ALPHA & OMEGA SEMICONDUCTOR

AOZ8S326US4-05

4-Channel Unidirectional Low Capacitance TVS

General Description

The AOZ8S326US4-05 is a 4-channel unidirectional high surge transient voltage suppressor designed to protect data lines such as Ethernet and USB2.0 from damaging ESD or surge events.

This device incorporates a series of bidirectional TVS diodes in a single package. During transient conditions, the bidirectional diodes direct the transient to either the positive side of the power supply line or to ground.

The AOZ8S326US4-05 provides a typical capacitance of 0.6 pF and low clamping voltage making it ideally suited for data transmission protection in mobile and computing devices.

The AOZ8S326US4-05 comes in a RoHS compliant and Halogen Free SOT23-6L package and is rated for -40°C to +125°C junction temperature range.

Features

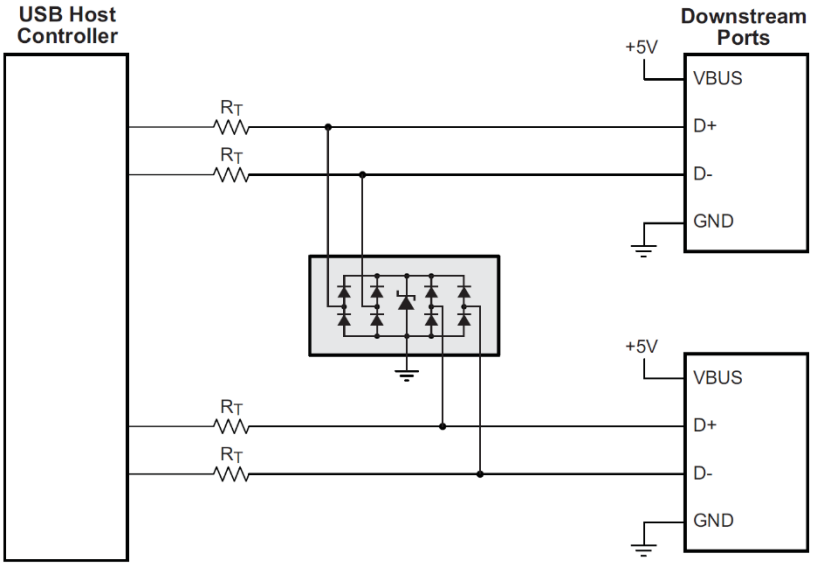
- ESD protection for high-speed data lines:
  - IEC 61000-4-2, ESD immunity:
    - Air discharge: ±30 kV
    - Contact discharge: ±30 kV
  - IEC61000-4-5 (Lightning, 8/20µs): ±9 A
  - IEC61000-4-4 (EFT, 5/50 ns): 40 A
  - Human Body Model (HBM) ±8 kV
- Array of surge rated diodes with internal TVS diodes
- Protected four I/O lines
- Low capacitance between I/O to GND: 0.7 pF
- Low clamping voltage
- Low operation Voltage: 5.0 V

Applications

- Ethernet
- Monitor and flat panel displays
- USB2.0, MDDI, HDMI
- Setup box
- CPE
- Notebook computers

Green Product

Typical Applications

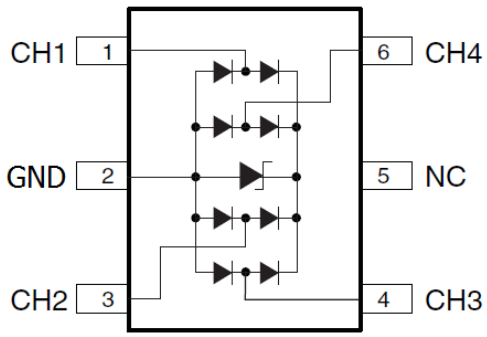


Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8S326US4-05	-40°C to +125°C	SOT23-6L	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.

