

## General Description

The AOZ8831A is an ultra low capacitance one-line bidirectional transient voltage suppressor diode designed to protect high speed data lines and voltage sensitive electronics from high transient conditions and ESD.

This device incorporates one bidirectional TVS diode in an ultra-small DFN 1.0x0.6 footprint 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 AOZ8831A comes in an RoHS compliant package and is rated over a  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  ambient temperature range.

The ultra-small  $1.0 \times 0.6 \times 0.5\text{mm}$  DFN 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

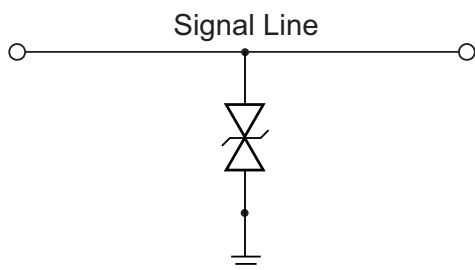
- ESD protection for high-speed data lines:
  - Exceeds: IEC 61000-4-2 (ESD),  $\pm 25\text{kV}$  (contact),  $\pm 30\text{kV}$  (air)
  - Human Body Model (HBM)  $\pm 25\text{kV}$
- Small package saves board space
- Ultra low capacitance:  $0.30\text{pF}$
- Low clamping voltage
- Low operating voltage:  $5.0\text{V}$
- Pb-free device

## Applications

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



## Typical Application



**Bidirection Protection of Single Line**

## Pin Configuration



## Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8831ADI-05	-40°C to +85°C	DFN 1.0 x 0.6	Green Product RoHS Compliant



AOS Green Products use reduced levels of Halogens, and are also RoHS compliant.

Please visit [www.aosmd.com/media/AOSGreenPolicy.pdf](http://www.aosmd.com/media/AOSGreenPolicy.pdf) for additional information.

## Absolute Maximum Ratings

*Exceeding the Absolute Maximum Ratings may damage the device.*

Parameter	Rating
VP – VN	5V
Peak Pulse Current ( $I_{PP}$ ), $t_P = 8/20\mu s$	2.5A
Peak Pulse Power, $t_P = 8/20\mu s$	40W
Storage Temperature ( $T_S$ )	-65°C to +150°C
ESD Rating per IEC61000-4-2, Contact <sup>(1)</sup>	±25kV
ESD Rating per IEC61000-4-2, Air <sup>(1)</sup>	±30kV
ESD Rating per Human Body Model <sup>(2)</sup>	±25kV

