

## General Description

The AOZ8831 is an ultra low capacitance one-line bi-directional 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 TVS diode in an ultra-small DFN 1006 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 AOZ8831 comes in an RoHS compliant DFN 1006 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

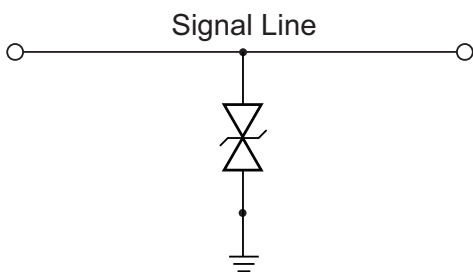
- ESD protection for high-speed data lines:
  - Exceeds: IEC 61000-4-2 (ESD)  $\pm 15\text{kV}$  (air),  $\pm 8\text{kV}$  (contact)
  - Human Body Model (HBM)  $\pm 15\text{kV}$
- Small package saves board space
- Ultra low capacitance:  $0.35\text{pF}$
- Low clamping voltage
- Low operating voltage:  $5.0\text{V}$
- 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
AOZ8831DI-05	-40°C to +85°C	DFN 1006	RoHS Compliant Green Product



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	Rating
VP – VN	5V
Peak Pulse Current (I <sub>pp</sub> ), t <sub>p</sub> = 8/20μs	2A
Peak Pulse Power, t <sub>p</sub> = 8/20μs	40W
Storage Temperature (T <sub>S</sub> )	-65°C to +150°C
ESD Rating per IEC61000-4-2, Contact <sup>(1)</sup>	±8kV
ESD Rating per IEC61000-4-2, Air <sup>(1)</sup>	±15kV
ESD Rating per Human Body Model <sup>(2)</sup>	±15kV

**Notes:**

- IEC 61000-4-2 discharge with C<sub>Discharge</sub> = 150pF, R<sub>Discharge</sub> = 330Ω.
- Human Body Discharge per MIL-STD-883, Method 3015 C<sub>Discharge</sub> = 100pF, R<sub>Discharge</sub> = 1.5kΩ.

## Maximum Operating Ratings

Parameter	Rating
Junction Temperature (T <sub>J</sub> )	-40°C to +85°C

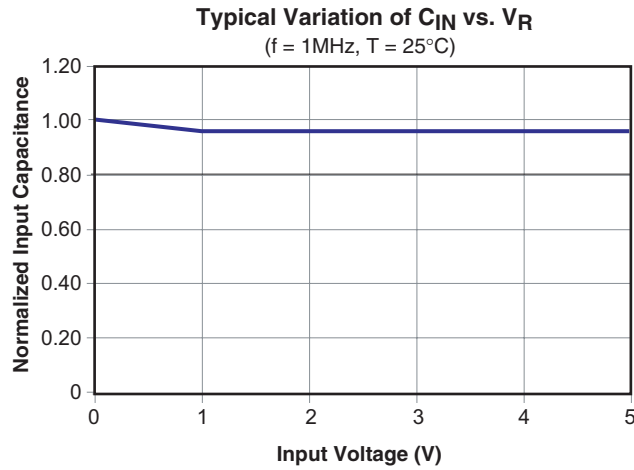
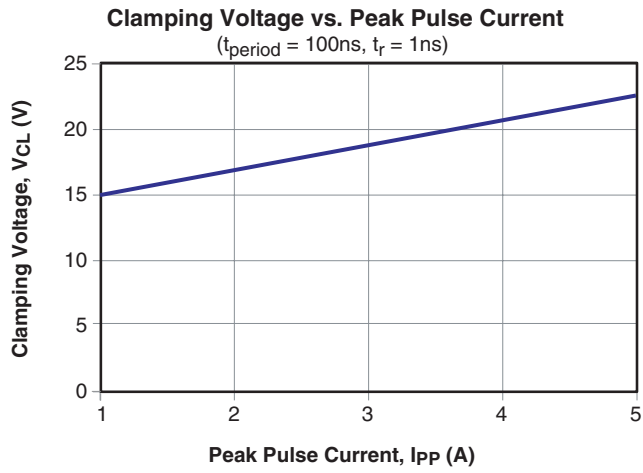
### Electrical Characteristics

