

General Description

The AOZ8331DI-03 is a single channel bidirectional high surge transient voltage suppressor designed to protect data lines such as audio line and power rail from damaging ESD or surge events.

This device incorporates two unidirectional TVS diodes in a single package. During transient conditions, the bidirectional diodes direct the transient to either the positive side of the power supply line or to ground.

The AOZ8331DI-03 provides a typical line-to-line capacitance of 75 pF and low clamping voltage making it ideally suited for data transmission protection in mobile and computing devices.

The AOZ8331DI-03 comes in a RoHS compliant and Halogen Free 1.0 mm x 0.6 mm x 0.5 mm package and is rated for -40°C to +125°C junction temperature range.

Features

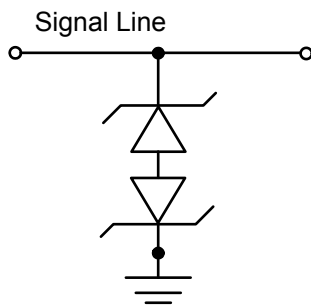
- ESD protection for high-speed data lines:
 - IEC 61000-4-2 (ESD) immunity: ± 30 kV (air), ± 30 kV (contact)
 - Human Body Model (HBM) ± 30 kV
 - IEC 61000-4-5 (Lightning) ± 35 A (8/20 μ s)
- Protects four I/O lines
- Low capacitance between I/O to GND: 85 pF
- Low clamping voltage
- Low operating voltage: 3.3 V

Applications

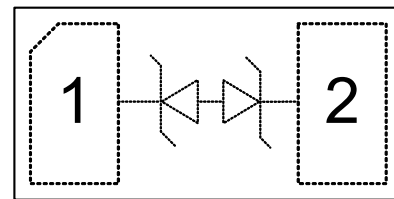
- Audio lines
- LVDS
- Mobile phone
- Notebook computers



Typical Application



Pin Configuration



DFN1.0x0.6_2L

Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8331DI-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
Storage Temperature (T _S)	-65°C to +150°C
ESD Rating per IEC61000-4-2, Contact ⁽¹⁾	±30 kV
ESD Rating per IEC61000-4-2, Air ⁽¹⁾	±30 kV
8/20us Surge IEC61000-4-5	±35 A

Notes:

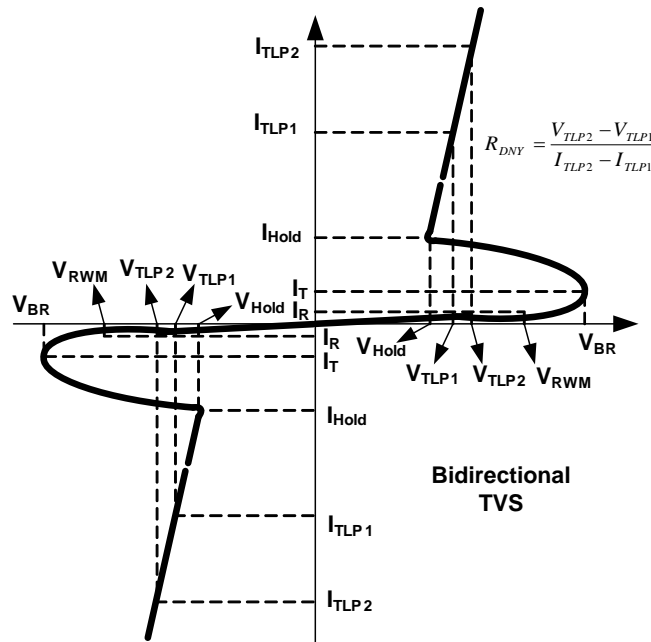
- IEC 61000-4-2 discharge with C_{Discharge} = 150pF, R_{Discharge} = 330Ω.
- Human Body Discharge per MIL-STD-883, Method 3015 C_{Discharge} = 100pF, R_{Discharge} = 1.5kΩ.

