

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

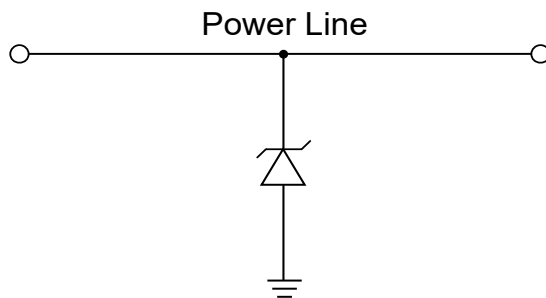
- Surge protection for power rail
- IEC 61000-4-5 8/20μs 30A
- IEC 61000-4-2 (ESD) ±30kV (Air and Contact)
- Human body model (HBM) ±8kV
- Peak pulse power 1200W
- Operating voltage: 20V
- Green product

Applications

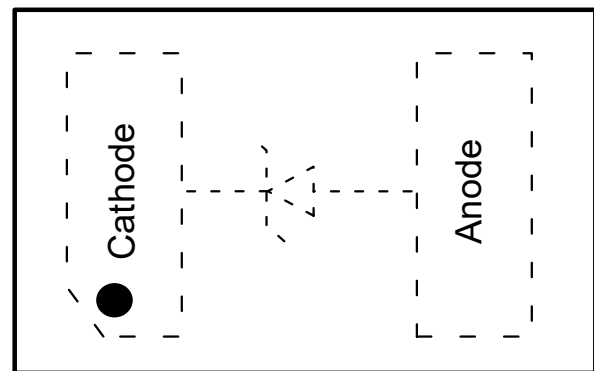
- USB VBUS
- Battery protection
- Mobile devices
- Screen panels
- Other power rails



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 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 ⁽¹⁾	±30kV
ESD Rating per IEC61000-4-2, Air ⁽¹⁾	±30kV
ESD Rating per Human Body Model ⁽²⁾	±8kV

Notes:

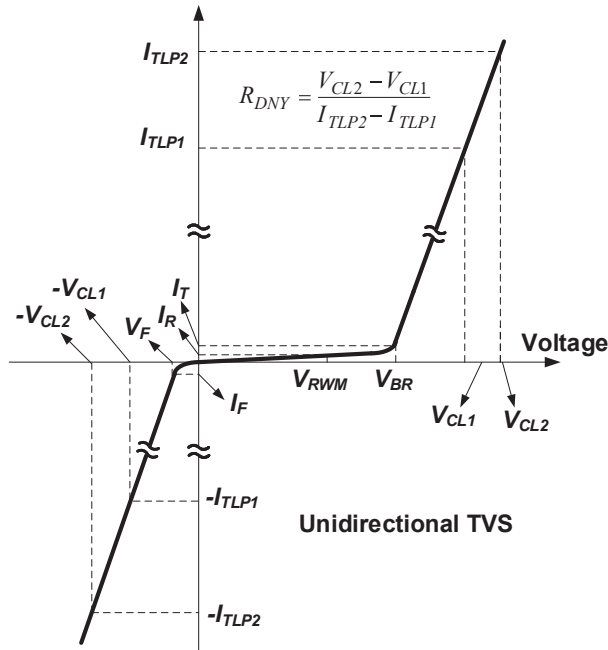
- IEC 61000-4-2 discharge with $C_{Discharge} = 150pF$, $R_{Discharge} = 330\Omega$
- Human Body Discharge per MIL-STD-883, Method 3015 $C_{Discharge} = 100 pF$, $R_{Discharge} = 1.5\Omega$

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.



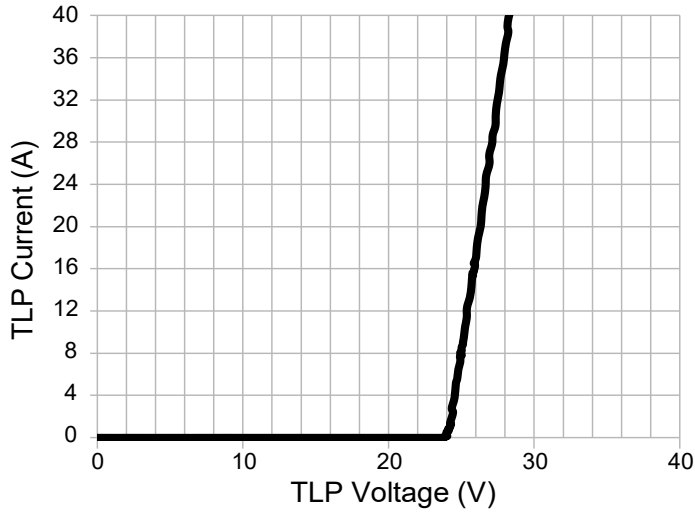
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V_{RWM}	Reverse Working Voltage				20	V
V_{BR}	Reverse Breakdown Voltage	$I_T = 1\text{mA}$	22.1	24	26	V
I_R	Reverse Leakage Current	Max. V_{RWM}		5	100	nA
V_{CL}	Clamping Voltage ⁽³⁾⁽⁴⁾ (100ns Transmission Line Pulse, I/O Pin to GND)	$I_{TLP} = 1\text{A}$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

Notes:

