ALPHA & OMEGA SEMICONDUCTOR

AOZ8S516UDS-05

Single Channel High Surge TVS

General Description

The AOZ8S516UDS-05 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 5V.

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: 100A
- 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: 5V
- Green product

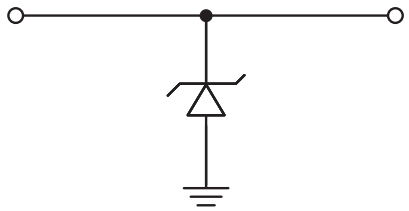
Applications

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

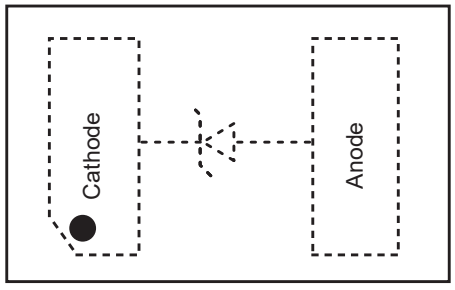
GREEN Product

Typical Application

Power Line



Pin Configuration



DFN1.6x1.0-2L

Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8S516UDS-05	-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	5V
Peak Pulse Current (I_{PP}), t_P = 8/20µs	100A
Peak Pulse Power (P_{PP}), t_P = 8/20µs	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:

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

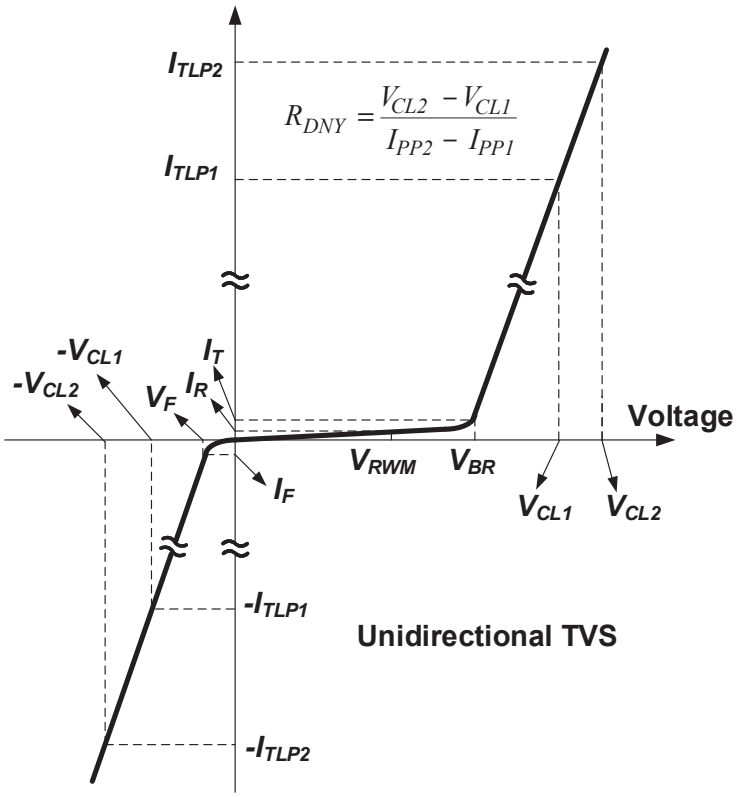
Maximum Operating Conditions

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.



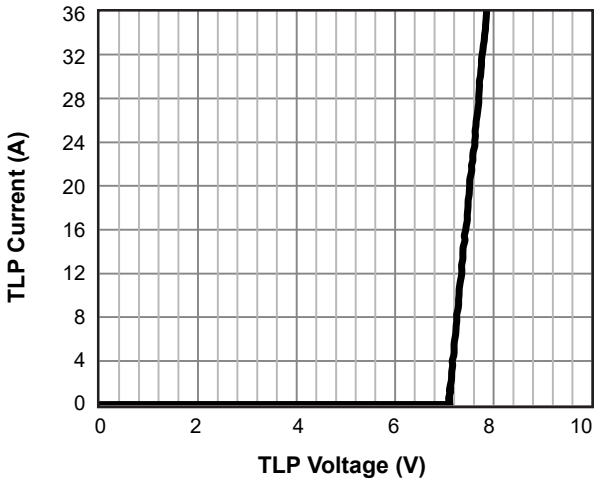
Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{RWM}	Reverse Working Voltage	I/O Pin-to-Ground			5	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1mA, I/O Pin-to-Ground	6	7	8.5	V
I_R	Reverse Leakage Current	Max. $V_{RWM,}$ I/O Pin-to-Ground		10	100	nA
V_F	Forward Voltage	I_F = 15mA		0.75	1.0	V
V_{CL}	Clamping Voltage(3)(4) (100ns Transmission Line Pulse, I/O Pin to GND)	I_{TLP} = 1A I_{TLP} = -1A		7.1 -0.9		V
		I_{TLP} = 30A I_{TLP} = -30A		7.7 -1.6		
	Clamping Voltage(3) (IEC61000-4-5, Surge 8/20µs)	I_{PP} = 5A I_{PP} = -5A		7.2 -1.1		
		I_{PP} = 100A I_{PP} = -100A		10.3 -3.6		
R_{DNY}	Dynamic Resistance(3)(4)	I_{TLP} = 1A to 3A I_{TLP} = -1A to 30A		0.02 0.02		Ω
C_J	Junction Capacitance(3)	$V_{I/O}$ = 0V, f = 1MHz		850		pF

