ALPHA & OMEGA SEMICONDUCTOR

AOZ8S327UD4-05

4-Channel Ultra Low Capacitance TVS Diode Array

General Description

The AOZ8S327UD4-05 is a transient voltage suppressor array designed to protect high speed data lines.

The AOZ8S327UD4-05 provides a typical 0.28pF line-to-GND capacitance and low insertion loss providing greater signal integrity making it ideally suited for HDMI 2.0, USB3.1/3.2, V-by-One, and LVDS applications.

The AOZ8S327UD4-05 comes in a RoHS compliant and Halogen Free 2.5 mm x 1.0 mm DFN-10 package and is rated for -40°C to +125°C junction temperature range

Features

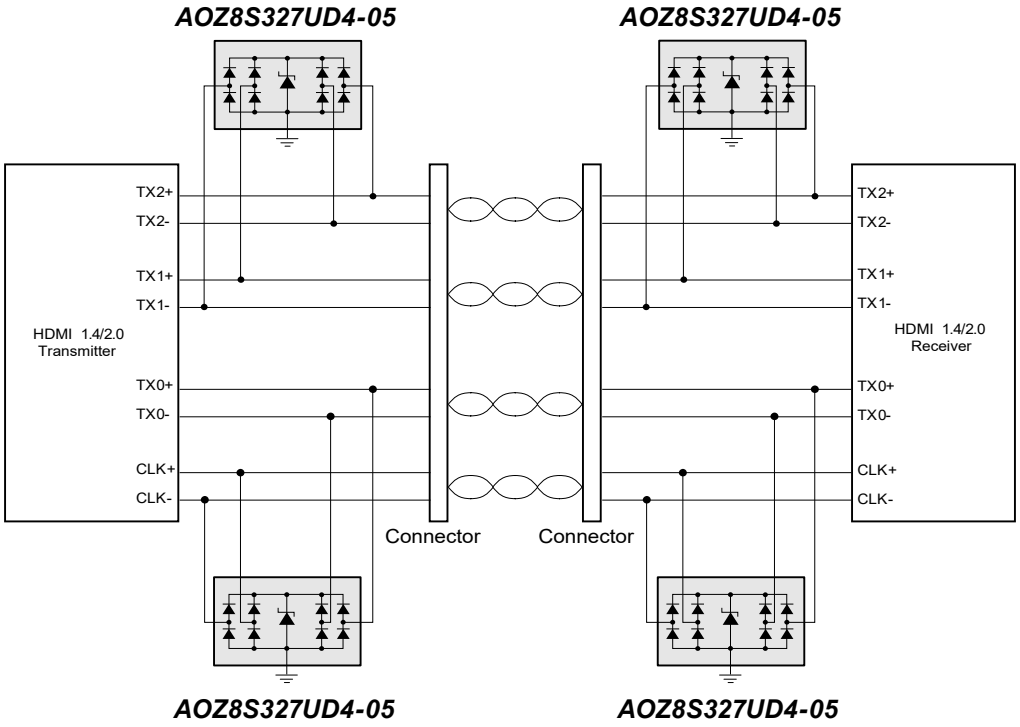
- ESD protection for high-speed data lines:
  - IEC61000-4-2, ESD immunity:
    - Air discharge: ±18 kV;
    - Air discharge: ±18 kV;
  - IEC61000-4-5 (8/20µs): 6 A
  - IEC61000-4-4 (EFT, 5/50ns): 40 A
    Human Body Model (HBM): ±8 kV
- Protects four I/O lines
- Low capacitance between I/O to GND: 0.28 pF
- Low clamping voltage
- Low operating voltage: 5V

Applications

- HDMI 2.0, USB 3.1/3.2, LVDS, V-by-One
- LCD TV Monitors and Display Panel
- Set-top box
- Video graphics cards
- Notebook/Desktop PC