Maximum Operating Ratings

Parameter	Rating
Junction Temperature (T _J)	-40°C to +85°C

Electrical Characteristics

T_A = 25°C unless otherwise specified.



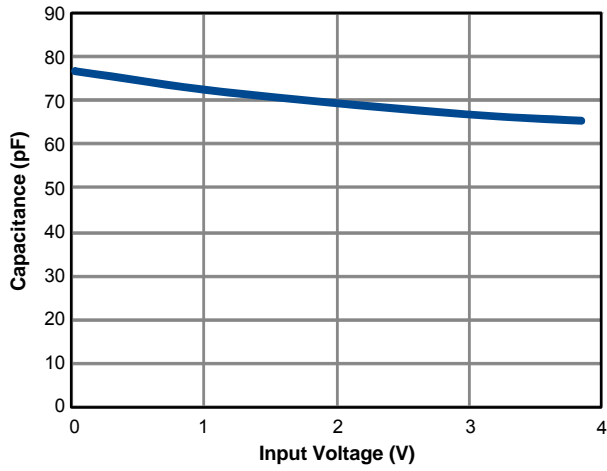
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V _{RWM}	Reverse Working Voltage				3.3 -3.3	V
V _{BR}	Reverse Breakdown Voltage	I _T =1mA I _T =-1mA	3.6 -3.6	6 -7	8 -9	V
I _R	Reverse Leakage Current	V _T =3.3V V _T =-3.3V		1 -1	100 -100	nA
V _{HOLD}	Hold Voltage of Snapback ⁽³⁾	I _T =100mA I _T =-100mA	3.3 -3.3			V
V _{CL}	Clamping Voltage ^(3, 4) (100ns Transmission Line Pulse)	I _{TLP} =1A I _{TLP} =-1A		5 -7	7 -9	V
		I _{TLP} =16A I _{TLP} =-16A		5.5 -8	7 -10	
		I _{TLP} =30A I _{TLP} =-30A		6 -9	7 -11	
R _{DNY}	Dynamic Resistance ⁽³⁾	I _{TLP} =1 to 30A I _{TLP} =-1 to -30A		0.03 0.07		Ω
I _{PP}	Peak Pulse Current ⁽³⁾ IE61000-4-5 Surge 8/20μs				40 -35	A
V _{CL}	Clamping Voltage ⁽³⁾ IEC61000-4-5 Surge 8/20μs	I _{PP} =2A I _{PP} =-2A		5 -7	6 -9	V
		I _{PP} =35A I _{PP} =-35A		9 -11	11 -13	
C _J	Junction Capacitance	V _{I/O} = 0V, f = 1MHz, Pin1 to Pin2 and Pin2 to Pin1		85	105	pF

Note:

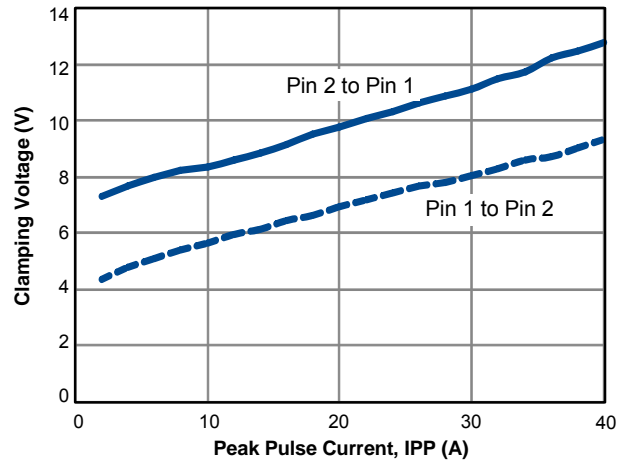
- 3. These specifications are guaranteed by design and characterization.
- 4. Measurements performed using a 100ns Transmission Line Pulse (TLP) system.

