

## General Description

The AOZ8231B is a one-line bi-directional transient voltage suppressor diode designed to protect voltage sensitive electronics from high transient conditions and ESD.

This device incorporates one TVS diode in an ultra-small DFN 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 AOZ8231B comes in an RoHS compliant DFN 1.0 x 0.6 package and is rated over a  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  ambient temperature range.

The ultra-small 1.0 x 0.6 x 0.5mm 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

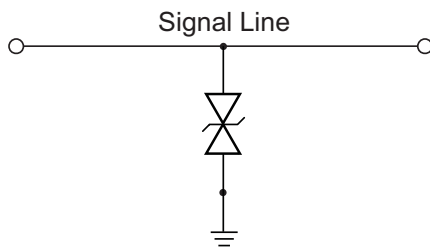
- ESD protection for high-speed data lines:
  - Exceeds: IEC 61000-4-2 (ESD)  $\pm 18\text{kV}$  (air),  $\pm 18\text{kV}$  (contact)
  - Human Body Model (HBM)  $\pm 30\text{kV}$
  - IEC 61000-4-5 (Lightning)  $\pm 4\text{A}$  (8/20 $\mu\text{S}$ )
  - IEC 61000-4-4 (EFT)  $\pm 40\text{A}$
- Small package saves board space
- Low insertion loss
- Low clamping voltage
- Operating voltage: 8V
- 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
AOZ8231BDI-08	-40°C to +85°C	DFN 1.0 x 0.6	Green Product



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	8V
Peak Pulse Current, $t_p = 8/20\mu s$	4A
Storage Temperature ( $T_S$ )	-65°C to +150°C
ESD Rating per IEC61000-4-2, Contact <sup>(1)</sup>	±18kV
ESD Rating per IEC61000-4-2, Air <sup>(1)</sup>	±18kV
ESD Rating per Human Body Model <sup>(2)</sup>	±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

$T_A = 25^\circ\text{C}$  unless otherwise specified.  $V_F = 0.9\text{V Max.}$  @  $I_F = 10\text{mA}$  for all types

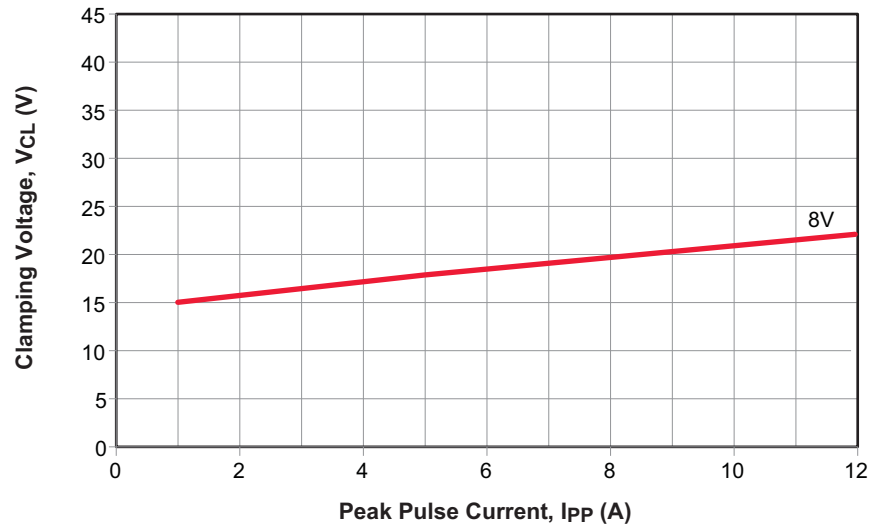
Symbol	Parameter	Diagram
$I_{PP}$	Reverse Peak Pulse Current, ( $t_{\text{period}} = 100\text{ns}$ , $t_r = 1\text{ns}$ )	
$V_{CL}$	Clamping Voltage @ $I_{PP}$	
$V_{RWM}$	Working Peak Reverse Voltage	
$I_R$	Maximum Reverse Leakage Current	
$V_{BR}$	Breakdown Voltage	
$I_F$	Forward Current	
$V_F$	Forward Voltage	
$P_{PK}$	Peak Power Dissipation	
$C_J$	Capacitance @ $V_R = 0$ and $f = 1\text{MHz}$	

Device	Device Marking	$V_{RWM}$ (V) Max.	$V_{BR}$ (V) Min. @ 1mA	$I_R$ ( $\mu\text{A}$ ) Max.	$V_{CL}$ Max.			$C_J$ (pF) Typ.	$C_J$ (pF) Max.
					$I_{PP} = 1\text{A}$	$I_{PP} = 5\text{A}$	$I_{PP} = 12\text{A}$		
AOZ8231BDI-08	1	8.0	9.5	0.1	15.0	18	22.5	45	56

