

## General Description

The AOZ8S305BLS-12 is a single channel transient voltage suppressor designed to protect high speed data lines such as USB2.0, USB 3.2, and HDMI 2.0/2.1 from damaging ESD events

The AOZ8S305BLS-12 provides a typical capacitance of 0.25 pF and low insertion loss providing greater signal integrity making it ideally suited for high speed data transmission applications in mobile and computing devices.

The AOZ8S305BLS-12 comes in a RoHS compliant and Halogen Free 0.6 mm x 0.3 mm x 0.3 mm package and is rated for -40°C to +125°C junction temperature range

## Features

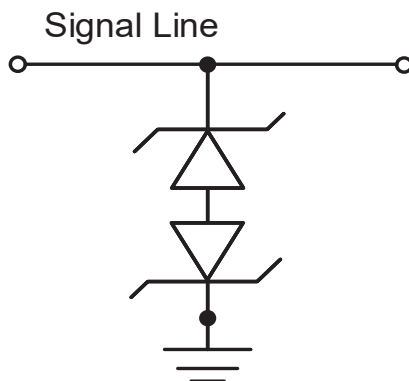
- ESD protection for high-speed data lines:
- IEC 61000-4-2 Immunity
  - Air discharge:  $\pm 22$  kV
  - Contact discharge:  $\pm 22$  kV
- IEC61000-4-5 (Lightning, 8/20 $\mu$ s): 8.5A
- Low capacitance between any I/O pins: 0.25pF
- Low clamping voltage
- Reverse Working Voltage: 12V

## Applications

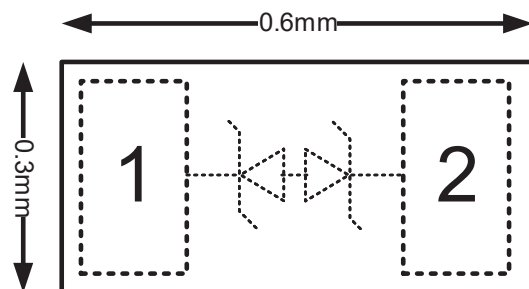
- USB2.0 & 3.2, HDMI 2.0/2.1, Thunderbolt, PCI Express
- Mobile Phone
- Notebook computers
- Wearable device



## Typical Application



## Pin Configuration



## Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8S305BLS-12	-40°C to +125°C	WLCSP0.6×0.3-2	Green Product



AOS Green Products use reduced levels of Halogens, and are also RoHS compliant. Please visit [www.aosmd.com/media/AOSGreenPolicy.pdf](http://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 <sub>S</sub> )	-65 °C to +150 °C
ESD Rating per IEC61000-4-2, Contact <sup>(1)</sup>	±22 kV
ESD Rating per IEC61000-4-2, Air <sup>(1)</sup>	±22 kV
ESD Rating per Human Body Mode (HBM) <sup>(2)</sup>	±8 kV
Surge Rating per IEC61000-4-5, 8/20µs	±8.5 A

### Notes:

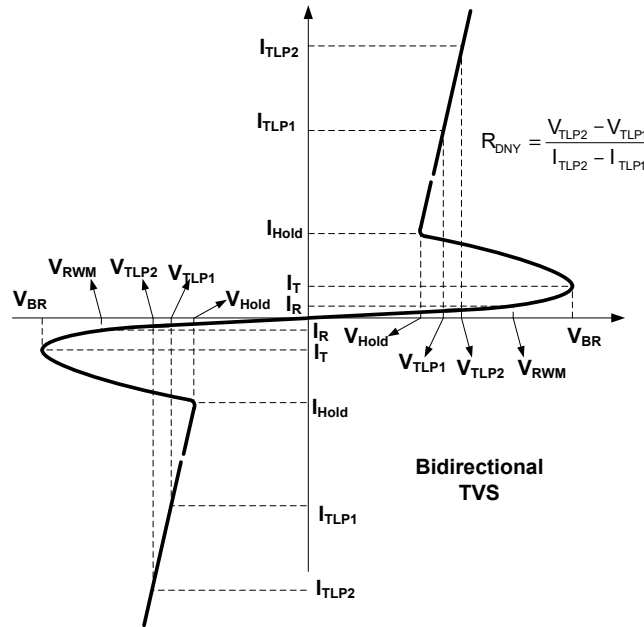
1. IEC 61000-4-2 discharge with C<sub>Discharge</sub> = 150pF, R<sub>Discharge</sub> = 330Ω
2. Human Body Discharge per MIL-STD-883, Method 3015 C<sub>Discharge</sub> = 100pF, R<sub>Discharge</sub> = 1.5kΩ

## Maximum Operating Ratings

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

## Electrical Characteristics

T<sub>A</sub> = 25°C unless otherwise specified. Any Pin to Pin.