Typical Performance Characteristics

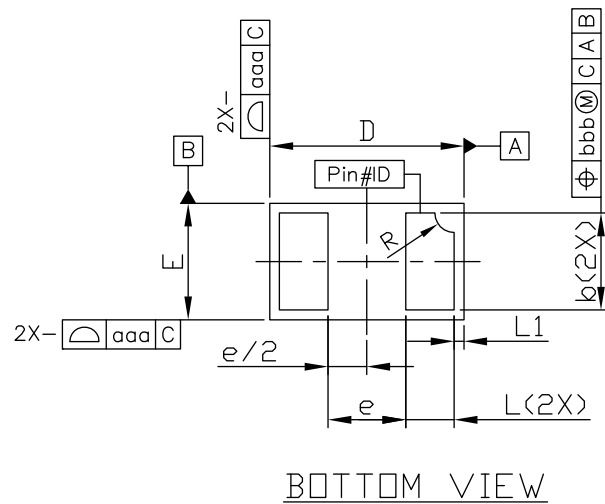
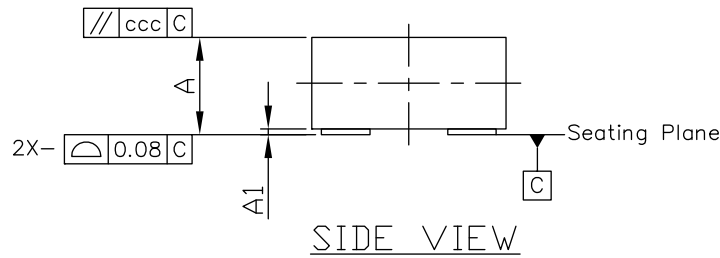
Typical Variations of CJ vs. Input Voltage



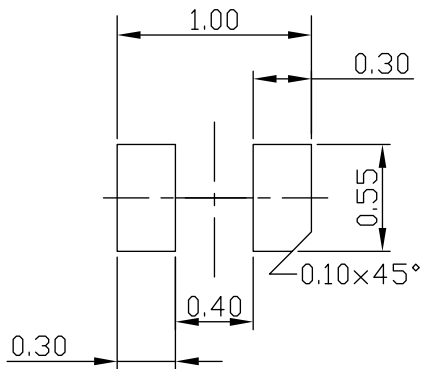
IEC61000-4-5 Surge 8.20μs



Package Dimensions, DFN 1.0 x 0.6, 2L EP2_S



RECOMMENDED LAND PATTERN



UNIT: mm

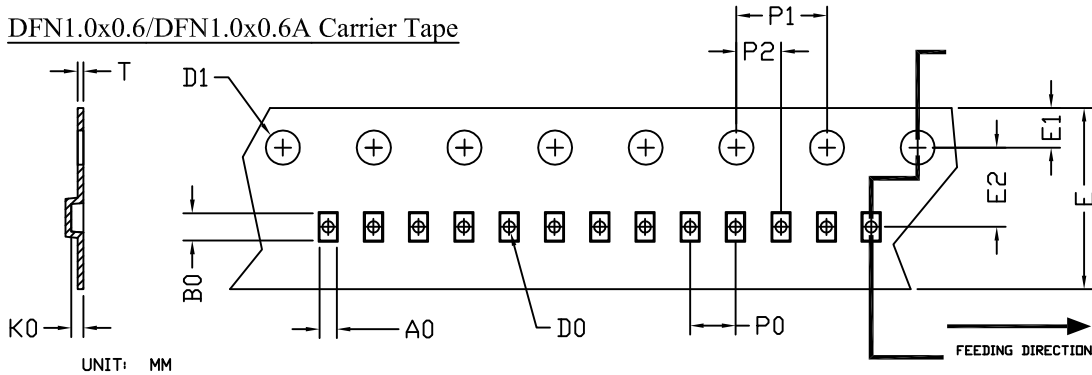
SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.47	0.50	0.53	0.019	0.020	0.021
A1	0.00	0.03	0.05	0.000	0.001	0.002
b	0.45	0.50	0.55	0.018	0.020	0.022
D	0.95	1.00	1.05	0.037	0.039	0.041
E	0.55	0.60	0.65	0.022	0.024	0.026
e	---	0.40	---	---	0.016	---
L	0.20	0.25	0.30	0.008	0.010	0.012
L1	0.05±0.03 Ref.			0.002±0.001 Ref.		
R	0.05	0.10	0.15	0.002	0.004	0.006
aaa	0.15			0.006		
bbb	0.05			0.002		
ccc	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.
3. THE SHAPE OF PIN ID CAN BE DIFFERENT PER MANUFACTURING LOCATION

