

General Description

The AOZ8212ACI-05 is a two-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, $\pm 15\text{kV}$ contact discharge).

The AOZ8212ACI-05 comes in a 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

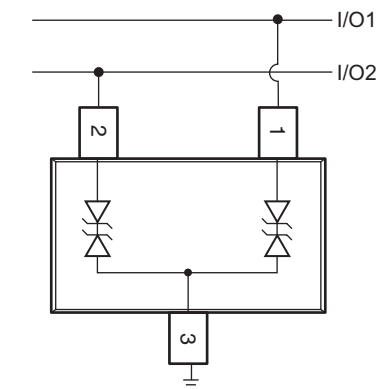
- ESD protection for high-speed data lines:
 - Exceeds: IEC 61000-4-2 (ESD) $\pm 15\text{kV}$ (air), $\pm 15\text{kV}$ (contact)
 - Human Body Model (HBM) $\pm 30\text{kV}$
 - IEC 61000-4-5 (Lightning) 6A (8/20 μs)
- IEC 61000-4-4 (EFT) $\pm 40\text{A}$
- Low clamping voltage
- Low operating voltages: 5.0V

Applications

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

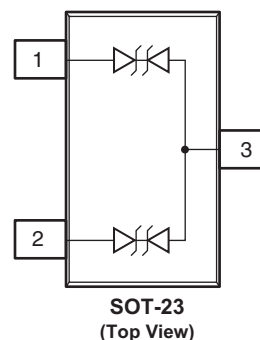


Typical Application



Bidirection Protection of Two Lines

Pin Configuration



Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8212ACI-05	-40°C to +85°C	SOT-23	Green Product



AOS Green Products use reduced levels of Halogens, and are also RoHS compliant.
 Please visit www.aosmd.com/media/AOSGreenPolicy.pdf for additional information.

Absolute Maximum Ratings

Exceeding the Absolute Maximum ratings may damage the device.

Parameter	Rating
Peak Pulse Current (I_{PP}), $t_P = 8/20\mu s$	6A
Peak Power Dissipation (TBD @ 25°C)	110W
Storage Temperature (T_S)	-65°C to +150°C
IEC 61000-4-4 (EFT)	±40A
ESD Rating per IEC61000-4-2, Contact ⁽¹⁾	±15kV
ESD Rating per IEC61000-4-2, Air ⁽¹⁾	±15kV
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 +125°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		

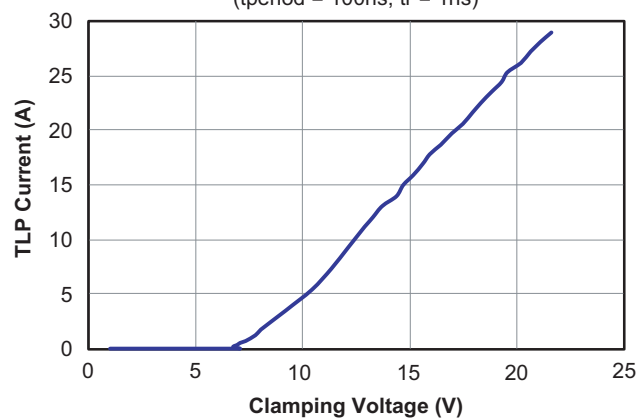
Electrical Characteristics

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

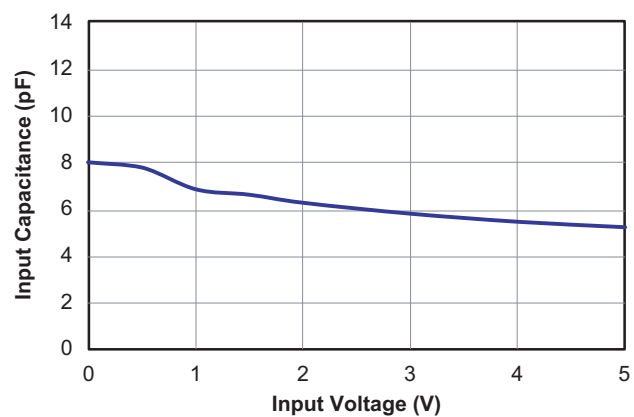
Device	Device Marking	V_{RWM} (V) Max.	V_{BR} (V) Min @ 1mA	I_R (μA) Max.	V_{CL} Max.		C_J (pF) Typ.	C_J (pF) Max.
					$I_{PP} = 1A$	$I_{PP} = 10A$		
AOZ8212ACI-05	BX	5.0	5.5	0.1	10.0	16.0	11.0	14.0

