

General Description

The AOZ8822 is an ultra-low capacitance two-line transient voltage suppressor diode designed to protect very high-speed data lines and voltage sensitive electronics from high transient conditions and ESD.

This device incorporates two TVS diodes in an ultra-small DFN 1.0 x 0.6 package. During transient conditions, the ultra-low capacitance TVS diodes direct the transient to ground. The AOZ8822 may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 (± 15 kV air, ± 15 kV contact discharge).

The AOZ8822 comes in an RoHS compliant 3-lead DFN package and is rated over a -40 °C to $+85$ °C ambient temperature range.

The ultra-small 1.0 mm x 0.6 mm x 0.5 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

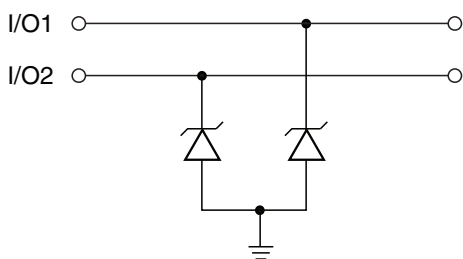
- ESD protection for high-speed data lines:
 - Exceeds: IEC 61000-4-2 (ESD) ± 15 kV (air), ± 15 kV (contact)
 - Human Body Model (HBM) ± 15 kV
- Ultra-low capacitance: 0.55 pF
- Low clamping voltage
- Low operating voltage: 5 V
- Green product

Applications

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

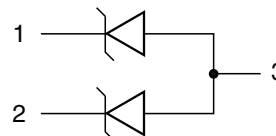


Typical Application



Unidirection Protection of Two Line

Pin Configuration



Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8822DI-05	-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	5 V
Peak Pulse Current (I_{PP}), $t_P = 8/20\mu s$	2 A
Storage Temperature (T_S)	-65 °C to +150 °C
ESD Rating per IEC61000-4-2, Contact ⁽¹⁾	± 15 kV
ESD Rating per IEC61000-4-2, Air ⁽¹⁾	± 15 kV
ESD Rating per Human Body Model ⁽²⁾	± 15 kV

Notes:

1. IEC 61000-4-2 discharge with $C_{Discharge} = 150$ pF, $R_{Discharge} = 330 \Omega$.

2. Human Body Discharge per MIL-STD-883, Method 3015 $C_{Discharge} = 100pF$, $R_{Discharge} = 1.5 k\Omega$.

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. Specifications in **BOLD** indicate a temperature range of -40°C to $+85^\circ\text{C}$.

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V_{RWM}	Reverse Working Voltage ⁽³⁾	I/O pin to ground			5.0	V
V_{BR}	Reverse Breakdown Voltage ⁽⁴⁾	$I_T = 1\text{ mA}$, I/O pin to ground	6.0		10.0	V
I_R	Reverse Leakage Current	$V_{RWM} = 5\text{ V}$, between I/O pin to ground			0.1	μA
V_{CL}	Channel Clamp Voltage	$I_{PP} = 1\text{ A}$, $t_p = 100\text{ ns}$, I/O pin to ground			13	V
		$I_{PP} = 2\text{ A}$, $t_p = 100\text{ ns}$, I/O pin to ground			14	V
		$I_{PP} = 5\text{ A}$, $t_p = 100\text{ ns}$, I/O pin to ground			17	V
		$I_{PP} = 1\text{ A}$, IEC61000-4-5, 8/20 μs , I/O pin to ground			14.5	V
		$I_{PP} = 2\text{ A}$, IEC61000-4-5, 8/20 μs , I/O pin to ground			19	V
C_J	Junction Capacitance	$V_R = 0\text{ V}$, $f = 1\text{ MHz}$, I/O pin to ground		0.55	0.75	pF

Notes:

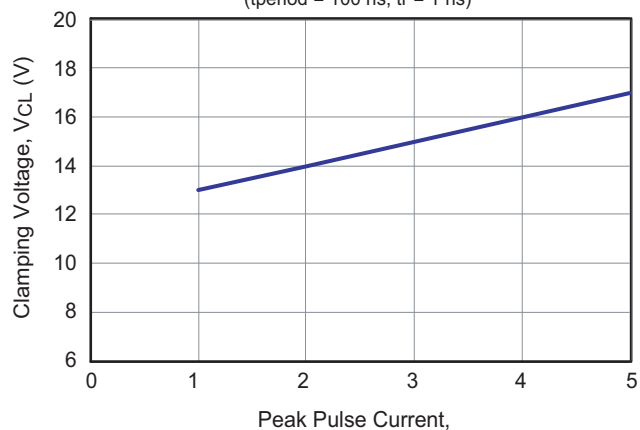
3. The working peak reverse voltage (V_{RWM}) should be equal to or greater than the DC or continuous peak operating voltage level.

