

General Description

The AOZ8202 is a one-line bi-directional transient voltage suppressor diode designed to protect voltage sensitive electronics from high transient conditions and ESD.

This device incorporates two TVS diodes in a small SOT-23 package. It may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 ($\pm 15\text{kV}$ air, $\pm 8\text{kV}$ contact discharge) and the IEC61000-4-5 (lightning) requirement..

The AOZ8202 comes in an RoHS compliant SOT-23 package and is rated over a -40°C to $+85^{\circ}\text{C}$ ambient temperature range.

The small SOT-23 package makes it ideal for applications where PCB space is a premium. The small size and high ESD protection makes it ideal for protecting voltage sensitive electronics from high transient conditions and ESD.

Features

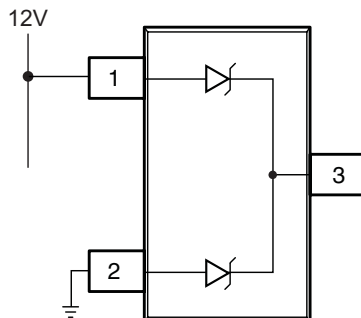
- ESD protection for high-speed data lines:
 - Exceeds: IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 30\text{kV}$ (contact)
 - Human Body Model (HBM) $\pm 30\text{kV}$
 - IEC 61000-4-5 (Lightning) 15A (8/20 μs)
- Small package saves board space
- IEC 61000-4-4 (EFT) $\pm 40\text{A}$
- Low insertion loss
- Low clamping voltage
- Low operating voltages: 12.0V

Applications

- Portable handheld devices
- Keypads, data lines, buttons
- Notebook computers
- Digital Cameras
- Portable GPS
- MP3 players

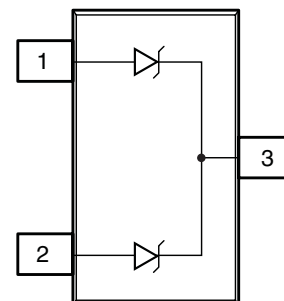


Typical Application



Bidirection Protection of One Line

Pin Configuration



**SOT-23
(Top View)**

Ordering Information

| Part Number | Ambient Temperature Range | Package | Environmental |
|--------------|---------------------------|---------|---------------|
| AOZ8202CI-12 | -40°C to +85°C | SOT-23A | Green Product |



AOS Green Products use reduced levels of Halogens, and are also RoHS compliant.
Please visit www.aosmd.com/web/quality/rohs_compliant.jsp for additional information.

Absolute Maximum Ratings

Exceeding the Absolute Maximum ratings may damage the device.

| Parameter | Rating |
|---|-----------------|
| VP – VN | 12V |
| Peak Pulse Current (I_{PP}), $t_P = 8/20\mu s$ | 15A |
| Peak Power Dissipation (TBD @ 25°C) | 125W |
| Storage Temperature (T_S) | -65°C to +150°C |
| IEC 61000-4-4 (EFT) | ±40A |
| ESD Rating per IEC61000-4-2, Contact ⁽¹⁾ | ±30kV |
| ESD Rating per IEC61000-4-2, Air ⁽¹⁾ | ±30kV |
| ESD Rating per Human Body Model ⁽²⁾ | ±30kV |

Notes:

- IEC 61000-4-2 discharge with $C_{Discharge} = 150pF$, $R_{Discharge} = 330\Omega$.
- Human Body Discharge per MIL-STD-883, Method 3015 $C_{Discharge} = 100pF$, $R_{Discharge} = 1.5k\Omega$.

Maximum Operating Ratings

| Parameter | Rating |
|--------------------------------|----------------|
| Junction Temperature (T_J) | -40°C to +85°C |

Electrical Characteristics

$T_A = 25^\circ C$ unless otherwise specified.

