

## General Description

The AOZ8S305BLS-24 is a single channel transient voltage suppressor designed to protect high speed data lines and voltage sensitive electronics from high transient conditions and ESD.

The AOZ8S305BLS-24 comes in an RoHS compliant package and is rated over a -40°C to +125°C ambient temperature range.

The ultra-small 0.6 mm x 0.3 mm 0201 footprint package makes the AOZ8S305BLS-24 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.

The high breakdown voltage AOZ8S305BLS-24 is able to avoid the TVS damage when signal pin short to VBUS pin in Type-C application.

## Features

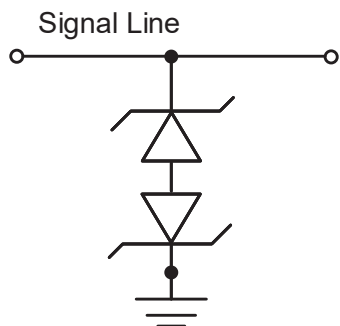
- ESD protection for high-speed data lines:
  - IEC 61000 4-2, ESD immunity:
  - Air discharge:  $\pm 30$  kV
  - Contact Discharge:  $\pm 30$  kV
  - IEC 61000-4-5 (Lightning 8/20  $\mu$ s): 20 A
  - IEC 61000-4-4 EFT (5/50 ns): 80 A
  - Human Body Mode:  $\pm 8$  kV
- Bidirectional TVS
- Low capacitance: 0.5 pF
- Low clamping voltage
- Low operating voltage: 24 V

## Applications

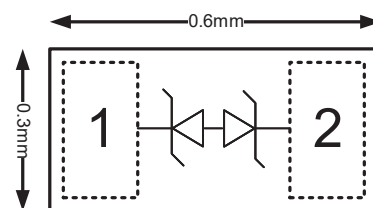
- USB 2.0 & 3.2, Thunderbolt, PCI Express
- Mobile phones
- Notebook computers



## Typical Applications



## Pin Configuration



## Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8S305BLS-24	-40°C to +125°C	WLCSP 0.6x0.3-2	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

(T<sub>A</sub> = 25°C, unless otherwise noted) Exceeding the Absolute Maximum Ratings may damage the device.

Parameter	Rating
Any Pin to Pin	24 V
Peak Pulse Current (I <sub>PP</sub> ), t <sub>P</sub> = 8/20 μs	20 A
Peak Pulse Power (P <sub>PP</sub> ), t <sub>P</sub> = 8/20 μs	140 W
Storage Temperature (T <sub>S</sub> )	-65°C to +150°C
ESD Rating per IEC61000-4-2, Contact <sup>(1)</sup>	±30 kV
ESD Rating per IEC61000-4-2, Air <sup>(1)</sup>	±30 kV
ESD Rating per Human Body Mode <sup>(2)</sup>	±8 kV

### Notes:

- IEC 61000-4-2 discharge with CDischarge = 150 pF, RDischarge = 330 Ω.
- Human Body Discharge per MIL-STD-883, Method 3015 CDischarge = 100 pF, RDischarge = 1.5 kΩ

