

# Dual Series Switching Diodes

## BAV99W, BAV99RW

The BAV99WT1G is a smaller package, equivalent to the BAV99LT1G.

### Features

- S and 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\*

### Suggested Applications

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

### MAXIMUM RATINGS (Each Diode)

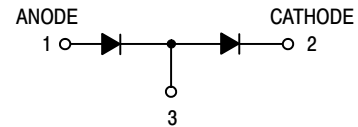
| Rating                                                                                | Symbol          | Value             | Unit |
|---------------------------------------------------------------------------------------|-----------------|-------------------|------|
| Reverse Voltage             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

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.

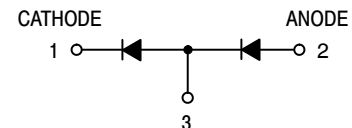
1.  $FR-5 = 1.0 \times 0.75 \times 0.062$  in.



SC-70  
CASE 419

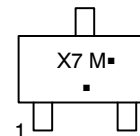


BAV99WT1  
SC-70, CASE 419, STYLE 9



BAV99RWT1  
SC-70, CASE 419, STYLE 10

### MARKING DIAGRAM



A7 = BAV99W  
F7 = BAV99RW  
M = Date Code  
▪ = Pb-Free Package

### ORDERING INFORMATION

| Device       | Package            | Shipping†            |
|--------------|--------------------|----------------------|
| BAV99WT1G    | SC-70<br>(Pb-Free) | 3,000 / Tape & Reel  |
| SBAV99WT1G   | SC-70<br>(Pb-Free) | 3,000 / Tape & Reel  |
| BAV99RWT1G   | SC-70<br>(Pb-Free) | 3,000 / Tape & Reel  |
| SBAV99RWT1G  | SC-70<br>(Pb-Free) | 3,000 / Tape & Reel  |
| BAV99WT3G    | SC-70<br>(Pb-Free) | 10,000 / Tape & Reel |
| NSVBAV99WT3G | SC-70<br>(Pb-Free) | 10,000 / 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.

# THERMAL CHARACTERISTICS

| Characteristic                                                                                                   | Symbol          | Max         | Unit                       |
|------------------------------------------------------------------------------------------------------------------|-----------------|-------------|----------------------------|
| Total Device Dissipation FR-5 Board, (Note 1) $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$        | $P_D$           | 200<br>1.6  | mW<br>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) $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$           | 300<br>2.4  | mW<br>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)

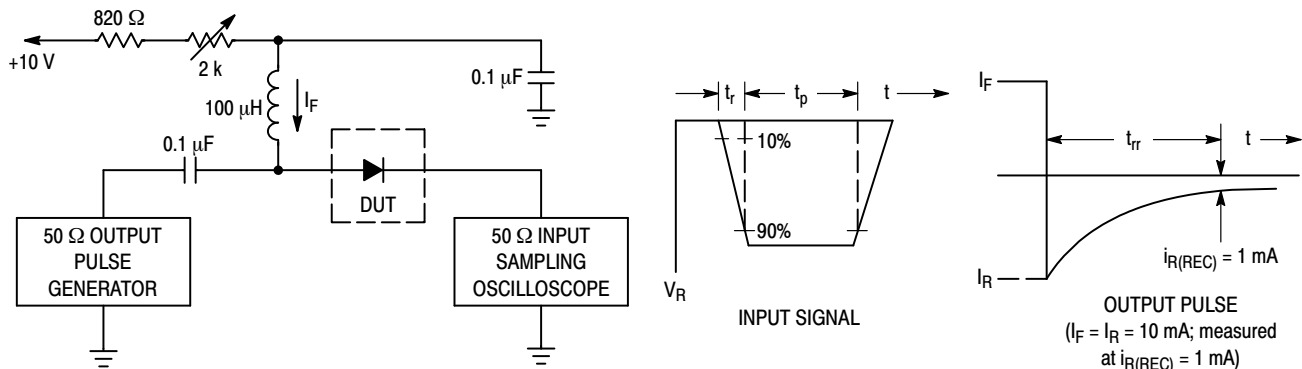
| Characteristic | Symbol | Min | Max | Unit |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

## OFF CHARACTERISTICS

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

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.

- 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% alumina.



