 0.45        | 0.60  |
| L   | 0.0350 | 0.0401 | 0.89        | 1.02  |
| S   | 0.0830 | 0.0984 | 2.10        | 2.50  |
| V   | 0.0177 | 0.0236 | 0.45        | 0.60  |


STYLE 12:

- PIN 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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