

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

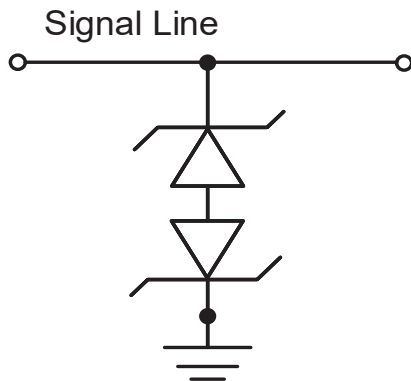
- ESD protection for high-speed data lines:
- IEC 61000-4-2 Immunity
 - Air discharge: ± 22 kV
 - Contact discharge: ± 22 kV
- IEC61000-4-5 (Lightning, 8/20 μ s): 8.5A
- Low capacitance between any I/O pins: 0.25 pF
- Low clamping voltage
- Reverse Working Voltage: 12V

Applications

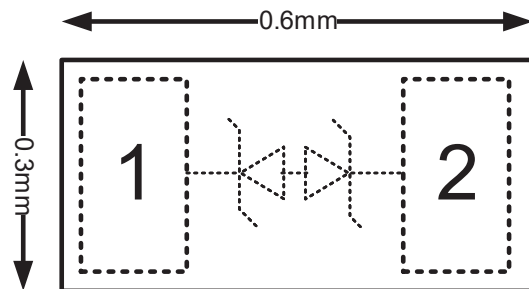
- USB2.0 & 3.2, HDMI 2.0/2.1, Thunderbolt, PCI Express
- Mobile Phone
- Notebook computers
- Wearable device



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 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 IEC61000-4-2, Contact ⁽¹⁾ | ±22 kV |
| ESD Rating per IEC61000-4-2, Air ⁽¹⁾ | ±22 kV |
| ESD Rating per Human Body Mode (HBM) ⁽²⁾ | ±8 kV |
| Surge Rating per IEC61000-4-5, 8/20µs | ±8.5 A |

Notes:

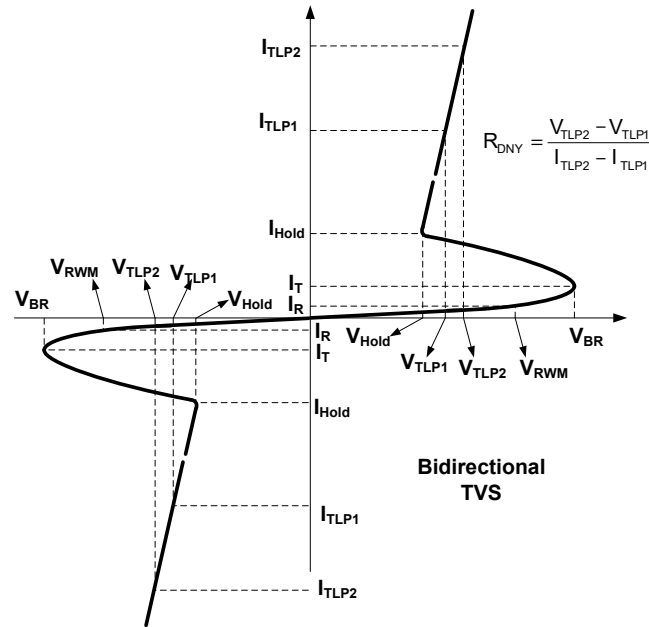
- IEC 61000-4-2 discharge with C_{Discharge} = 150pF, R_{Discharge} = 330Ω
- Human Body Discharge per MIL-STD-883, Method 3015 C_{Discharge} = 100pF, R_{Discharge} = 1.5kΩ

Maximum Operating Ratings

| Parameter | Rating |
|--|------------------|
| Junction Temperature (T _J) | -40°C to + 125°C |

Electrical Characteristics

T_A = 25°C unless otherwise specified. Any Pin to Pin.