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

Figure 1. Recovery Time Equivalent Test Circuit

CURVES APPLICABLE TO EACH DIODE

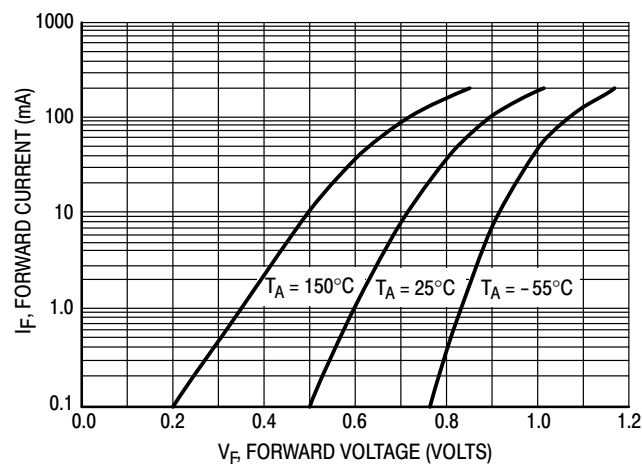


Figure 2. Forward Voltage

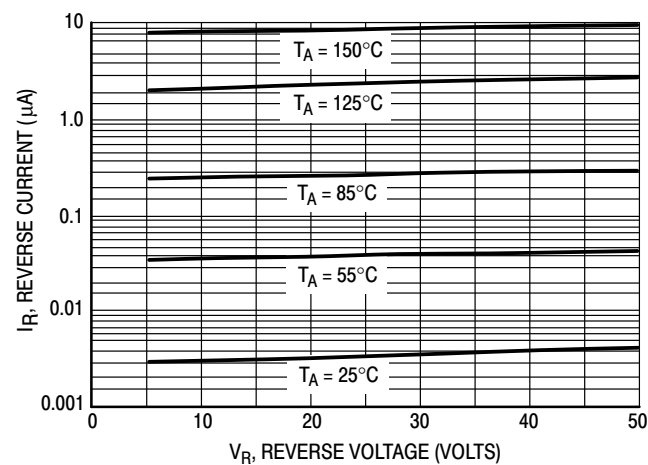


Figure 3. Leakage Current

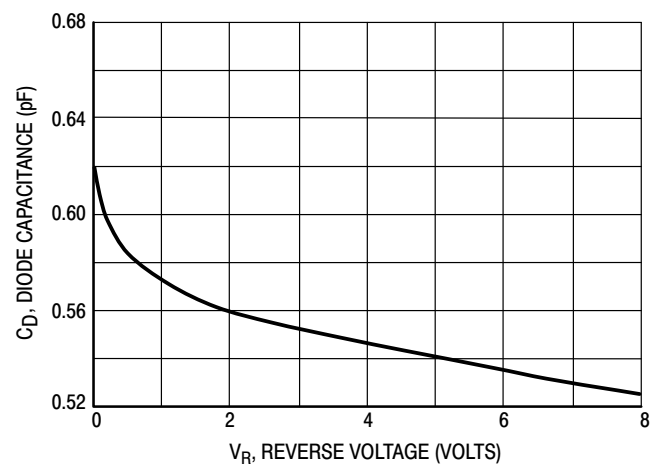


Figure 4. Capacitance



SCALE 4:1

### SC-70 (SOT-323)

#### CASE 419

#### ISSUE R

DATE 11 OCT 2022



#### NOTES:

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

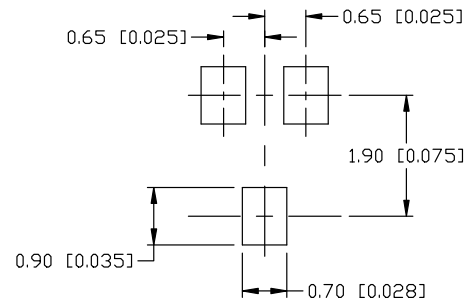
| DIM            | MILLIMETERS |      |      | INCHES    |       |       |
|----------------|-------------|------|------|-----------|-------|-------|
|                | MIN.        | NOM. | MAX. | MIN.      | NOM.  | MAX.  |
| A              | 0.80        | 0.90 | 1.00 | 0.032     | 0.035 | 0.040 |
| A1             | 0.00        | 0.05 | 0.10 | 0.000     | 0.002 | 0.004 |
| A2             | 0.70 REF    |      |      | 0.028 BSC |       |       |
| 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        | 2.00 | 2.20 | 0.071     | 0.080 | 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 |
| H <sub>E</sub> | 2.00        | 2.10 | 2.40 | 0.079     | 0.083 | 0.095 |

#### GENERIC MARKING DIAGRAM



XX = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.



\* For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

#### SOLDERING FOOTPRINT

STYLE 1:  
CANCELLED

STYLE 2:  
PIN 1. ANODE  
2. N.C.  
3. CATHODE

STYLE 3:  
PIN 1. BASE  
2. EMITTER  
3. COLLECTOR

STYLE 4:  
PIN 1. CATHODE  
2. CATHODE  
3. ANODE

STYLE 5:  
PIN 1. ANODE  
2. ANODE  
3. CATHODE

STYLE 6:  
PIN 1. EMITTER  
2. BASE  
3. COLLECTOR

STYLE 7:  
PIN 1. BASE  
2. EMITTER  
3. COLLECTOR

STYLE 8:  
PIN 1. GATE  
2. SOURCE  
3. DRAIN

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

STYLE 10:  
PIN 1. CATHODE  
2. ANODE  
3. ANODE-CATHODE

STYLE 11:  
PIN 1. CATHODE  
2. CATHODE  
3. CATHODE

|                  |                 |                                                                                                                                                                                     |
|------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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| DESCRIPTION:     | SC-70 (SOT-323) | PAGE 1 OF 1                                                                                                                                                                         |

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