

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°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

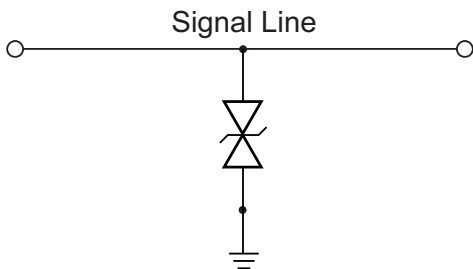
- ESD protection for high-speed data lines:
 - Exceeds: IEC 61000-4-2 (ESD), $\pm 25\text{kV}$ (contact)
 - Human Body Model (HBM) $\pm 25\text{kV}$
- Small package saves board space
- Ultra low capacitance: 0.30pF
- Low clamping voltage
- Low operating voltage: 5.0V
- Pb-free device

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 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 = 8/20μs	2.5A
Peak Pulse Power, t _p = 8/20μs	40W
Storage Temperature (T _S)	-65°C to +150°C
ESD Rating per IEC61000-4-2, Contact ⁽¹⁾	±25kV
ESD Rating per Human Body Model ⁽²⁾	±25kV

Notes:

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

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

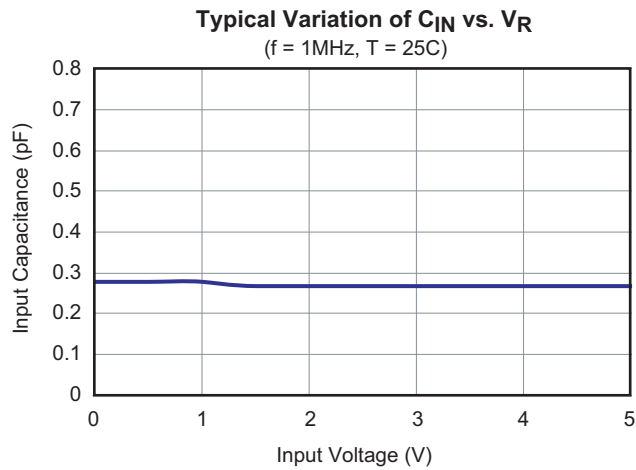
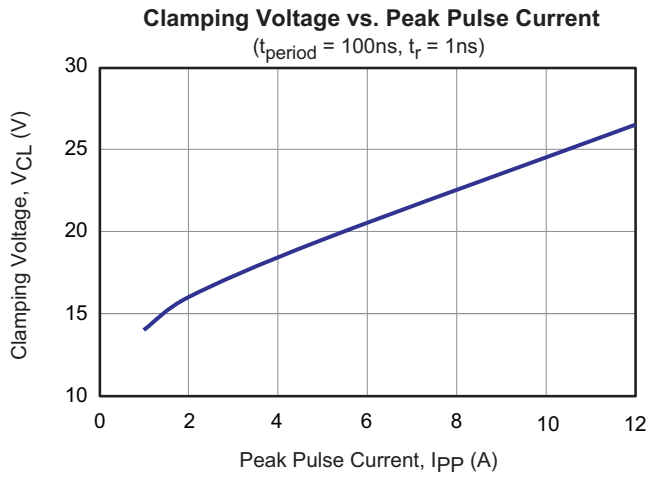
Electrical Characteristics

T_A = 25°C unless otherwise specified.

