

Switching Diode, Dual, High Voltage, Common Cathode

BAV23CL, NSVBAV23CL

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

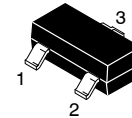
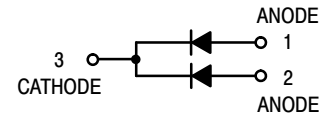
Typical Applications

- LCD TV
- Power Supply
- Industrial

MAXIMUM RATINGS

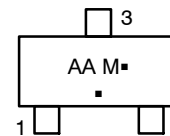
Rating	Symbol	Value	Unit
Continuous Reverse Voltage	V_R	250	V
Repetitive Peak Reverse Voltage	V_{RRM}	250	V
Peak Forward Current	I_F	400	mA
Non-Repetitive Peak Forward Surge Current @ $t = 1.0 \mu s$ @ $t = 100 \mu s$ @ $t = 10 ms$	I_{FSM}	9.0 3.0 1.7	A
Peak Forward Surge Current	$I_{FM(surge)}$	625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



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, NSVBV23CL

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

DUAL HEATED (Note 3)

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

- FR-4 @ 100 mm², 1 oz. copper traces, still air.
- FR-4 @ 500 mm², 2 oz. copper traces, still air.
- 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	μAdc
Reverse Breakdown Voltage ($I_{BR} = 100\text{ }\mu\text{Adc}$)	$V_{(BR)}$	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 ($I_F = I_R = 30\text{ mAdc}$, $R_L = 100\text{ }\Omega$)	t_{rr}	-	150	ns

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.

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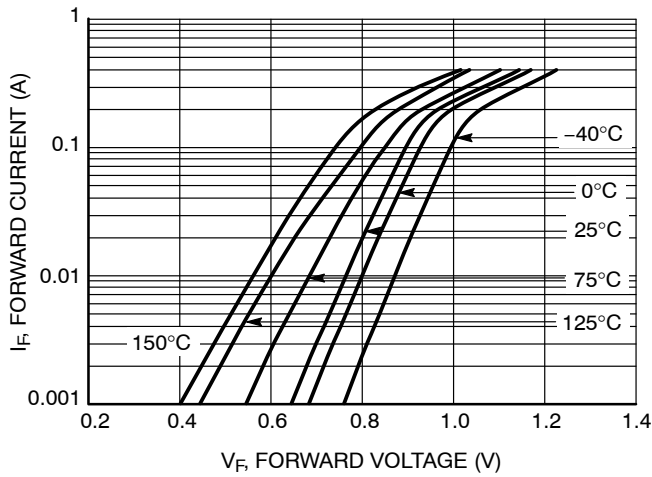


