



## 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

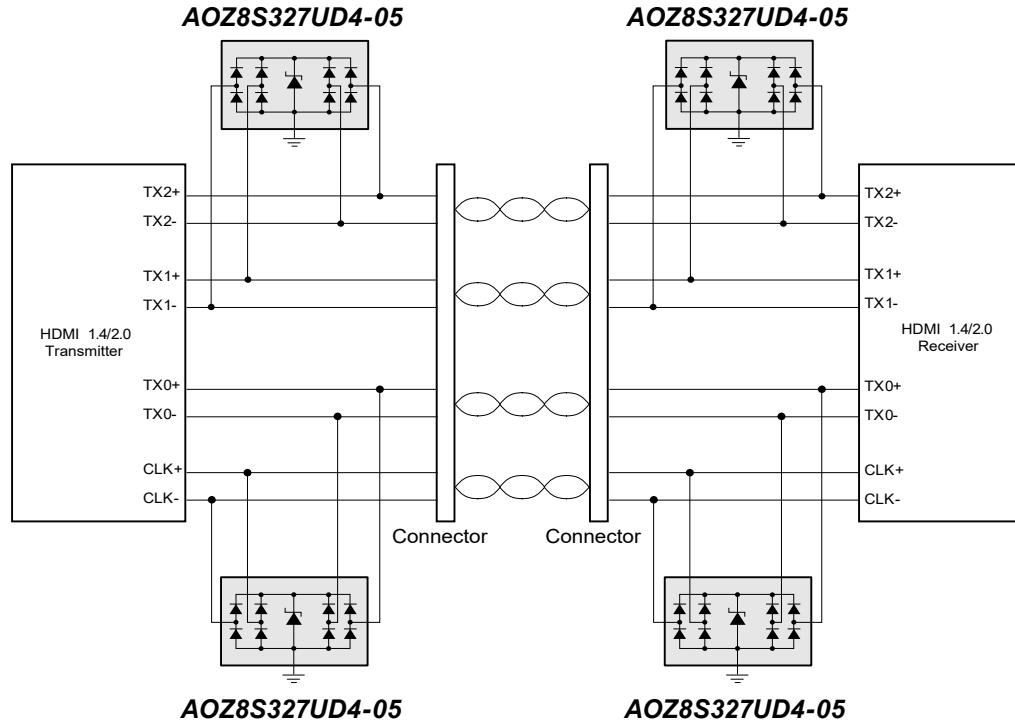
- ESD protection for high-speed data lines:
  - IEC61000-4-2, ESD immunity:
    - Air discharge:  $\pm 18$  kV;
    - Air discharge:  $\pm 18$  kV;
  - IEC61000-4-5 (8/20 $\mu$ s): 6 A
  - IEC61000-4-4 (EFT, 5/50ns): 40 A
  - Human Body Model (HBM):  $\pm 8$  kV
- Protects four I/O lines
- Low capacitance 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



## Typical Application



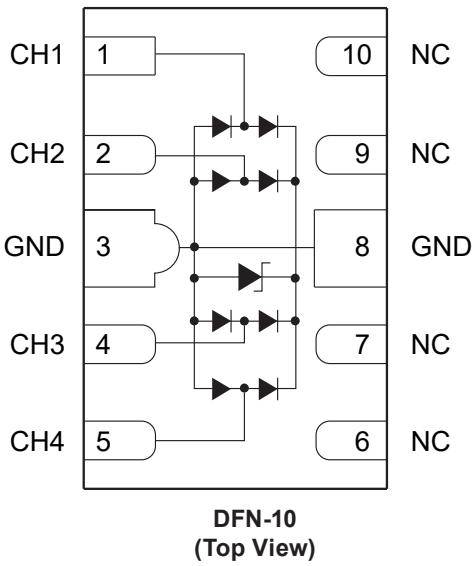
## Ordering Information

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



## Absolute Maximum Ratings

*Exceeding the Absolute Maximum ratings may damage the device.*

Parameter	Rating
Storage Temperature (Ts)	-65 °C to +150 °C
ESD Rating per IEC61000-4-2, Contact <sup>(1)</sup>	± 18 kV
ESD Rating per IEC61000-4-2, Air <sup>(1)</sup>	± 18 kV
ESD Rating per Human Body Mode (HBM) <sup>(2)</sup>	± 8 kV
Surge Rating per IEC61000-4-5, 8/20µs	± 6 A