4. V_{BR} is measured at the pulse test current I_T .

Typical Performance Characteristics

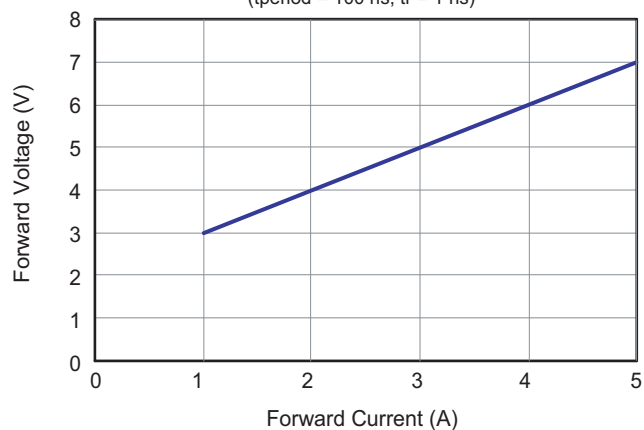
Clamping Voltage vs. Peak Pulse Current

(tperiod = 100 ns, tr = 1 ns)

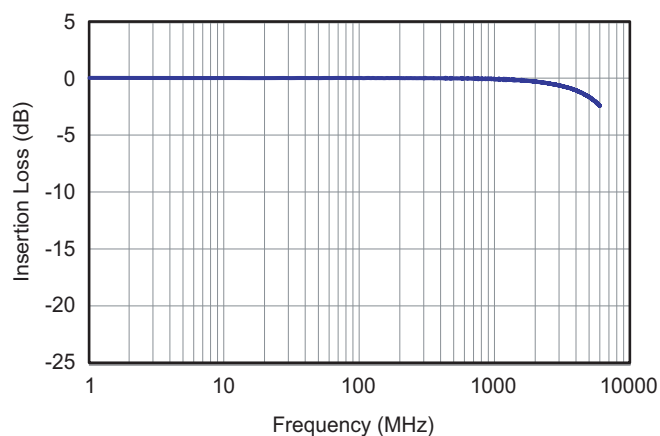


Forward Voltage vs. Forward Current

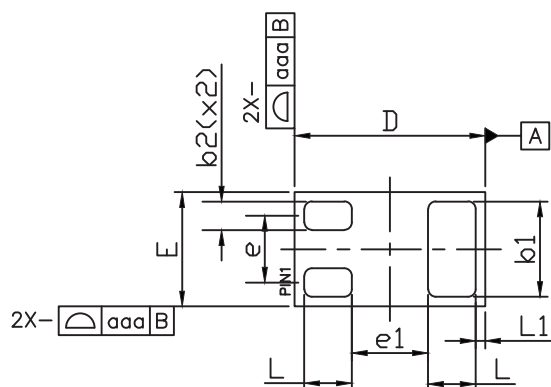
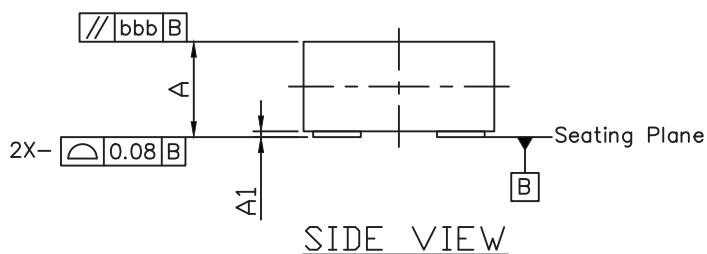
(tperiod = 100 ns, tr = 1 ns)



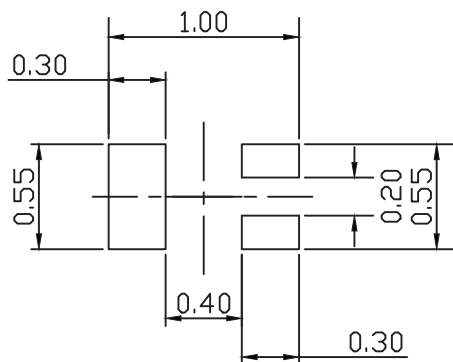
I/O – Gnd Insertion Loss (S₂₁) vs. Frequency