### 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 Conditions

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

Parameter	Rating
Junction Temperature ( $T_J$ )	-40°C to +125°C

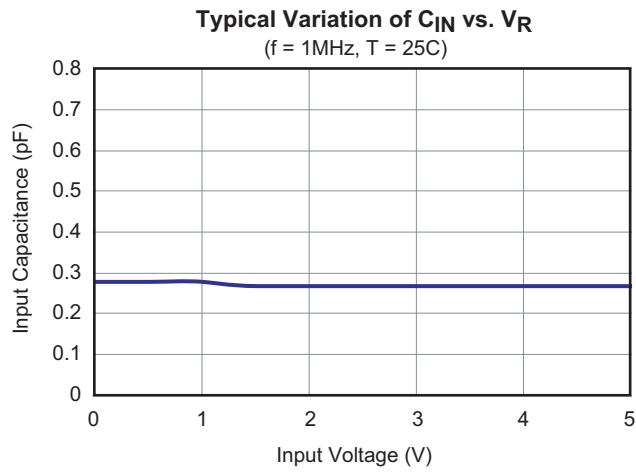
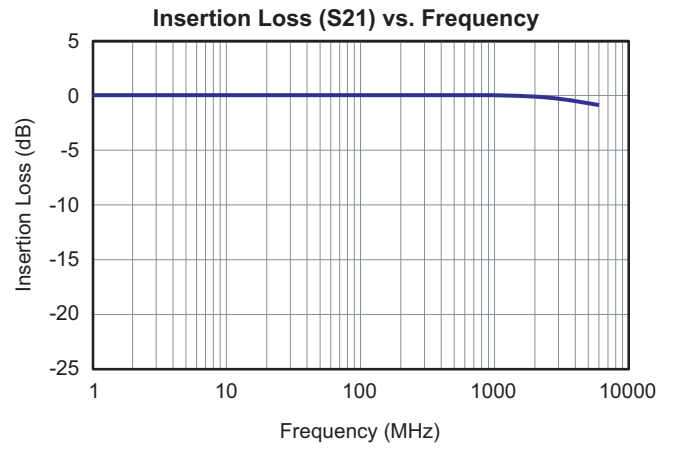
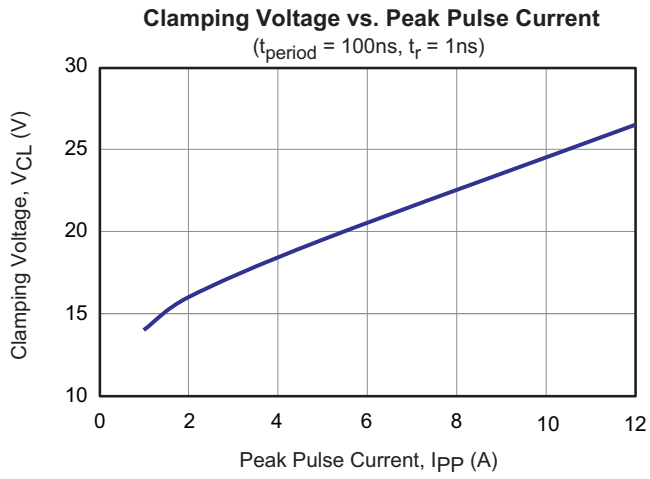
### Electrical Characteristics

T<sub>A</sub> = 25°C unless otherwise specified.

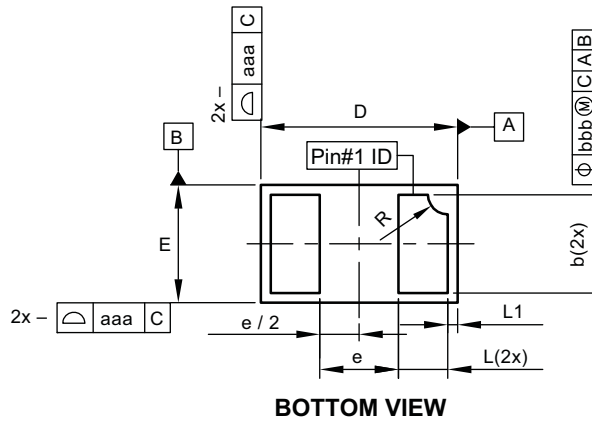
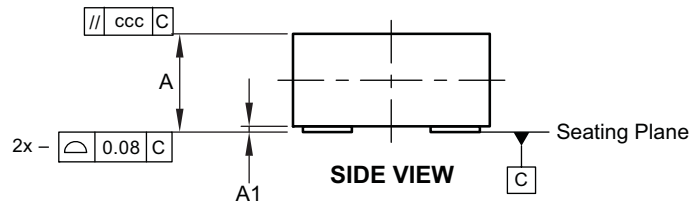
Symbol	Parameter	Diagram
I <sub>PP</sub>	Maximum Reverse Peak Pulse Current (100ns Transmission Line Pulse (TLP))	
V <sub>CL</sub>	Clamping Voltage @ I <sub>PP</sub>	
V <sub>SURGE_MAX</sub>	Peak Voltage at I <sub>SURGE</sub> = 2A (IEC61000-40-5 8/20µs pulse current)	
V <sub>RWM</sub>	Working Peak Reverse Voltage	
I <sub>R</sub>	Maximum Reverse Leakage Current	
V <sub>BR</sub>	Breakdown Voltage	
P <sub>PK</sub>	Peak Power Dissipation	
C <sub>J</sub>	Capacitance @ V <sub>R</sub> = 0 and f = 1MHz	

