

General Description

The AOZ8302 is a high current surge transient voltages suppressor diode designed to protect voltage sensitive electronics from high current surge and ESD.

This device incorporates two high current surge 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).

The AOZ8302 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

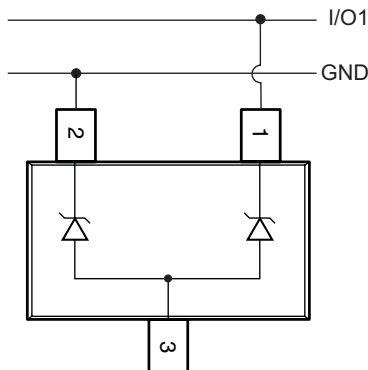
- ESD and high current surge protection:
AOZ8302CI-05 (5V version):
 - Exceeds: IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 30\text{kV}$ (contact)
 - Human Body Model (HBM) $\pm 30\text{kV}$
 - IEC 61000-4-5 (Lightning) 32A (8/20 μs)
- AOZ8302CI-12 (12V version):
 - Exceeds: IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (air), $\pm 30\text{kV}$ (contact)
 - Human Body Model (HBM) $\pm 30\text{kV}$
 - IEC 61000-4-5 (Lightning) 24A (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: 5.0V, 12.0V

Applications

- Ethernet
- Datacom Interfaces
- Telecom Interfaces

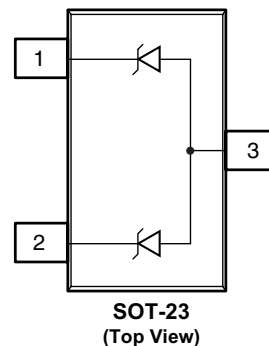


Typical Application



Bidirectional Protection of One Line

Pin Configuration



Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8302CI-05	-40°C to +85°C	SOT-23A	Green Product
AOZ8302CI-12			



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	
	5V	12V
VP – VN	5V	12V
Peak Pulse Current (I_{PP}), $t_P = 8/20\mu s$	32A	24A
Peak Power Dissipation (TBD @ 25°C)	432W	450W
Storage Temperature (T_S)	-65°C to +150°C	-65°C to +150°C
IEC 61000-4-4 (EFT)	±40A	±40A
ESD Rating per IEC61000-4-2, Contact ⁽¹⁾	±30kV	±30kV
ESD Rating per IEC61000-4-2, Air ⁽¹⁾	±30kV	±30kV
ESD Rating per Human Body Model ⁽²⁾	±30kV	±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.

