ALPHA & OMEGA SEMICONDUCTOR

AOZ8S515UDS-20

Single Channel High Surge TVS

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

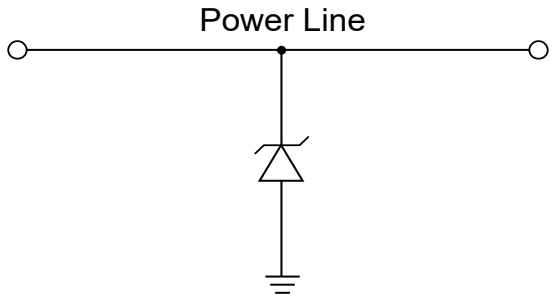
- Surge protection for power rail
- IEC 61000-4-5 8/20μs 30A
- IEC 61000-4-2 (ESD) ±30kV (Air and Contact)
- Human body model (HBM) ±8kV
- Peak pulse power 1200W
- Operating voltage: 20V
- Green product

Applications

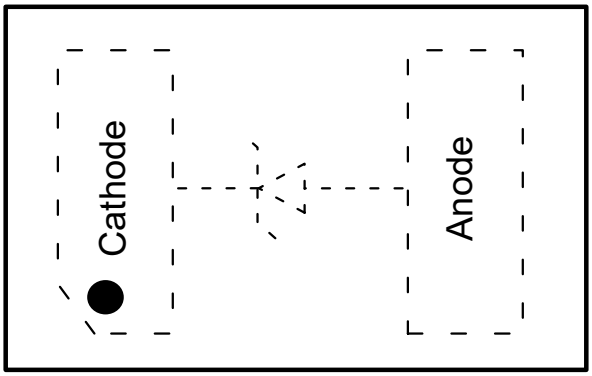
- USB VBUS
- Battery protection
- Mobile devices
- Screen panels
- Other power rails

Green Product

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 = 8/20µs	30A
Peak Pulse Power (P_{PP}), t_P = 8/20µs	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

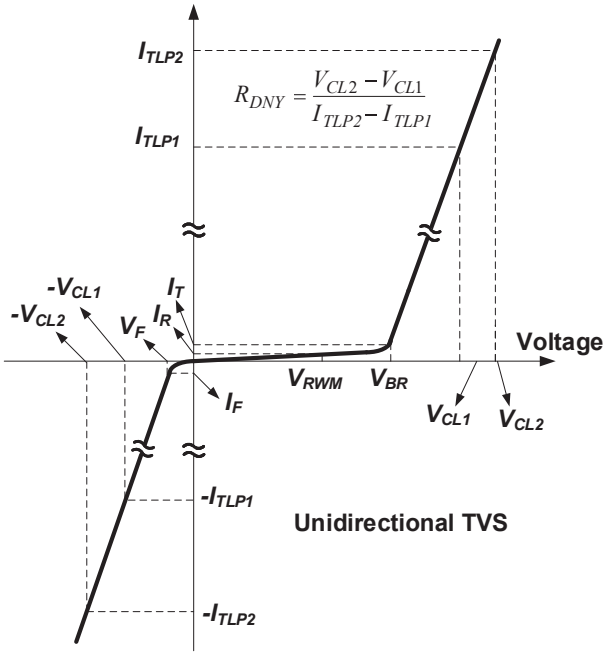
Notes:
1. IEC 61000-4-2 discharge with $C_{Discharge}$ = 150pF, $R_{Discharge}$ = 330Ω
2. Human Body Discharge per MIL-STD-883, Method 3015 $C_{Discharge}$ = 100 pF, $R_{Discharge}$ = 1.5Ω

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.

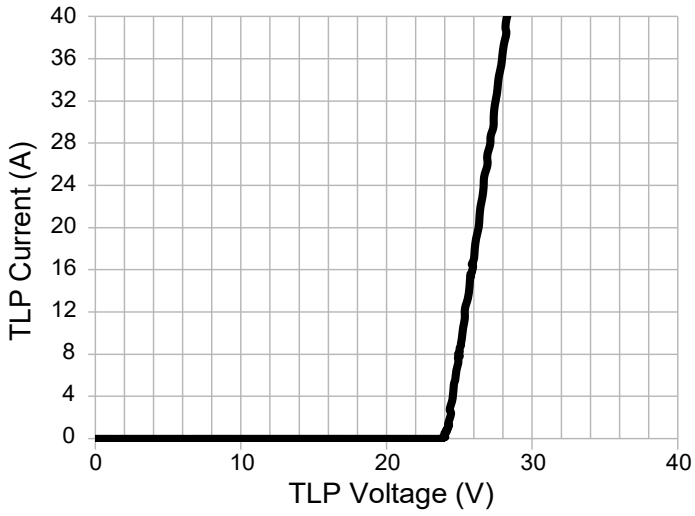


Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V_{RWM}	Reverse Working Voltage				20	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1mA	22.1	24	26	V
I_R	Reverse Leakage Current	Max. V_{RWM}		5	100	nA
V_{CL}	Clamping Voltage[3][4] (100ns Transmission Line Pulse, I/O Pin to GND	I_{TLP} = 1A I_{TLP} = -1A	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