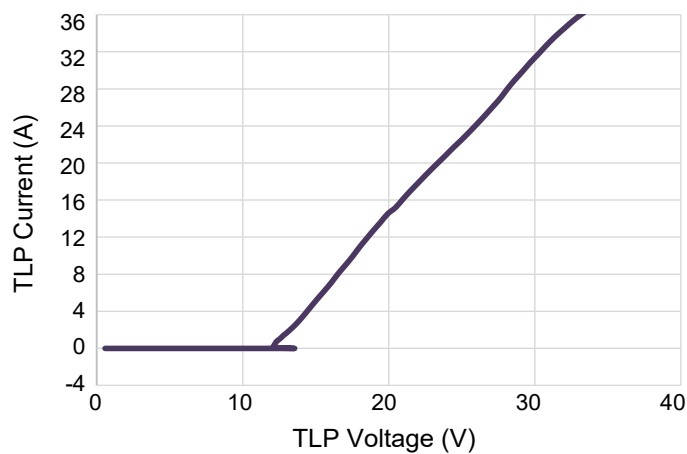
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V <sub>RWM</sub>	Reverse Working Voltage				12	V
V <sub>BR</sub>	Reverse Breakdown Voltage	I <sub>T</sub> = 1μA	13	16	19	
I <sub>R</sub>	Reverse Leakage Current	Max. V <sub>RWM</sub>			1	μA
V <sub>HOLD</sub>	Hold Voltage of Snapback		10.0			V
V <sub>CL</sub>	Clamping Voltage <sup>(3) (4)</sup> (100ns Transmission Line Pulse)	I <sub>TLP</sub> = 1A		12.6		
		I <sub>TLP</sub> = 16A		21		
R <sub>DNY</sub>	Dynamic Resistance <sup>(3) (4)</sup>	I <sub>TLP</sub> = 1 to 16A		0.56		Ω
I <sub>PP</sub>	Peak Pulse Current IE61000-4-5 Surge 8/20μs <sup>(3)</sup>				8.5	A
V <sub>CL</sub>	Clamping Voltage <sup>(3)</sup> (IEC61000-4-5 Surge 8/20μs)	I <sub>PP</sub> = 2A		13.5		V
		I <sub>PP</sub> = 4A		15.5		
C <sub>J</sub>	Junction Capacitance	V <sub>I/O</sub> = 0V, f = 1MHz		0.25	0.45	pF

### Notes:

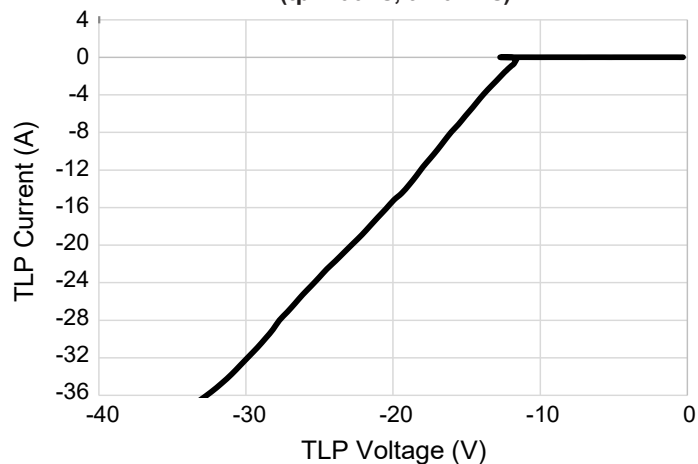
- These specifications are guaranteed by design and characterization.
- Measurements performed using a 100 nS Transmission Line Pulse (TLP) system.

## Typical Characteristics

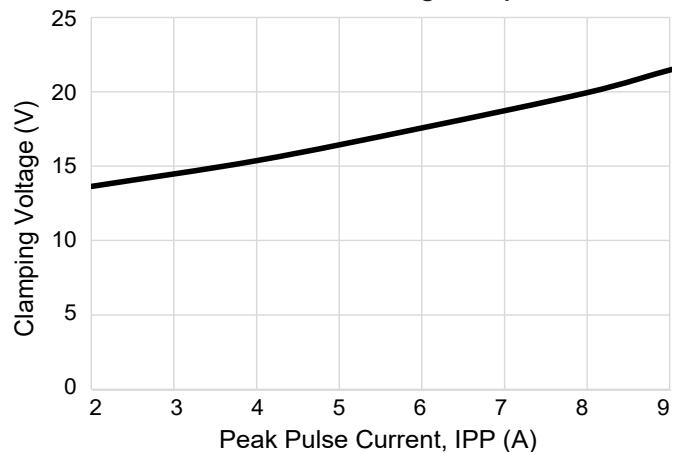
Positive Transmission Line Pulse  
( $t_p=100\text{ns}$ ,  $t_r=0.2\text{ns}$ )



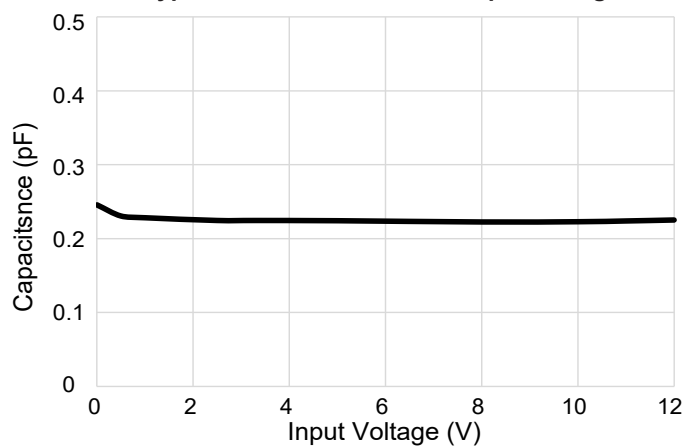
Negative Transmission Line Pulse  
( $t_p=100\text{ns}$ ,  $t_r=0.2\text{ns}$ )



IEC61000-4-5 Surge 8/20 $\mu\text{s}$



Typical Variations of CJ vs. Input Voltage



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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.