

## General Description

The AOZ8S515UDS-20 is a single channel high power transient voltage suppressor designed to protect power line from damaging surge and ESD events, with an operating voltage of 20V.

This device is with one unidirectional TVS diode in 1.6x1.0mm DFN package. It can be used to meet both the ESD and Surge immunities and requirement.

The AOZ8S515UDS-20 comes in a RoHS compliant and Halogen Free 1.6mm x 1.0mm x 0.5mm package and is rated for -40°C to +125°C junction temperature range.

## Features

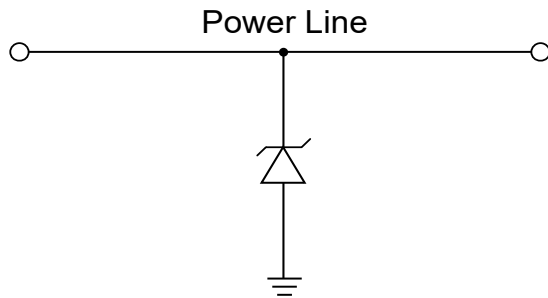
- Surge protection for power rail
- IEC 61000-4-5 8/20 $\mu$ s 30A
- IEC 61000-4-2 (ESD)  $\pm$ 30kV (Air and Contact)
- Human body model (HBM)  $\pm$ 8kV
- Peak pulse power 1200W
- Operating voltage: 20V
- Green product

## Applications

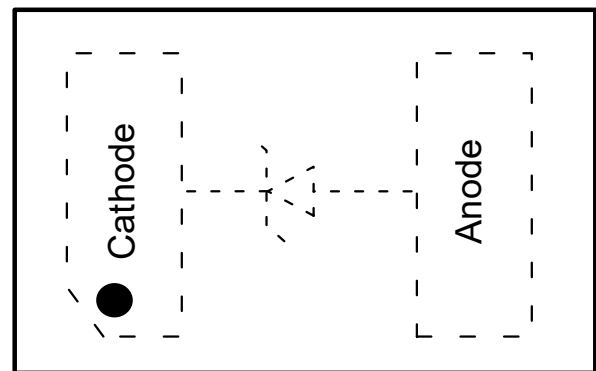
- USB VBUS
- Battery protection
- Mobile devices
- Screen panels
- Other power rails



## Typical Application



## Pin Configuration



DFN1.6x1.0\_2L

## Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8S515UDS-20	-40°C to +125°C	DFN1.6x1.0-2L	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
VP-VN	20V
Peak Pulse Current ( $I_{PP}$ ), $t_P = 8/20\mu s$	30A
Peak Pulse Power ( $P_{PP}$ ), $t_P = 8/20\mu s$	1200W
Storage Temperature ( $T_S$ )	-65°C to +150°C
ESD Rating per IEC61000-4-2, Contact <sup>(1)</sup>	±30kV
ESD Rating per IEC61000-4-2, Air <sup>(1)</sup>	±30kV
ESD Rating per Human Body Model <sup>(2)</sup>	±8kV

### Notes:

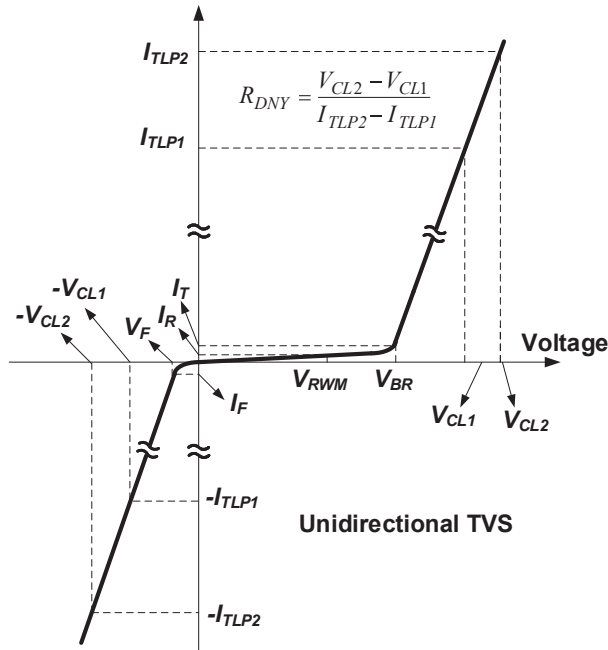
- IEC 61000-4-2 discharge with  $C_{Discharge} = 150pF$ ,  $R_{Discharge} = 330\Omega$
- Human Body Discharge per MIL-STD-883, Method 3015  $C_{Discharge} = 100 pF$ ,  $R_{Discharge} = 1.5\Omega$

## Maximum Operating Ratings

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

## Electrical Characteristics

TA = 25°C unless otherwise specified. Pin 2 as GND.