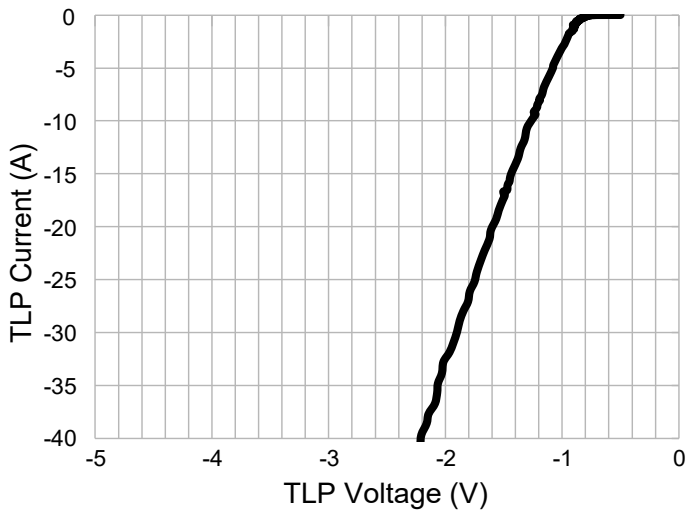
Notes:
3. These specifications are guaranteed by design and characterization.
4. Measurements performed using a 100ns Transmission Line Pulse (TLP) system.

Typical Characteristics

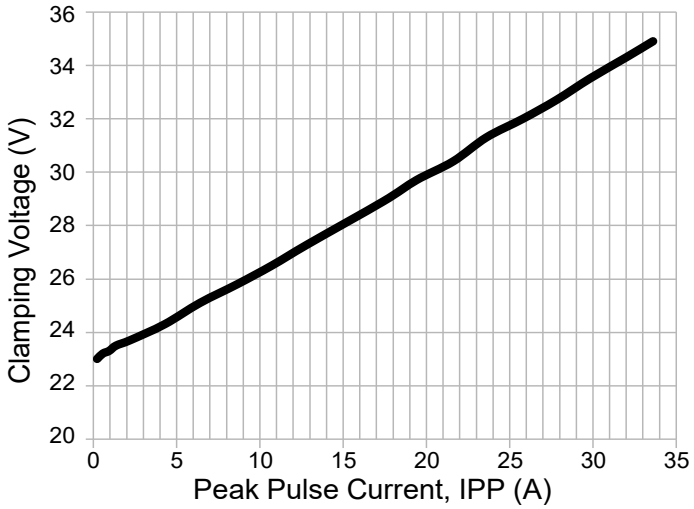
Positive Tranmission Line Pulse (tp=100ns, tr=0.2ns)



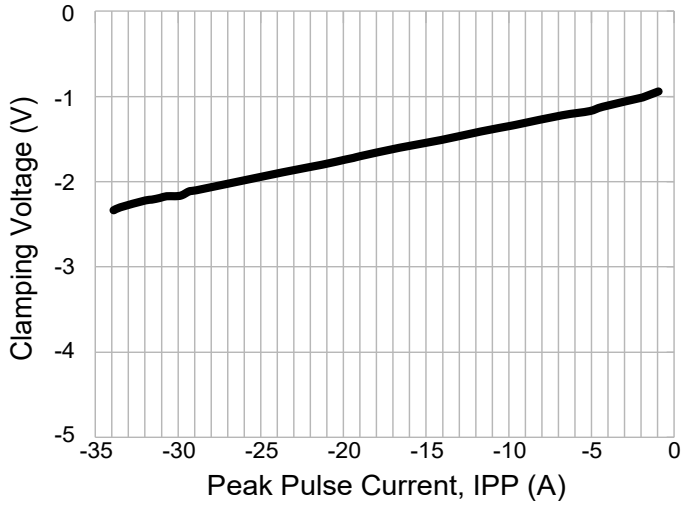
Negative Tranmission Line Pulse (tp=100ns, tr=0.2ns)



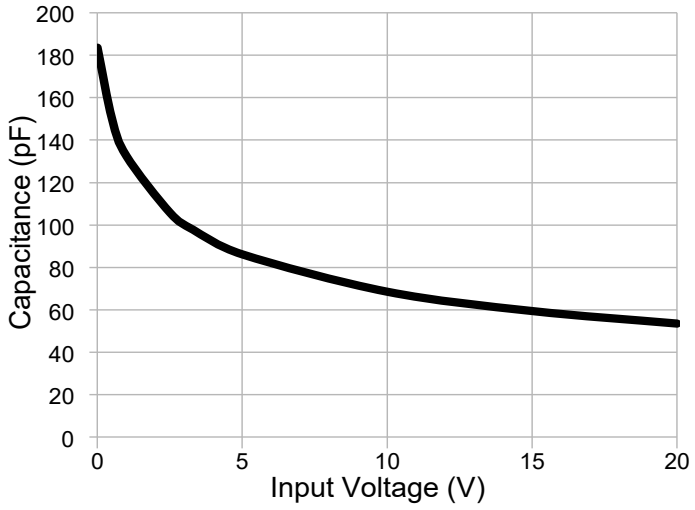
Positive Curve IEC61000-4-5 Surge 8/20µs



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



Typical Variations of C_J vs. Input Voltage



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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.