

General Description

The AOZ8S294BLS-05 is a single channel transient voltage suppressor designed to protect high speed data lines such as USB2.0/3.x/4, and Thunderbolt from damaging ESD events

The AOZ8S294BLS-05 provides a typical capacitance of 0.15 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 AOZ8S294BLS-05 comes in a RoHS compliant and Halogen Free 0.43 mm x 0.23 mm x 0.15 mm package and is rated for -40°C to +125°C junction temperature range

Features

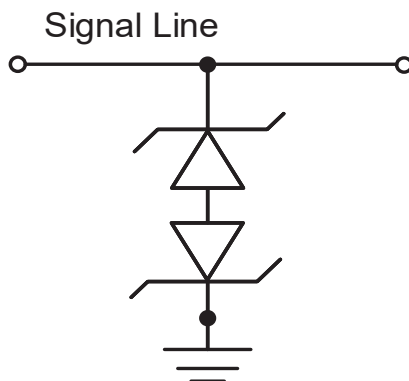
- IEC 61000-4-2 ESD Immunity
 - Air discharge: ± 20 kV
 - Contact discharge: ± 20 kV
- IEC61000-4-5 (Lightning, 8/20 μ s): 8 A
- Low capacitance between any I/O pins: 0.15 pF
- Low clamping voltage
- Reverse Working Voltage: 5.5V

Applications

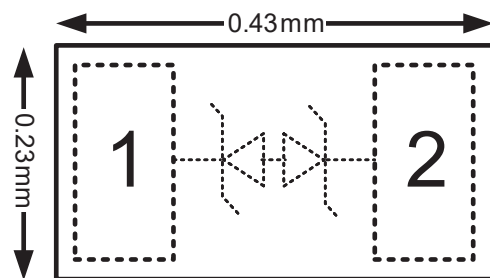
- USB2.0 & 3.2, USB4, Thunderbolt, PCI Express
- Mobile phone
- Notebook computers
- Wearable device



Typical Application



Pin Configuration



Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8S294BLS-05	-40°C to +125°C	WLCSP0.43×0.23-2	Green Product



AOS Green Products use reduced levels of Halogens, and are also RoHS compliant.
 Please visit <https://aosmd.com/sites/default/files/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⁾	±20kV
ESD Rating per IEC61000-4-2, Air ⁽¹⁾	±20kV
ESD Rating per Human Body Mode (HBM) ⁽²⁾	±8kV
Surge Rating per IEC61000-4-5, 8/20μs	±8 A

Notes:

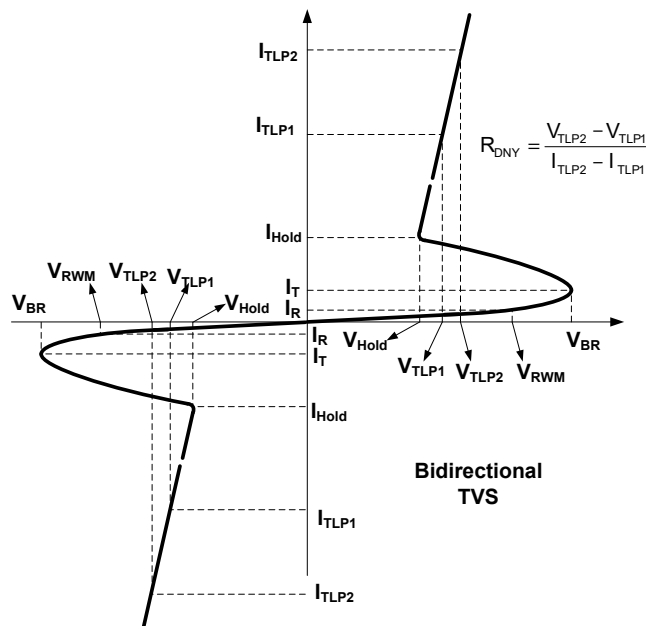
- IEC 61000-4-2 discharge with C_{Discharge} = 150pF, R_{Discharge} = 330Ω
- Human Body Discharge per MIL-STD-883, Method 3015 C_{Discharge} = 100pF, R_{Discharge} = 1.5kΩ

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.



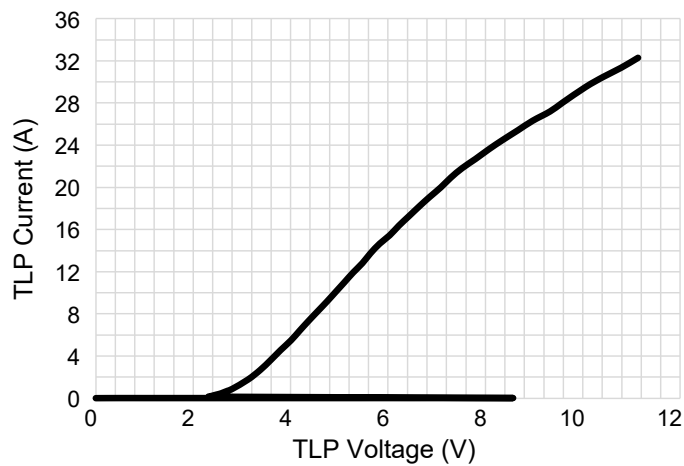
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V _{RWM}	Reverse Working Voltage				5.5	V
V _{BR}	Reverse Breakdown Voltage	I _T = 100μA	6	7.5	9	
I _R	Reverse Leakage Current	Max. V _{RWM}		1	100	nA
V _{CL}	Clamping Voltage ^{(3) (4)} (100ns Transmission Line Pulse)	I _{TLP} = 1A		2.5		V
		I _{TLP} = 16A		6.5		
R _{DNY}	Dynamic Resistance ^{(3) (4)}	I _{TLP} = 1 to 16A		0.25		Ω
V _{CL}	Clamping Voltage ⁽³⁾ (IEC61000-4-5 Surge 8/20μs)	I _{PP} = 1A		3		V
		I _{PP} = 8A		6.6		
C _J	Junction Capacitance ⁽³⁾	V _{I/O} = 0V, f = 1MHz		0.15	0.20	pF

