AOZ8S322US2-05

2-Channel Unidirectional Low Capacitance TVS

General Description

The AOZ8S322US2-05 is a 2-channel unidirectional low capacitance transient voltage suppressor designed to protect data lines such as USB2.0 and low speed signal lines from damaging ESD or surge events.

This device incorporates two unidirectional TVS diodes in a single package. During transient conditions, the TVS diodes direct the transient to ground.

The AOZ8S322US2-05 provides a typical I/O to GND capacitance of 0.55 pF and low clamping voltage making it ideally suited for data transmission protection in mobile and computing devices.

The AOZ8S322US2-05 comes in a RoHS compliant and Halogen Free SOT23-3L package and is rated for -40°C to +125°C junction temperature range.

Features

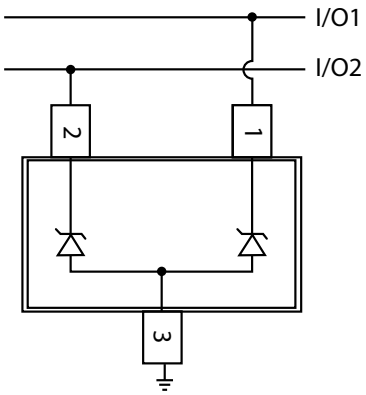
- ESD protection for high-speed data lines:
  - IEC 61000-4-2, ESD immunity
    - Air discharge: ±30 kV
    - Contact Discharge: ±30 kV
  - Human Body Model (HBM): ±8 kV
  - IEC61000-4-5, Surge immunity (8/20 µs): 9 A
  - IEC61000-4-4 (EFT, 5/50ns) 40A
- Low capacitance between I/O to GND: 0.55 pF
- Low surge clamping voltage
- Low operating voltage: 5 V

Applications

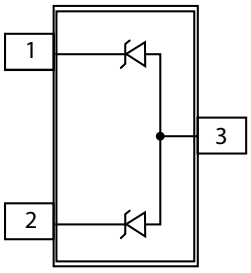
- USB2.0
- USB Type-C
- Mobile Phone
- Notebook computers

Green Product

Typical Applications



Pin Configuration



SOT-23
(Top View)

Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8S322US2-05	-40°C to +125°C	SOT23-3L	Green Product

AOS products are offered in packages with Pb-free plating and compliant to RoHS standards.
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 Human Body Mode (HBM) (1)	±8 kV
ESD Rating per IEC61000-4-2, Contact(2)	±30 kV
ESD Rating per IEC61000-4-2 , Air (2)	±30 kV
Surge Rating per IEC61000-4-5, 8/20µs	±9 A

Notes:

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

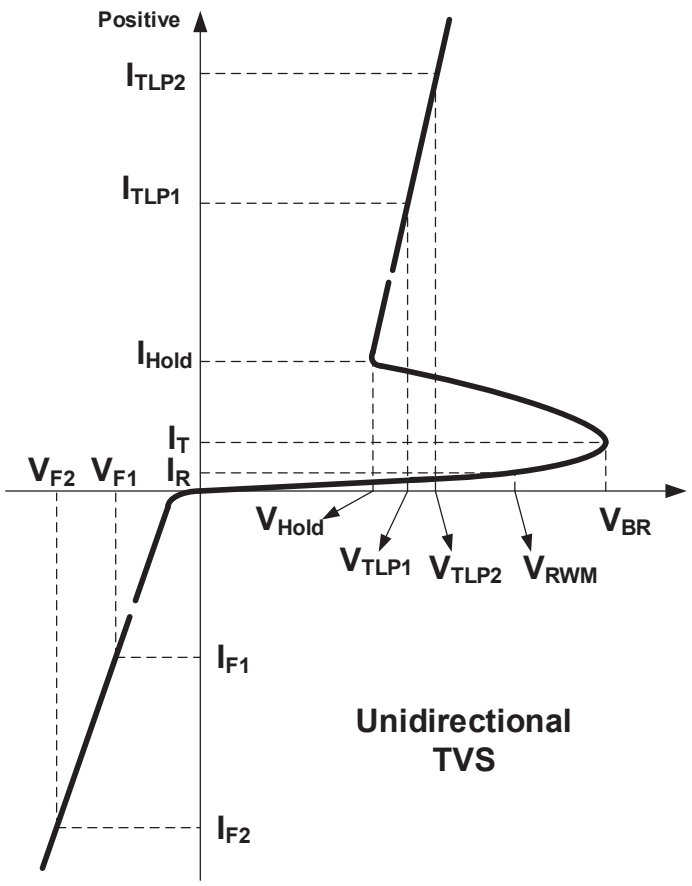
Maximum Operating Ratings

The device is not guaranteed to operate beyond the Maximum Operating Conditions.

