

General Description

The AOZ8S516UDS-48 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 48V.

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

The AOZ8S516UDS 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

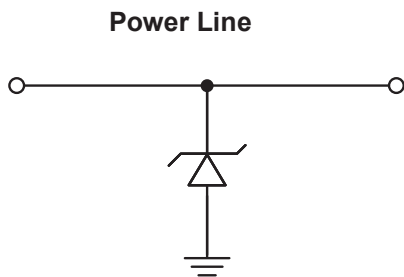
- Surge protection for power rail
- IEC 61000-4-5 8/20μs: 15A
- IEC 61000-4-2 (ESD): ±30kV (Air and Contact)
- Human body mode (HBM): ±8kV
- IEC 61000-4-4 (EFT): 80A (5/50ns)
- Peak pulse power: 1050W
- Operating voltage: 48V
- Green product

Applications

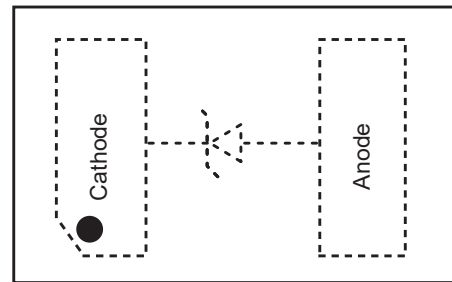
- PD3.0/PD3.1 VBUS
- Power lines
- Panel
- Mobile phone
- Notebook computers



Typical Application



Pin Configuration



DFN1.6x1.0-2L

Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8S516UDS-48	-40°C to +125°C	DFN1.6 x 1.0-2L	Green Product



AOS products are offered in packages with Pb-free plating and compliant to RoHS standards. 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	48V
Peak Pulse Current (I_{PP}), $t_P = 8/20\mu s$	15A
Peak Pulse Power (P_{PP}), $t_P = 8/20\mu s$	1050W
Storage Temperature (T_S)	-65°C to +150°C
EFT 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 $C_{Discharge} = 100pF$, $R_{Discharge} = 1.5k\Omega$.

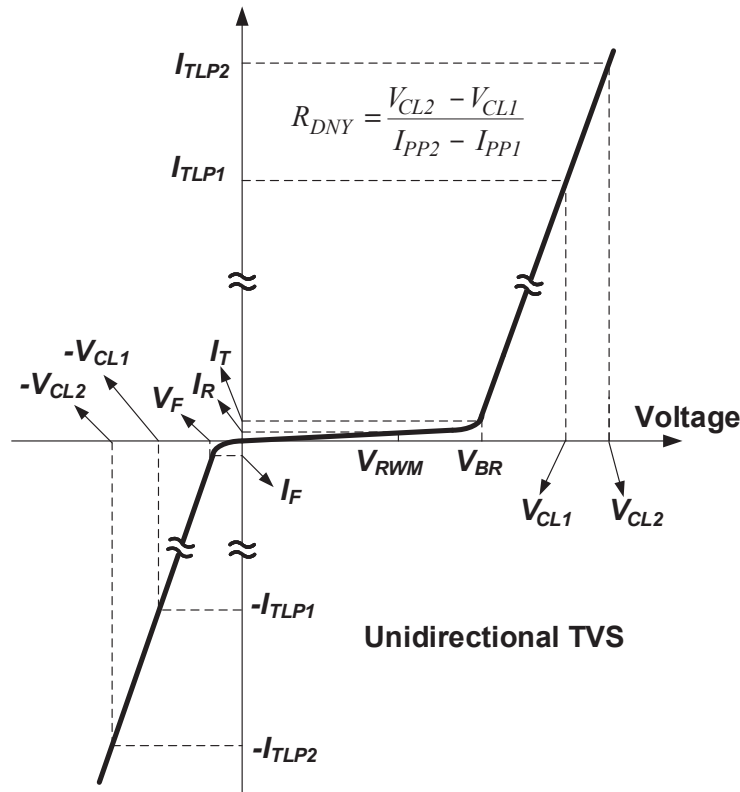
Maximum Operating Conditions

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 specified. Pin 2 as ground.



