

BAT54SWT1G, NSVBAT54SWT1G

Dual Series 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) @ $I_F = 10 \text{ mAdc}$
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- 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 @ $T_A = 25^\circ\text{C}$ Derate above 25°C | P_F | 200 1.6 | mW mW/ $^\circ\text{C}$ |
| Forward Current (DC) | I_F | 200 Max | mA |
| Non-Repetitive Peak Forward Current $t_p < 10 \text{ msec}$ | I_{FSM} | 600 | mA |
| Repetitive Peak Forward Current Pulse Wave = 1 sec, 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 | $^\circ\text{C}$ |
| Electrostatic Discharge | ESD | HM < 8000 MM < 400 | V V |

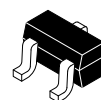
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



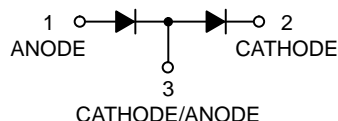
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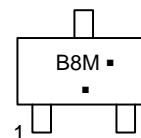
30 VOLT DUAL SERIES SCHOTTKY BARRIER DIODES



SOT-323
CASE 419
STYLE 9



MARKING DIAGRAM



B8 = 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† |
|---------------|----------------------|------------------------|
| BAT54SWT1G | SOT-323 (Pb-Free) | 3,000 / Tape & Reel |
| NSVBAT54SWT1G | SOT-323 (Pb-Free) | 3,000 / Tape & Reel |

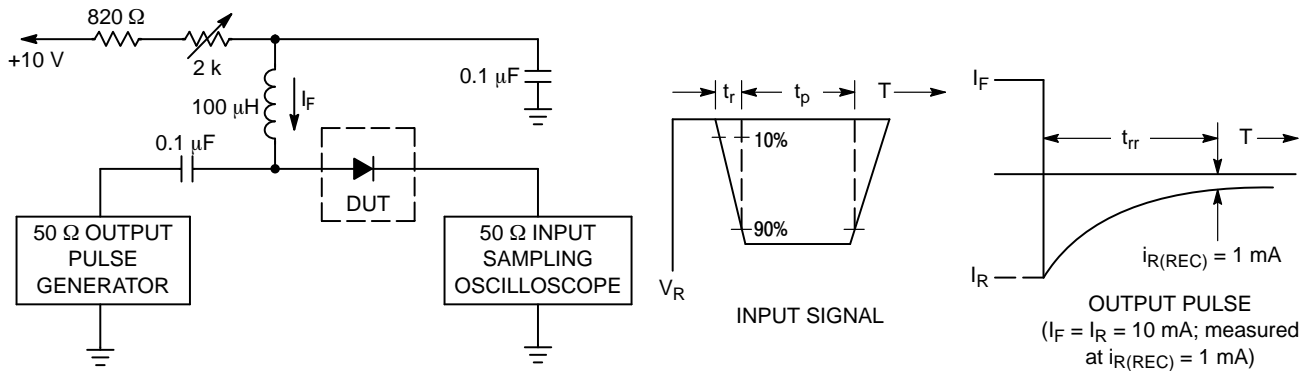
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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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 ($I_R = 10\ \mu\text{A}$) | $V_{(BR)R}$ | 30 | – | – | V |
| 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 | μA_{dc} |
| Forward Voltage ($I_F = 0.1\ \text{mA}_{dc}$) | V_F | – | 0.22 | 0.24 | V _{dc} |
| Forward Voltage ($I_F = 30\ \text{mA}_{dc}$) | V_F | – | 0.41 | 0.5 | V _{dc} |
| Forward Voltage ($I_F = 100\ \text{mA}_{dc}$) | V_F | – | 0.52 | 0.8 | V _{dc} |
| Reverse Recovery Time ($I_F = I_R = 10\ \text{mA}_{dc}$, $I_{R(REC)} = 1.0\ \text{mA}_{dc}$, Figure 1) | t_{rr} | – | – | 5.0 | ns |
| Forward Voltage ($I_F = 1.0\ \text{mA}_{dc}$) | V_F | – | 0.29 | 0.32 | V _{dc} |
| Forward Voltage ($I_F = 10\ \text{mA}_{dc}$) | V_F | – | 0.35 | 0.40 | V _{dc} |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



- 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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TYPICAL CHARACTERISTICS