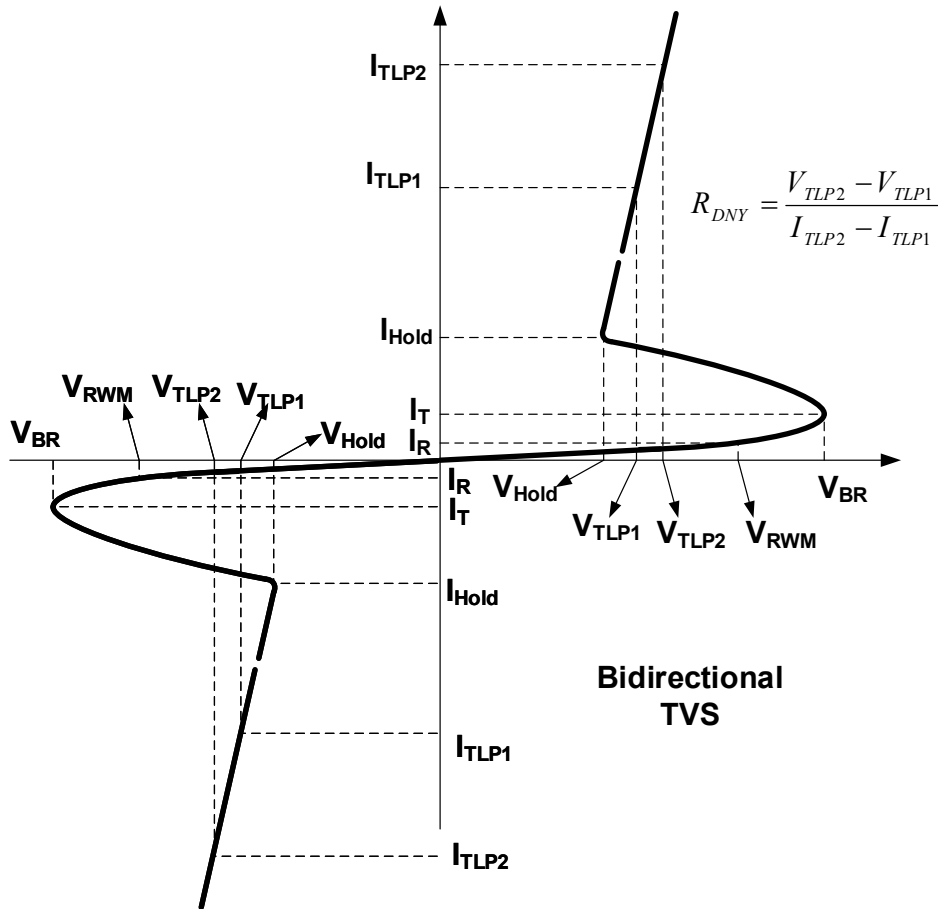
## Maximum Operating Ratings

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

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

## Electrical Characteristics

T<sub>A</sub> = 25°C, unless otherwise noted. Any I/O Pin to I/O Pin.



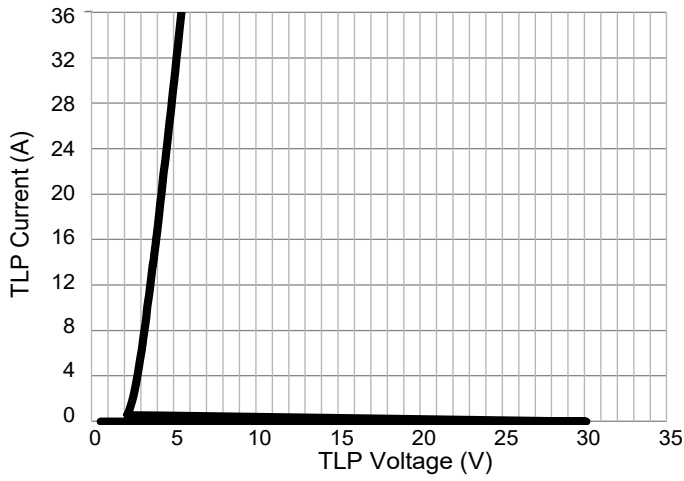
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V <sub>RWM</sub>	Reverse Working Voltage				24	V
V <sub>BR</sub>	Reverse Breakdown Voltage	I <sub>T</sub> = 10 μA	27	29	32	V
I <sub>R</sub>	Reverse Leakage Current	Max. V <sub>RWM</sub>		1	50	nA
V <sub>CL</sub>	Clamping Voltage <sup>(3)(4)</sup> (100 ns Transmission Line Pulse)	I <sub>TLP</sub> = 1 A		2.5		V
		I <sub>TLP</sub> = 16 A		4		
V <sub>CL</sub>	Clamping Voltage <sup>(3)</sup> (IEC61000-4-5, 8/20 μs)	I <sub>PP</sub> = 1 A		2.5		V
		I <sub>PP</sub> = 20A		5.3		
R <sub>DNY</sub>	Dynamic Resistance <sup>(3) (4)</sup>	I <sub>TLP</sub> = 1A to 16 A		0.1		Ω
C <sub>J</sub>	Junction Capacitance	V <sub>I/O</sub> = 1.5V, f = 1Mhz		0.5	0.6	pF