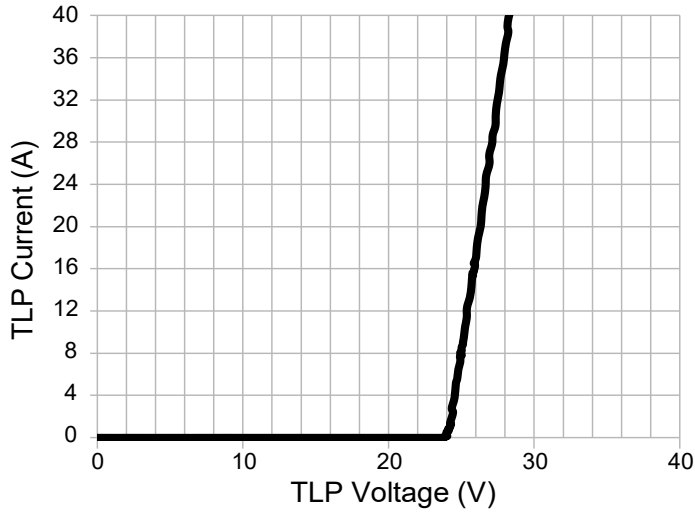
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V <sub>RWM</sub>	Reverse Working Voltage				20	V
V <sub>BR</sub>	Reverse Breakdown Voltage	I <sub>T</sub> = 1mA	22.1	24	26	V
I <sub>R</sub>	Reverse Leakage Current	Max. V <sub>RWM</sub>		5	100	nA
V <sub>CL</sub>	Clamping Voltage <sup>(3)(4)</sup> (100ns Transmission Line Pulse, I/O Pin to GND)	I <sub>TLP</sub> = 1A I <sub>TLP</sub> = -1A		25 -1		V
		I <sub>TLP</sub> = 30A I <sub>TLP</sub> = -30A		29 -3.5		
R <sub>DYN</sub>	Dynamic Resistance <sup>(3)(4)</sup>	I <sub>TLP</sub> = 1 to 30A I <sub>TLP</sub> = -1 to -30A		0.1 0.1		Ω
V <sub>CL</sub>	Clamping Voltage <sup>(3)</sup> (IEC61000-4-5 Surge 8/20μs)	I <sub>PP</sub> = 10A I <sub>PP</sub> = -10A		26 -2	28 -3	V
		I <sub>PP</sub> = 17A I <sub>PP</sub> = -17A		28.5 -6	30 -9	
		I <sub>PP</sub> = 30A I <sub>PP</sub> = -30A		33.5 -6	35 -9	
C <sub>J</sub>	Junction Capacitance <sup>(3)</sup>	V <sub>TLP</sub> = 0V, f = 1MHz		200		pF

**Notes:**

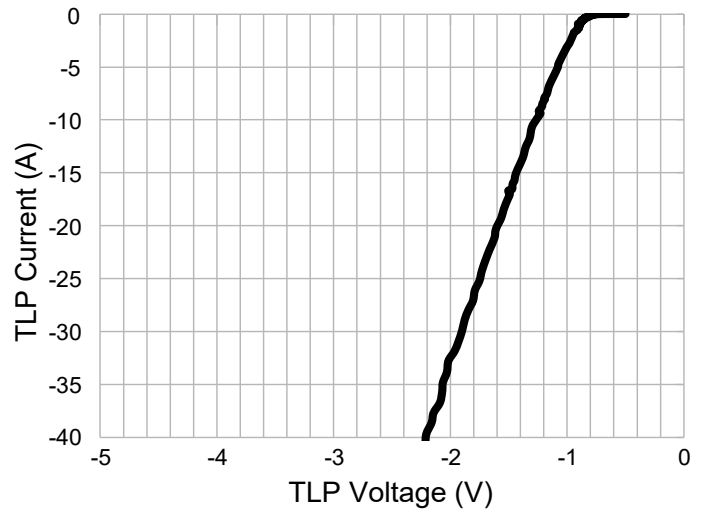
- 3. These specifications are guaranteed by design and characterization.
- 4. Measurements performed using a 100ns Transmission Line Pulse (TLP) system.