Notes:

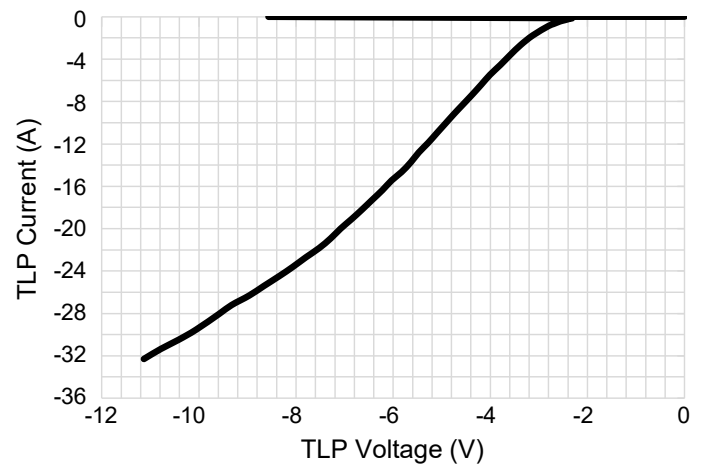
- These specifications are guaranteed by design and characterization.
- Measurements performed using a 100 nS Transmission Line Pulse (TLP) system.

Typical Characteristics

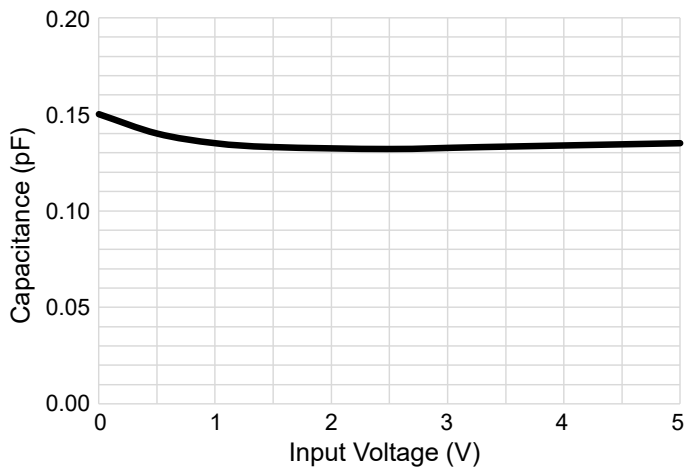
Positive Transmission Line Pulse
($t_p=100\text{ns}$, $t_r=0.2\text{ns}$)



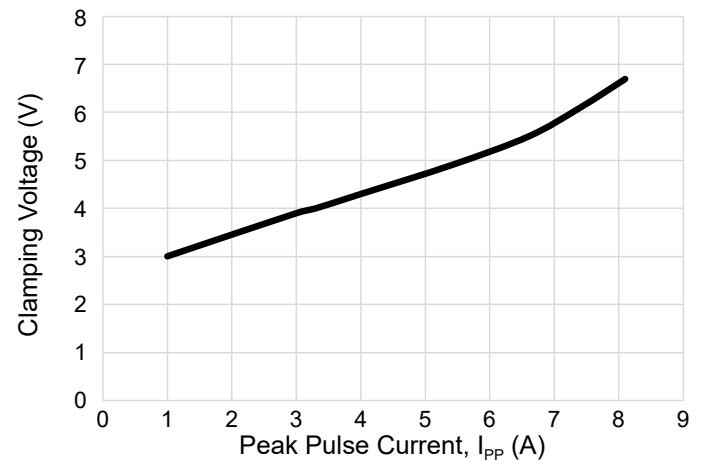
Negative Transmission Line Pulse
($t_p=100\text{ns}$, $t_r=0.2\text{ns}$)



Typical Variations of CJ vs. Input Voltage
(Any Pin to Pin)



IEC61000-4-5 Surge 8/20 μs
(Any Pin to Pin)



LEGAL DISCLAIMER

Applications or uses as critical components in life support devices or systems are not authorized. Alpha and Omega Semiconductor does not assume any liability arising out of such applications or uses of its products. AOS reserves the right to make changes to product specifications without notice. It is the responsibility of the customer to evaluate suitability of the product for their intended application. Customer shall comply with applicable legal requirements, including all applicable export control rules, regulations and limitations.

AOS' products are provided subject to AOS' terms and conditions of sale which are set forth at:

http://www.aosmd.com/terms_and_conditions_of_sale

LIFE SUPPORT POLICY

ALPHA AND OMEGA SEMICONDUCTOR PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
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.