Tape and Reel Dimensions, DFN 1.0 x 0.6, 2L_EP2_S

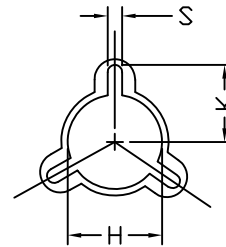
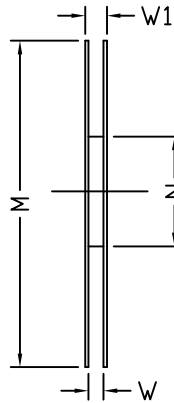
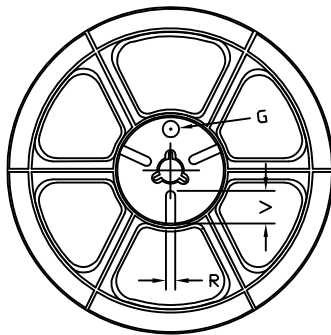
DFN1.0x0.6/DFN1.0x0.6A Carrier Tape



UNIT: MM

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
DFN1.0x0.6/ DFN1.0x0.6A (8 mm)	0.65 ±0.04	1.05 ±0.04	0.61 ±0.04	0.40 ±0.05	1.50 +0.10	8.00 +0.30 -0.10	1.75 ±0.10	3.50 ±0.05	2.00 ±0.10	4.00 ±0.10	2.00 ±0.05	0.20 ±0.05

DFN1.0x0.6/DFN1.0x0.6A Reel



UNIT: MM

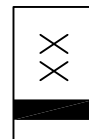
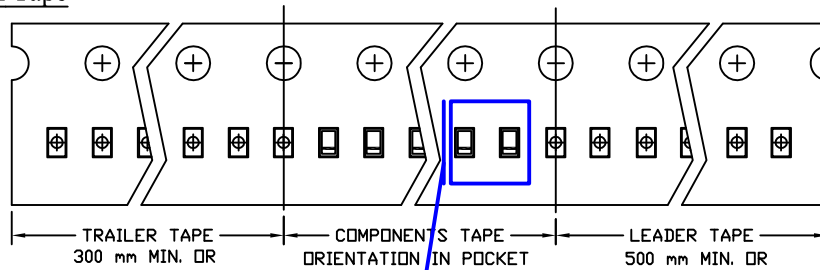
TAPE SIZE	REEL SIZE	M	N	W	W1	H	K	S	G	R	V
8 mm	φ178	φ178 ±0.5	φ55 ±1	8.4 +0.5 -0.5	MAX. 14.4	φ13.0 ±0.5	MAX. 10.1	2.0 ±0.5	N/A	N/A	N/A

DFN1.0x0.6/DFN1.0x0.6A Tape

Leader / Trailer
& Orientation

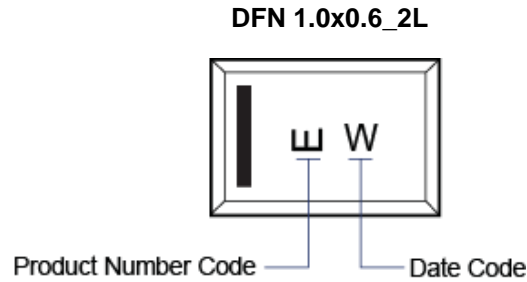
TVS

Unit Per Reel:
10000pcs



DETAIL:
UNIT DIRECTION IN POCKET

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.