Device	Device Marking	V <sub>RWM</sub> (V) Max.	V <sub>BR</sub> (V)		I <sub>R</sub> (nA) Max.	V <sub>SURGE</sub> (V) Max.	V <sub>CL</sub> Max.			C <sub>J</sub> (pF)	
			Min.	Max.			I <sub>PP</sub> = 1A	I <sub>PP</sub> = 2A	I <sub>PP</sub> = 5A	Typ.	Max.
AOZ8831ADI-05	T	5.0	6.0	10.0	50.0	15.5	14.0	16.0	19.5	0.30	0.45

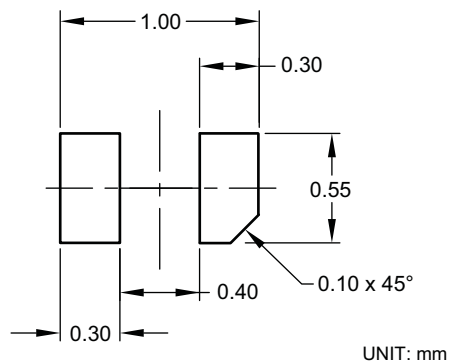
## Typical Performance Characteristics



Package Dimensions, DFN 1.0 x 0.6



RECOMMENDED LAND PATTERN



Dimensions in millimeters

Symbols	Min.	Nom.	Max.
A	0.47	0.52	0.55
A1	0.00	0.03	0.05
b	0.45	0.50	0.55
D	0.95	1.00	1.05
E	0.55	0.60	0.65
e	---	0.40	---
L	0.20	0.25	0.30
L1	0.05±0.03 REF.		
R	0.05	0.10	0.15
aaa	0.15		
bbb	0.5		
ccc	0.5		

Dimensions in inches

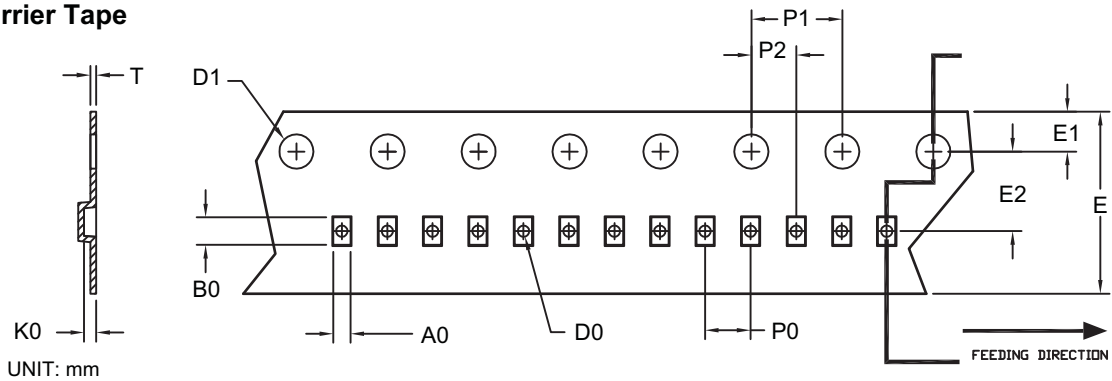
Symbols	Min.	Nom.	Max.
A	0.019	0.020	0.021
A1	0.000	0.001	0.002
b	0.018	0.020	0.022
D	0.037	0.039	0.041
E	0.022	0.024	0.026
e	---	0.016	---
L	0.008	0.010	0.012
L1	0.002±0.001 REF.		
R	0.002	0.004	0.006
aaa	0.006		
bbb	0.002		
ccc	0.002		

Notes:

1. All dimensions are in millimeters. Angles are in degrees.
2. Coplanarity applies to the exposed heat sink slug as well as the terminals.

