

# BAV99W, BAV99RW

## Dual Series Switching Diodes

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 (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 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.

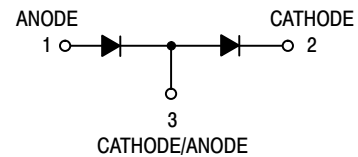


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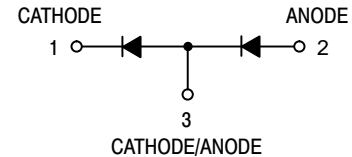
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SC-70  
CASE 419

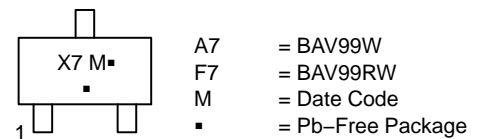


BAV99WT1  
SC-70, CASE 419, STYLE 9



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
NSVBAV99WT3G	SC-70 (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.

# BAV99W, BAV99RW

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, (Note 1) $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	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 $25^\circ\text{C}$	$P_D$	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)

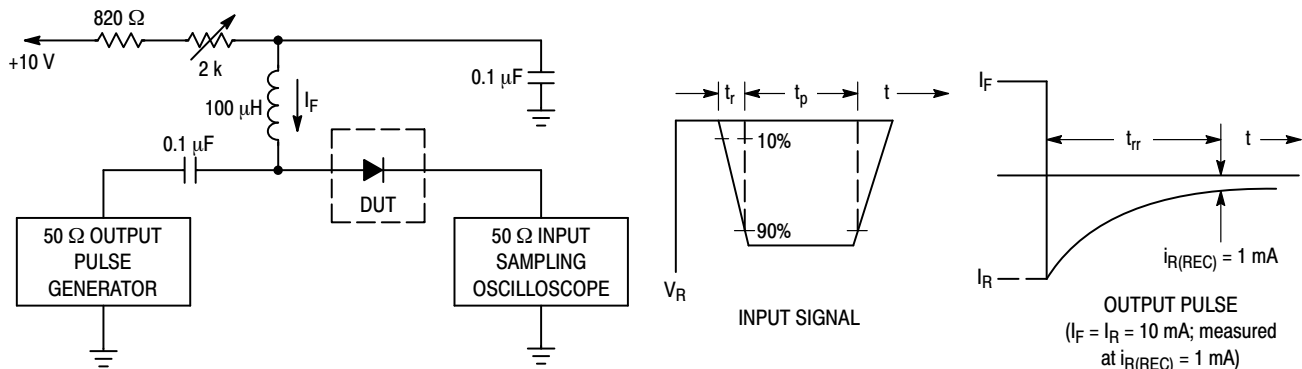
Characteristic	Symbol	Min	Max	Unit
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### OFF CHARACTERISTICS

Reverse Breakdown Voltage ( $I_{BR} = 100 \mu\text{A}$ )	$V_{(BR)}$	100	-	Vdc
Reverse Voltage Leakage Current ( $V_R = 100 \text{Vdc}$ ) ( $V_R = 25 \text{Vdc}, T_J = 150^\circ\text{C}$ ) ( $V_R = 70 \text{Vdc}, T_J = 150^\circ\text{C}$ )	$I_R$	- - -	1.0 30 50	$\mu\text{A}$ dc
Diode Capacitance ( $V_R = 0, f = 1.0 \text{MHz}$ )	$C_D$	-	1.5	pF
Forward Voltage ( $I_F = 1.0 \text{mA}$ ) ( $I_F = 10 \text{mA}$ ) ( $I_F = 50 \text{mA}$ ) ( $I_F = 150 \text{mA}$ )	$V_F$	- - - -	715 855 1000 1250	mVdc
Reverse Recovery Time ( $I_F = I_R = 10 \text{mA}$ , $i_{R(REC)} = 1.0 \text{mA}$ ) (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

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  $I_{R(\text{peak})}$  is equal to 10 mA.  
 (c)  $t_p \gg t_{rr}$