Pin Configuration



SOT23-6
(Top View)

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 Human Body Mode (HMB) (1)	±8 kV
ESD Rating per IEC61000-4-2, contact(2)	±30 kV
ESD Rating per IEC61000-4-2, air(2)	±30 kV
Surge Rating per IEC61000-4-5, 8/20 µs	±9A

Notes:

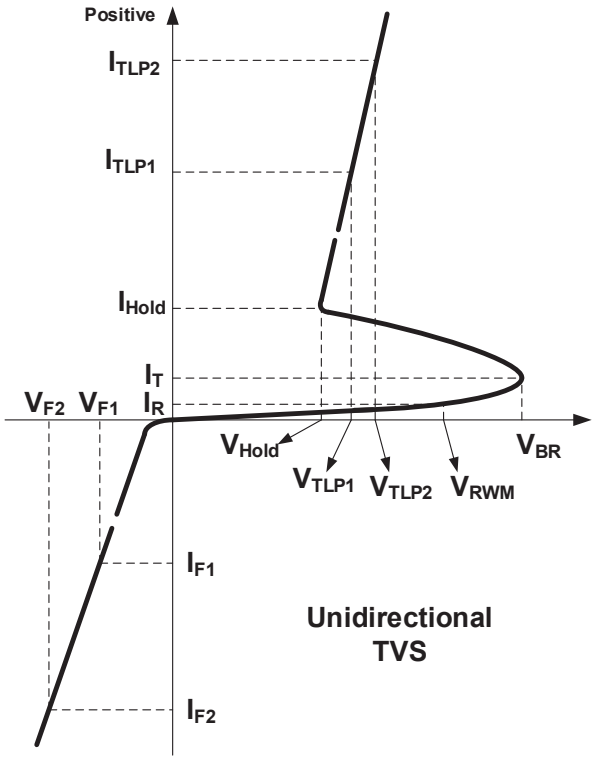
1. Human Body Discharge per MIL-STD-883, Method 3015 $C_{Discharge}$ = 100 pF, $R_{Discharge}$ = 1.5 kΩ
2. IEC 61000-4-2 discharge with $C_{Discharge}$ = 150 pF, $R_{Discharge}$ = 330 Ω.

Maximum Operating Ratings

Parameter	Rating
Junction Temperature (T_J)	-40 °C to +125 °C

Electrical Characteristics

Any I/O Pin to GND. TA = 25 °C unless otherwise specified.



Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage	Between I/O and GND			5.5	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1 mA, between I/O and GND	6	7.4	9	
I_R	Reverse Leakage Current	V_T = Max. V_{RWM}, between I/O and GND			100	nA
V_{CL}	Clamping Voltage[3] [4] (100 ns Transmission Line Pulse)	I_{TLP} = 1A I_{TLP} = -1A		1.2 -1.2	1.5 -1.5	V
		I_{TLP} = 16A I_{TLP} = -16A		3.3 -3	4 -4	
		I_{TLP} = 30A I_{TLP} = -30A		5 -4.8	6 -5.8	
	Clamping Voltage[3] IEC61000-4-5 Surge 8/20us	I_{PP} = 1A I_{PP} = -1A		1.6 -1.6	2.1 -2.1	V
		I_{PP} = 9A I_{PP} = -9A		3.3 -3.3	4 -4	
C_J	Junction Capacitance	I_{TLP} = 16A to 30A I_{TLP} = -16A to -30A		0.12 0.12		Ω
C_J	Junction Capacitance	$V_{I/O}$ = 1.5 V, f = 1 MHz		0.7	0.9	pF
		$V_{I/O}$ = 0 V, f = 1 MHz, Any I/O to I/O		0.5		

Notes:

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

Typical Performance Characteristics

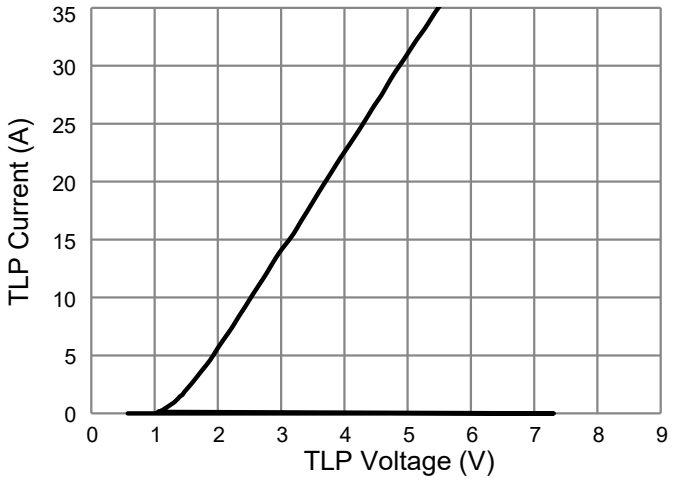


Figure 1. Positive Transmission Line Pulse (tp=100ns, tr=0.2ns)

