

# BAV23CL, NSVBAV23CL

## Dual High Voltage Common Cathode Switching Diode

### Features

- Moisture Sensitivity Level: 1
- ESD Rating – Human Body Model: Class 2  
– Machine Model: Class C
- Fast Switching Speed
- Switching Application
- 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

### Typical Applications

- LCD TV
- Power Supply
- Industrial

### MAXIMUM RATINGS

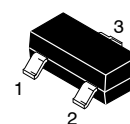
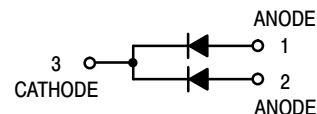
Rating	Symbol	Value	Unit
Continuous Reverse Voltage	$V_R$	250	V
Repetitive Peak Reverse Voltage	$V_{RRM}$	250	V
Peak Forward Current	$I_F$	400	mA
Non-Repetitive Peak Forward Surge Current	$I_{FSM}$	9.0 3.0 1.7	A
		@ $t = 1.0 \mu s$	
		@ $t = 100 \mu s$	
		@ $t = 10 ms$	
Peak Forward Surge Current	$I_{FM(surge)}$	625	mAdc
Non-Repetitive Peak Per Human Body Model	HBM	4.0	kV
Per Machine Model	MM	400	V

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.



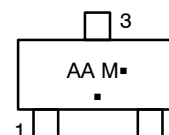
**ON Semiconductor®**

<http://onsemi.com>



SOT-23  
CASE 318  
STYLE 9

### MARKING DIAGRAM



AA = Specific Device Code  
M = Date Code  
▪ = Pb-Free Package  
(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping†
BAV23CLT1G	SOT-23 (Pb-Free)	3000 / Tape & Reel
BAV23CLT3G	SOT-23 (Pb-Free)	10000 / Tape & Reel
NSVBAV23CLT1G	SOT-23 (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.

# BAV23CL, NSVBAV23CL

## THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
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### SINGLE HEATED

Total Device Dissipation (Note 1) $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	265 2.1	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{\theta JA}$	472	$^\circ\text{C}/\text{W}$
Thermal Reference, Junction-to-Anode Lead (Note 1)	$R_{\psi JL}$	263	$^\circ\text{C}/\text{W}$
Thermal Reference, Junction-to-Case (Note 1)	$R_{\psi JC}$	289	$^\circ\text{C}/\text{W}$
Total Device Dissipation (Note 2) $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	345 2.7	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	362	$^\circ\text{C}/\text{W}$
Thermal Reference, Junction-to-Anode Lead (Note 2)	$R_{\psi JL}$	251	$^\circ\text{C}/\text{W}$
Thermal Reference, Junction-to-Case (Note 2)	$R_{\psi JC}$	250	$^\circ\text{C}/\text{W}$

### DUAL HEATED (Note 3)

Total Device Dissipation (Note 1) $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	390 3.1	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient (Note 1)	$R_{\theta JA}$	321	$^\circ\text{C}/\text{W}$
Thermal Reference, Junction-to-Anode Lead (Note 1)	$R_{\psi JL}$	159	$^\circ\text{C}/\text{W}$
Thermal Reference, Junction-to-Case (Note 1)	$R_{\psi JC}$	138	$^\circ\text{C}/\text{W}$
Total Device Dissipation (Note 2) $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	540 4.3	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	231	$^\circ\text{C}/\text{W}$
Thermal Reference, Junction-to-Anode Lead (Note 2)	$R_{\psi JL}$	148	$^\circ\text{C}/\text{W}$
Thermal Reference, Junction-to-Case (Note 2)	$R_{\psi JC}$	119	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

1. FR-4 @ 100 mm<sup>2</sup>, 1 oz. copper traces, still air.
2. FR-4 @ 500 mm<sup>2</sup>, 2 oz. copper traces, still air.
3. Dual heated values assume total power is sum of two equally powered channels

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

Characteristic	Symbol	Min	Max	Unit
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### OFF CHARACTERISTICS

