

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

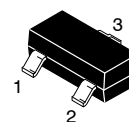
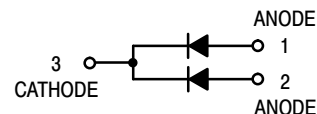
| Rating | Symbol | Value | Unit |
|---|-----------------|-------------------|------|
| Continuous Reverse Voltage | V_R | 250 | V |
| Repetitive Peak Reverse Voltage | V_{RRM} | 250 | V |
| Peak Forward Current | I_F | 400 | mA |
| Non-Repetitive Peak Forward Surge Current | I_{FSM} | 9.0 3.0 1.7 | 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 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.



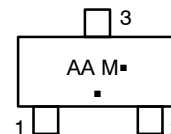
ON Semiconductor®

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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.

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THERMAL CHARACTERISTICS

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

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 | $^\circ\text{C}/\text{W}$ |
| 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°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°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°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 mm², 1 oz. copper traces, still air.
2. FR-4 @ 500 mm², 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 |
|----------------|--------|-----|-----|------|
|----------------|--------|-----|-----|------|

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 ($I_{BR} = 100\ \mu\text{Adc}$) | $V_{(BR)}$ | 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 |

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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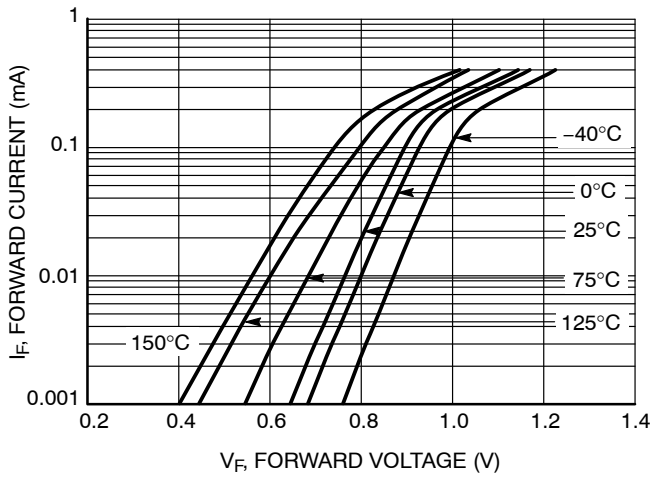


