ALPHA & OMEGA SEMICONDUCTOR

AOZ8S516UDS-20

Single Channel High Surge TVS

General Description

AOZ8S516UDS-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 20 V.

This device is with one unidirectional TVS diode in 1.6x1.0 mm DFN package. It may apply to meet the IEC61000-4-5 surge immunity and IEC61000-4-2 ESD immunity requirements.

The AOZ8S516UDS-20 comes in RoHS complaint and Halogen Free DFN1.6x1.0 package and is rated for -40°C to +125°C junction temperature range.

Features

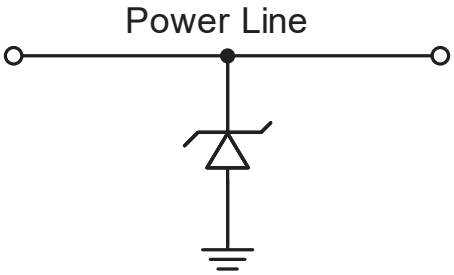
- Surge protection for power rail
- IEC 61000-4-5 8/20μs: 32A
- IEC 61000-4-2 (ESD): ±30kV (air and contact)
- Human Body Model (HBM): ±8kV
- IEC 61000-4-4 (EFT): 80A (5/50nS)
- Peak pulse power: 1050W
- Operating voltage: 20V
- Green Product

Applications

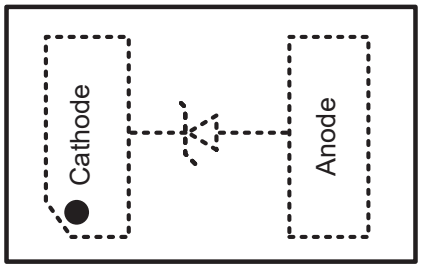
- PD3.0/PD3.1 VBUS
- Power lines
- Panel
- Mobile Phone
- Notebook computers

GREEN Product

Typical Application



Pin Configuration



DFN1.6x1.0_2L

Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8S516UDS-20	-40°C to +125°C	DFN1.6×1.0-2L	Green Product

AOS Green Products use reduced levels of Halogens, and are also RoHS compliant.
Please visit https://aosmd.com/sites/default/files/media/AOSGreenPolicy.pdf for additional information.

Absolute Maximum Ratings

Exceeding the Absolute Maximum Ratings may damage the device.

Parameter	Rating
VP-VN	20 V
Peak Pulse Current (I_{PP}), t_P = 8/20 µs	32 A
Peak Pulse Power (P_{PP}), t_P = 8/20 µs	1050 W
Storage Temperature (T_S)	-65°C to +150°C
EFT Rating per IEC61000-4-2, Contact(1)	±30 kV
ESD Rating per IEC61000-4-2, Air(1)	±30 kV
ESD Rating per Human Body Model(2)	±8 kV

Notes:

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

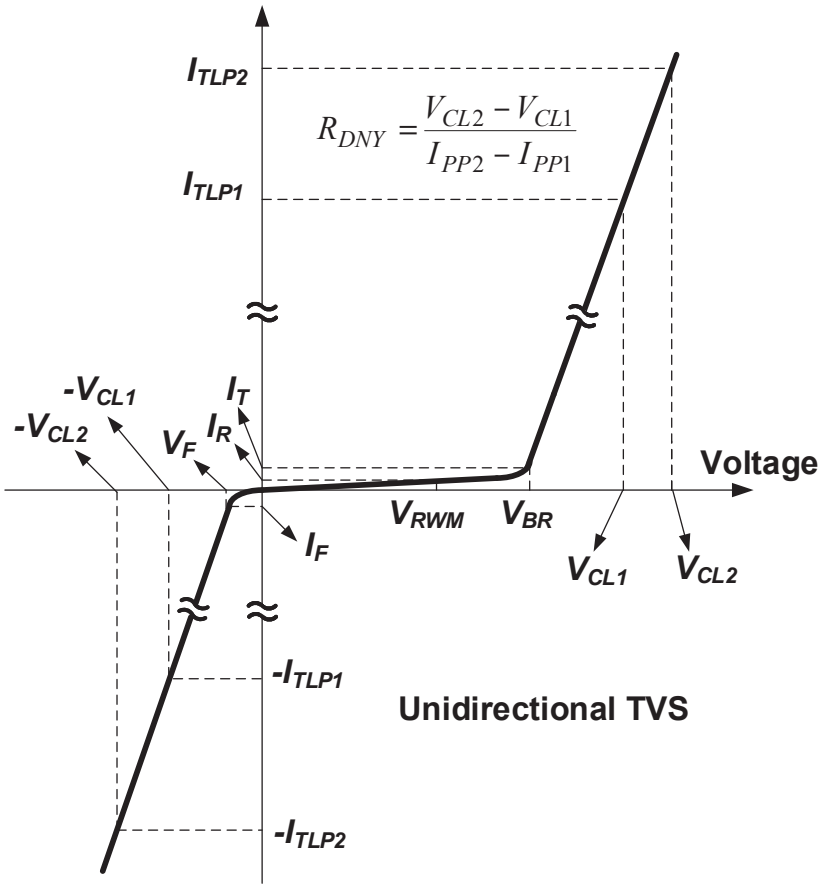
Maximum Operating Ratings

The device is not guaranteed to operate beyond the Maximum Operating Conditions.

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

Electrical Characteristics

T_A = 25°C, unless otherwise noted. Pin 2 as Ground.



