AOZ8131DI-06

Ultra Low Capacitance One-Line Bi-directional TVS Diode

General Description

The AOZ8131DI-06 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 1006 package. It may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 (±15kV air, ±8kV contact discharge).

The AOZ8131DI-06 comes in an RoHS compliant DFN 1006 package and is rated over a -40°C to +85°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

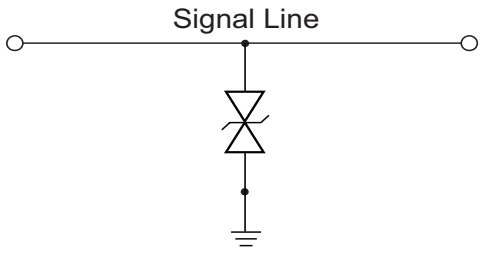
- ESD protection for high-speed data lines:
  - Exceeds:
    IEC 61000-4-2 (ESD) ±24kV (air), ±24kV (contact)
    IEC 61000-4-4(EFT) ±40A (5/50ns)
    IEC 61000-4-5 (Lightning) ±4A
  - Human Body Model (HBM) ±30kV
- Small package saves board space
- Ultra low capacitance: 1.25pF
- Low clamping voltage
- Low operating voltage: 6.0V
- Pb-free device

Applications

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

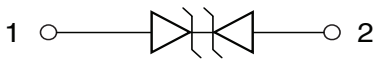
Green Product

Typical Application



Bidirection Protection of Single Line

Pin Configuration



Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8131DI-06	-40°C to +85°C	DFN 1006	RoHS Compliant 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
Peak Pulse Current (I_{PP}), t_P = 8/20µs	4A
Storage Temperature (T_S)	-65°C to +150°C
ESD Rating per IEC61000-4-2, Contact(1)	±24kV
ESD Rating per IEC61000-4-2, Air(1)	±24kV
ESD Rating per Human Body Model(2)	±30kV

Notes:

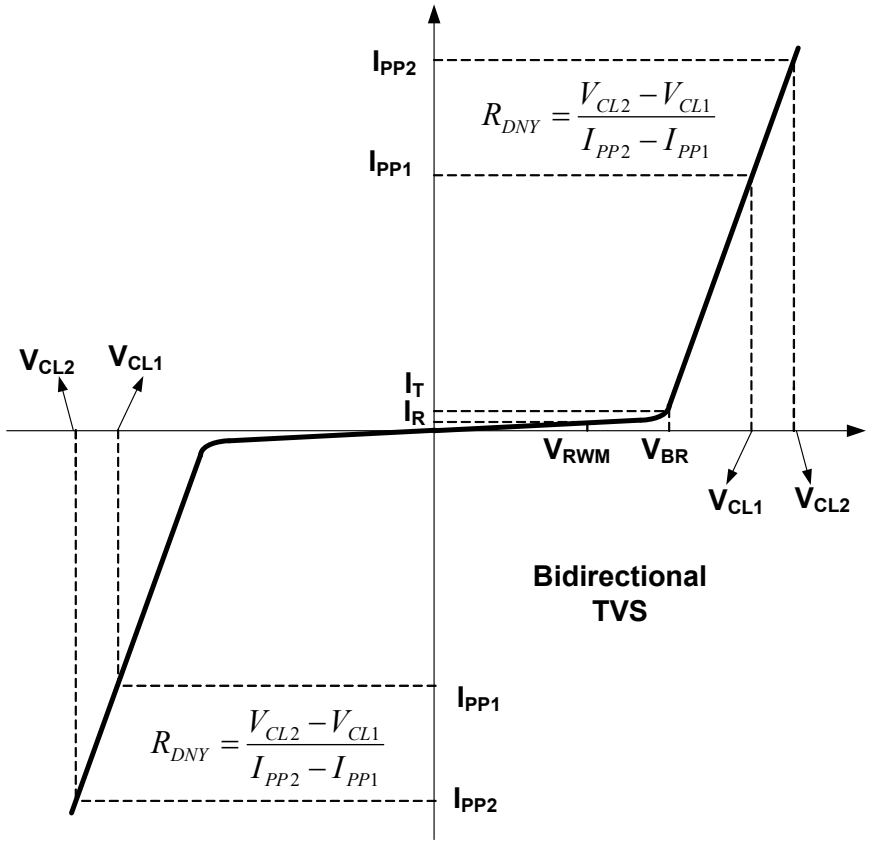
1. IEC 61000-4-2 discharge with $C_{Discharge}$ = 150pF, $R_{Discharge}$ = 330Ω.
2. Human Body Discharge per MIL-STD-883, Method 3015 $C_{Discharge}$ = 100pF, $R_{Discharge}$ = 1.5kΩ.