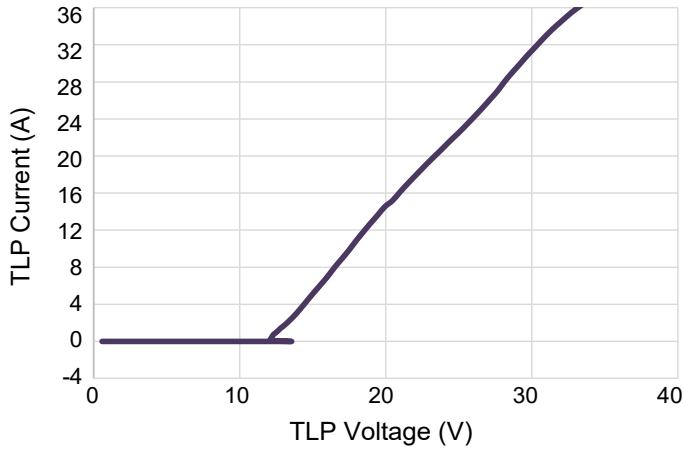
| Symbol | Parameter | Conditions | Min | Typ | Max | Units |
|-------------------|--|---|------|--------------|------|-------|
| V _{RWM} | Reverse Working Voltage | | | | 12 | V |
| V _{BR} | Reverse Breakdown Voltage | I _T = 1μA | 13 | 16 | 19 | |
| I _R | Reverse Leakage Current | Max. V _{RWM}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

Notes:

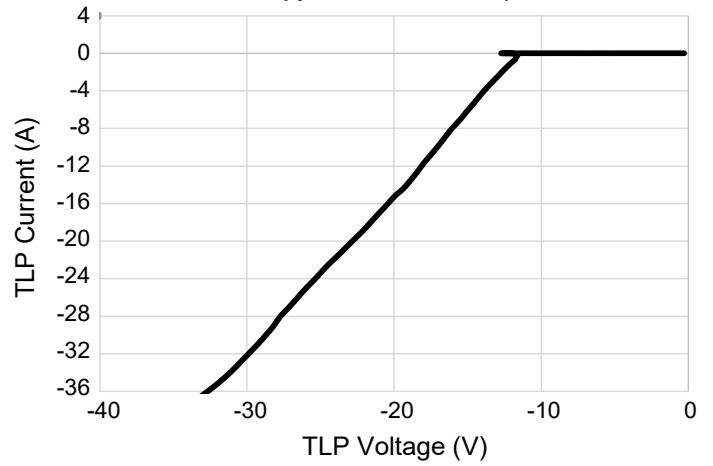
- These specifications are guaranteed by design and characterization.
- Measurements performed using a 100 nS Transmission Line Pulse (TLP) system.

Typical Characteristics

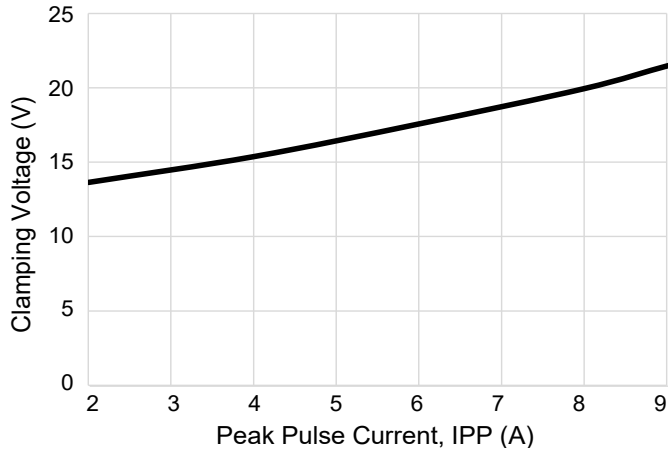
Positive Transmission Line Pulse
($t_p=100\text{ns}$, $t_r=0.2\text{ns}$)



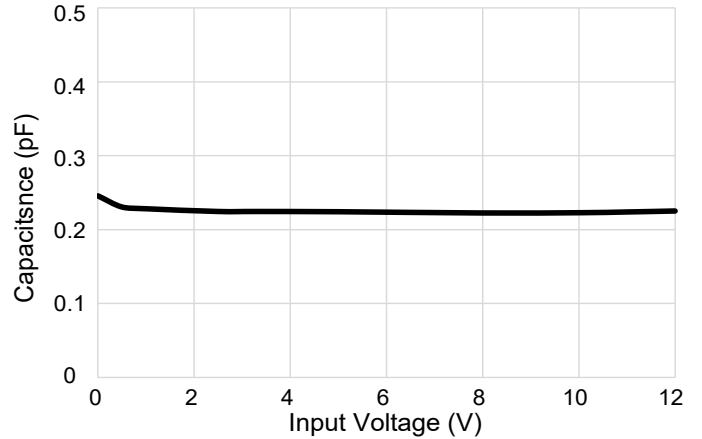
Negative Transmission Line Pulse
($t_p=100\text{ns}$, $t_r=0.2\text{ns}$)



IEC61000-4-5 Surge 8/20 μs



Typical Variations of C_J 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.