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

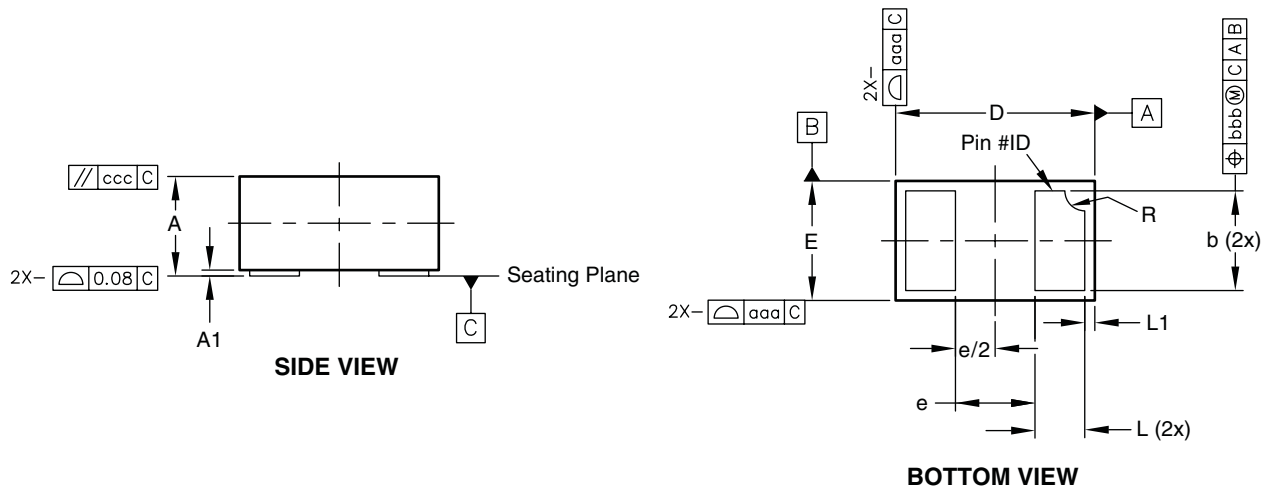
Symbol	Parameter	Diagram
I <sub>PP</sub>	Maximum Reverse Peak Pulse Current	
V <sub>CL</sub>	Clamping Voltage @ I <sub>PP</sub>	
V <sub>RWM</sub>	Working Peak Reverse Voltage	
I <sub>R</sub>	Maximum Reverse Leakage Current	
V <sub>BR</sub>	Breakdown Voltage	
I <sub>F</sub>	Forward Current	
V <sub>F</sub>	Forward 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) Min.	I <sub>R</sub> (μA) Max.	V <sub>F</sub> (V) Typ.	V <sub>CL</sub> Max.			C <sub>J</sub> (pF) Typ.
						I <sub>PP</sub> = 1A	I <sub>PP</sub> = 2A	I <sub>PP</sub> = 5A	
AOZ8831DI-05	AX	5.0	6.0	0.1	1.0	15.00	17.00	23.00	0.35

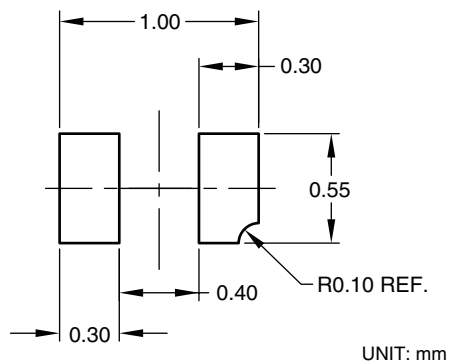
## Typical Performance Characteristics



Package Dimensions, DFN 1006



RECOMMENDED LAND PATTERN



Dimensions in millimeters

Symbols	Min.	Nom.	Max.
A	0.47	0.50	0.55
A1	0.00	0.03	0.05
b	0.45	0.50	0.55
D	0.95	1.00	1.075
E	0.55	0.60	0.675
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	0.05		
ccc	0.05		