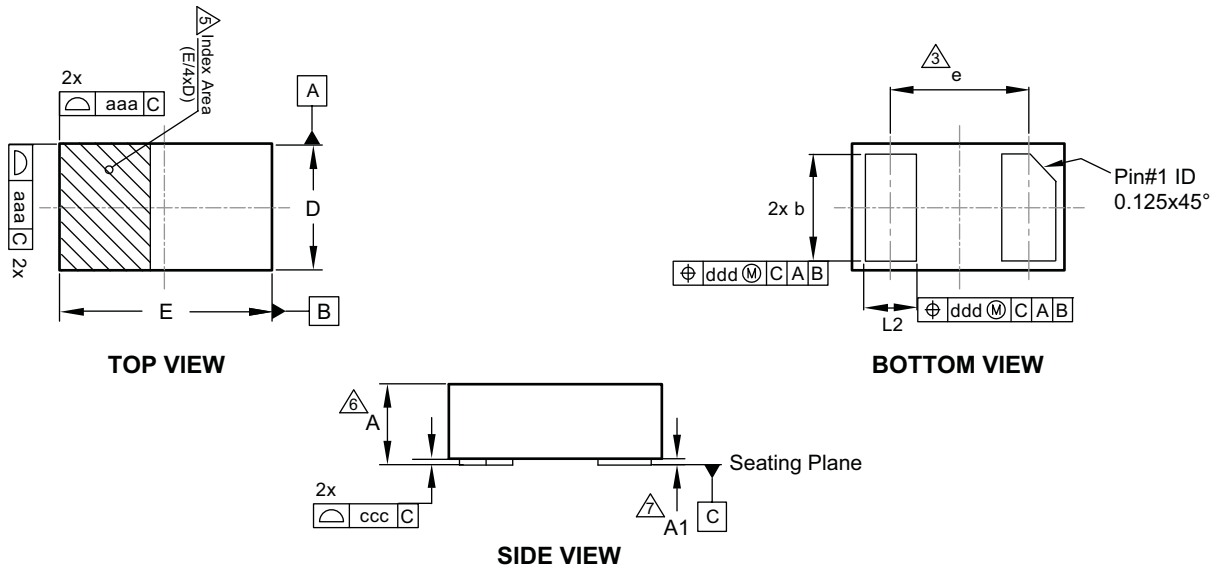
Symbol	Parameter	Diagram
I _{PP}	Maximum Reverse Peak Pulse Current (100ns Transmission Line Pulse (TLP))	<p>The graph shows the reverse current (I) versus reverse voltage (V) for the AOZ8831A. The curve starts at a low current for low voltages, rises to a plateau at the breakdown voltage (V_{BR}), and then rises sharply towards the clamping voltage (V_{CL}). Key parameters are labeled: V_{CL}, V_{BR}, V_{RWM} (Working Peak Reverse Voltage), I_R (Maximum Reverse Leakage Current), I_T (Test Current), and I_{PP} (Maximum Reverse Peak Pulse Current).</p>
V _{CL}	Clamping Voltage @ I _{PP}	
V _{SURGE_MAX}	Peak Voltage at I _{SURGE} = 2A (IEC61000-40-5 8/20μs pulse current)	
V _{RWM}	Working Peak Reverse Voltage	
I _R	Maximum Reverse Leakage Current	
V _{BR}	Breakdown Voltage	
P _{PK}	Peak Power Dissipation	
C _J	Capacitance @ V _R = 0 and f = 1MHz	

Device	Device Marking	V _{RWM} (V) Max.	V _{BR} (V)		I _R (nA) Max.	V _{SURGE} (V) Max.	V _{CL} Max.			C _J (pF)	
			Min.	Max.			I _{PP} = 1A	I _{PP} = 2A	I _{PP} = 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

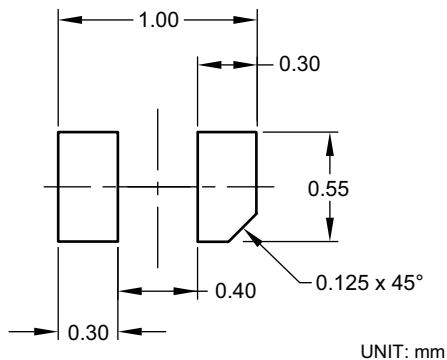
Typical Performance Characteristics



Package Dimensions, DFN 1.0 x 0.6



RECOMMENDED LAND PATTERN



Dimensions in millimeters

Symbols	Min.	Nom.	Max.
A	0.47	0.51	0.55
A1	0.00	0.02	0.05
b	0.45	0.50	0.55
D	0.60 BSC		
E	1.00 BSC		
e	0.65 BSC		
L	0.20	0.25	0.30
aaa	0.05		
ccc	0.03		
ddd	0.10		