Reverse Voltage Leakage Current ( $V_R = 200\text{ Vdc}$ ) ( $V_R = 200\text{ Vdc}, T_J = 150^\circ\text{C}$ )	$I_R$	- -	0.1 100	$\mu\text{Adc}$
Reverse Breakdown Voltage ( $I_{BR} = 100\ \mu\text{Adc}$ )	$V_{(BR)}$	250	-	Vdc
Forward Voltage ( $I_F = 100\ \text{mAdc}$ ) ( $I_F = 200\ \text{mAdc}$ )	$V_F$	- -	1000 1250	mV
Diode Capacitance ( $V_R = 0, f = 1.0\ \text{MHz}$ )	$C_T$	-	5.0	pF
Reverse Recovery Time ( $I_F = I_R = 30\ \text{mAdc}, R_L = 100\ \Omega$ )	$t_{rr}$	-	150	ns

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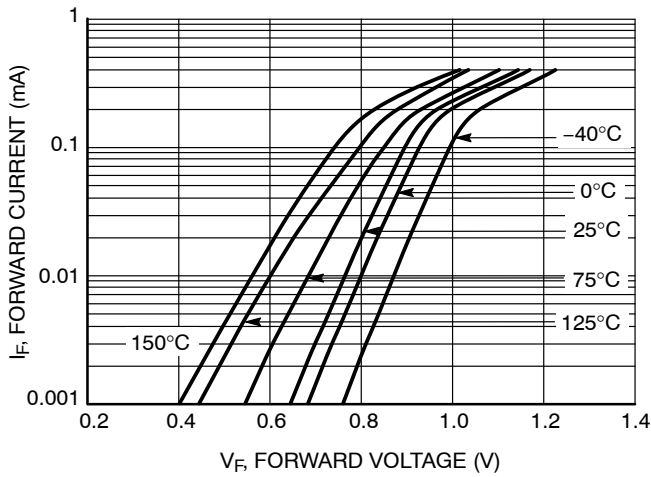