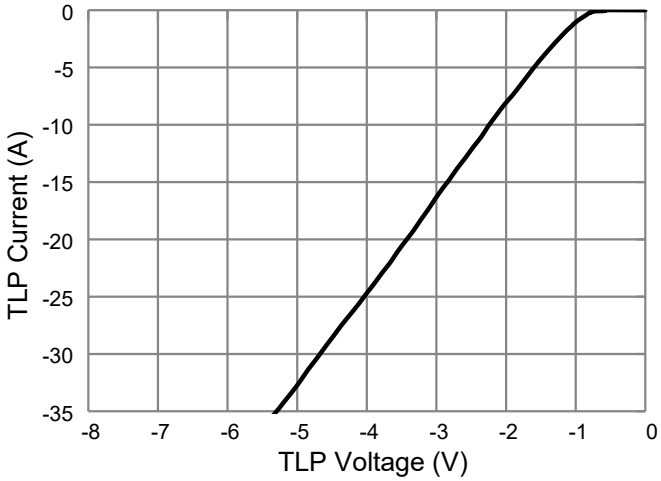


Figure 2. Negative Transmission Line Pulse (tp=100ns, tr=0.2ns)

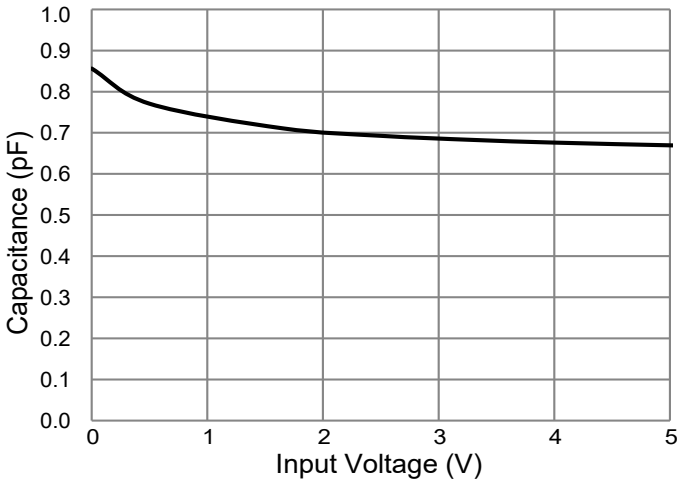


Figure 3. Typical Variations of CJ vs. Input Voltage

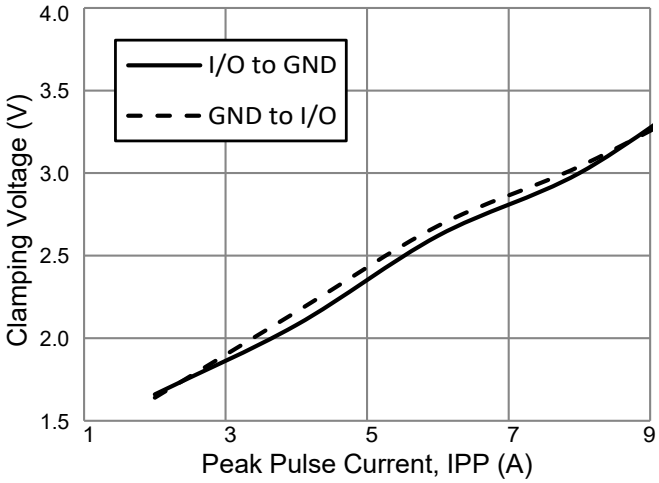


Figure 4. IEC61000-4-5 Surge 8/20us

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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.