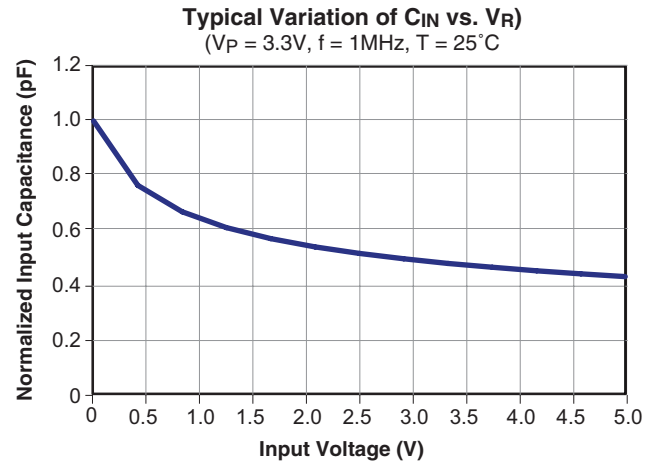
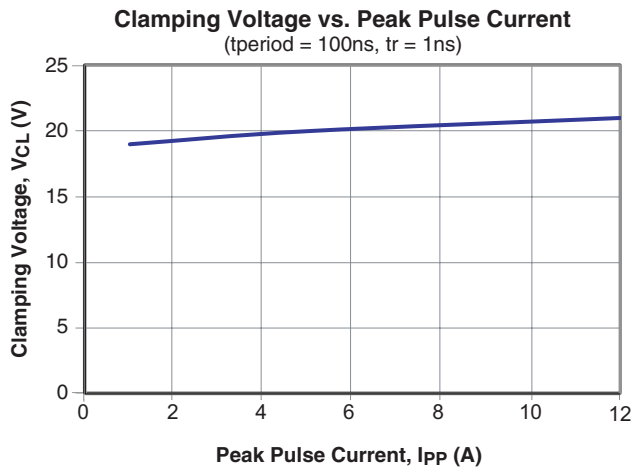
| Symbol | Parameter | Symbol | Parameter |
|-----------|------------------------------------|----------|--|
| I_{PP} | Maximum Reverse Peak Pulse Current | I_F | Forward Current |
| V_{CL} | Clamping Voltage @ I_{PP} | V_F | Forward Voltage |
| V_{RWM} | Working Peak Reverse Voltage | P_{pk} | Peak Power Dissipation |
| I_R | Maximum Reverse Leakage Current | C_J | Capacitance (between pins 1 and 2) @ $V_R = 0$ and $f = 1MHz$ |
| V_{BR} | Breakdown Voltage | | |

Electrical Characteristics

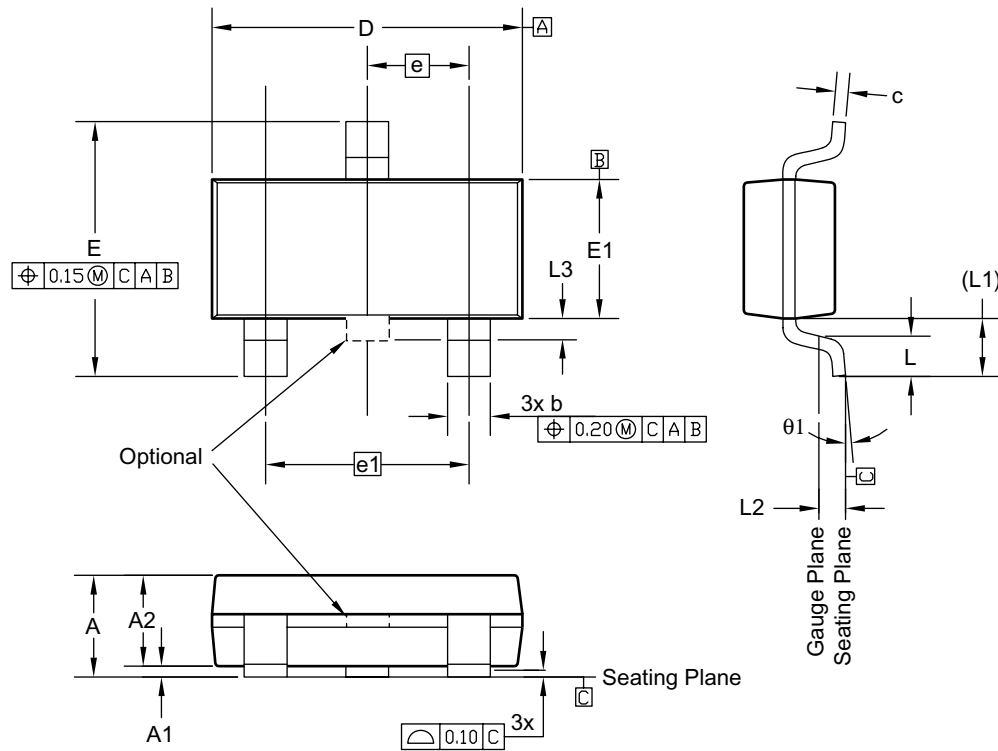
$T_A = 25^\circ C$ unless otherwise noted, $V_F = 1V$ Max. @ $I_F = 15mA$ for all types

