

## General Description

The AOZ8224 is a four-line bi-directional transient voltage suppressor diode designed to protect voltage sensitive electronics from high transient conditions and ESD.

This device incorporates eight 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 ( $\pm 15$  kV air,  $\pm 8$  kV contact discharge).

The AOZ8224 comes in a SOT-23 package and is rated over a  $-40$  °C to  $+85$  °C ambient temperature range.

The small SOT-23 package makes the AOZ8224 ideal for applications where PCB space is a premium. The small size and high ESD protection is ideal for protecting voltage sensitive electronics from high transient conditions and ESD.

## Features

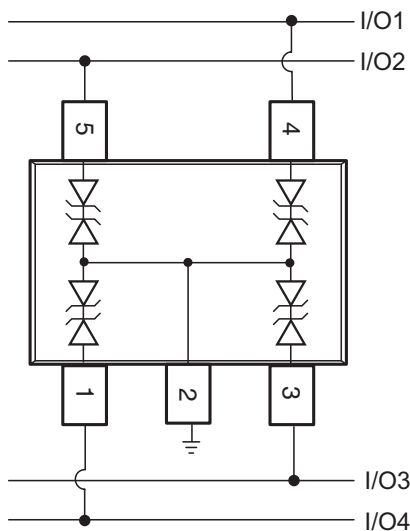
- ESD protection for high-speed data lines:
  - Exceeds IEC 61000-4-2 (ESD)  $\pm 30$  kV (air),  $\pm 30$  kV (contact)
  - Human Body Model (HBM)  $\pm 30$  kV
  - IEC 61000-4-5 (Lightning) 5 A (8/20  $\mu$ s)
- IEC 61000-4-4 (EFT)  $\pm 40$ A
- Small package saves board space
- Low insertion loss
- Low clamping voltage
- Low operating voltages: 5.0 V

## Applications

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

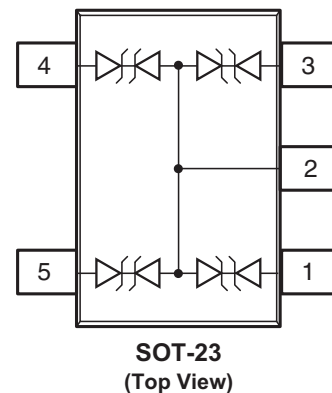


## Typical Application



**Bidirection Protection of Four Lines**

## Pin Configuration



## Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8224CI-05	-40 °C to +85 °C	SOT-23-5L	Green Product RoHS Compliant



AOS Green Products use reduced levels of Halogens, and are also RoHS compliant.  
Please visit [www.aosmd.com/web/quality/rohs\\_compliant.jsp](http://www.aosmd.com/web/quality/rohs_compliant.jsp) for additional information.

## Absolute Maximum Ratings

Exceeding the Absolute Maximum Ratings may damage the device.

Parameter	AOZ8224CI-05
Peak Pulse Current, $t_p = 8/20 \mu s$	5 A
Peak Pulse Power, $t_p = 8/20 \mu s$	70 W
Storage Temperature ( $T_S$ )	-65 °C to +150 °C
ESD Rating per IEC61000-4-2, Contact <sup>(1)</sup>	± 30 kV
ESD Rating per IEC61000-4-2, Air <sup>(1)</sup>	± 30 kV
ESD Rating per Human Body Model <sup>(2)</sup>	± 30 kV

### Notes:

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

## Maximum Operating Ratings

The device is not guaranteed to operate beyond the Maximum Operating Conditions.