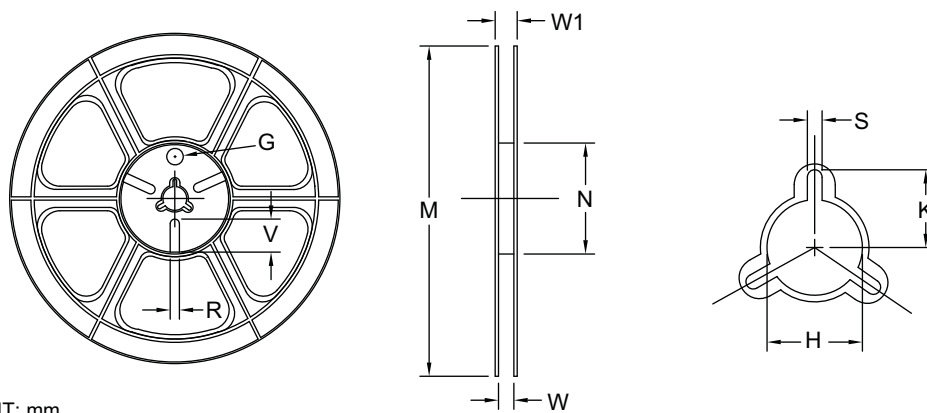
### Tape and Reel Dimensions, DFN 1.0 x 0.6

#### Carrier Tape



Option	Package	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
A	DFN 1.0x0.6/ DFN 1.0x0.6A (8 mm)	0.69 ±0.05	1.19 ±0.05	0.66 ±0.05	0.40 ±0.05	1.50 ±0.10	8.00 +0.3/-0.1	1.75 ±0.10	3.50 ±0.05	2.00 ±0.05	4.00 ±0.10	2.00 ±0.05	0.23 ±0.02
B	DFN 1.0x0.6/ DFN 1.0x0.6A (8 mm)	0.65 ±0.04	1.05 ±0.04	0.61 ±0.04	0.40 ±0.05	1.50 ±0.10	8.00 +0.3/-0.1	1.75 ±0.10	3.50 ±0.05	2.00 ±0.10	4.00 ±0.10	2.00 ±0.05	0.20 ±0.05

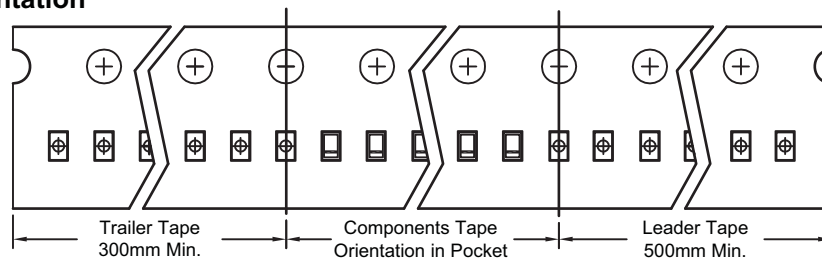
#### Reel



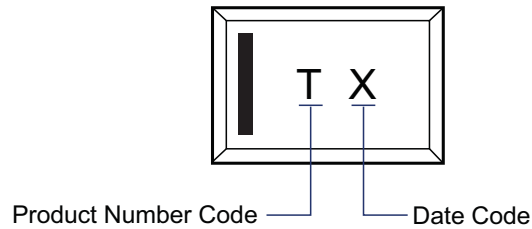
Tape Size	Reel Size	M	N	W	W1	H	K	S	G	R	V
8mm	ø178	ø178 ±0.5	ø55 ±1	8.4 +1.5/-0	Max. 14.4	ø13.0 ±0.5	Max. 10.1	2.0 ±0.5	N/A	N/A	N/A

#### Leader / Trailer & Orientation

TVS  
Unit Per Reel:  
10000pcs



## Part Marking



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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.

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