Green Product

Typical Application

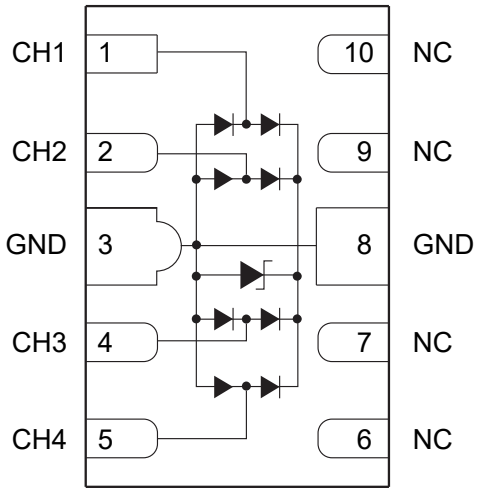


Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8S327UD4-05	-40 °C to +125 °C	DFN2.5x1.0-10L	RoHS

AOS products are offered in packages with Pb-free plating and compliant to RoHS standards.
Please visit https://aosmd.com/sites/default/files/media/AOSGreenPolicy.pdf for additional information.

Pin Configuration



DFN-10
(Top View)

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)	± 18 kV
ESD Rating per IEC61000-4-2, Air(1)	± 18 kV
ESD Rating per Human Body Mode (HBM)(2)	± 8 kV
Surge Rating per IEC61000-4-5, 8/20µs	± 6A

Notes:

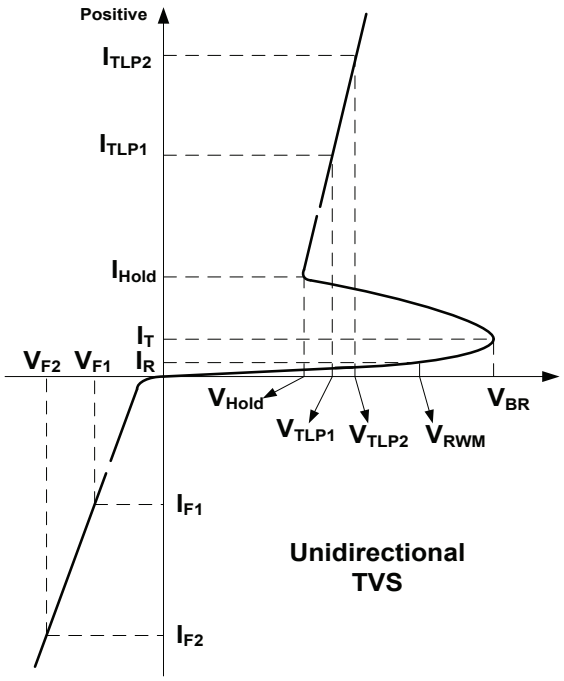
1. IEC 61000-4-2 discharge with $C_{Discharge}$ = 150pF, $R_{Discharge}$ = 330Ω
2. Human Body Discharge per MIL-STD-883, Method 3015 $C_{Discharge}$ = 100pF, $R_{Discharge}$ = 1.5kΩ

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				5	V
V_{BR}	Reverse Breakdown Voltage	I_T = 100µA, I/O Pin-to-Ground	6		9	
I_R	Reverse Leakage Current	Max. V_{RWM}, I/O Pin-to-Ground		1	50	nA
V_{CL}	Clamping Voltage(3)(4) (100ns Transmission Line Pulse)	I_{TLP} = 1A I_{TLP} = -1A		1.6 -1.4		V
		I_{TLP} = 16A I_{TLP} = -16A		4.6 -4.6	5.6 -5.6	Ω
R_{DNY}	Dynamic Resistance(3)(4)	I_{TLP}= 1 to 16A I_{TLP}= -1 to -16A		0.21 0.21		Ω
C_J	Junction Capacitance	$V_{PIN3,8}$ = 0V, $V_{I/O}$ = 1.65V, f = 1MHz, I/O Pin-to-Ground		0.28	0.34	pF
		$V_{PIN3,8}$ = 0V, $V_{I/O}$ = 0V, f = 1MHz, I/O Pin-to-I/O Pin		0.15		