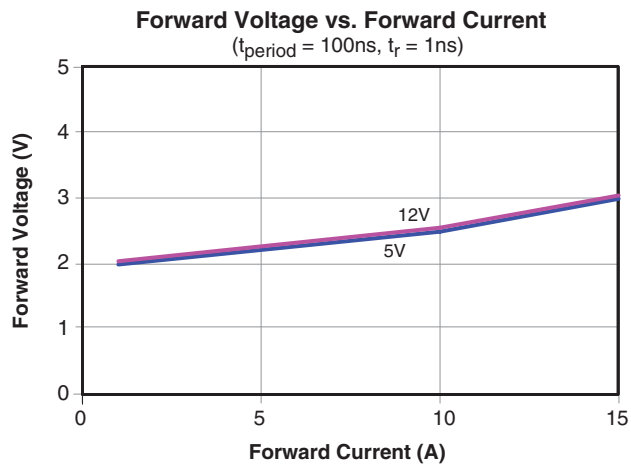
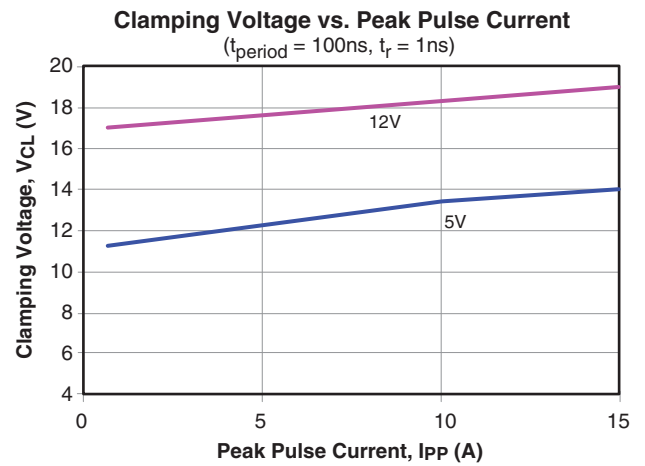
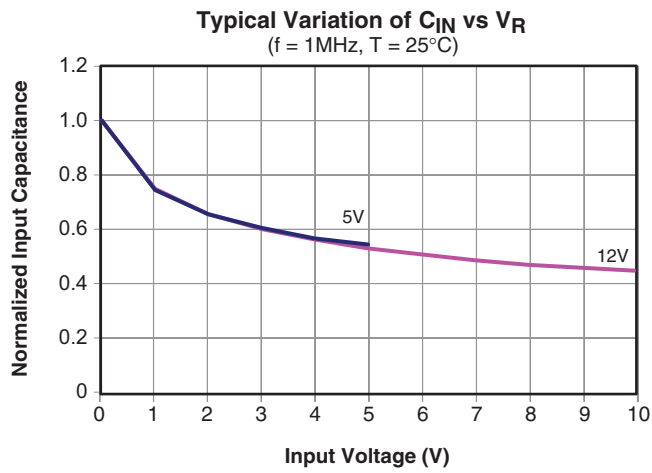
Symbol	Parameter	Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current	I_F	Forward Current
V_{CL}	Clamping Voltage @ I_{PP}	V_F	Forward Voltage
V_{RWM}	Working Peak Reverse Voltage	P_{pk}	Peak Power Dissipation
I_R	Maximum Reverse Leakage Current	C_J	Max. Capacitance @ $V_R = 0$ and $f = 1MHz$
V_{BR}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

Electrical Characteristics

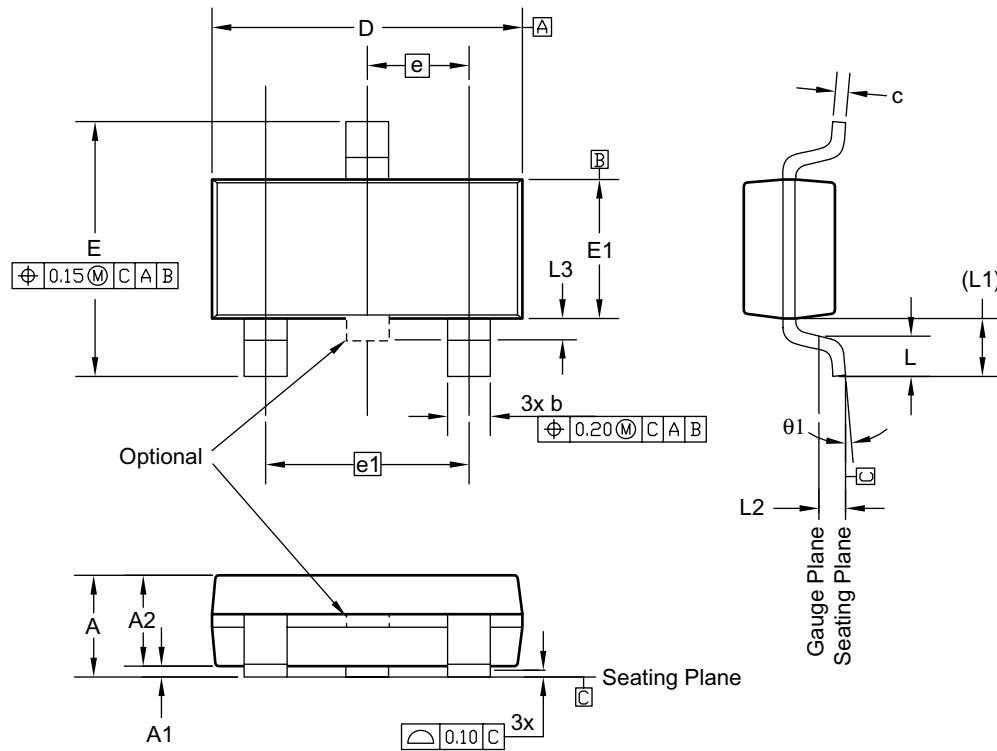
$T_A = 25^\circ C$ unless otherwise noted, $V_F = 1V$ Max. @ $I_F = 15mA$ for all types