## Typical Performance Characteristics

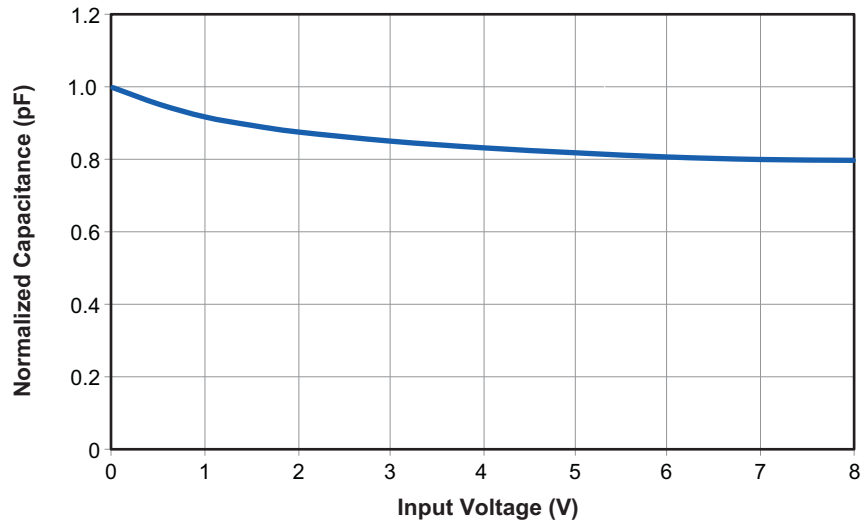
Clamping Voltage vs. Peak Pulse Current

( $t_{\text{period}} = 100 \text{ ns}$ ,  $t_r = 1 \text{ ns}$ )

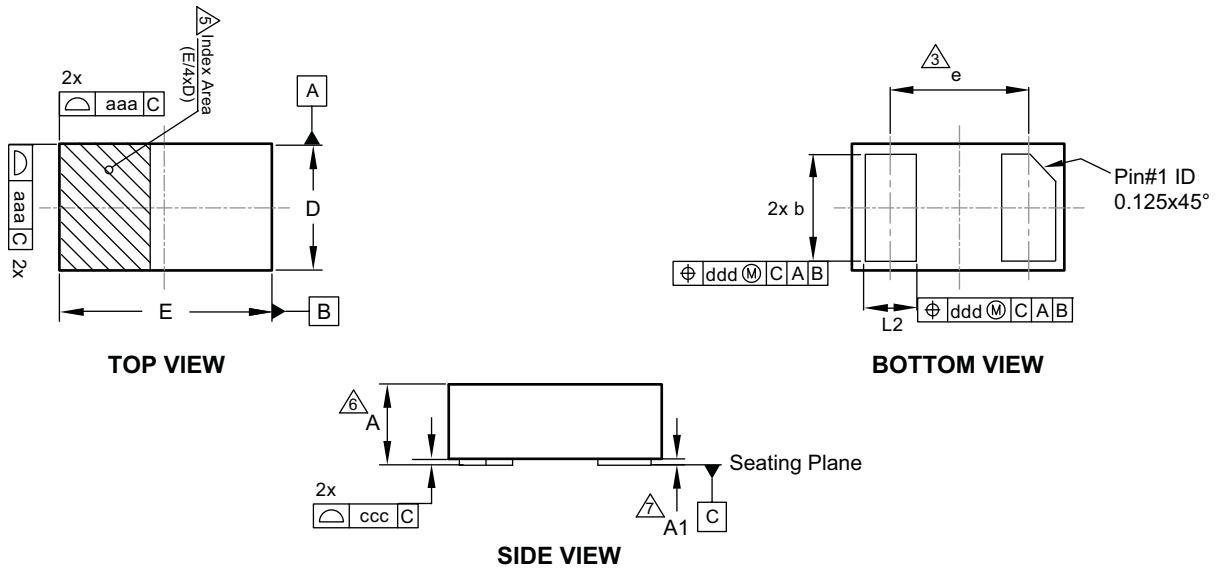


Typical Variation of  $C_{IN}$  vs.  $V_R$

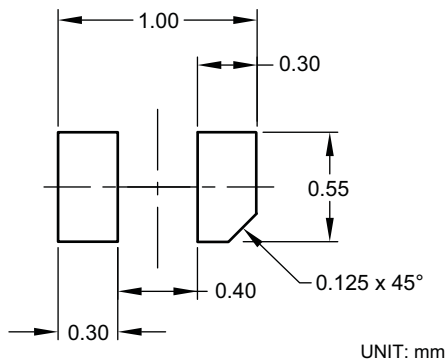
( $f = 1 \text{ MHz}$ ,  $T = 25 \text{ }^\circ\text{C}$ )