Typical Performance Characteristics

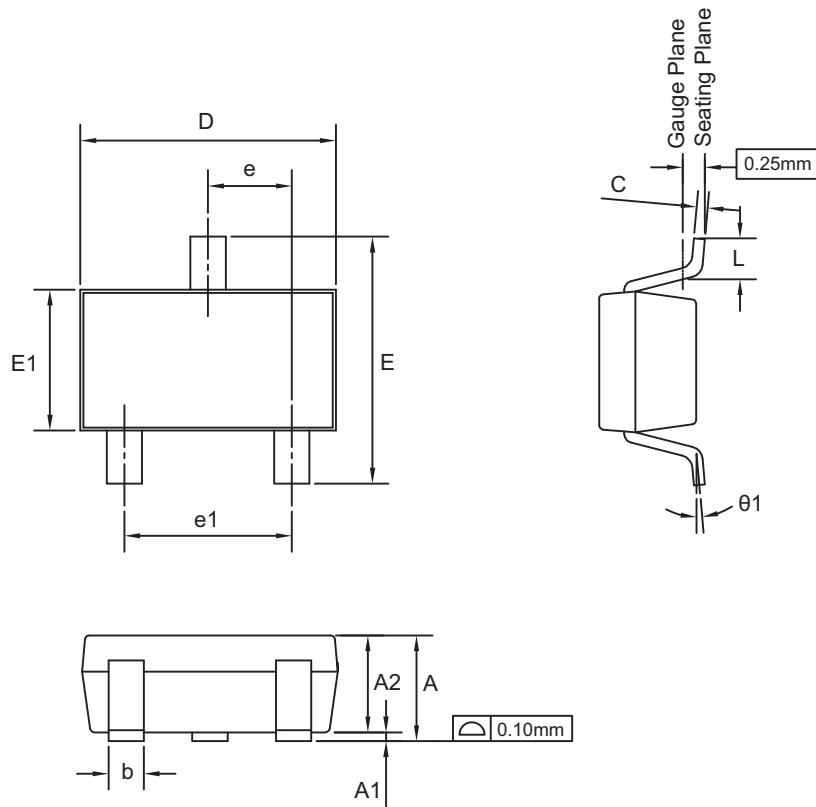
TLP Current vs. Clamping Voltage
(tperiod = 100ns, tr = 1ns)



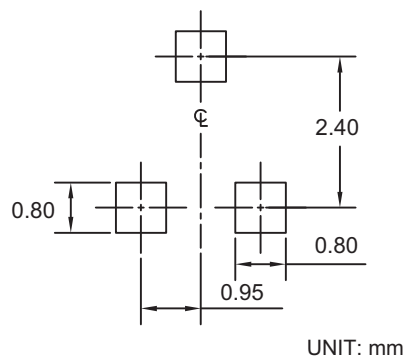
Typical Variation of CIN vs. VR



Package Dimensions, SOT-23 3L



RECOMMENDED LAND PATTERN



Dimensions in millimeters

Symbols	Min.	Nom.	Max.
A	0.85	—	1.25
A1	0.00	—	0.13
A2	0.70	1.00	1.15
b	0.30	0.40	0.50
c	0.08	0.13	0.20
D	2.80	2.90	3.10
E	2.60	2.80	3.00
E1	1.40	1.60	1.80
e	0.95 BSC		
e1	1.90 BSC		
L	0.30	—	0.60
θ1	0°	5°	8°

Dimensions in inches

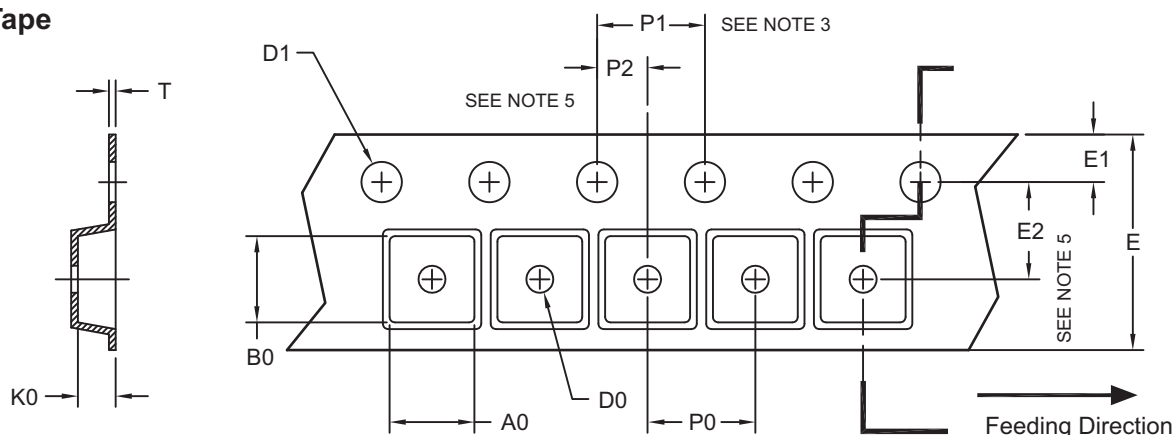
Symbols	Min.	Nom.	Max.
A	0.033	—	0.049
A1	0.000	—	0.005
A2	0.028	0.039	0.045
b	0.012	0.016	0.020
c	0.003	0.005	0.008
D	0.110	0.114	0.122
E	0.102	0.110	0.118
E1	0.055	0.063	0.071
e	0.037 BSC		
e1	0.075 BSC		
L	0.012	—	0.024
θ1	0°	5°	8°

Notes:

- Package body sizes exclude mold flash or gate burrs. Mold flash at the non-lead sides should be less than 5mils each.
- Tolerance $\pm 0.100\text{mm}$ (4mils) unless otherwise specified.
- Dimension L is measured in gauge plane.
- Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.
- All dimensions are in millimeters.

