

## General Description

The AOZ8S502BS2-03 is a 2-channel bidirectional high surge transient voltage suppressor designed to protect data lines such as audio line and power rail from damaging ESD or surge events.

This device incorporates two 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 AOZ8S502BS2-03 provides a typical capacitance of 22 pF and low clamping voltage making it ideally suited for data transmission protection in mobile and computing devices.

The AOZ8S502BS2-03 comes in a RoHS compliant and Halogen Free SOT23-3L package and is rated for -40 °C to +125 °C junction temperature range.

## Features

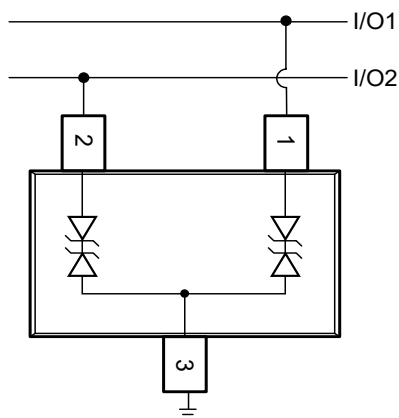
- IEC 61000-4-2, ESD immunity:
  - Air discharge: ±30kV
  - Contact discharge: ±30kV
- IEC 61000-4-5, surge immunity (8/20 μs): 12A
- IEC 61000-4-4 (EFT, 5/50ns): 40A
- Human Body Mode (HBM): ±8kV
- Junction capacitance: 22 pF
- Low clamping voltage
- Reverse working voltage: 3.3V

## Applications

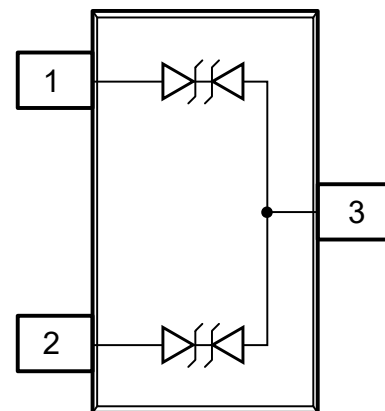
- Audio & power lines
- General purpose
- Mobile phone
- Notebook computers



## Typical Application



## Pin Configuration



**SOT-23  
(Top View)**

## Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8S502BS2-03	-40°C to +125°C	SOT23-3L	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>	±30 kV
ESD Rating per IEC61000-4-2, air <sup>(1)</sup>	±30 kV
8/20µs Surge IEC61000-4-5 Peak Pulse Current	± 12A
EFT Rating per IEC61000-4-4 (5/50ns)	40A
ESD Rating per Human Body Model <sup>(2)</sup>	±8 kV

### Notes:

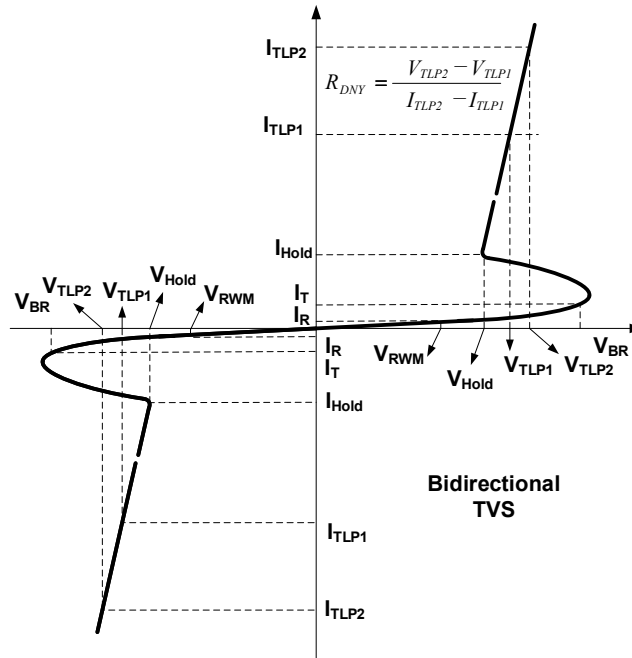
- IEC 61000-4-2 discharge with C<sub>Discharge</sub> = 150pF, R<sub>Discharge</sub> = 330Ω
- Human Body Discharge per MIL-STD-883, Method 3015 C<sub>Discharge</sub> = 100pF, R<sub>Discharge</sub> = 1.5kΩ