| Device | Device Marking | V_{RWM} (V) Max. | V_{BR} (V) Min @ 5mA | I_R (μA) Max. | V_F (V) Typ. | V_{CL} Max. | | C_J (pF) Typ. | C_J (pF) Max. |
|--------------|----------------|-----------------------|---------------------------|---------------------------|-------------------|---------------|----------------|--------------------|--------------------|
| | | | | | | $I_{PP} = 1A$ | $I_{PP} = 10A$ | | |
| AOZ8202CI-12 | AS | 12.0 | 15.0 | 1.0 | 0.75 | 19 | 21 | 62 | 70 |

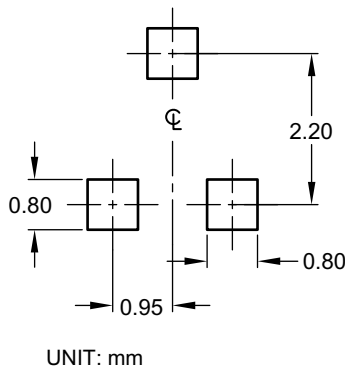
Typical Performance Characteristics



Package Dimensions, SOT-23A 3L



RECOMMENDED LAND PATTERN



UNIT: mm

Dimensions in millimeters

| Symbols | Min. | Nom. | Max. |
|---------|-----------|------|------|
| A | 0.713 | — | 1.17 |
| A1 | 0.013 | — | 0.15 |
| A2 | 0.70 | 0.85 | 1.02 |
| b | 0.30 | — | 0.51 |
| c | 0.08 | — | 0.20 |
| D | 2.80 | 2.90 | 3.04 |
| E | 2.10 | — | 2.64 |
| E1 | 1.20 | 1.30 | 1.40 |
| e | 0.95 BSC | | |
| e1 | 1.90 BSC | | |
| L | 0.40 | 0.50 | 0.60 |
| L1 | 0.54 REF. | | |
| L2 | 0.25 | | |
| L3 | — | — | 0.20 |
| θ1 | 0° | — | 8° |