### Notes:

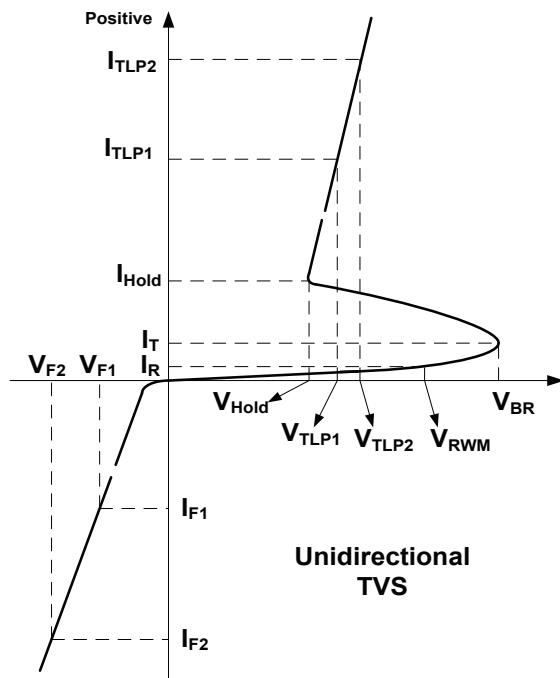
1. IEC 61000-4-2 discharge with  $C_{\text{Discharge}} = 150\text{pF}$ ,  $R_{\text{Discharge}} = 330\Omega$
2. Human Body Discharge per MIL-STD-883, Method 3015  $C_{\text{Discharge}} = 100\text{pF}$ ,  $R_{\text{Discharge}} = 1.5\text{k}\Omega$

## Maximum Operating Ratings

Parameter	Rating
Junction Temperature (T <sub>J</sub> )	-40°C to + 125°C

## Electrical Characteristics

$T_A = 25^\circ\text{C}$  unless otherwise specified.



Symbol	Parameter	Conditions	Min	Typ	Max	Units
$V_{RWM}$	Reverse Working Voltage	$I_T = 100\mu\text{A}$ , I/O Pin-to-Ground			5	V
$V_{BR}$	Reverse Breakdown Voltage		6		9	
$I_R$	Reverse Leakage Current	Max. $V_{RWM}$ , I/O Pin-to-Ground		1	50	nA
$V_{CL}$	Clamping Voltage <sup>(3)(4)</sup> (100ns Transmission Line Pulse)	$I_{TLP} = 1\text{A}$		1.6		V
		$I_{TLP} = -1\text{A}$		-1.4		
$R_{DNY}$	Dynamic Resistance <sup>(3)(4)</sup>	$I_{TLP} = 16\text{A}$		4.6	5.6	$\Omega$
		$I_{TLP} = -16\text{A}$		-4.6	-5.6	
$C_J$	Junction Capacitance	$V_{PIN3,8} = 0\text{V}$ , $V_{I/O} = 1.65\text{V}$ , $f = 1\text{MHz}$ , I/O Pin-to-Ground		0.21		pF
		$V_{PIN3,8} = 0\text{V}$ , $V_{I/O} = 0\text{V}$ , $f = 1\text{MHz}$ , I/O Pin-to-I/O Pin		0.15		

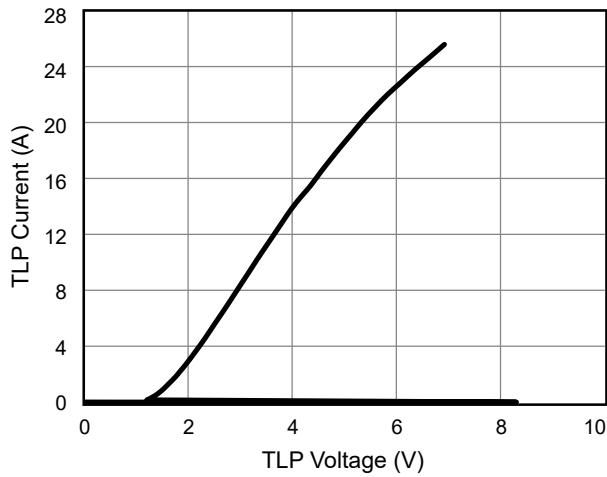
### Notes:

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

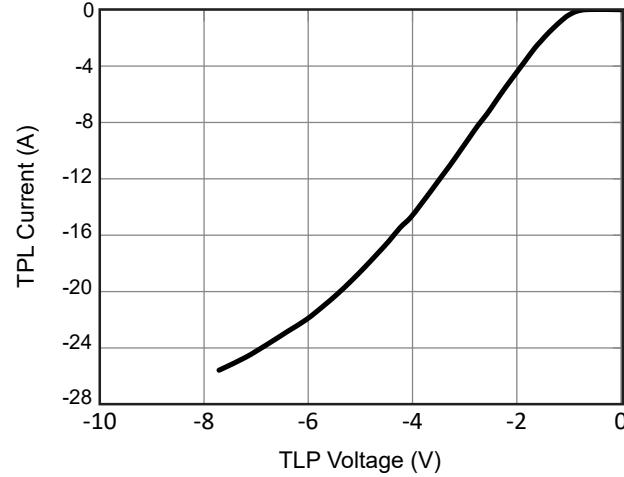
## Typical Characteristics

$T_A = 25^\circ\text{C}$ , unless otherwise specified.

