

BAV99WT1, SBAV99WT1G, BAV99RWT1, SBAV99RWT1G

Dual Series Switching Diodes

The BAV99WT1 is a smaller package, equivalent to the BAV99LT1.

Features

- These Devices are Pb-Free and are RoHS Compliant
- S Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable

Suggested Applications

- ESD Protection
- Polarity Reversal Protection
- Data Line Protection
- Inductive Load Protection
- Steering Logic

MAXIMUM RATINGS (Each Diode)

| Rating | Symbol | Value | Unit |
|---|-----------------|-------------------|------|
| Reverse Voltage | V_R | 100 | Vdc |
| Forward Current | I_F | 215 | mAdc |
| Peak Forward Surge Current | $I_{FM(surge)}$ | 500 | mAdc |
| Repetitive Peak Reverse Voltage | V_{RRM} | 70 | V |
| Average Rectified Forward Current (Note 1) (averaged over any 20 ms period) | $I_{F(AV)}$ | 715 | mA |
| Repetitive Peak Forward Current | I_{FRM} | 450 | mA |
| Non-Repetitive Peak Forward Current $t = 1.0 \mu s$ $t = 1.0 ms$ $t = 1.0 s$ | I_{FSM} | 2.0 1.0 0.5 | A |

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 = $1.0 \times 0.75 \times 0.062$ in.

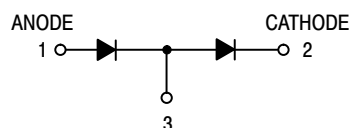


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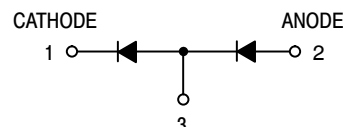
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SC-70
CASE 419

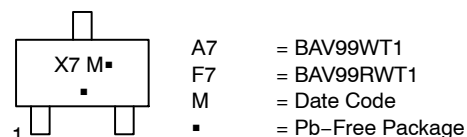


BAV99WT1
SC-70, CASE 419, STYLE 9



BAV99RWT1
SC-70, CASE 419, STYLE 10

MARKING DIAGRAM



ORDERING INFORMATION

| Device | Package | Shipping† |
|-------------|--------------------|---------------------|
| BAV99WT1G | SC-70 (Pb-Free) | 3,000 / Tape & Reel |
| SBAV99WT1G | SC-70 (Pb-Free) | 3,000 / Tape & Reel |
| BAV99RWT1G | SC-70 (Pb-Free) | 3,000 / Tape & Reel |
| SBAV99RWT1G | SC-70 (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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THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|--|-----------------|-------------|----------------------------|
| Total Device Dissipation FR-5 Board, (Note 1) $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 200 1.6 | mW mW/ $^\circ\text{C}$ |
| Thermal Resistance Junction-to-Ambient | $R_{\theta JA}$ | 625 | $^\circ\text{C}/\text{W}$ |
| Total Device Dissipation Alumina Substrate, (Note 2) $T_A = 25^\circ\text{C}$ Derate above 25°C | P_D | 300 2.4 | mW mW/ $^\circ\text{C}$ |
| Thermal Resistance Junction-to-Ambient | $R_{\theta JA}$ | 417 | $^\circ\text{C}/\text{W}$ |
| Junction and Storage Temperature | T_J, T_{stg} | -65 to +150 | $^\circ\text{C}$ |