Dimensions in inches

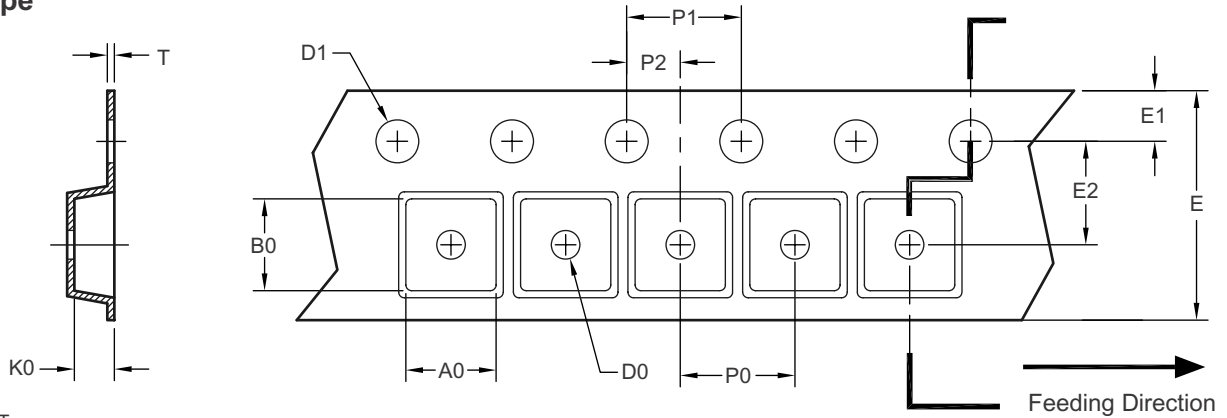
| Symbols | Min. | Nom. | Max. |
|---------|------------|-------|-------|
| A | 0.028 | — | 0.046 |
| A1 | 0.001 | — | 0.006 |
| A2 | 0.028 | 0.033 | 0.040 |
| b | 0.012 | — | 0.020 |
| c | 0.003 | — | 0.008 |
| D | 0.110 | 0.114 | 0.120 |
| E | 0.083 | — | 0.104 |
| E1 | 0.047 | 0.051 | 0.055 |
| e | 0.037 BSC | | |
| e1 | 0.075 BSC | | |
| L | 0.016 | 0.20 | 0.024 |
| L1 | 0.021 REF. | | |
| L2 | 0.010 | | |
| L3 | — | — | 0.008 |
| θ1 | 0° | — | 8° |

Notes:

- All dimensions are in millimeters.
- Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.
- Dimension D does not include mold flash, protrusions or gate burrs. Mold flash, protrusions or gate burrs shall not exceed 0.25mm per end. Dimension E1 does not include interlead flash or protrusion. Interlead flash or protrusion shall not exceed 0.25mm per side.
- The package top may be smaller than the package bottom. Dimensions D and E1 are determined at the outermost extremes of the plastic body exclusive of mold flash, tie bar burrs, gate burrs and interlead flash, but including any mismatch between the top and bottom of the plastic body.
- Follow JEDEC TO-236HAA.