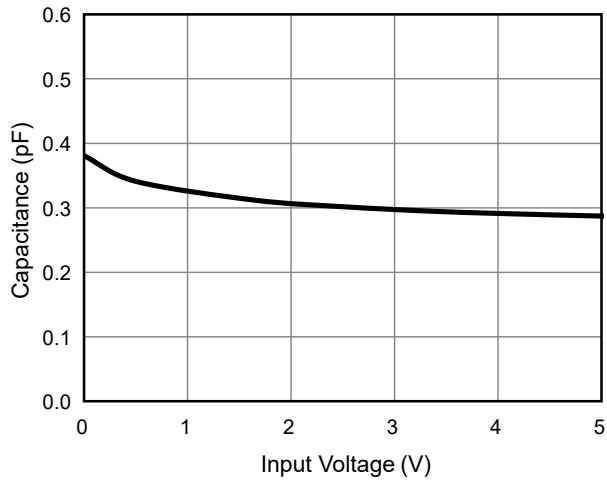
**Positive Transmission Line Pulse**  
 $(tp=100\text{ns}, tr=0.2\text{ns})$



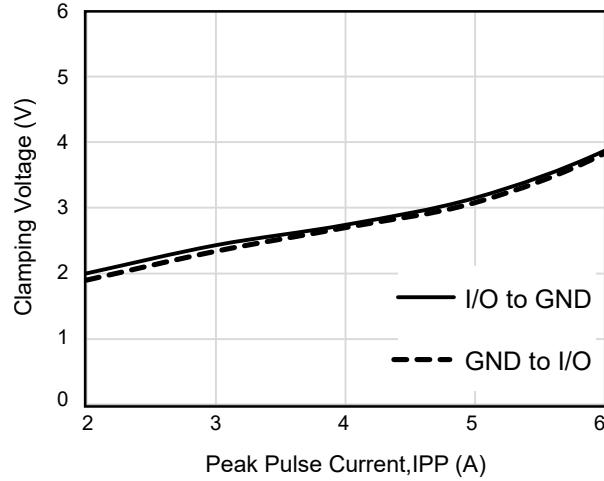
**Negative Transmission Line Pulse**  
 $(tp = 100\text{ns}, tr = 0.2\text{ns})$



**Typical Variations of CJ vs. Input Voltage**



**IEC61000-4-5 Surge 8/20μs**

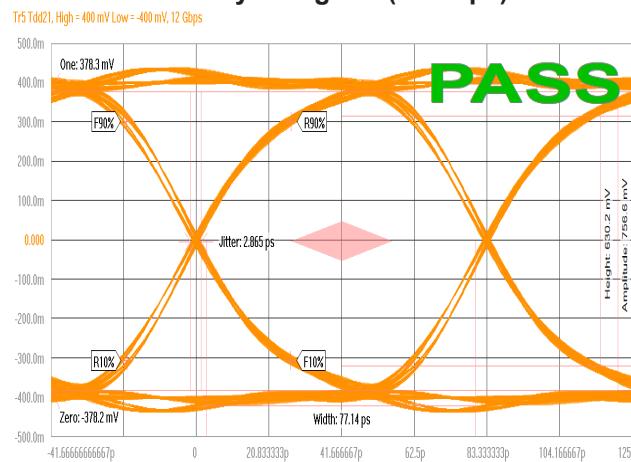


## Typical Characteristics (continued)

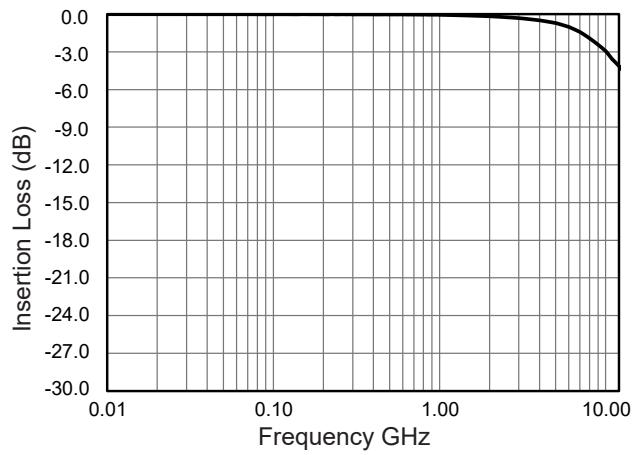
**USB3.1 Gen2 Eye Diagram (10 Gbps)**



**HDMI Eye Diagram (12 Gbps)**



**Insertion loss SDD21**



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