Figure 1. Forward Voltage

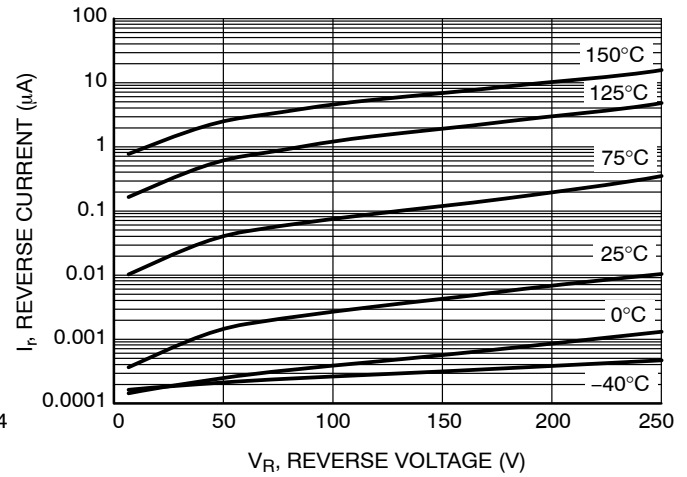


Figure 2. Reverse Current

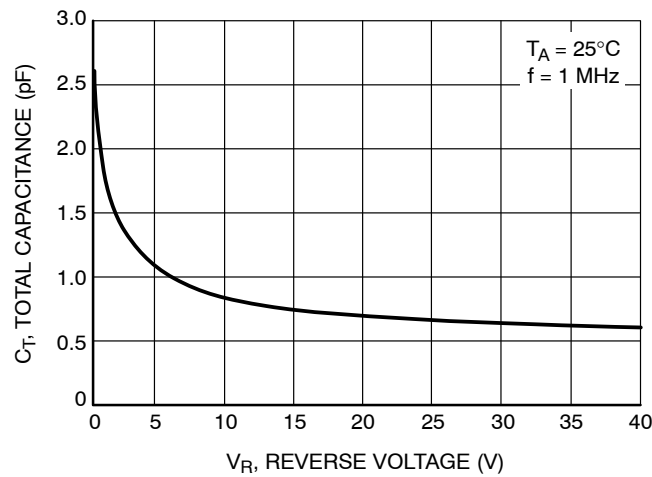
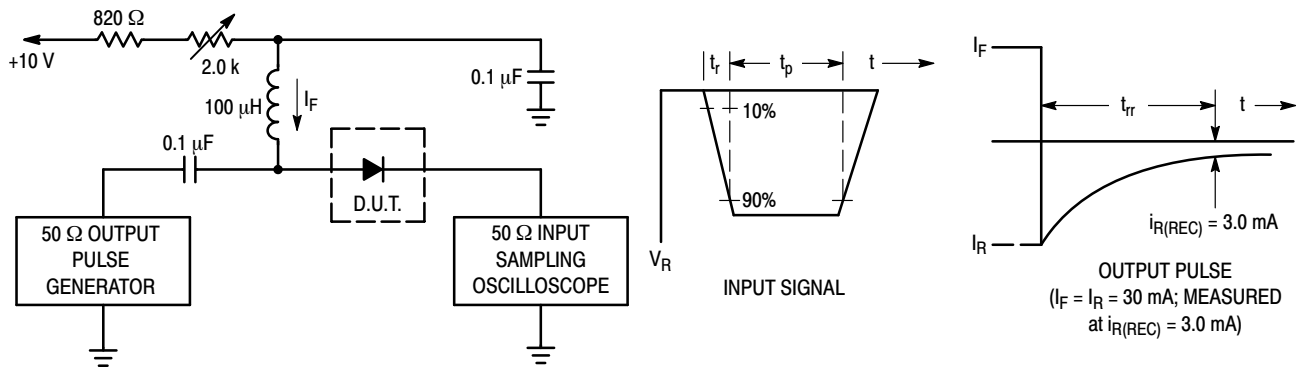


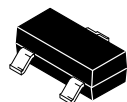
Figure 3. Total Capacitance



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

Figure 4. Recovery Time Equivalent Test Circuit

MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



SCALE 4:1

SOT-23 (TO-236)
CASE 318
ISSUE AT

DATE 01 MAR 2023

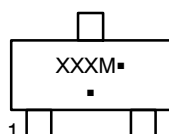


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

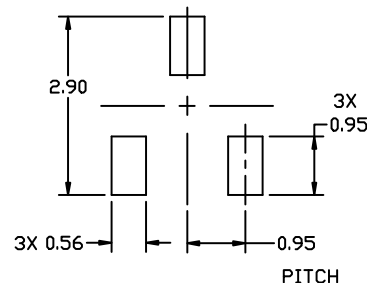
DIM	MILLIMETERS			INCHES		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.89	1.00	1.11	0.035	0.039	0.044
A1	0.01	0.06	0.10	0.000	0.002	0.004
b	0.37	0.44	0.50	0.015	0.017	0.020
c	0.08	0.14	0.20	0.003	0.006	0.008
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.080
L	0.30	0.43	0.55	0.012	0.017	0.022
L1	0.35	0.54	0.69	0.014	0.021	0.027
H _E	2.10	2.40	2.64	0.083	0.094	0.104
T	0°	---	10°	0°	---	10°

GENERIC MARKING DIAGRAM*



XXX = 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.



RECOMMENDED MOUNTING 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.

STYLES ON PAGE 2

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MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS



SOT-23 (TO-236) CASE 318 ISSUE AT

DATE 01 MAR 2023

STYLE 1 THRU 5: CANCELLED	STYLE 6: PIN 1. BASE 2. EMITTER 3. COLLECTOR	STYLE 7: PIN 1. EMITTER 2. BASE 3. COLLECTOR	STYLE 8: PIN 1. ANODE 2. NO CONNECTION 3. CATHODE		
STYLE 9: PIN 1. ANODE 2. ANODE 3. CATHODE	STYLE 10: PIN 1. DRAIN 2. SOURCE 3. GATE	STYLE 11: PIN 1. ANODE 2. CATHODE 3. CATHODE-ANODE	STYLE 12: PIN 1. CATHODE 2. CATHODE 3. ANODE	STYLE 13: PIN 1. SOURCE 2. DRAIN 3. GATE	STYLE 14: PIN 1. CATHODE 2. GATE 3. ANODE
STYLE 15: PIN 1. GATE 2. CATHODE 3. ANODE	STYLE 16: PIN 1. ANODE 2. CATHODE 3. CATHODE	STYLE 17: PIN 1. NO CONNECTION 2. ANODE 3. CATHODE	STYLE 18: PIN 1. NO CONNECTION 2. CATHODE 3. ANODE	STYLE 19: PIN 1. CATHODE 2. ANODE 3. CATHODE-ANODE	STYLE 20: PIN 1. CATHODE 2. ANODE 3. GATE
STYLE 21: PIN 1. GATE 2. SOURCE 3. DRAIN	STYLE 22: PIN 1. RETURN 2. OUTPUT 3. INPUT	STYLE 23: PIN 1. ANODE 2. ANODE 3. CATHODE	STYLE 24: PIN 1. GATE 2. DRAIN 3. SOURCE	STYLE 25: PIN 1. ANODE 2. CATHODE 3. GATE	STYLE 26: PIN 1. CATHODE 2. ANODE 3. NO CONNECTION
STYLE 27: PIN 1. CATHODE 2. CATHODE 3. CATHODE	STYLE 28: PIN 1. ANODE 2. ANODE 3. ANODE				

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