Figure 1. Forward Voltage

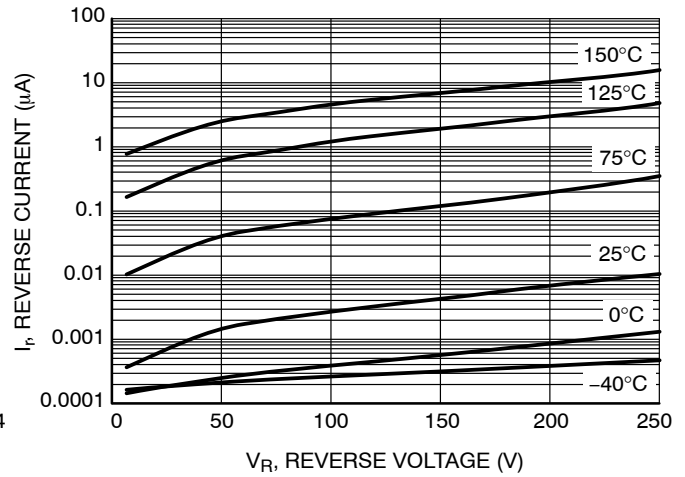


Figure 2. Reverse Current

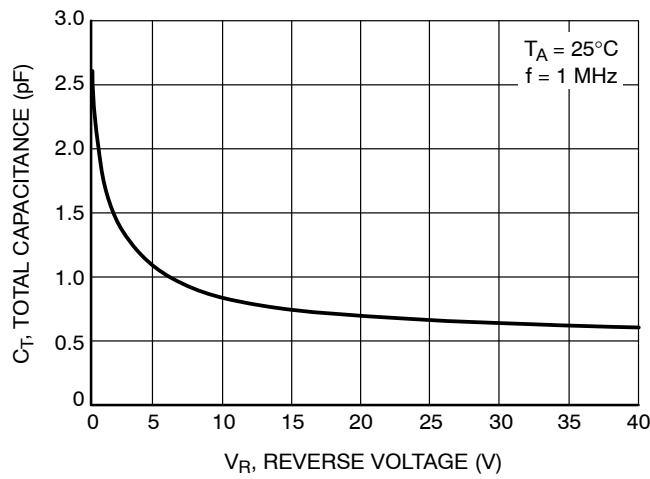
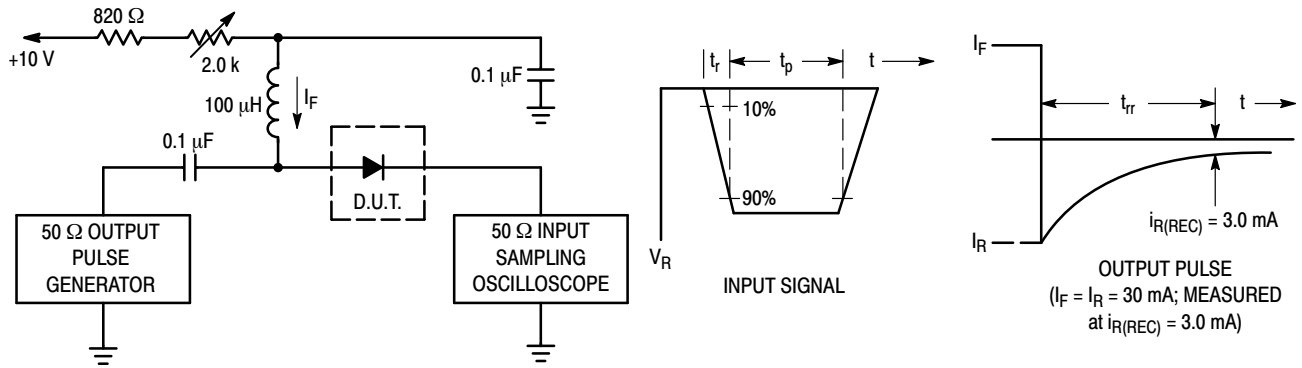


Figure 3. Total Capacitance



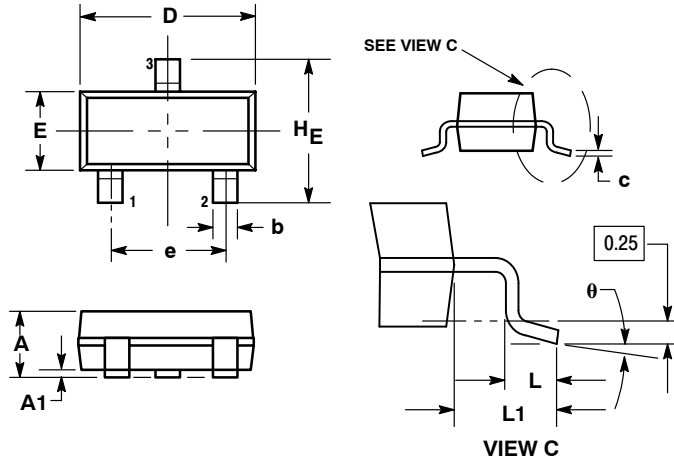
- Notes: 1. A 2.0 kΩ variable resistor adjusted for a Forward Current ( $I_F$ ) of 30 mA.  
 2. Input pulse is adjusted so  $I_{R(peak)}$  is equal to 30 mA.  
 3.  $t_p \gg t_{rr}$

Figure 4. Recovery Time Equivalent Test Circuit

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## PACKAGE DIMENSIONS

SOT-23 (TO-236)  
CASE 318-08  
ISSUE AP



### NOTES:

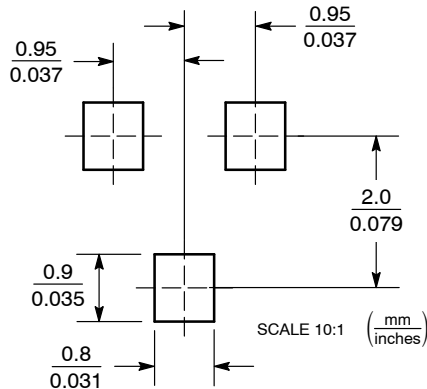
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.


DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.040	0.044
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.37	0.44	0.50	0.015	0.018	0.020
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.081
L	0.10	0.20	0.30	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
HE	2.10	2.40	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

### STYLE 9:

1. ANODE
2. ANODE
3. CATHODE

### SOLDERING FOOTPRINT



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