AOZ8831-03

Ultra Low Capacitance One-line Bi-directional TVS Diode

General Description

The AOZ8831-03 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 1.0 x 0.6 package. It may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4.

The AOZ8831-03 comes in an RoHS compliant DFN package and is rated over a -40°C to +85°C ambient temperature range.

The ultra-small 1.0 x 0.6 x 0.4mm 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

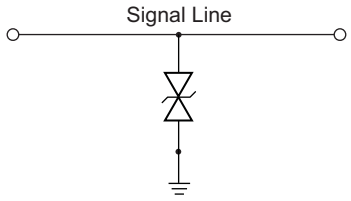
- ESD protection for high-speed data lines:
  - Exceeds: IEC 61000-4-2 (ESD) ±20kV (air), ±20kV (contact)
  - Human Body Model (HBM) ±15kV
- Small package saves board space
- Ultra low capacitance: 0.22pF
- Low clamping voltage
- Operating voltage: 3.6V
- Pb-free device

Applications

- Portable handheld devices
- Notebook computers
- Digital Cameras
- Portable GPS

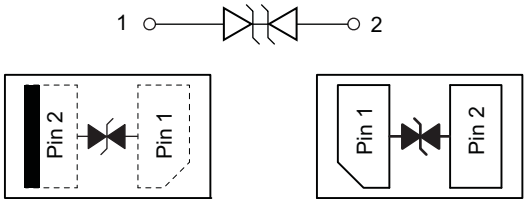
Green Product

Typical Application



Bidirection Protection of Single Line

Pin Configuration



Top View **Bottom View**

Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8831DT-03	-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 for additional information.

Absolute Maximum Ratings

Exceeding the Absolute Maximum ratings may damage the device.

Parameter	Rating
VP – VN	3.6V
Peak Pulse Current (I_{PP}), t_P = 8/20µs	6A
Peak Pulse Power (IEC61000-4-5 8/20µs current pulse)	90W
Storage Temperature (T_S)	-65°C to +150°C
ESD Rating per IEC61000-4-2, Contact(1)	±20kV
ESD Rating per IEC61000-4-2, Air(1)	±20kV
ESD Rating per Human Body Model(2)	±15kV

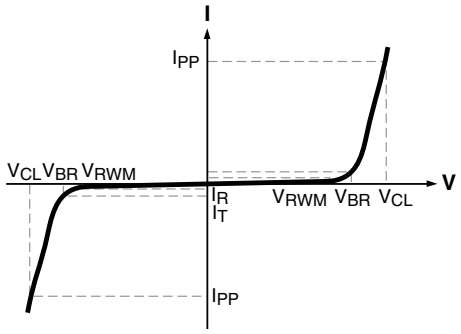
Notes:
1. IEC 61000-4-2 discharge with $C_{Discharge}$ = 150pF, $R_{Discharge}$ = 330Ω.
2. Human Body Discharge per MIL-STD-883, Method 3015 $C_{Discharge}$ = 100pF, $R_{Discharge}$ = 1.5kΩ.

Maximum Operating Ratings

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(3) (IEC61000-4-5 8/20µs pulse)	
V_{CL}	Clamping Voltage @ I_{PP}(3)	
V_{RWM}	Working Peak Reverse Voltage	
I_R	Maximum Reverse Leakage Current	
V_{BR}	Breakdown Voltage	
C_J	Capacitance @ V_R = 0 and f = 1MHz	

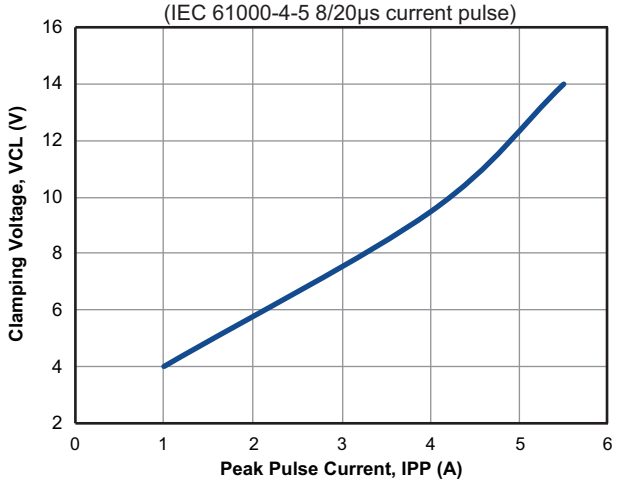
Device	Device Marking	V_{RWM} (V) Max.	V_{BR} (V)		I_R (µA) Max.	V_{CL} Max.			C_J (pF)	
			Min.	Max.		I_{PP} = 1 A	I_{PP} = 4 A	I_{PP} = 6 A	Typ.	Max.
AOZ8831DT-03	4	3.6	4.5	10	0.1	4	9.5	15	0.22	0.35