Parameter	Rating
Junction Temperature ( $T_J$ )	-4 0°C to +85 °C

## Electrical Characteristics

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

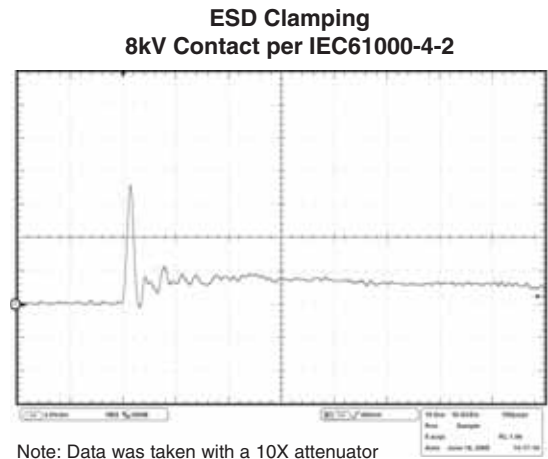
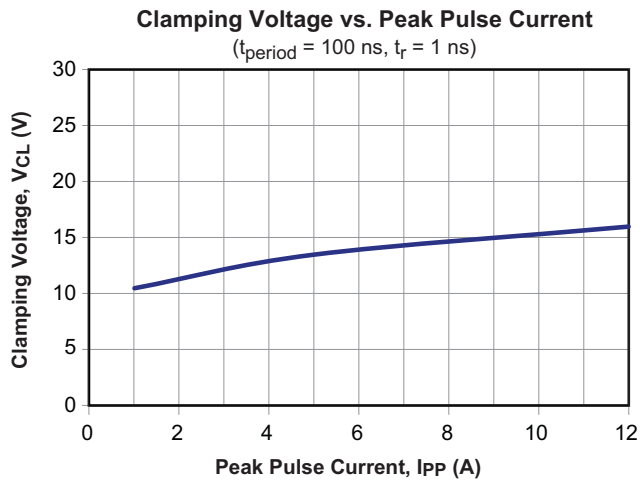
Symbol	Parameter	Symbol	Parameter
$I_{PP}$	Maximum Reverse Peak Pulse Current	$I_F$	Forward Current
$V_{CL}$	Clamping Voltage @ $I_{PP}$	$V_F$	Forward Voltage
$V_{RWM}$	Working Peak Reverse Voltage	$P_{pk}$	Peak Power Dissipation
$I_R$	Maximum Reverse Leakage Current	$C_J$	Max. Capacitance @ $V_R = 0$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

## Electrical Characteristics

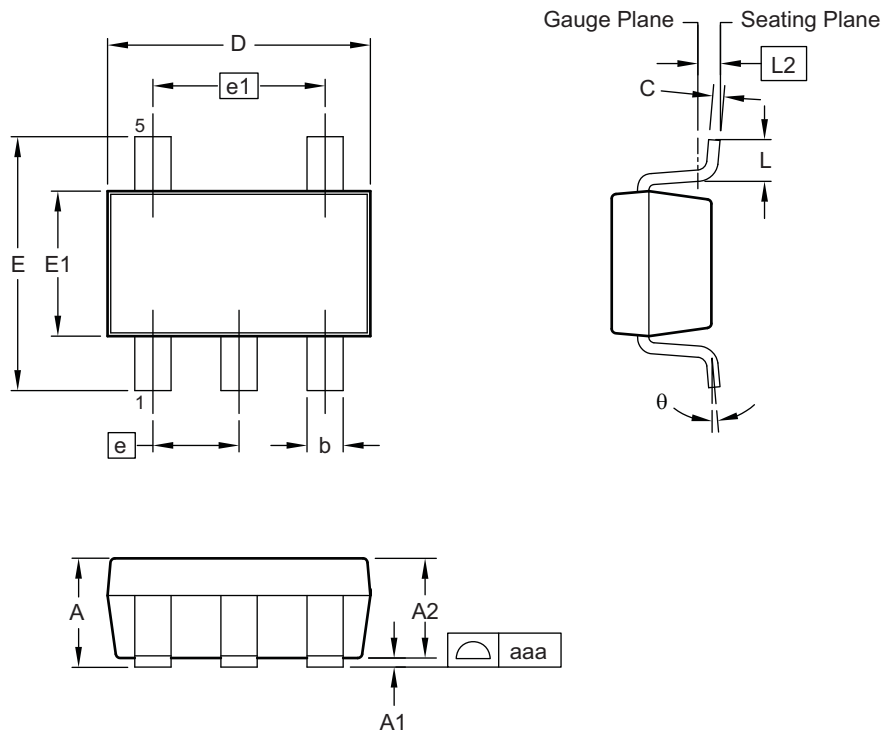
$T_A = 25^\circ\text{C}$  unless otherwise noted,  $V_F = 1 \text{ V Max.}$  @  $I_F = 15 \text{ mA}$  for all types