Tape and Reel Dimensions, SOT-23 3L

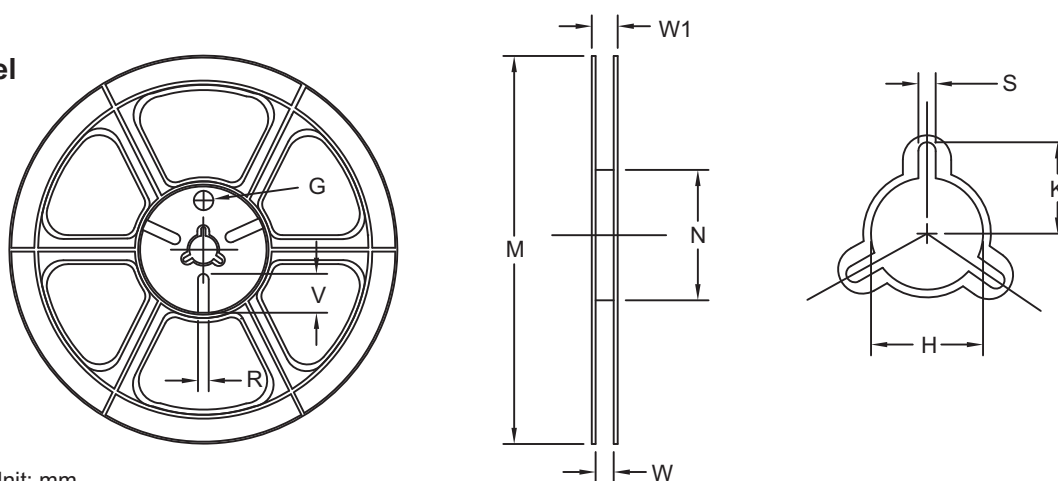
Tape



Unit: mm

Package	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOT23 (8mm)	3.15 ±0.10	3.20 ±0.10	1.40 ±0.10	1.50 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	0.15 ~ 0.30

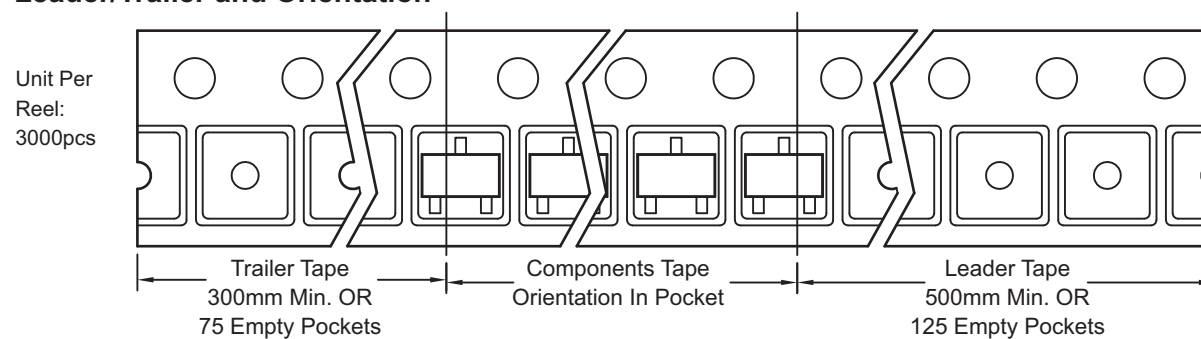
Reel



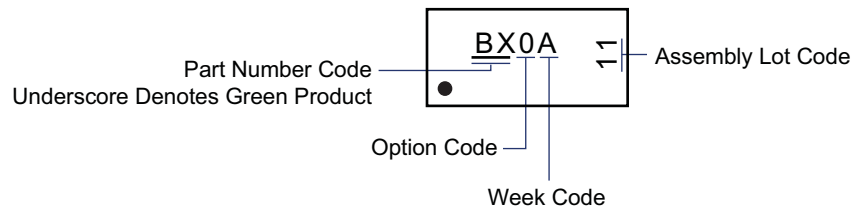
Unit: mm

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	11.00 ±1.00	13.00 +0.50 / -0.20	10.60	2.00 ±0.50	ø9.00	5.00	18.00

Leader/Trailer and Orientation



Package Marking



LEGAL DISCLAIMER

Alpha and Omega Semiconductor makes no representations or warranties with respect to the accuracy or completeness of the information provided herein and takes no liabilities for the consequences of use of such information or any product described herein. Alpha and Omega Semiconductor reserves the right to make changes to such information at any time without further notice. This document does not constitute the grant of any intellectual property rights or representation of non-infringement of any third party's intellectual property rights.

LIFE SUPPORT POLICY

ALPHA AND OMEGA SEMICONDUCTOR PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
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.