## Typical Characteristics

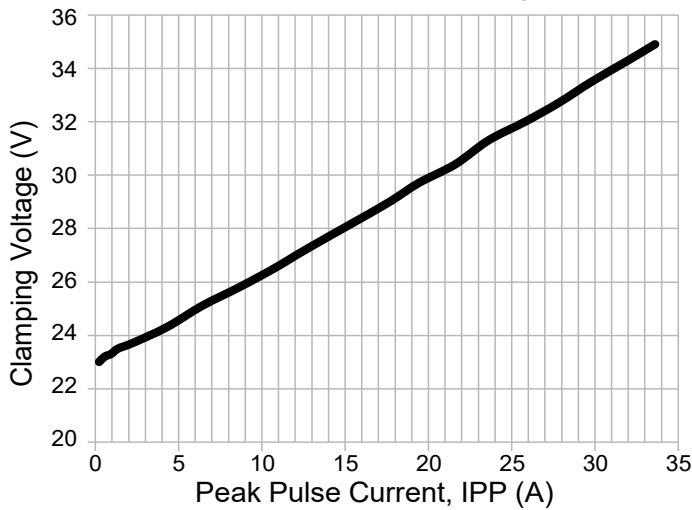
Positive Transmission Line Pulse  
( $t_p=100\text{ns}$ ,  $t_r=0.2\text{ns}$ )



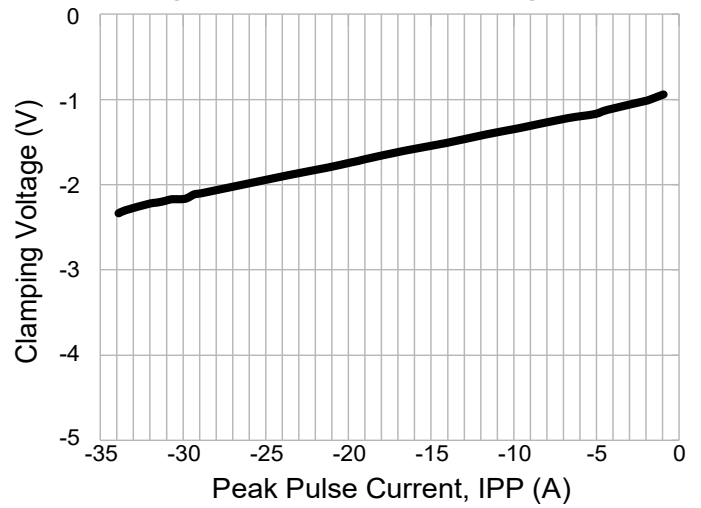
Negative Transmission Line Pulse  
( $t_p=100\text{ns}$ ,  $t_r=0.2\text{ns}$ )



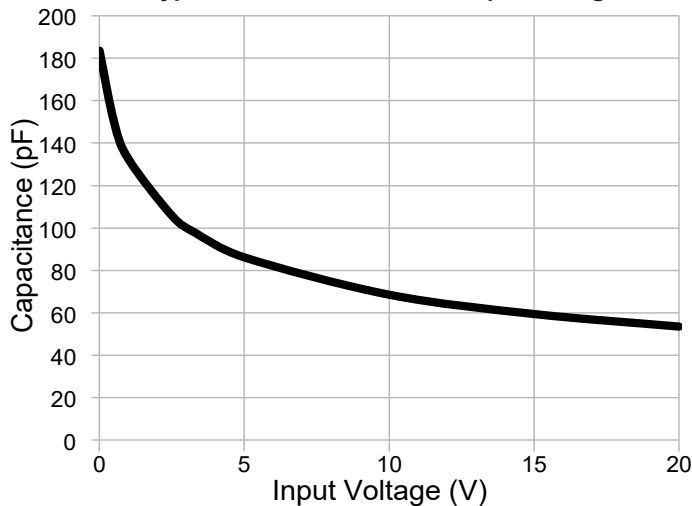
Positive Curve IEC61000-4-5 Surge 8/20 $\mu\text{s}$



Negative Curve IEC61000-4-5 Surge 8/20 $\mu\text{s}$



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.

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