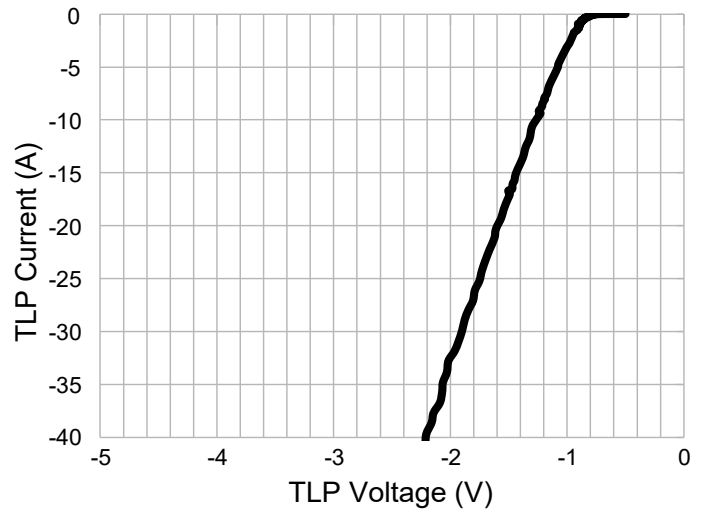
- 3. These specifications are guaranteed by design and characterization.
- 4. Measurements performed using a 100ns Transmission Line Pulse (TLP) system.

Typical Characteristics

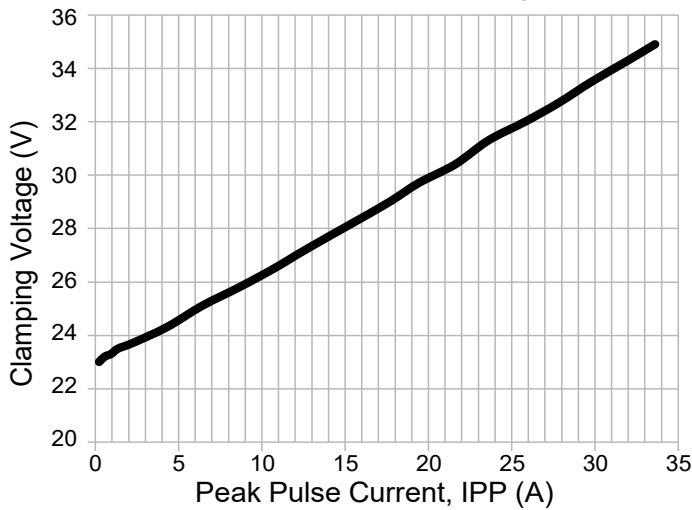
Positive Transmission Line Pulse
($t_p=100\text{ns}$, $t_r=0.2\text{ns}$)



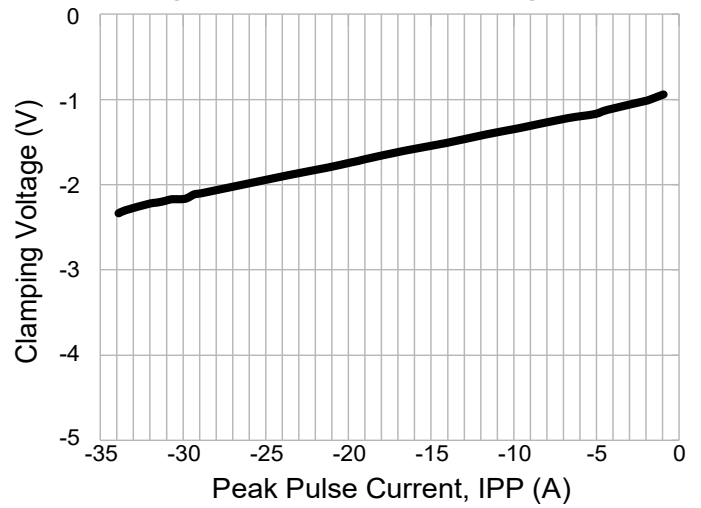
Negative Transmission Line Pulse
($t_p=100\text{ns}$, $t_r=0.2\text{ns}$)



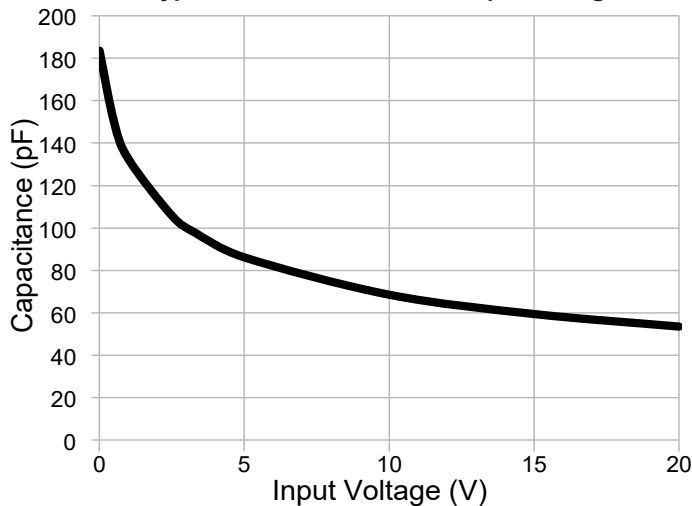
Positive Curve IEC61000-4-5 Surge 8/20 μs



Negative Curve IEC61000-4-5 Surge 8/20 μs



Typical Variations of C_J vs. Input Voltage



LEGAL DISCLAIMER

Applications or uses as critical components in life support devices or systems are not authorized. AOS 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.