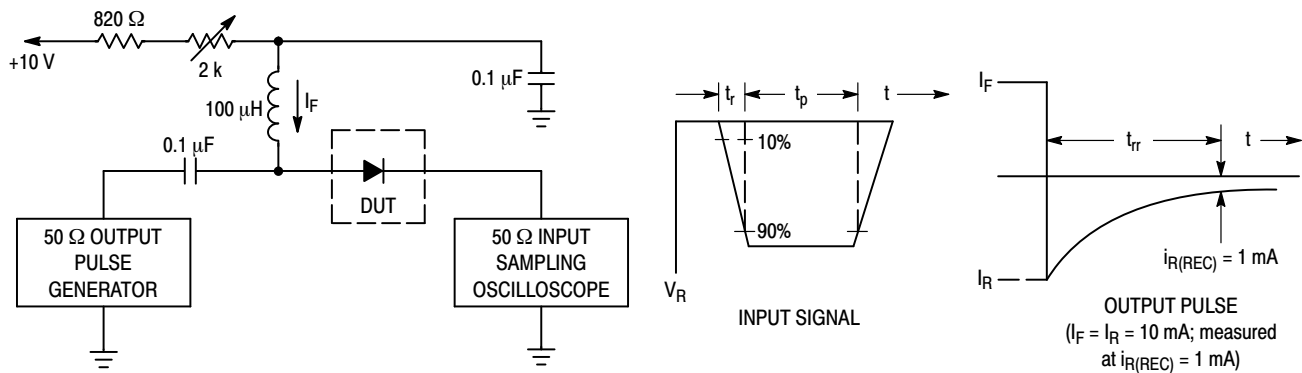
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted) (Each Diode)

| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

OFF CHARACTERISTICS

| | | | | |
|--|------------|------------------|----------------------------|-----------------|
| Reverse Breakdown Voltage ($I_{BR} = 100 \mu\text{A}$) | $V_{(BR)}$ | 100 | – | Vdc |
| Reverse Voltage Leakage Current ($V_R = 100 \text{ Vdc}$) ($V_R = 25 \text{ Vdc}, T_J = 150^\circ\text{C}$) ($V_R = 70 \text{ Vdc}, T_J = 150^\circ\text{C}$) | I_R | – – – | 2.5 30 50 | μAdc |
| Diode Capacitance ($V_R = 0, f = 1.0 \text{ MHz}$) | C_D | – | 1.5 | pF |
| Forward Voltage ($I_F = 1.0 \text{ mAdc}$) ($I_F = 10 \text{ mAdc}$) ($I_F = 50 \text{ mAdc}$) ($I_F = 150 \text{ mAdc}$) | V_F | – – – – | 715 855 1000 1250 | mVdc |
| Reverse Recovery Time ($I_F = I_R = 10 \text{ mAdc}, i_{R(REC)} = 1.0 \text{ mAdc}$) (Figure 1) $R_L = 100 \Omega$ | t_{rr} | – | 6.0 | ns |
| Forward Recovery Voltage ($I_F = 10 \text{ mA}, t_r = 20 \text{ ns}$) | V_{FR} | – | 1.75 | V |

- FR-5 = $1.0 \times 0.75 \times 0.062 \text{ in.}$
- Alumina = $0.4 \times 0.3 \times 0.024 \text{ in. } 99.5\% \text{ alumina.}$