Tape and Reel Dimensions, SOT-23 3L

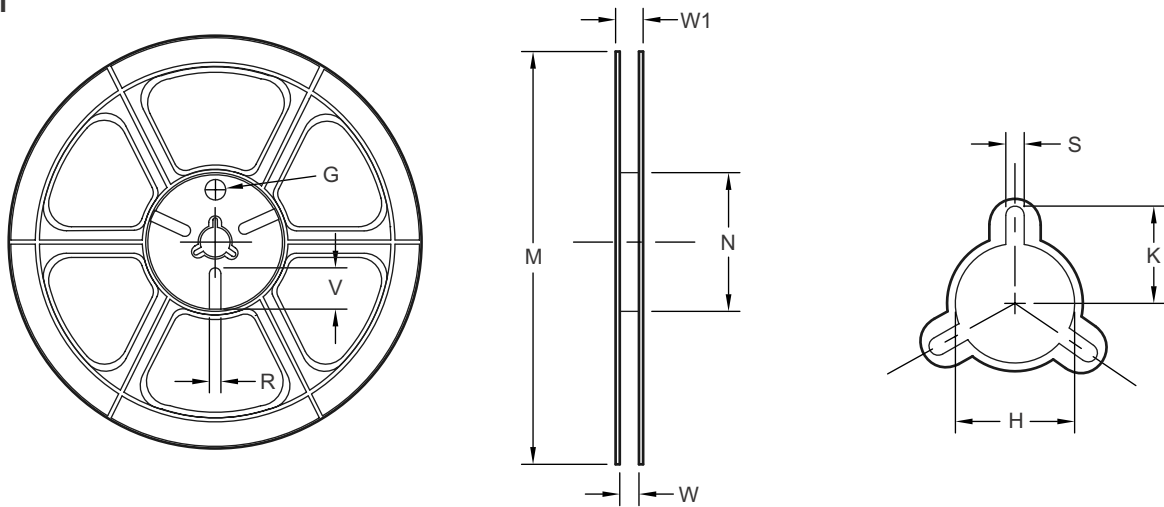
Tape



UNIT: mm

| Package | A0 | B0 | K0 | D0 | D1 | E | E1 | E2 | P0 | P1 | P2 | T |
|-----------------|--------------------|--------------------|--------------------|--------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| SOT-23 (8mm) | 3.15 ± 0.10 | 3.20 ± 0.10 | 1.40 ± 0.10 | 1.00 Min. | 1.50 ± 0.10 | 8.00 ± 0.30 | 1.75 ± 0.10 | 3.50 ± 0.05 | 4.00 ± 0.10 | 4.00 ± 0.10 | 2.00 ± 0.05 | 0.25 ± 0.05 |

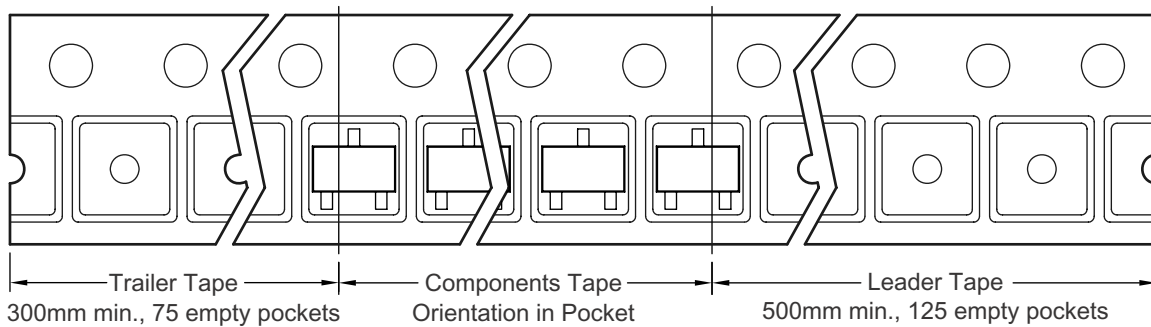
Reel



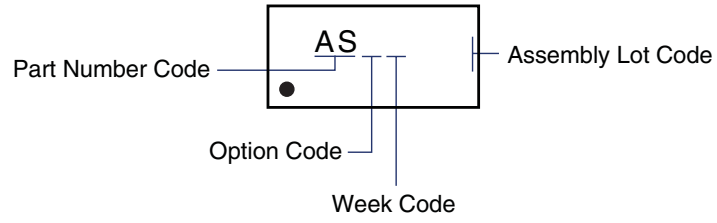
UNIT: mm

| Tape Size | Reel Size | M | N | W | W1 | H | K | S | G | R | V |
|-----------|-------------------|------------------------------------|---------------------|--------------------|---------------------|--|-------|--------------------|--------------------|------|-------|
| 8mm | $\varnothing 180$ | $\varnothing 180.00$ ± 0.50 | $\varnothing 60.50$ | 9.00 ± 0.30 | 11.40 ± 1.00 | $\varnothing 13.00$ $+0.50 / -0.20$ | 10.60 | 2.00 ± 0.50 | $\varnothing 9.00$ | 5.00 | 18.00 |

Leader/Trailer and Orientation



Package Marking



Revision History

| Revision | Revised Item |
|----------|-----------------|
| Rev. 1.0 | Initial release |

This datasheet contains preliminary data; supplementary data may be published at a later date. Alpha & Omega Semiconductor reserves the right to make changes at any time without notice.

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2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.