

## General Description

The AOZ8S503BS2-05 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 AOZ8S503BS2-05 provides a typical capacitance of 9pF and low clamping voltage making it ideally suited for data transmission protection in mobile and computing devices.

The AOZ8S503BS2-05 comes in a RoHS compliant and Halogen Free SOT23-3L package and is rated for -40 °C to +125 °C junction temperature range.

## Features

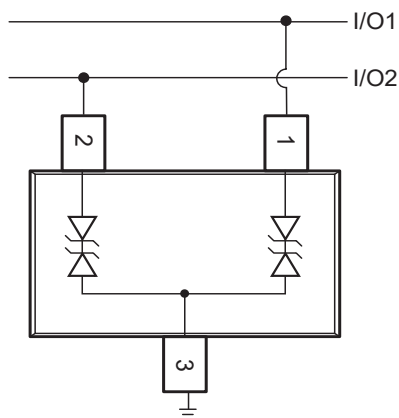
- IEC 61000-4-2, ESD immunity:
  - Air discharge:  $\pm 30\text{kV}$
  - Contact discharge:  $\pm 30\text{kV}$
- IEC 61000-4-5, surge immunity (8/20  $\mu\text{s}$ ): 7A
- IEC 61000-4-4 (EFT, 5/50ns): 40A
- Human Body Mode (HBM):  $\pm 8\text{kV}$
- Junction capacitance: 9pF
- Low clamping voltage
- Reverse working voltage: 5V

## Applications

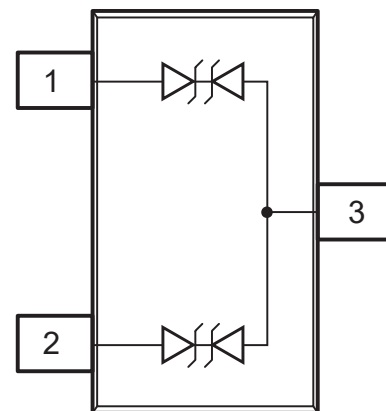
- Audio & power lines
- General purpose
- Mobile phone
- Notebook computers



## Typical Application



## Pin Configuration



**SOT-23  
(Top View)**

## Ordering Information

| Part Number    | Ambient Temperature Range | Package  | Environmental |
|----------------|---------------------------|----------|---------------|
| AOZ8S503BS2-05 | -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        | ± 7A            |
| EFT Rating per IEC61000-4-4 (5/50ns)                | 40A             |
| ESD Rating per Human Body Model <sup>(2)</sup>      | ±8 kV           |

### Notes:

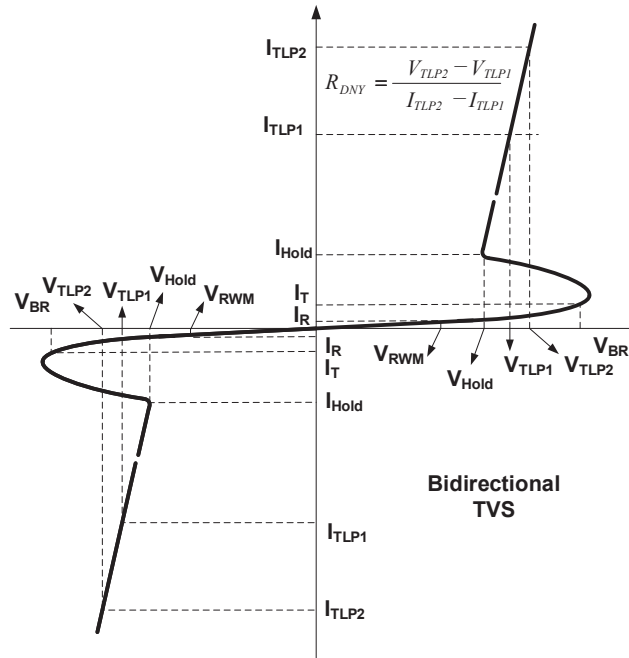
- IEC 61000-4-2 discharge with C<sub>Discharge</sub> = 150pF, R<sub>Discharge</sub> = 330Ω