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

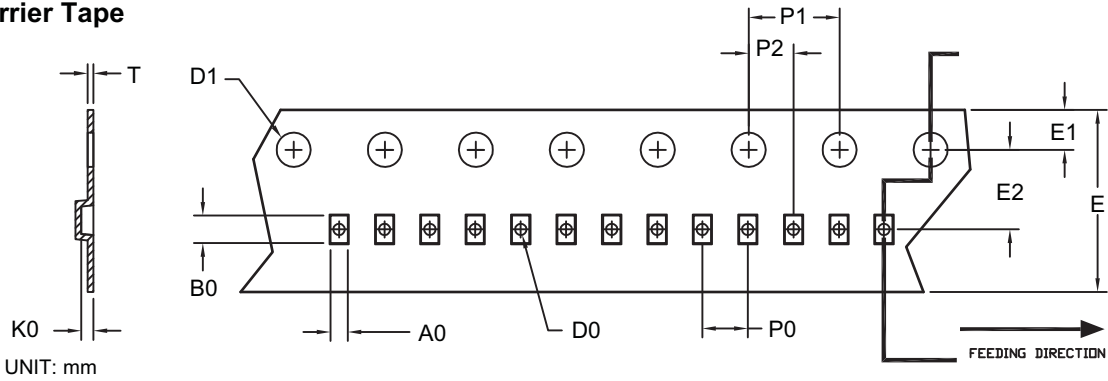
Symbols	Min.	Nom.	Max.
A	0.019	0.020	0.022
A1	0.000	0.001	0.002
b	0.018	0.020	0.022
D	0.024		
E	0.039		
e	0.026		
L	0.008	0.010	0.012
aaa	0.002		
ccc	0.001		
ddd	0.004		

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

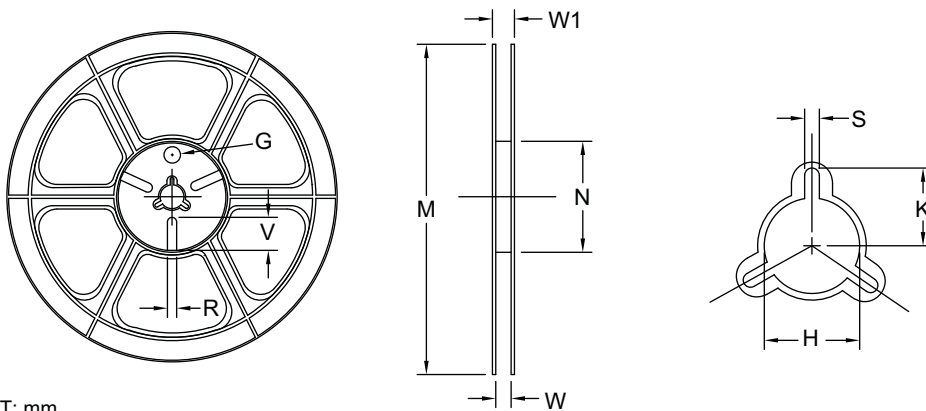
Carrier Tape



UNIT: mm

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

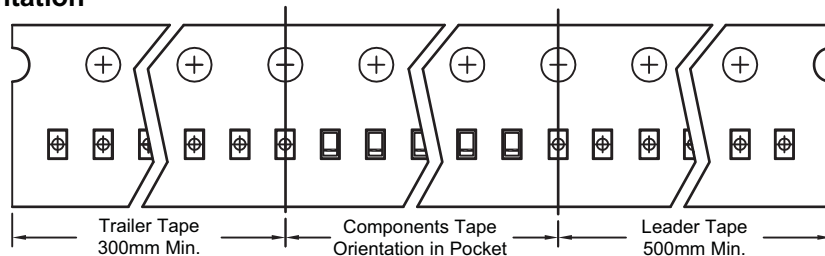


UNIT: mm

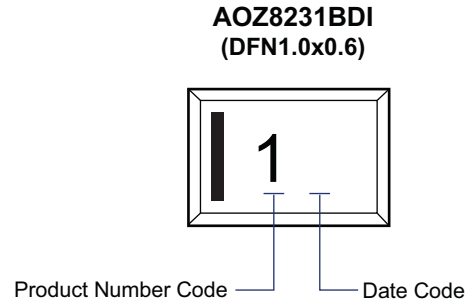
Tape Size	Reel Size	M	N	W	W1	H	K	S	G	R	V
8mm	ø178	ø178 ±0.5	ø55 ±1	8.4 +1.5/-0	Max. 14.4	ø13.0 ±0.5	Max. 10.1	2.0 ±0.5	N/A	N/A	N/A

Leader / Trailer & Orientation

TVS  
Unit Per Reel:  
10000pcs



## Part Marking



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