Device	Device Marking	$V_{RWM} \text{ (V) Max.}$	$V_{BR} \text{ (V) Min @ 5mA}$	$I_R \text{ (}\mu\text{A) Max.}$	$V_F \text{ (V) Typ.}$	$V_{CL} \text{ Max.}$		$C_J \text{ (pF) Typ.}$	$C_J \text{ (pF) Max.}$
						$I_{PP} = 1 \text{ A}$	$I_{PP} = 10 \text{ A}$		
AOZ8224CI-05	AZ	5.0	5.5	0.1	0.75	11.0	15.0	13.0	14.0

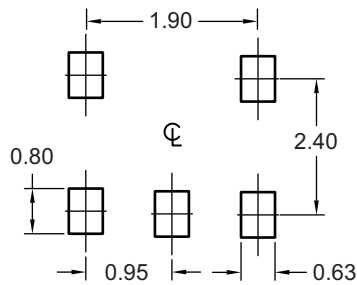
## Typical Performance Characteristics



Package Dimensions, SOT-23-5L



RECOMMENDED LAND PATTERN



UNIT: mm

Dimensions in millimeters

Symbols	Min.	Nom.	Max.
A	—	—	1.00
A1	0.00	—	0.10
A2	0.70	0.88	0.95
b	0.35	0.40	0.50
C	0.10	0.13	0.20
D	2.80	2.90	3.00
E	2.60	2.80	3.00
E1	1.50	1.60	1.70
e	0.95 BSC		
e1	1.90 BSC		
L	0.30	0.40	0.60
L2	0.25 BSC		
aaa	0.10		
θ	0°	—	8°

Dimensions in inches

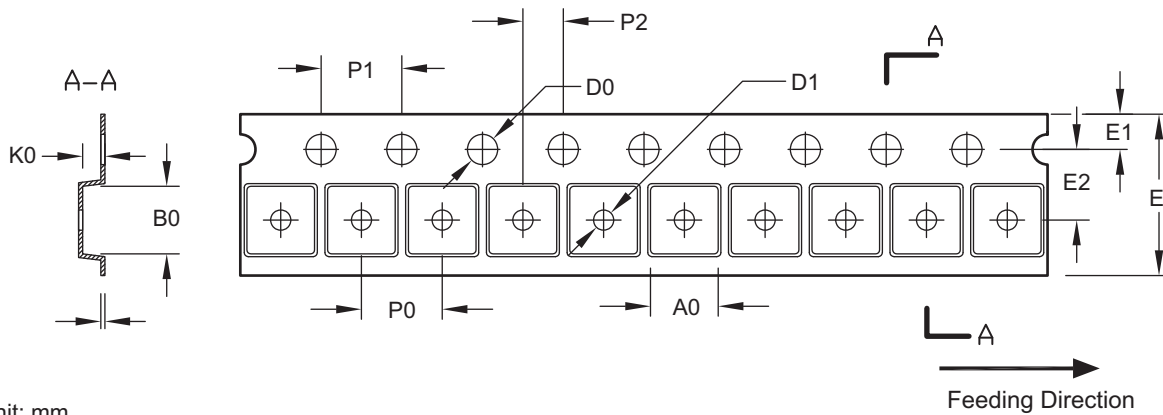
Symbols	Min.	Nom.	Max.
A	—	—	0.039
A1	0.00	—	0.004
A2	0.028	0.035	0.037
b	0.014	0.016	0.020
C	0.004	0.005	0.008
D	0.110	0.114	0.118
E	0.102	0.110	0.118
E1	0.059	0.063	0.067
e	0.037 BSC		
e1	0.075 BSC		
L	0.012	0.016	0.024
L2	0.010 BSC		
aaa	0.004		
θ	0°	—	8°

Notes:

1. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
2. Dimension "L" is measured in gauge plane.
3. Tolerance 0.10mm (4 mil) unless otherwise specified
4. Refer to JEDEC MO-193C AB.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