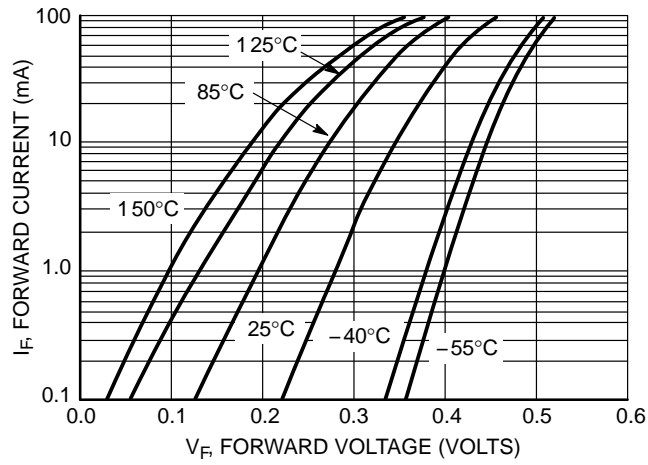


Figure 2. Forward Voltage

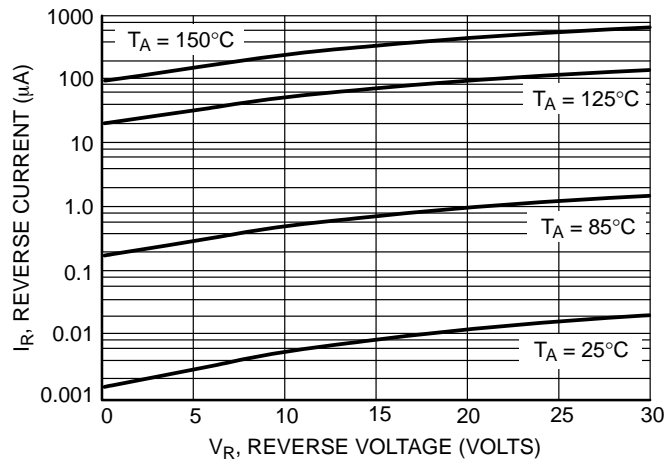


Figure 3. Leakage Current

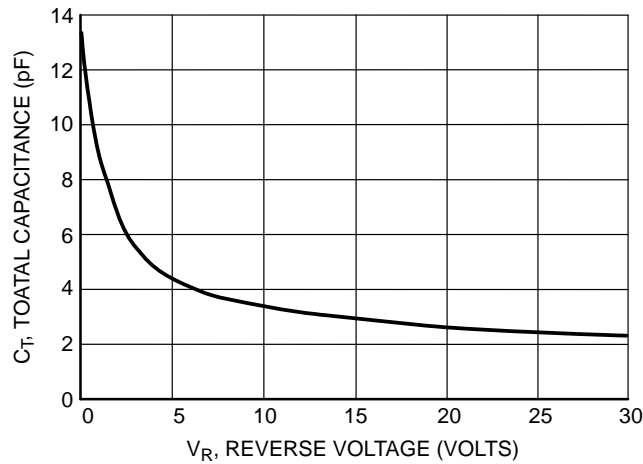
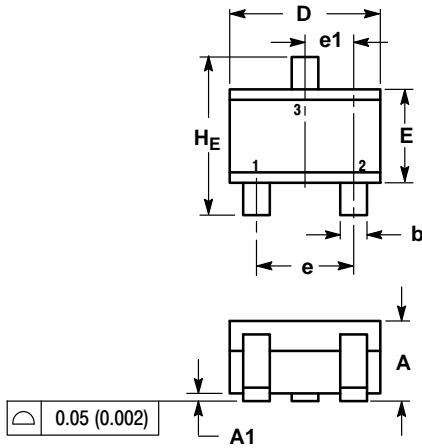


Figure 4. Total Capacitance

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PACKAGE DIMENSIONS

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

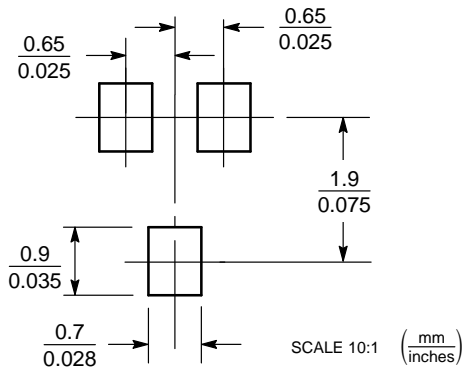


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.


| 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 9:
PIN 1. ANODE
2. CATHODE
3. CATHODE-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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