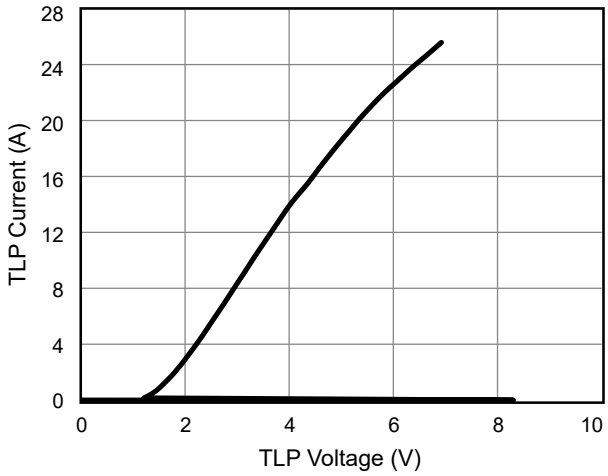
Notes:

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

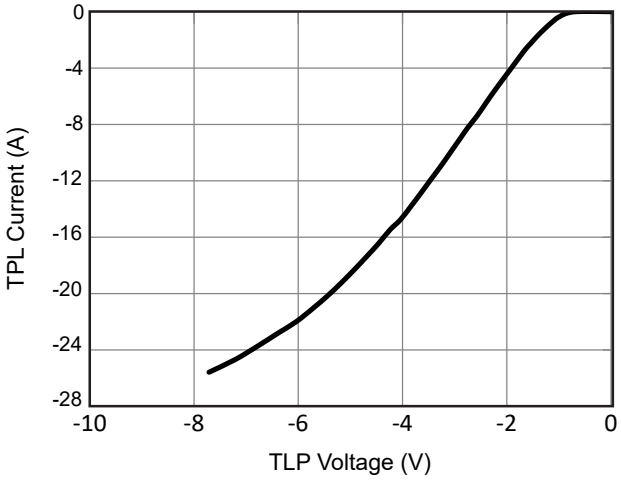
Typical Characteristics

T_A = 25 °C, unless otherwise specified.

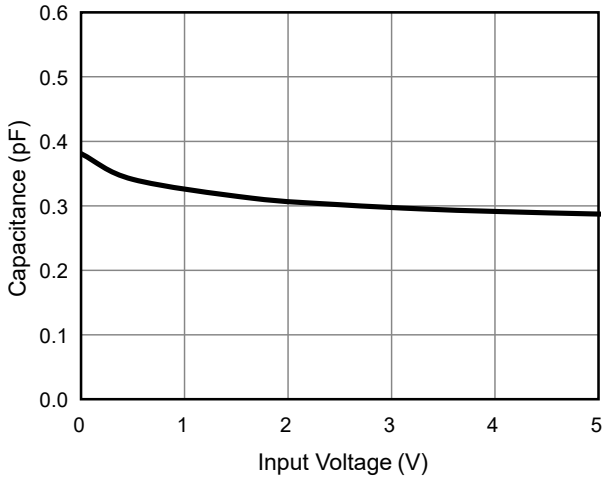
Positive Transmission Line Pulse (tp=100ns, tr=0.2ns)