Package Dimensions, DFN1.0x0.6



RECOMMENDED LAND PATTERN



UNIT: mm

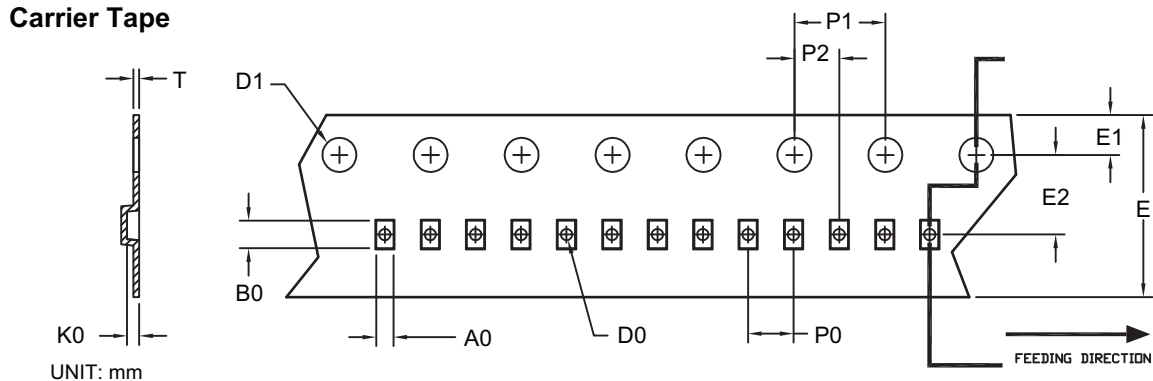
SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.47	0.52	0.55	0.019	0.020	0.022
A1	0.00	0.03	0.05	0.000	0.001	0.002
b1	0.45	0.50	0.55	0.018	0.020	0.022
b2	0.10	0.15	0.20	0.004	0.006	0.008
D	0.95	1.00	1.05	0.037	0.039	0.041
E	0.55	0.60	0.65	0.022	0.024	0.026
e	---	0.35	---	---	0.014	---
e1	---	0.40	---	---	0.016	---
L	0.20	0.25	0.30	0.008	0.010	0.012
L1	---	0.05	---	---	0.002	---
aaa	0.15			0.006		
bbb	0.05			0.002		

NOTE

1. ALL DIMENSION ARE IN MILLIMETERS.ANGLES ARE IN DEGREES.
2. COPLANARITY APPLIES TO THE EXPOSED HEAT SINK SLUG AS WELL AS THE TERMINALS.

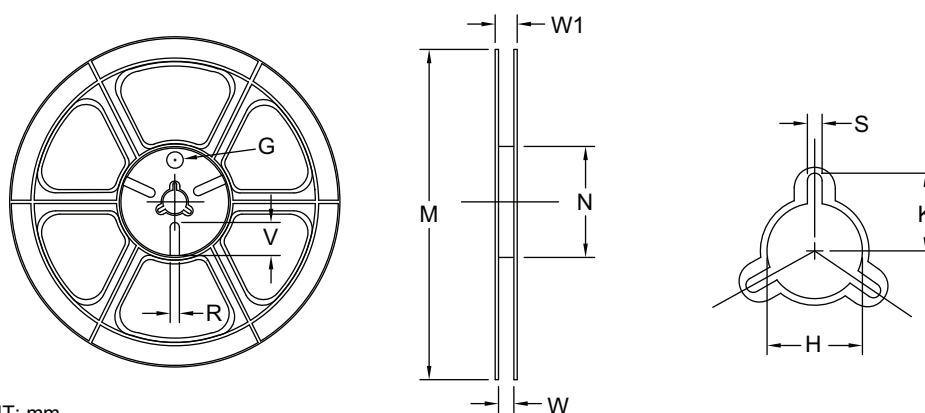
Tape and Reel Dimensions, DFN1.0x0.6

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

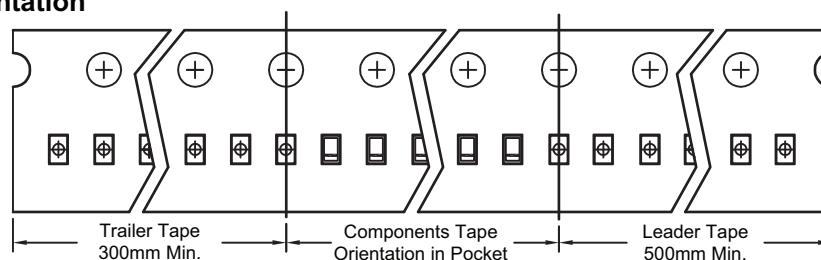
Reel



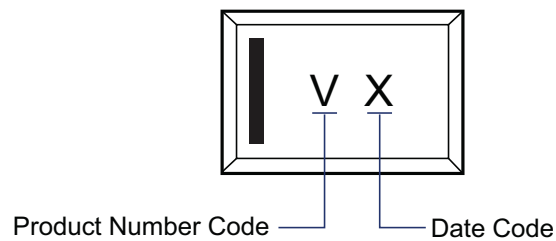
Tape Size	Reel Size	M	N	W	W1	H	K	S	G	R	V
8mm	ø178	ø178 ±0.5	ø55 ±1	8.4 +1.5/-0	Max. 14.4	ø13.0 ±0.5	Max. 10.1	2.0 ±0.5	N/A	N/A	N/A

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.