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) Max.
						$I_{PP} = 1A$	$I_{PP} = 15A$	
AOZ8302CI-05	AU5	5.0	6.0	1.0	0.75	11.5	14.0	25
AOZ8302CI-12	AUC	12.0	13.0	1.0	0.75	17.0	19.0	25

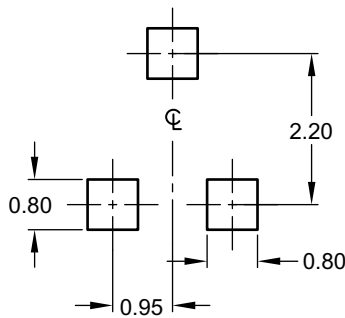
Typical Performance Characteristics



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

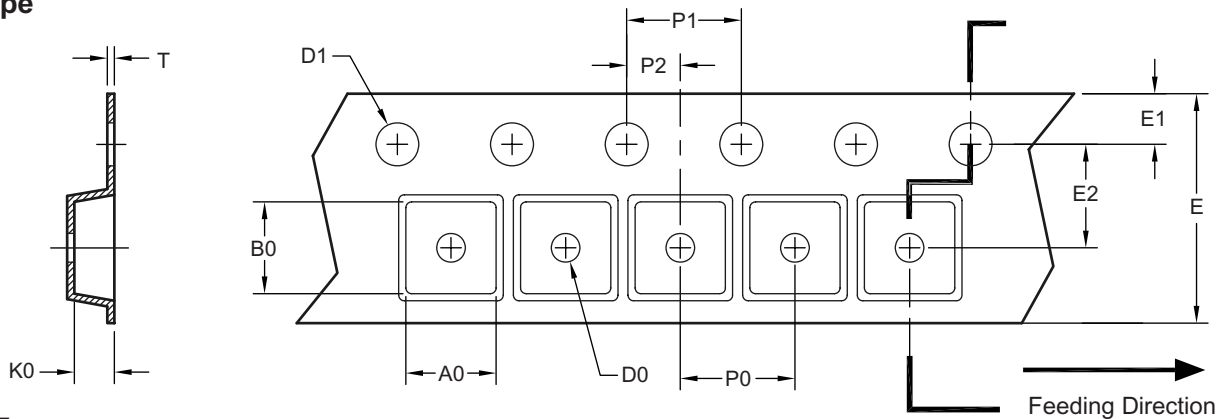
Symbols	Min.	Nom.	Max.
A	0.028	—	0.046
A1	0.001	—	0.006
A2	0.028	0.033	0.040
b	0.012	—	0.020
c	0.003	—	0.008
D	0.110	0.114	0.120
E	0.083	—	0.104
E1	0.047	0.051	0.055
e	0.037 BSC		
e1	0.075 BSC		
L	0.016	0.20	0.024
L1	0.021 REF.		
L2	0.010		
L3	—	—	0.008
θ1	0°	—	8°

Notes:

1. All dimensions are in millimeters.
2. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.
3. 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.
4. 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.
5. Follow JEDEC TO-236HAA.