Figure 1. Recovery Time Equivalent Test Circuit

# BAV99W, BAV99RW

## CURVES APPLICABLE TO EACH DIODE

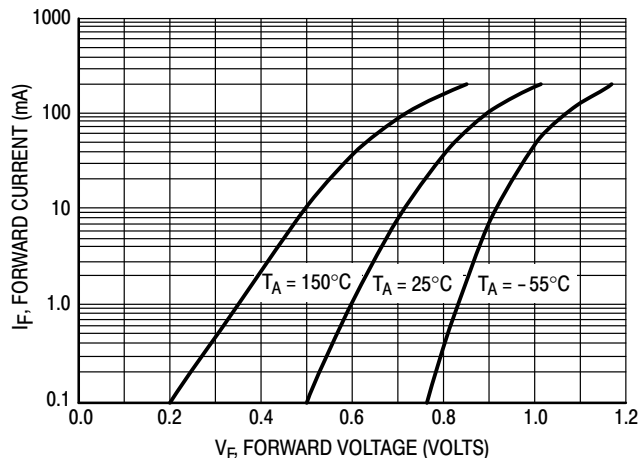


Figure 2. Forward Voltage

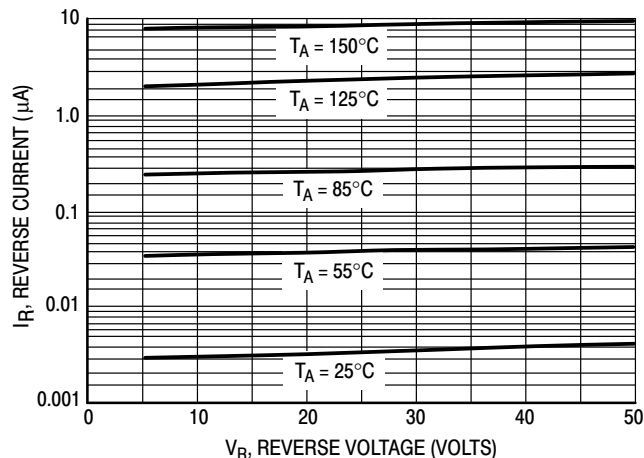


Figure 3. Leakage Current

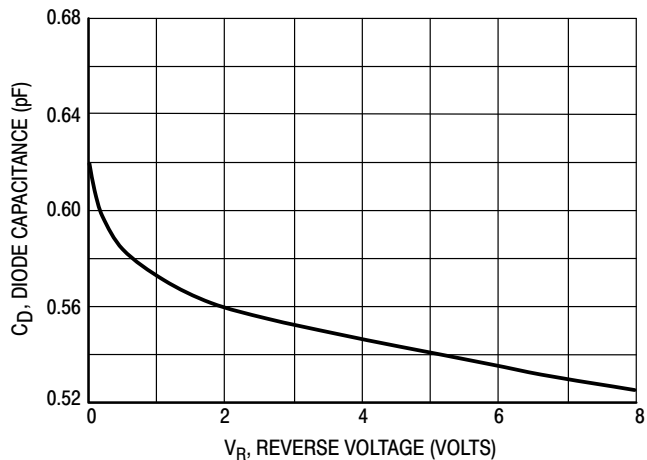
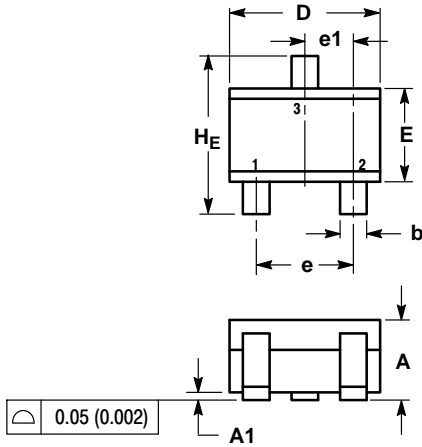


Figure 4. Capacitance

# BAV99W, BAV99RW

## PACKAGE DIMENSIONS

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



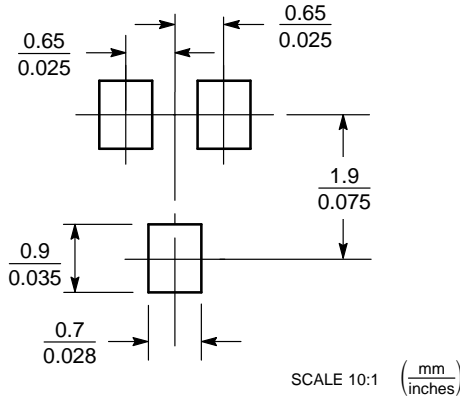
NOTES:  
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
2. CONTROLLING DIMENSION: INCH.

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  
2. CATHODE  
3. CATHODE-ANODE

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