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

Figure 1. Recovery Time Equivalent Test Circuit

BAV99WT1, SBAV99WT1G, BAV99RWT1, SBAV99RWT1G

CURVES APPLICABLE TO EACH DIODE

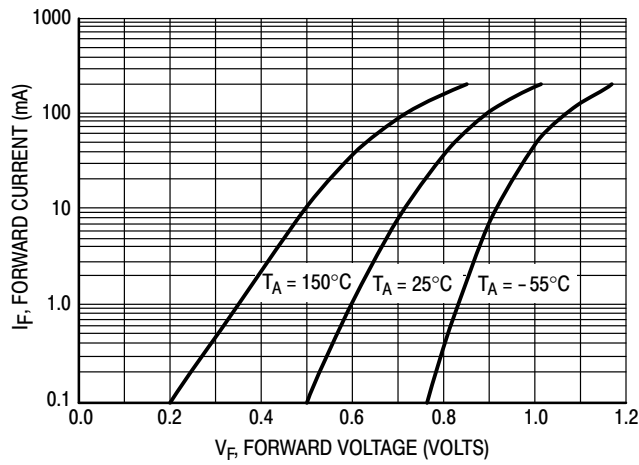


Figure 2. Forward Voltage

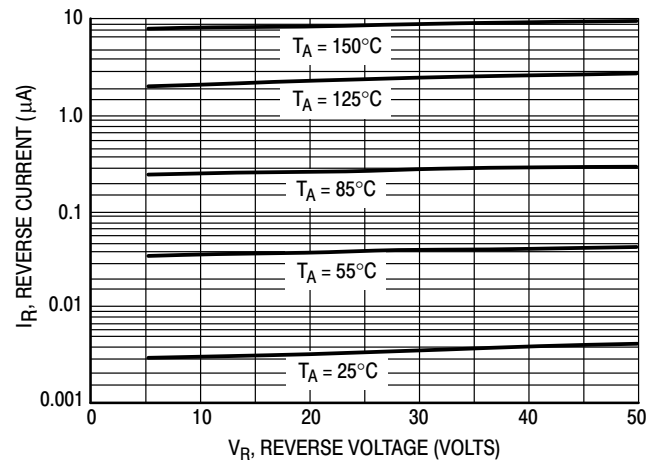


Figure 3. Leakage Current

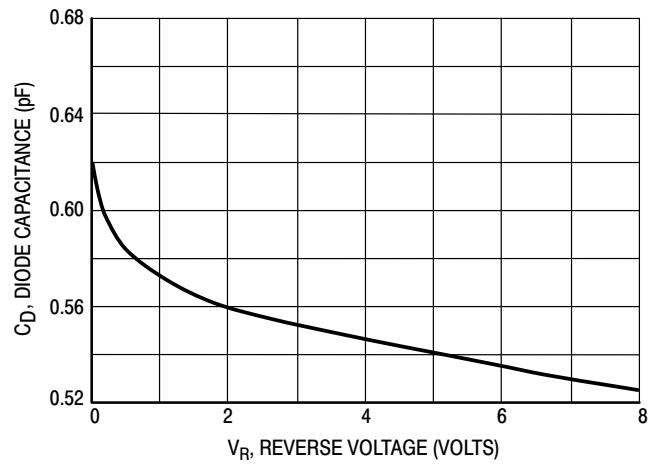
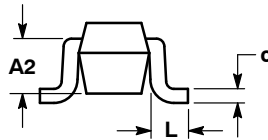
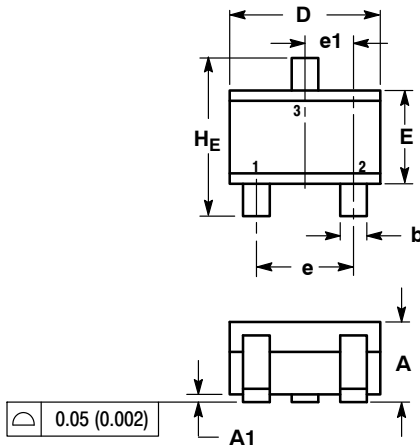


Figure 4. Capacitance

BAV99WT1, SBAV99WT1G, BAV99RWT1, SBAV99RWT1G

PACKAGE DIMENSIONS

SC-70 (SOT-323) 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 |

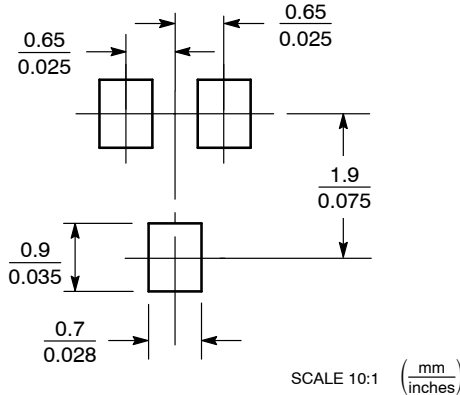
STYLE 9:

- PIN 1. ANODE
- CATHODE
- CATHODE-ANODE


STYLE 10:

- PIN 1. CATHODE
- ANODE
- ANODE-CATHODE

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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