Figure 1. Forward Voltage

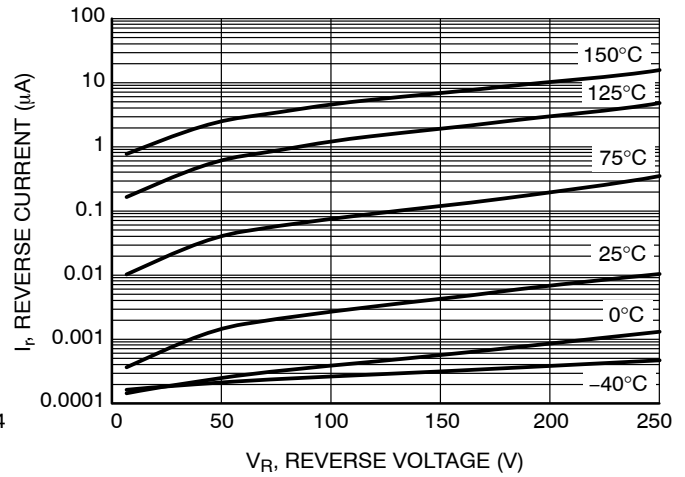


Figure 2. Reverse Current

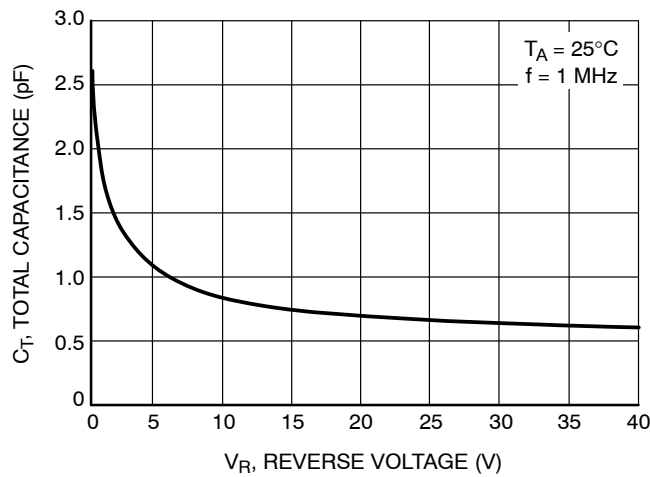
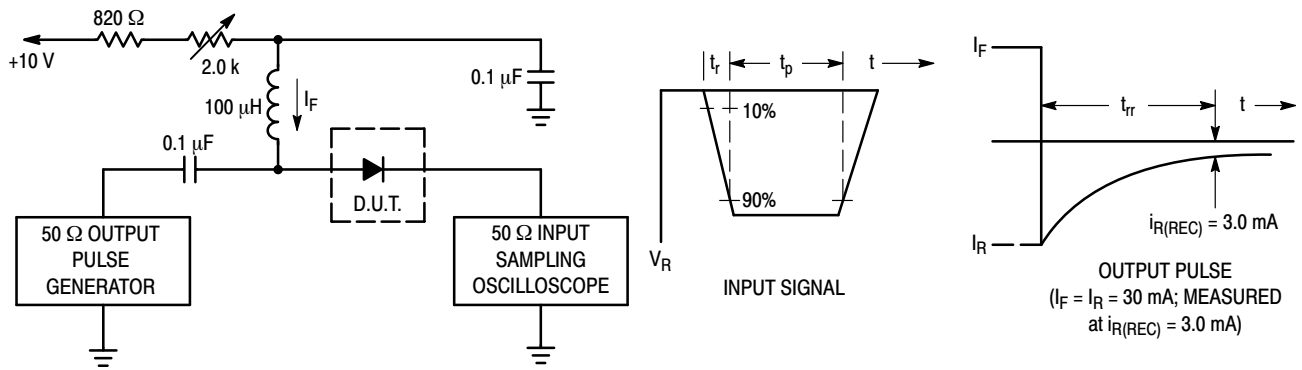


Figure 3. Total Capacitance



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

Figure 4. Recovery Time Equivalent Test Circuit

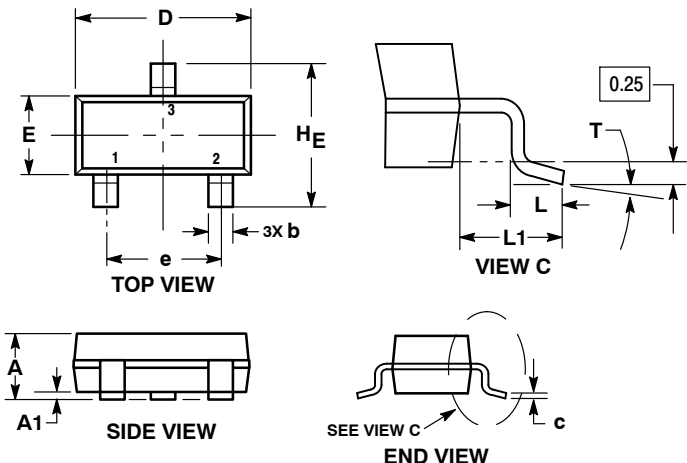
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PACKAGE DIMENSIONS

SOT-23 (TO-236)

CASE 318-08

ISSUE AR



NOTES:

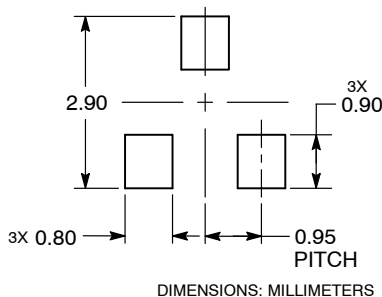
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF THE BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

| 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 |
| HE | 2.10 | 2.40 | 2.64 | 0.083 | 0.094 | 0.104 |
| T | 0° | --- | 10° | 0° | --- | 10° |

STYLE 9:

1. ANODE
2. ANODE
3. CATHODE

RECOMMENDED 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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