### Tape and Reel Dimensions, SOT-23

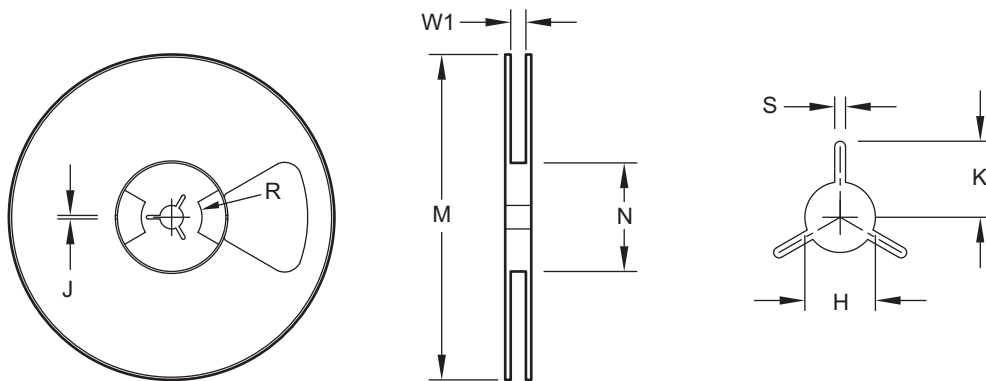
#### Tape



Unit: mm

Package	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOT23-5/6L LP	3.15 ±0.10	3.20 ±0.10	1.40 ±0.10	1.50 ±0.05	1.00 +0.10 / -0	8.00 ±0.30	1.75 ±0.10	3.50 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	0.23 ±0.03

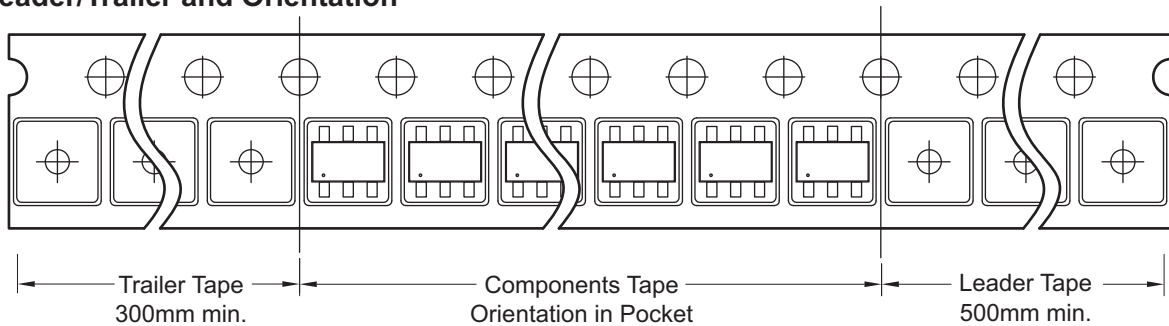
#### Reel



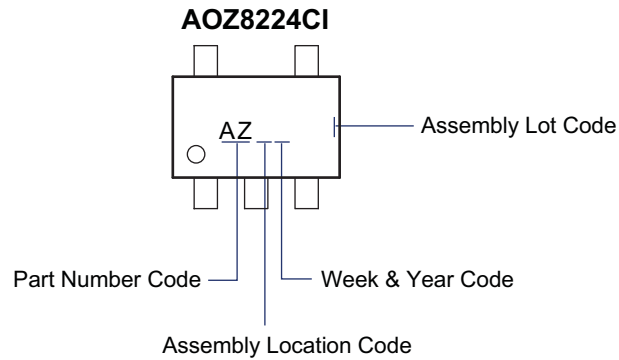
Unit: mm

Tape Size	Reel Size	M	N	W1	H	S	K	R	J
8mm	ø177.8	ø177.8 Max.	55.0 Min.	8.4 +1.50 / -0.0	13.0 +0.5 / -0.2	1.5 Min.	10.1 Min.	12.7	4.0 ±0.1

#### Leader/Trailer and Orientation



## Part Marking



**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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