Notes:

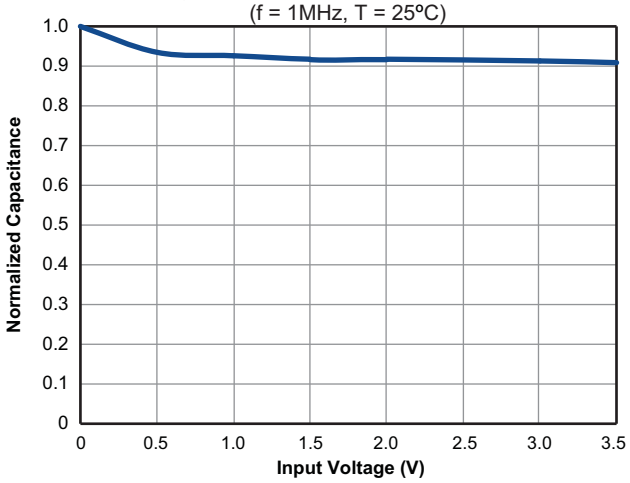
3. These specifications are guaranteed by design and characterization.

Performance Characteristics

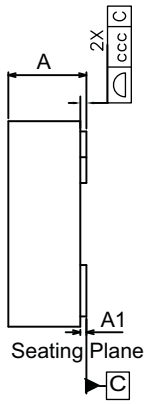
Clamping Voltage vs. Peak Pulse Current
(IEC 61000-4-5 8/20µs current pulse)



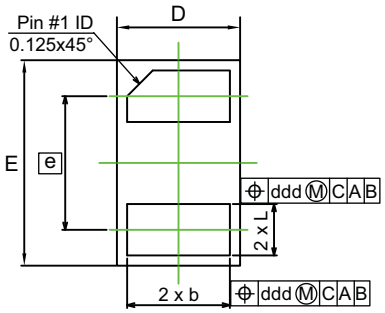
Typical Variations of CIN vs. VR
(f = 1MHz, T = 25ºC)



Package Dimensions, DFN 1.0 x 0.6

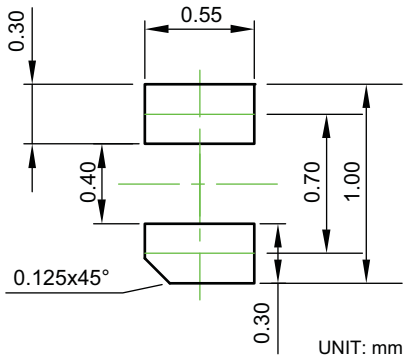


SIDE VIEW



BOTTOM VIEW

RECOMMENDED LAND PATTERN



Dimensions in millimeters

Symbols	Min.	Nom.	Max.
A	0.31	0.38	0.40
A1	0.00	0.02	0.05
b	0.45	0.50	0.55
D	0.55	0.60	0.65
E	0.95	1.00	1.05
e	0.65 BSC		
L	0.20	0.25	0.30
ccc	0.03		
ddd	0.10		