Notes:

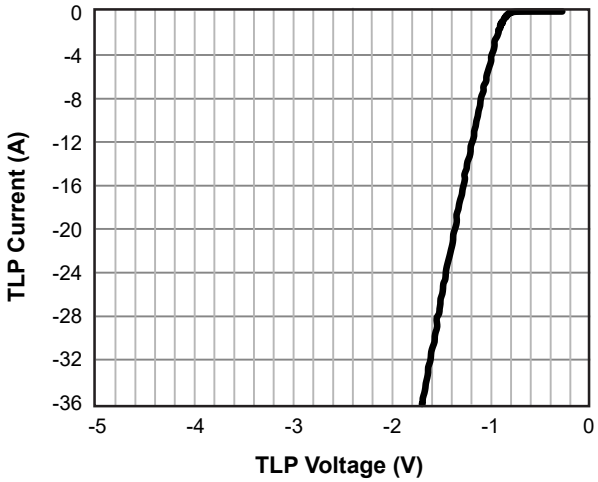
3. These specifications are guaranteed by design and characterization.
4. Measurements performed using a 100ns Transmission Line Pulse (TLP) system.

Typical Characteristics

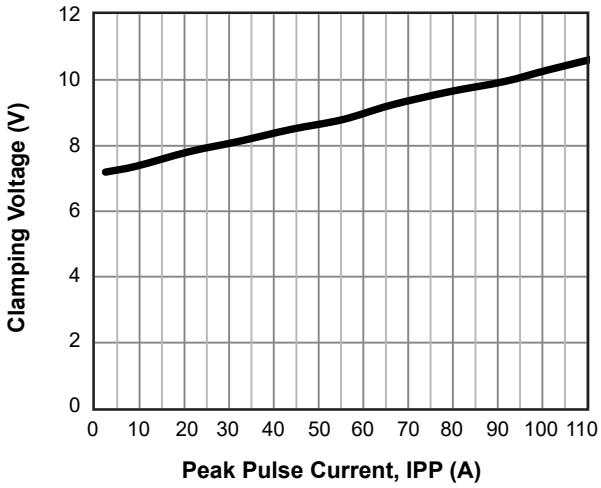
Positive Transmission Line Pulse
(t_P = 100ns, t_r = 0.2ns)



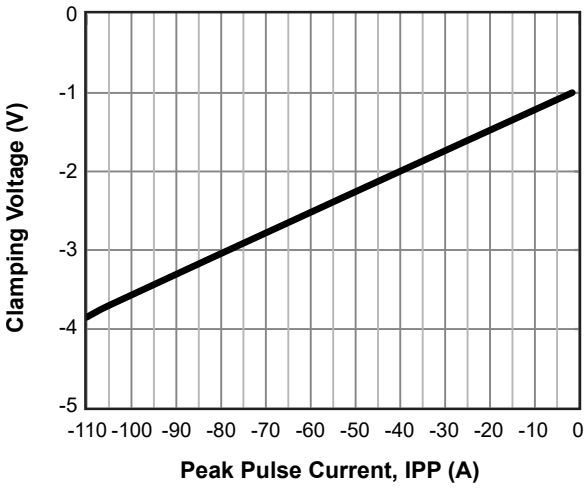
Negative Transmission Line Pulse
(t_P = 100ns, t_r = 0.2ns)



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



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



LEGAL DISCLAIMER

Applications or uses as critical components in life support devices or systems are not authorized. Alpha and Omega Semiconductor 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's products are provided subject to AOS's 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.