AOZ8331DI-03

One-Channel Bi-directional High Surge TVS

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

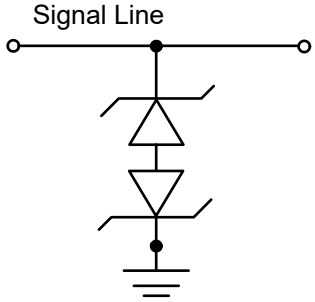
- ESD protection for high-speed data lines:
  - IEC 61000-4-2 (ESD) immunity: ±30 kV (air), ±30kV (contact)
  - Human Body Model (HBM) ±30 kV
  - IEC 61000-4-5 (Lightning) ±35 A (8/20µs)
- Protects four I/O lines
- Low capacitance between I/O to GND: 85 pF
- Low clamping voltage
- Low operating voltage: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

Applications

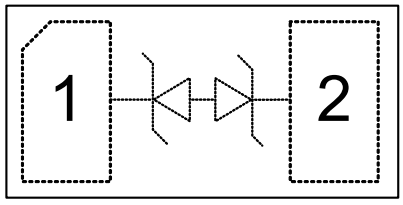
- Audio lines
- LVDS
- Mobile phone
- Notebook computers

Green Product

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:

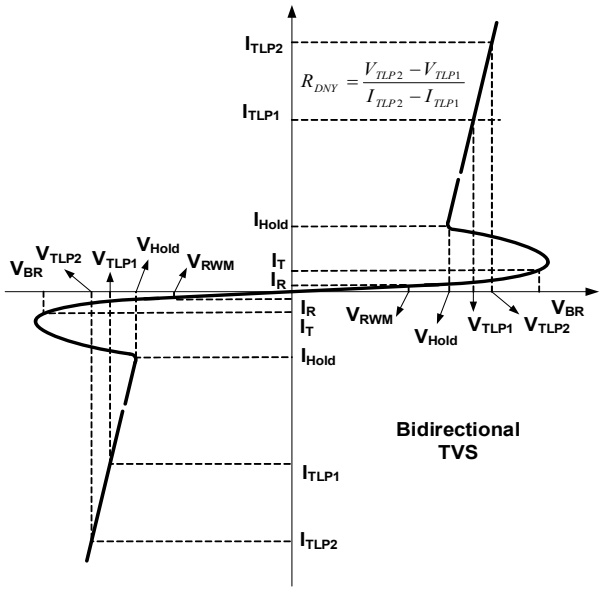
1. IEC 61000-4-2 discharge with $C_{Discharge}$ = 150pF, $R_{Discharge}$ = 330Ω.
2. Human Body Discharge per MIL-STD-883, Method 3015 $C_{Discharge}$ = 100pF, $R_{Discharge}$ = 1.5kΩ.

Maximum Operating Ratings

Parameter	Rating
Junction Temperature (T_J)	-40°C to +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	
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	VI/O = 0V, f = 1MHz, Pin1 to Pin2 and Pin2 to Pin1		85	105	pF

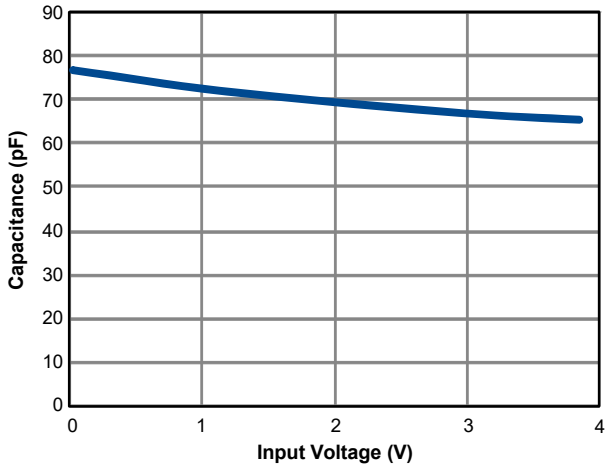
Note:

3. These specifications are guaranteed by design and characterization.

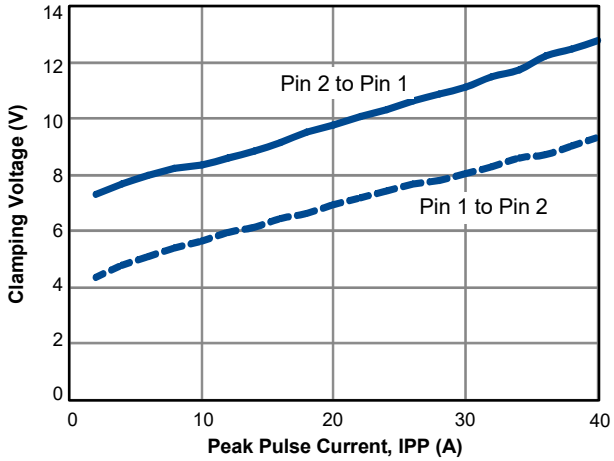
4. Measurements performed using a 100ns Transmission Line Pulse (TLP) system.

Typical Performance Characteristics

Typical Variations of CJ vs. Input Voltage



IEC61000-4-5 Surge 8.20µs



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As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.

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.