Dimensions in inches

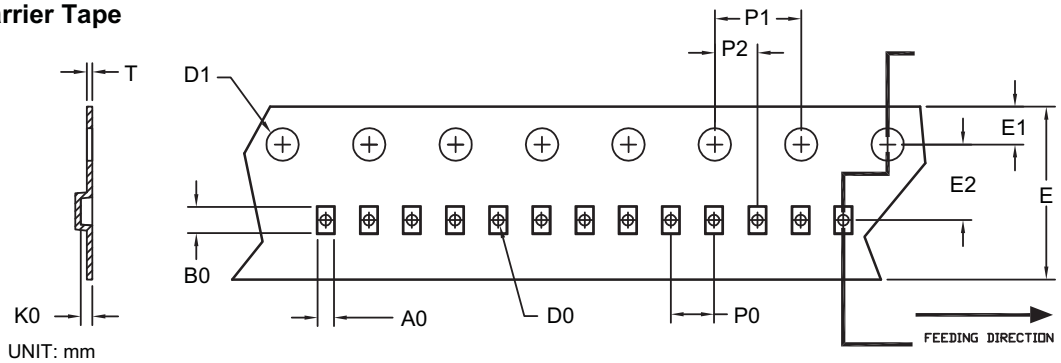
Symbols	Min.	Nom.	Max.
A	0.012	0.015	0.016
A1	0.000	0.001	0.002
b	0.018	0.020	0.022
D	0.022	0.024	0.026
E	0.037	0.039	0.041
e	0.026 BSC		
L	0.008	0.010	0.012
ccc	0.001		
ddd	0.004		

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

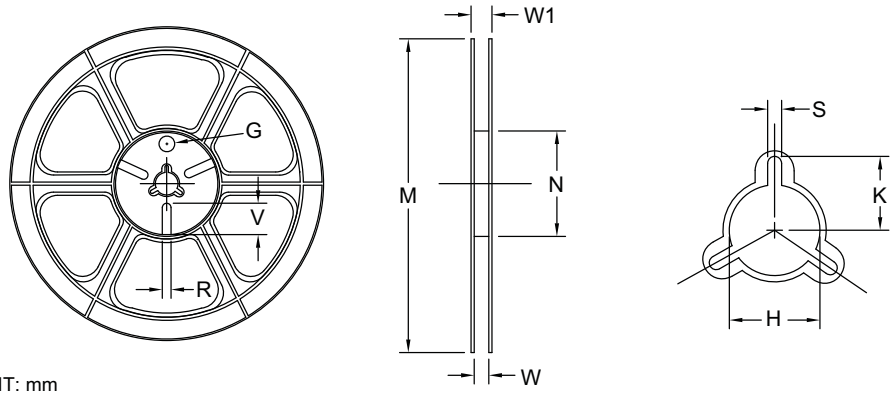
Carrier Tape



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

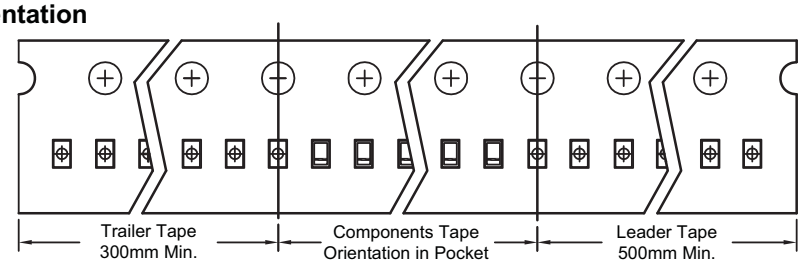


UNIT: mm

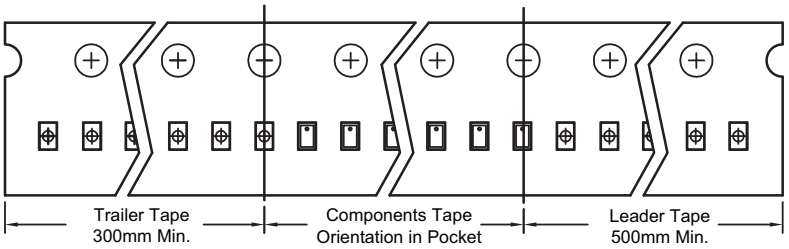
Tape Size	Reel Size	M	N	W	W1	H	K	S	G	R	V
8mm	ø178	ø178 ±0.5	ø55 ±1	8.4 +1.5/-0	Max. 14.4	ø13.0 ±0.5	Max. 10.1	2.0 ±0.5	N/A	N/A	N/A

Leader / Trailer & Orientation

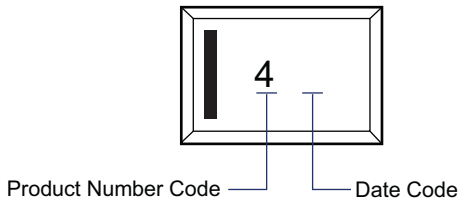
TVS
Unit Per Reel:
10000pcs



MOS
Unit Per Reel:
10000pcs



Part Marking



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