**Notes:**

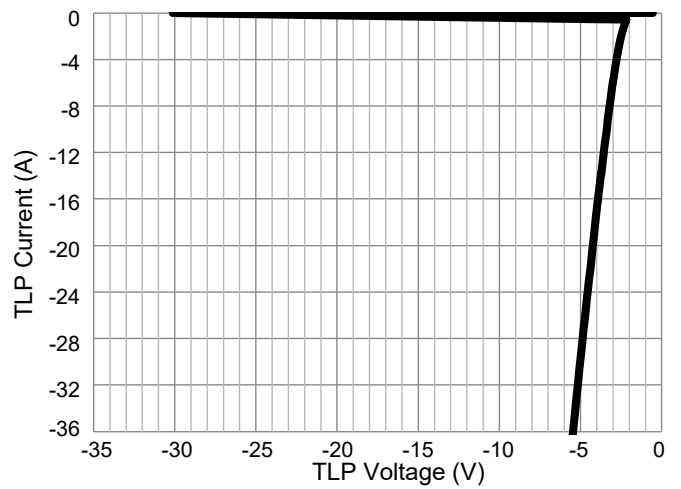
- 3. These specifications are guaranteed by design and characterization.
- 4. Measurements performed using a 100ns Transmission Line Pulse (TLP) system.

## Typical Performance Characteristics

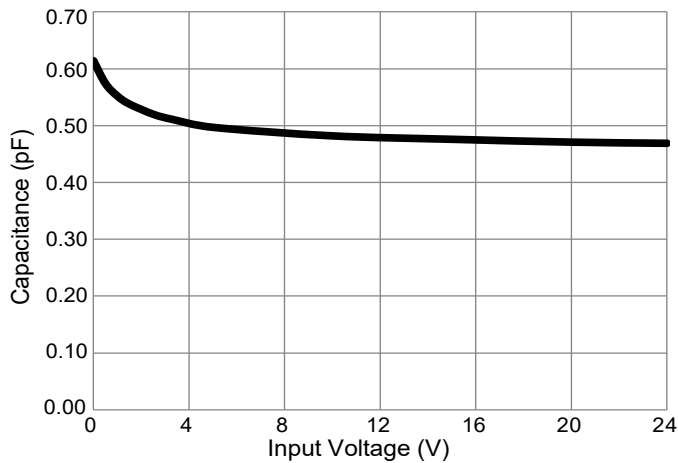
Positive Transmission Line Pulse  
( $t_p=100\text{ns}$ ,  $t_r=10\text{ns}$ )



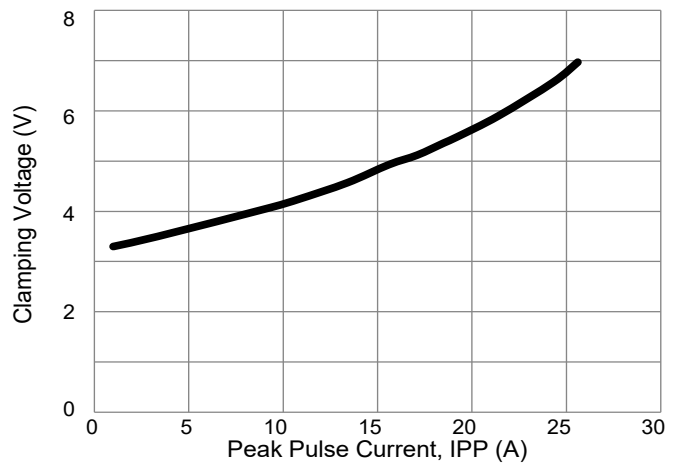
Negative Transmission Line Pulse  
( $t_p=100\text{ns}$ ,  $t_r=10\text{ns}$ )



Typical Variations of CJ vs. Input Voltage



IEC61000-4-5 Surge 8/20 $\mu\text{s}$  (Any pin to pin)



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