Dimensions in inches

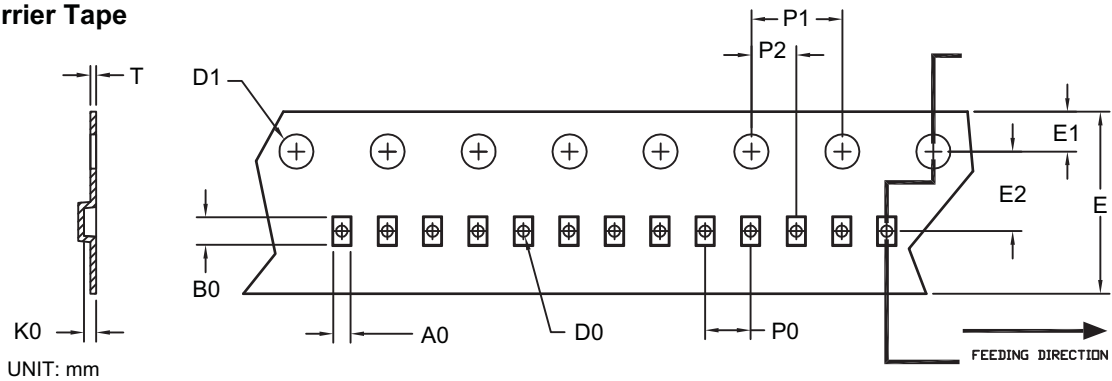
Symbols	Min.	Nom.	Max.
A	0.019	0.020	0.022
A1	0.000	0.001	0.002
b	0.018	0.020	0.022
D	0.024		
E	0.039		
e	0.026		
L	0.008	0.010	0.012
aaa	0.002		
ccc	0.001		
ddd	0.004		

Notes:

1. Dimensions and tolerancing conform to ASME Y14.5-2009.
2. All dimensions are in millimeters.
3. "e" represents the terminal grid pitch.
4. N is the total number of terminals.
5. A visual index feature must be located within the hatched area. Typical index feature (chamfer) must be located on the edge of the Pin#1 feature.
6. This dimension includes stand-off height "A1" and packaged body thickness, but does not include attached feature e.g. external heatsink or chip capacitors, an internal heatslug is not considered as attached feature.
7. Dimension "A1" is primarily terminal plating, and does not include small metal protrusions.

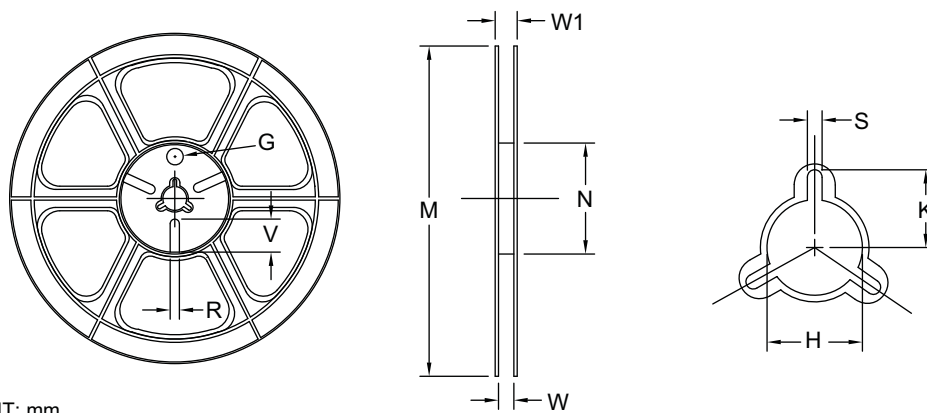
Tape and Reel Dimensions, DFN 1.0 x 0.6

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

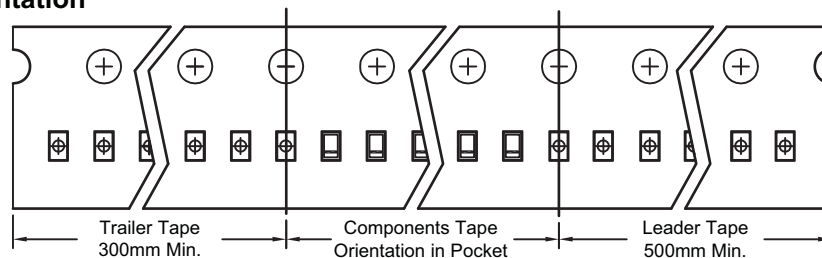
Reel



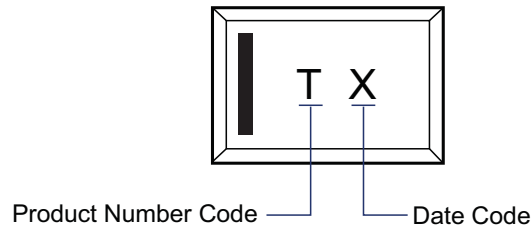
Tape Size	Reel Size	M	N	W	W1	H	K	S	G	R	V
8mm	ø178	ø178 ±0.5	ø55 ±1	8.4 +1.5/-0	Max. 14.4	ø13.0 ±0.5	Max. 10.1	2.0 ±0.5	N/A	N/A	N/A

Leader / Trailer & Orientation

TVS
Unit Per Reel:
10000pcs



Part Marking



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