Dimensions in inches

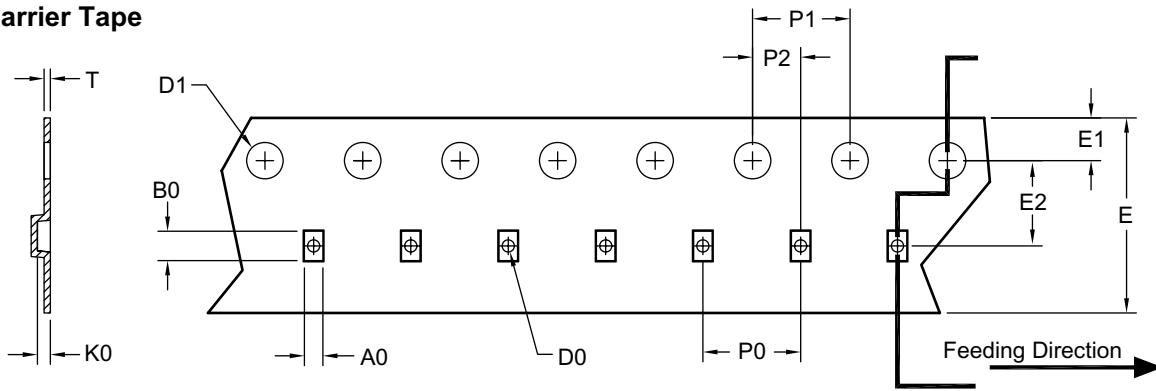
Symbols	Min.	Nom.	Max.
A	0.019	0.020	0.022
A1	0.000	0.001	0.002
b	0.018	0.020	0.022
D	0.037	0.039	0.042
E	0.022	0.024	0.027
e	—	0.016	—
L	0.008	0.010	0.012
L1	0.002±0.001 REF.		
R	0.002	0.004	0.006
aaa	0.006		
bbb	0.002		
ccc	0.002		

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 1006

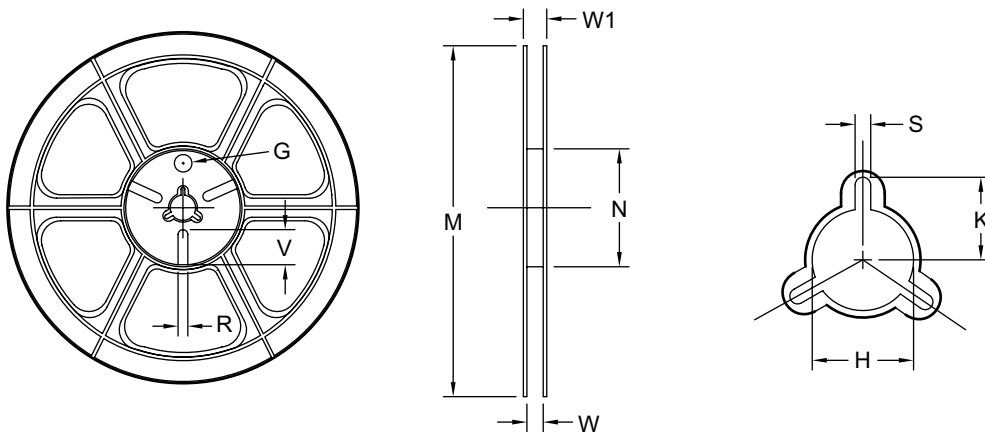
#### Carrier Tape



UNIT: mm

Package	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOD882	0.76 ±0.05	1.21 ±0.05	0.53 ±0.05	0.50 ±0.05	1.50 ±0.05	8.00 +0.30/-0.10	1.75 ±0.10	3.50 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	0.254 ±0.02

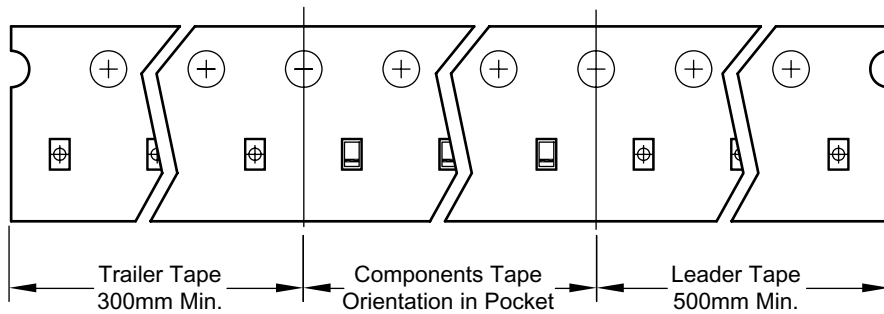
#### Reel



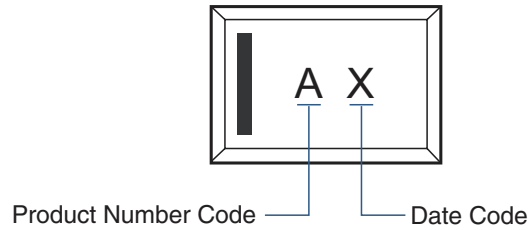
UNIT: mm

Tape Size	Reel Size	M	N	W	W1	H	K	S	G	R	V
8mm	ø178	ø178 ±0.50	ø55 ±1	8.4 +1.5/-0	14.4 Max.	ø13.0 ±0.5	10.1 Max.	2.0 ±0.5	N/A	N/A	N/A

#### Leader / Trailer & Orientation



## Chip 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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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.