## 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 I/O Pin to Pin 3.



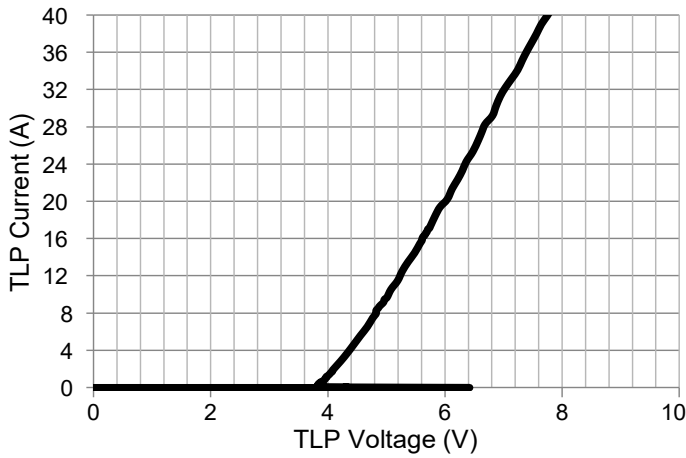
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V <sub>RWM</sub>	Reverse Working Voltage				3.3	V
V <sub>BR</sub>	Reverse Breakdown Voltage	I <sub>T</sub> = 1mA	4.5	5.5	6.5	
I <sub>R</sub>	Reverse Leakage Current	V <sub>T</sub> = Max. V <sub>RWM</sub>		1	100	nA
V <sub>HOLD</sub>	Hold Voltage of Snapback <sup>(3)</sup>	I <sub>T</sub> = 100mA	3.6			V
V <sub>CL</sub>	Clamping Voltage <sup>(3) (4)</sup> (100ns Transmission Line Pulse)	I <sub>TLP</sub> = 1A I <sub>TLP</sub> = 16A I <sub>TLP</sub> = 30A		5 6.5 8		
V <sub>CL</sub>	Clamping Voltage <sup>(3)</sup> (IEC61000-4-5 Surge 8/20μs)	I <sub>PP</sub> = 2A I <sub>PP</sub> = 7A		5 7.5		
C <sub>J</sub>	Junction Capacitance <sup>(3)</sup>	V <sub>I/O</sub> = 0V, f = 1MHz		22		pF

**Notes:**

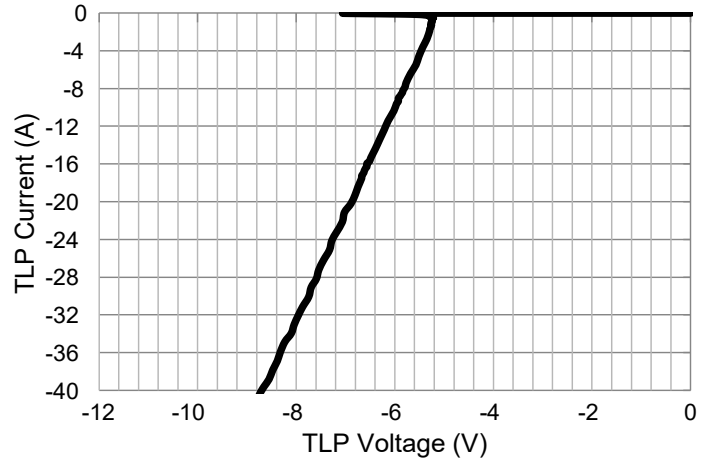
- 3. These specifications are guaranteed by design and characterization.
- 4. Measurements performed using a 100 nS Transmission Line Pulse (TLP) system.

## Typical Characteristics

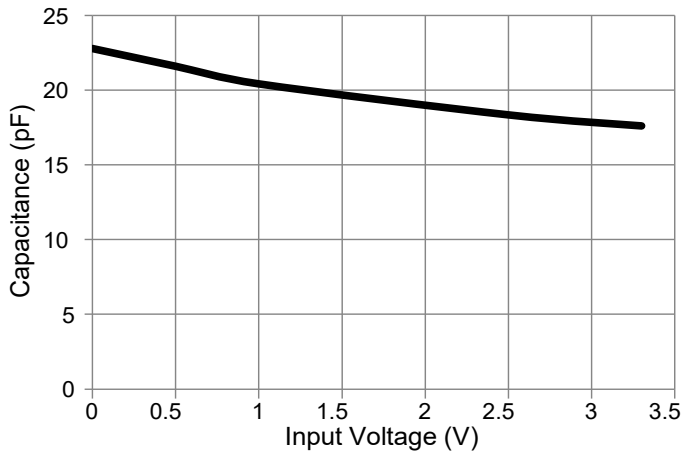
**Positive Transmission Line Pulse**  
( $t_p=100\text{ns}$ ,  $t_r=0.2\text{ns}$ , Pin 3 as GND)



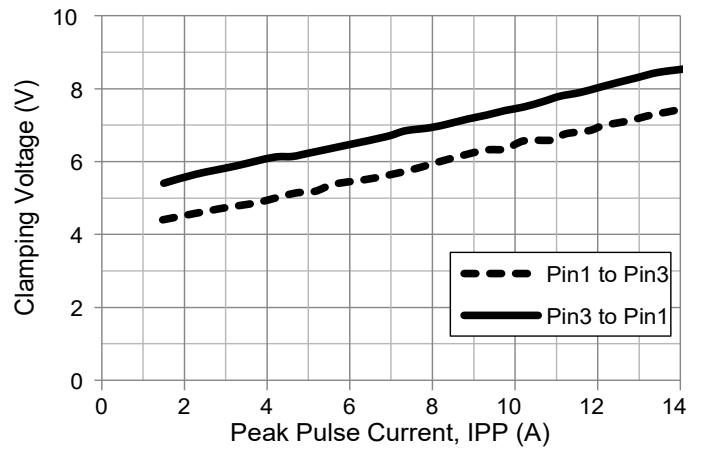
**Negative Transmission Line Pulse**  
( $t_p=100\text{ns}$ ,  $t_r=0.2\text{ns}$ , Pin 3 as GND)



**Typical Variations of CJ vs. Input Voltage**



**IEC61000-4-5 Surge 8/20 $\mu$ s**



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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.