## 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.



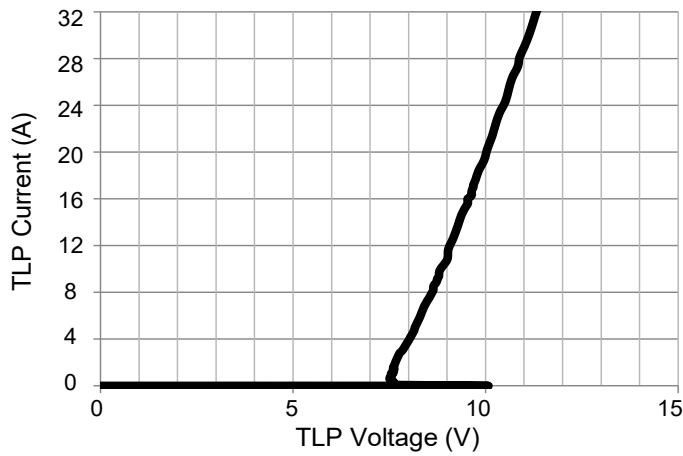
| Symbol            | Parameter  | Conditions  | Min. | Typ.             | Max. | Units |
|-------------------|--|---|------|------------------|------|-------|
| V <sub>RWM</sub>  | Reverse Working Voltage  |   |      |                  | 5    | V     |
| V <sub>BR</sub>   | Reverse Breakdown Voltage  | I <sub>T</sub> = 1mA  | 6.5  | 7.5              | 9.5  |       |
| 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>(2)</sup>                            | I <sub>T</sub> = 100mA  | 6    |                  |      | V     |
| V <sub>CL</sub>   | Clamping Voltage <sup>(2)</sup><br>(100ns Transmission Line Pulse) | I <sub>TLP</sub> = 1A<br>I <sub>TLP</sub> = 16A<br>I <sub>TLP</sub> = 30A |      | 6.5<br>9<br>11.5 |      |       |
| V <sub>CL</sub>   | Clamping Voltage <sup>(2)</sup><br>(IEC61000-4-5 Surge 8/20μs)     | I <sub>PP</sub> = 2A<br>I <sub>PP</sub> = 7A                              |      | 7<br>9           |      |       |
| C <sub>J</sub>    | Junction Capacitance <sup>(2)</sup>                                | V <sub>I/O</sub> = 0V, f = 1MHz   |      | 9                |      | pF    |

**Notes:**

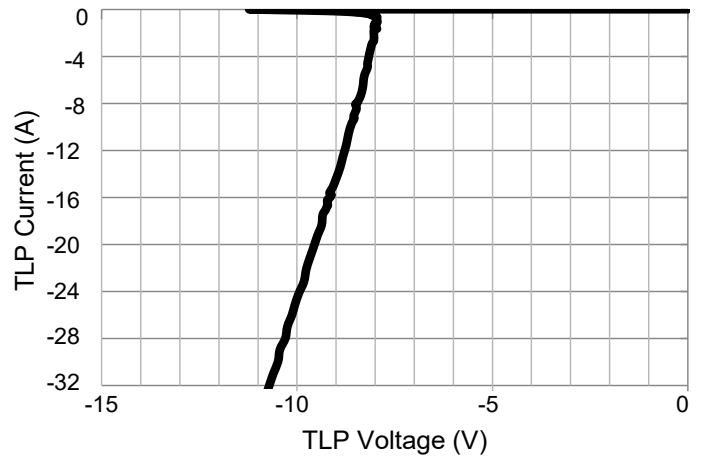
2. These specifications are guaranteed by design and characterization.

## Typical Characteristics

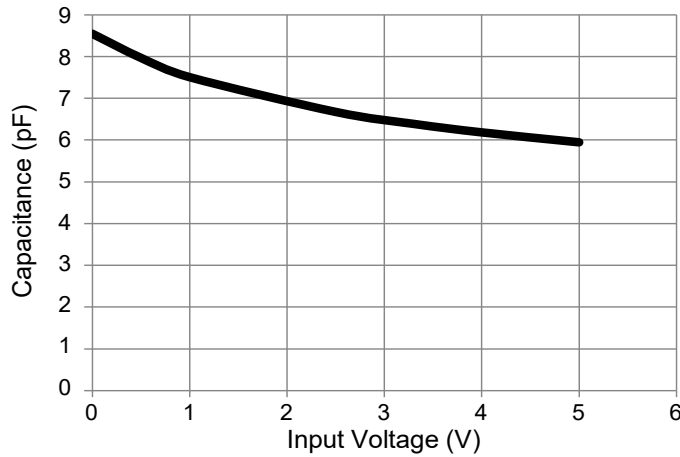
Positive Transmission Line Pulse  
( $t_p=100\text{ns}$ ,  $t_r=0.2\text{ns}$ )



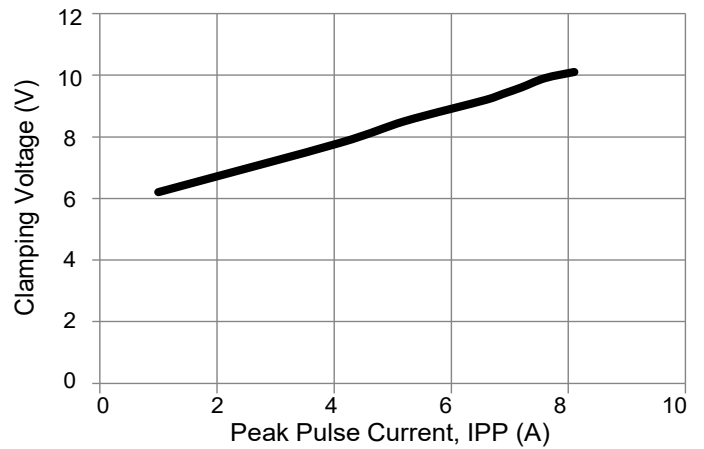
Negative Transmission Line Pulse  
( $t_p=100\text{ns}$ ,  $t_r=0.2\text{ns}$ )



Typical Variations of  $C_J$  vs. Input Voltage



IEC61000-4-5 Surge 8/20 $\mu\text{s}$   
(I/O Pin to GND or GND to I/O Pin)



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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.