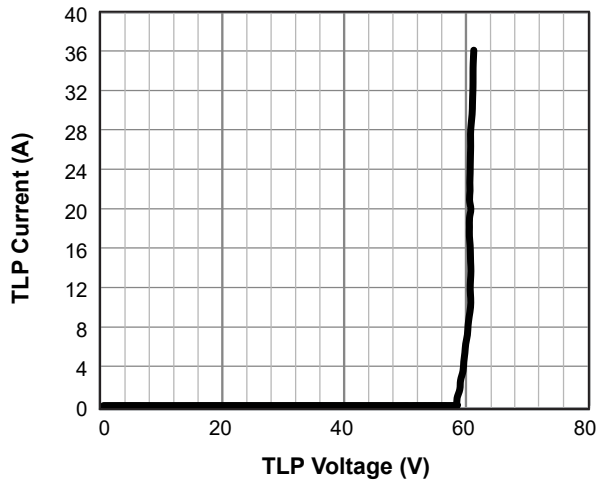
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V _{RWM}	Reverse Working Voltage	I/O Pin-to-Ground			48	V
V _{BR}	Reverse Breakdown Voltage	I _T = 1mA, I/O Pin-to-Ground	52	57	63	V
I _R	Reverse Leakage Current	Max. V _{RWM} , I/O Pin-to-Ground		2	100	nA
V _F	Forward Voltage	I _F = 15mA		0.75	1.0	V
V _{CL}	Clamping Voltage ⁽³⁾⁽⁴⁾ (100ns Transmission Line Pulse, I/O Pin to GND)	I _{TLP} = 1A I _{TLP} = -1A		59 -1		V
		I _{TLP} = 30A I _{TLP} = -30A		61 -1.8		
	Clamping Voltage ⁽³⁾ (IEC61000-4-5, Surge 8/20μs)	I _{PP} = 5A I _{PP} = -5A		61 1.7		
		I _{PP} = 15A I _{PP} = -15A		70 -2.5		
R _{DNY}	Dynamic Resistance ⁽³⁾⁽⁴⁾	I _{TLP} = 1A to 3A I _{TLP} = -1A to 30A		0.07 0.03		Ω
C _J	Junction Capacitance ⁽³⁾	V _{I/O} = 0V, f = 1MHz		105		pF

Notes:

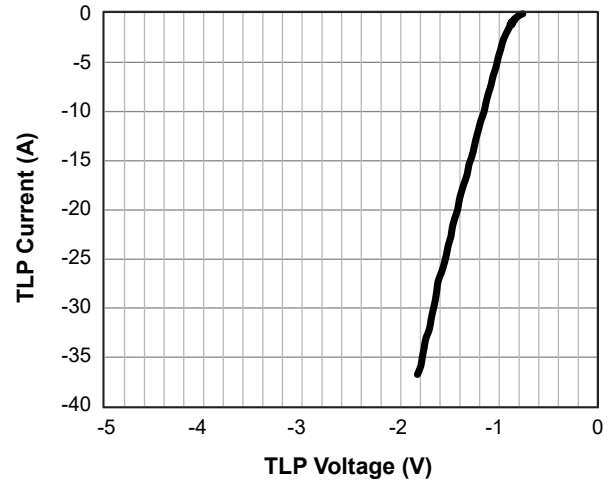
3. These specifications are guaranteed by design and characterization.
4. Measurements performed using a 100ns Transmission Line Pulse (TLP) system.

Typical Characteristics

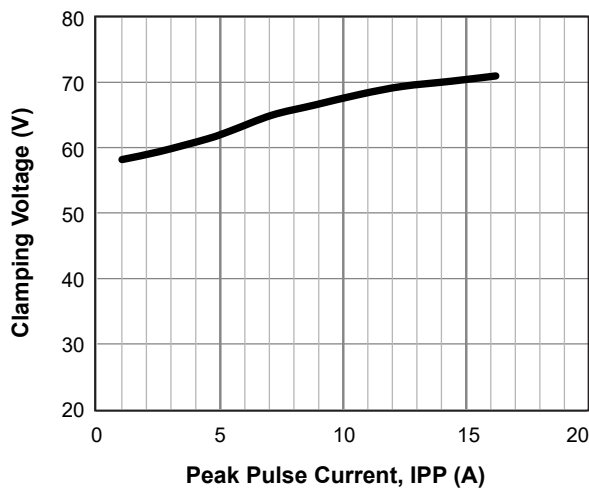
Positive Transmission Line Pulse
($t_p = 100\text{ns}$, $t_r = 0.2\text{ns}$)



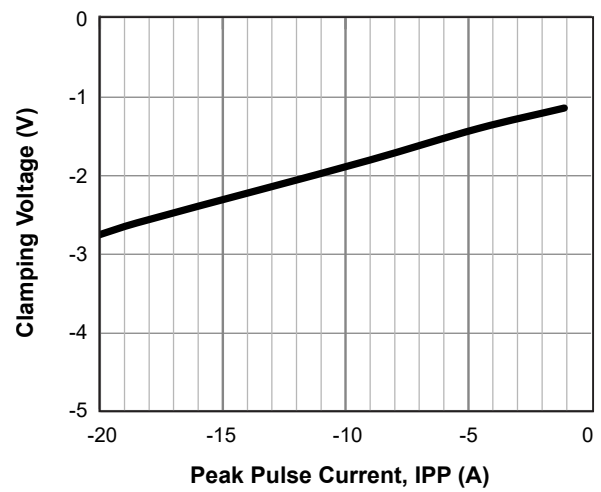
Negative Transmission Line Pulse
($t_p = 100\text{ns}$, $t_r = 0.2\text{ns}$)



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



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



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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.