Tape and Reel Dimensions, SOT-23 3L

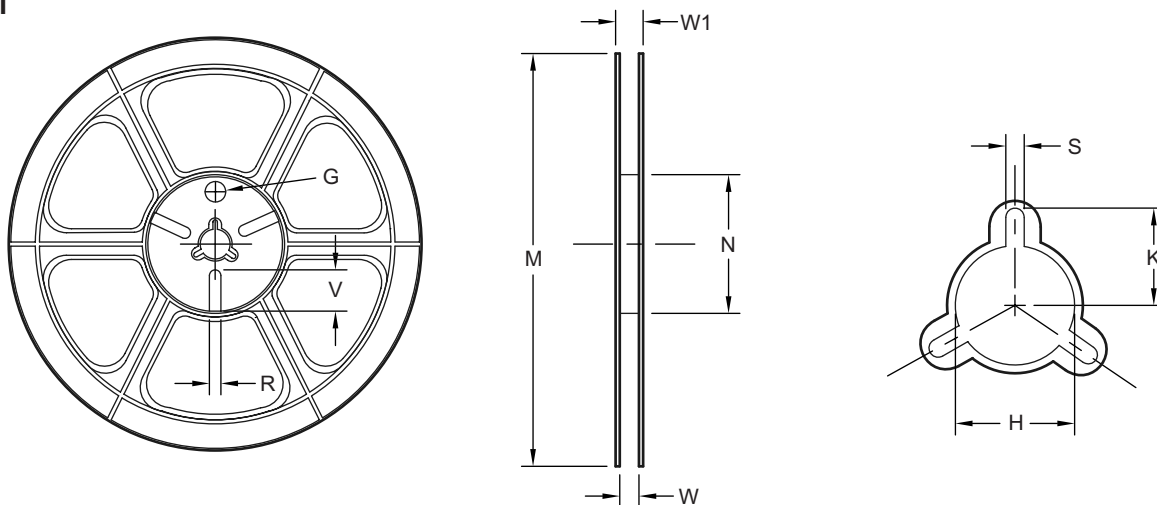
Tape



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

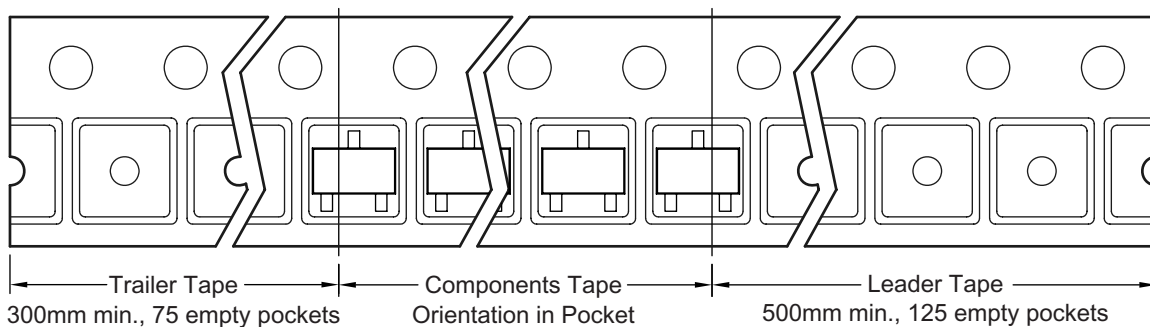
Reel



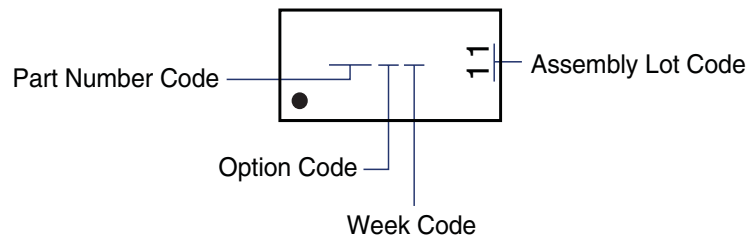
UNIT: mm

Tape Size	Reel Size	M	N	W	W1	H	K	S	G	R	V
8mm	ø180	ø180.00 ±0.50	ø60.50	9.00 ±0.30	11.40 ±1.00	ø13.00 +0.50 / -0.20	10.60	2.00 ±0.50	ø9.00	5.00	18.00

Leader/Trailer and Orientation



Part Marking



Revision History

Revision	Revised Item
Rev. 0.1	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.