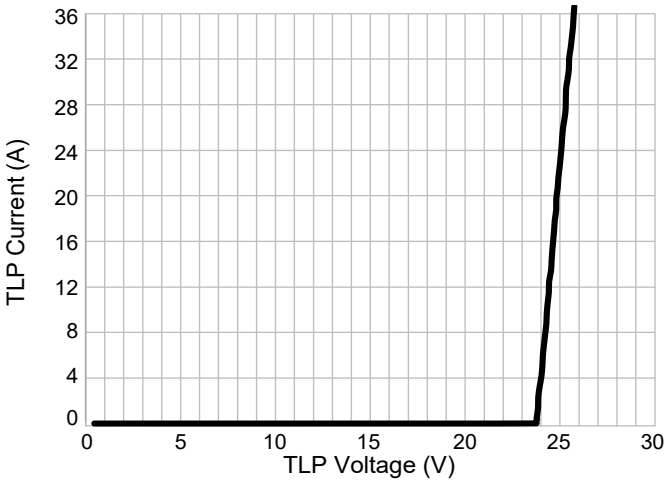
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage	I/O Pin-to-Ground			20	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1 mA, I/O Pin-to-Ground	22	23.5	26	V
I_R	Reverse Leakage Current	Max. V_{RWM}, I/O Pin-to-Ground		2	100	nA
V_{CL}	Clamping Voltage[3][4] (100 ns Transmission Line Pulse, I/O Pin to GNG)	I_{TLP} = 1 A I_{TLP} = -1 A		23.8 -0.9		V
		I_{TLP} = 30 A I_{TLP} = -30 A		25.5 -1.6		
	Clamping Voltage[3] (IEC61000-4-5, Surge 8/20 µs)	I_{PP} = 5 A I_{PP} = -5 A		24.5 -1.2		
		I_{PP} = 32 A I_{PP} = -32 A		31 -2.0		
R_{DNY}	Dynamic Resistance[3] [4]	I_{TLP} = 1A to 30 A I_{TLP} = -1 A to -30 A		0.05 0.02		Ω
C_J	Junction Capacitance[3]	$V_{I/O}$ = 0 V, f = 1MHz		200		pF

Notes:

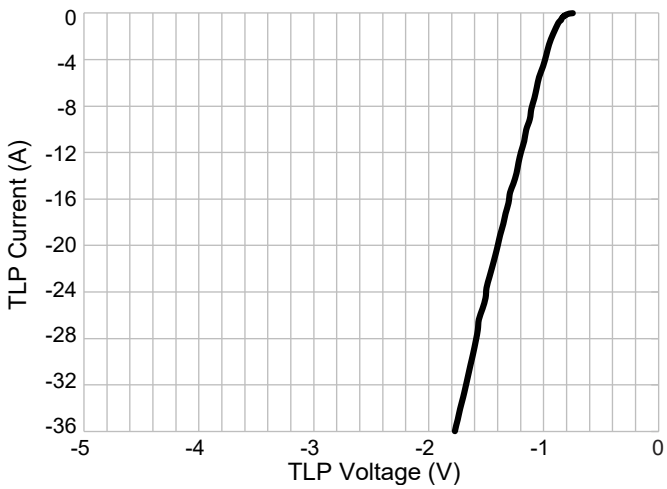
3. These specifications are guaranteed by design and characterization.
4. Measurements performed using a 100ns Transmission Line Pulse (TLP) system.

Typical Performance Characteristics

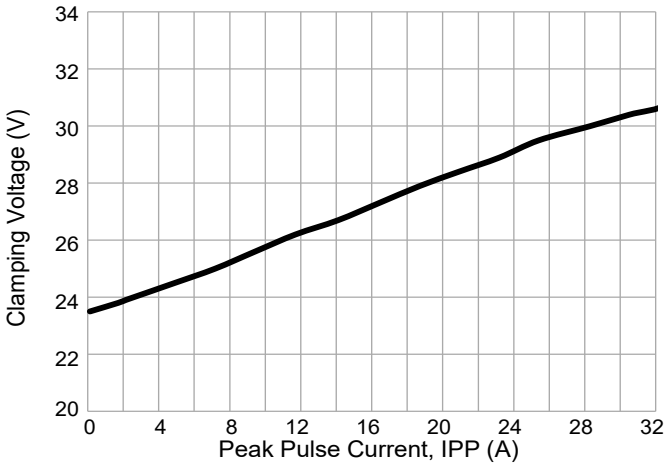
Positive Transmission Line Pulse (tp=100ns, tr=0.2ns)



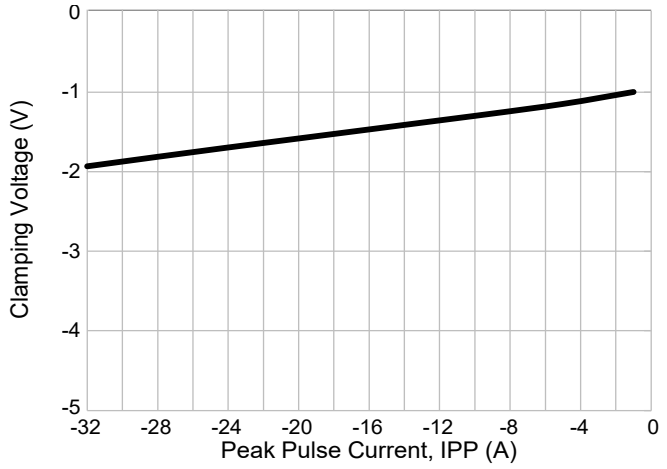
Negative Transmission Line Pulse (tp=100ns, tr=0.2ns)



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



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



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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.