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

Electrical Characteristics

T_A = 25°C, unless otherwise specified. Any I/O Pin to Pin3.



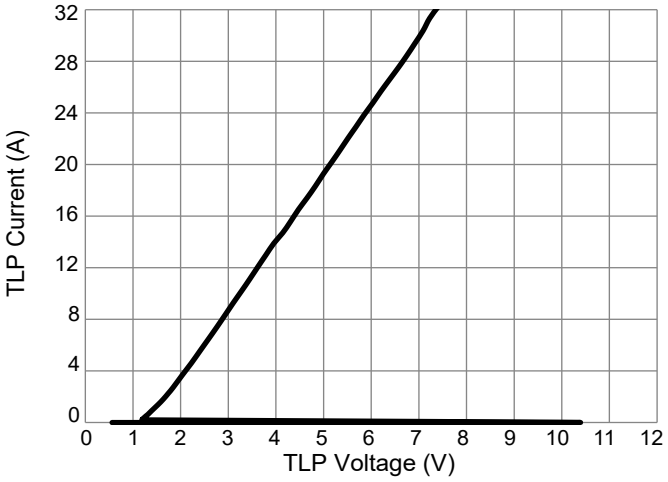
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage				5	V
V_{BR}	Reverse Breakdown Voltage	I_T = 100µA	6	9	12	
I_R	Reverse Leakage Current	V_T = Max. V_{RWM}		1	100	nA
V_{CL}	Clamping Voltage[3][4] (100 ns Transmission Line Pulse)	I_{TLP} = 1 A I_{TLP} = -1 A		1.5 -1.5	2 -2	V
		I_{TLP} = 16 A I_{TLP} = -16 A		4.5 -4.8	5.5 -5.8	
		I_{TLP} = 30 A I_{TLP} = -30 A		7.5 -6.5	8.5 -8.5	
	Clamping Voltage[3] (IEC61000-4-5, 8/20 µs)	I_{PP} = 1 A I_{PP} = -1 A		2 -2	3 -3	
		I_{PP} = 9 A I_{PP} = -9 A		4.5 -4.5	5.5 -5.5	
C_J	Junction Capacitance	$V_{I/O}$ = 0V, f = 1MHz		0.55	0.95	pF

Notes:

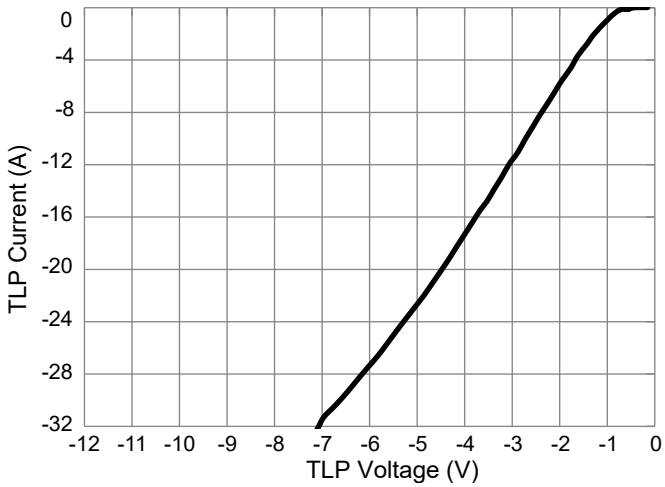
3. These specifications are guaranteed by design and characterization.
4. Measurements performed using a 100ns Transmission Line Pulse (TLP) system.

Typical Performance Characteristics

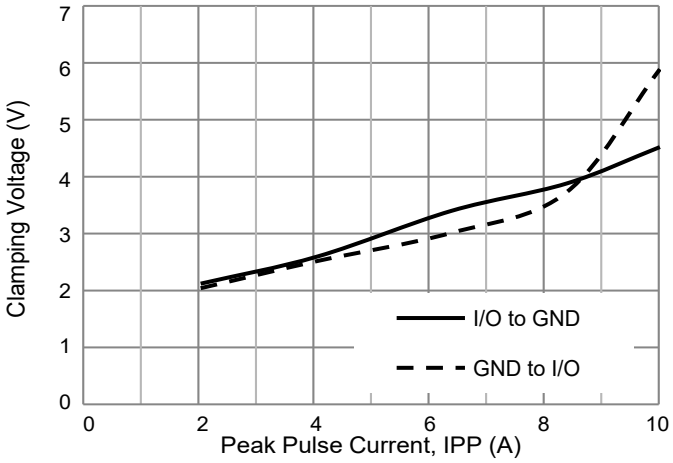
Positive Transmission Line Pulse (tp=100ns, tr=0.2ns)



Negative Transmission Line Pulse (tp=100ns, tr=0.2ns)



IEC61000-4-5 Surge 8/20µs



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As used herein:

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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.