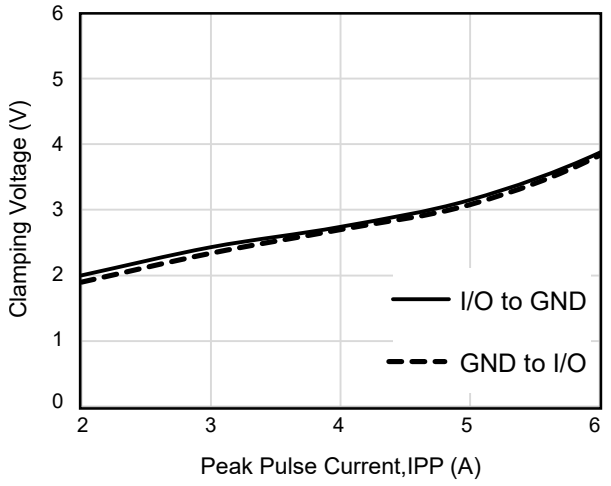
Negative Transmission Line Pulse (tp = 100ns, tr = 0.2ns)



Typical Variations of CJ vs. Input Voltage

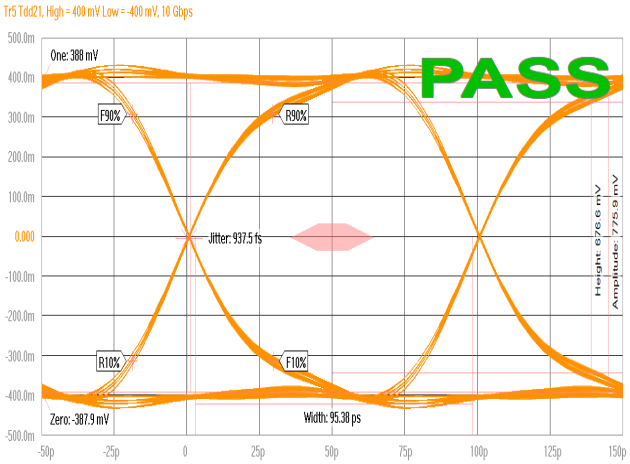


IEC61000-4-5 Surge 8/20µs

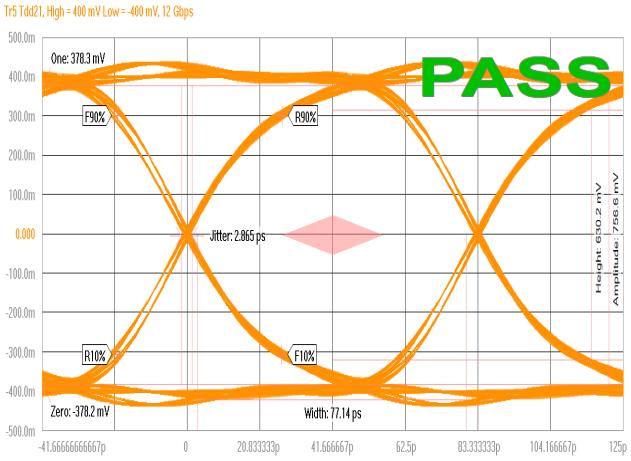


Typical Characteristics *(continued)*

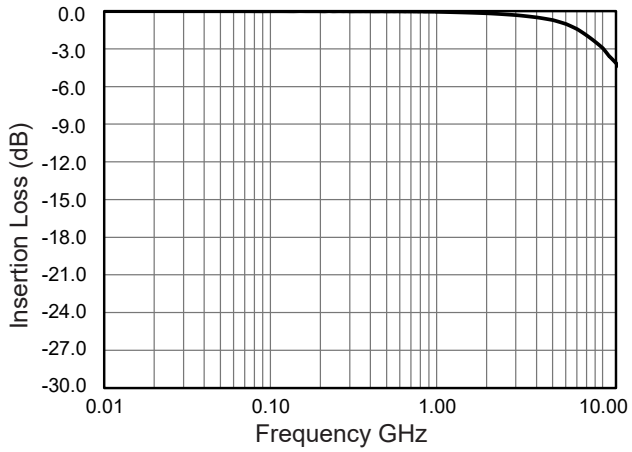
USB3.1 Gen2 Eye Diagram (10 Gbps)



HDMI Eye Diagram (12 Gbps)



Insertion loss SDD21



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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.