Maximum Operating Ratings

Parameter	Rating
Junction Temperature (T_J)	-40°C to +125°C

Electrical Characteristics

T_A = 25°C unless otherwise specified.



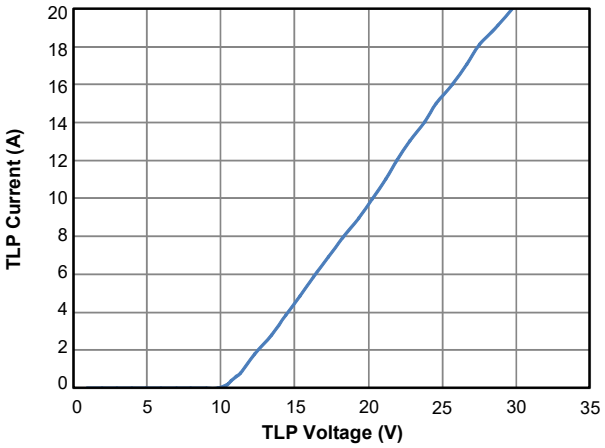
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V_{RWM}	Reverse Working Voltage	Pin1 to Pin2 or Pin2 to Pin1			6	V
V_{BR}	Reverse Breakdown Voltage	I_T=1mA	7		9.5	V
I_R	Reverse Leakage Current	V_{RWM}=6V			100	nA
V_{CL}	Clamping Voltage(3) (Transmission Line Pulse, Tp=100ns, Tr=1ns))	I_{TLP}=1A		12		V
		I_{TLP}=16A		25		
R_{DNY}	Dynamic Resistance(3)	I_{TLP}= 1A to 16A		0.85		Ω
C_J	Junction Capacitance	$V_{I/O}$=0V, f=1MHz		1.2	2.0	pF

Note:

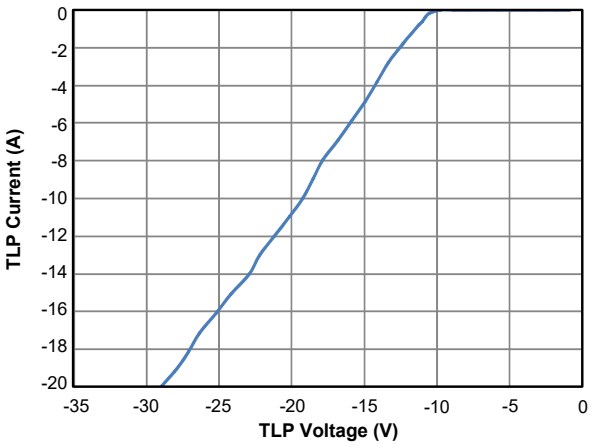
3. These specifications are guaranteed by design and characterization.

Typical Performance Characteristics

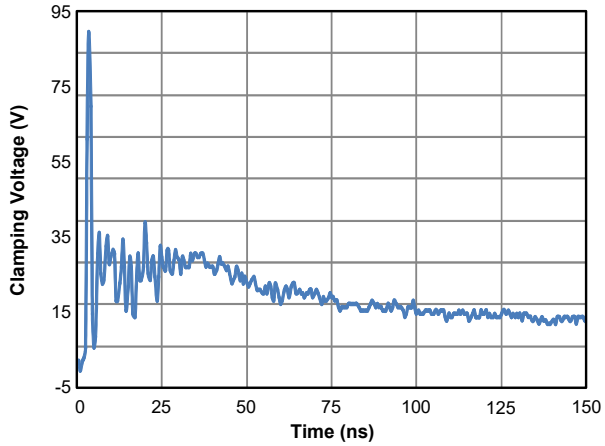
Positive TLP Clamping
(tp = 100ns, tr = 1ns)



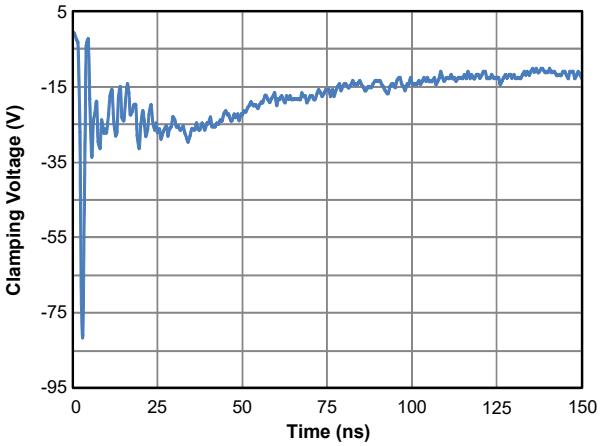
Negative TLP Clamping
(tp = 100ns, tr = 1ns)



+8kV ESD Clamping Per IEC 61000-4-2
(Contact, Between IO to GND)



-8kV ESD Clamping Per IEC 61000-4-2
(Contact, Between IO to GND)



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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.