AOZ8821DI-05

Ultra-Low Capacitance One-line TVS Diode

General Description

The AOZ8821DI-05 is a ultra-low capacitance one-line transient voltage suppressor diode designed to protect very high-speed data lines and voltage sensitive electronics from high transient conditions and ESD.

This device incorporates one TVS diode in an ultra-small DFN 0.6 x 0.3 package. During transient conditions, the ultra-low capacitance one-line TVS diode directs the transient to ground. It may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 (±15kV air, ±15kV contact discharge).

The AOZ8821DI-05 comes in an RoHS compliant DFN package and is rated over a -40°C to +85°C ambient temperature range.

The ultra-small DFN 0.6 x 0.3mm package makes it ideal for applications where PCB space is a premium. The small size and high ESD protection makes it ideal for protecting voltage sensitive electronics from high transient conditions and ESD.

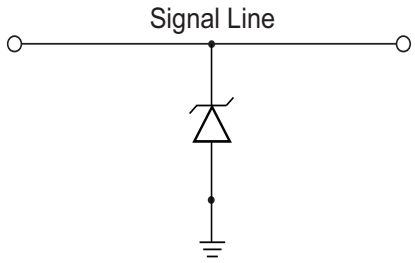
Features

- ESD protection for high-speed data lines:
  - Exceeds: IEC 61000-4-2 (ESD) ±15V (air), ±15kV (contact)
  - Human Body Model (HBM) ±15kV
- Small package saves board space
- Ultra-low capacitance: 0.65pF
- Low clamping voltage
- Low operating voltage: 5V
- Green product

Applications

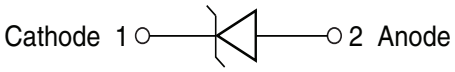
- Portable hand-held devices
- Keypads, data lines, buttons
- Notebook computers
- Digital cameras
- Portable GPS
- MP3 players

Typical Application



Unidirection Protection of Single Line

Pin Configuration



Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8821DI-05	-40°C to +85°C	DFN 0.6 x 0.3	RoHS Compliant 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	5V
Peak Pulse Current (I_{PP}), t_P = 8/20µs	2A
Storage Temperature (T_S)	-65°C to +150°C
ESD Rating per IEC61000-4-2, Contact(1)	±20kV
ESD Rating per IEC61000-4-2, Air(1)	±20kV
ESD Rating per Human Body Model(2)	±15kV

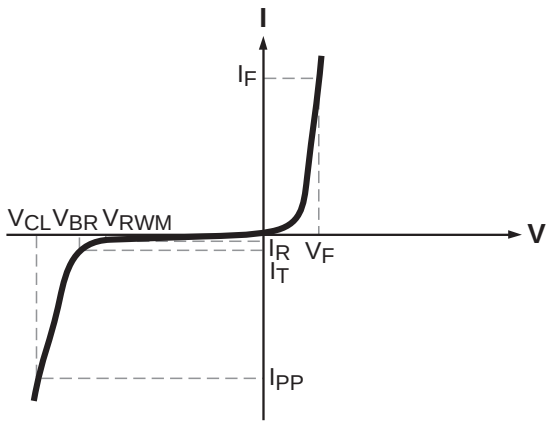
Notes:
1. IEC 61000-4-2 discharge with $C_{Discharge}$ = 150pF, $R_{Discharge}$ = 330Ω.
2. Human Body Discharge per MIL-STD-883, Method 3015 $C_{Discharge}$ = 100pF, $R_{Discharge}$ = 1.5kΩ.

Maximum Operating Ratings

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

Electrical Characteristics

T_A = 25°C unless otherwise specified.

Symbol	Parameter	Diagram
I_{PP}	Maximum Reverse Peak Pulse Current	
V_{CL}	Clamping Voltage @ I_{PP}	
V_{RWM}	Working Peak Reverse Voltage	
I_R	Maximum Reverse Leakage Current	
V_{BR}	Breakdown Voltage	
I_T	Test Current	
I_F	Forward Current	
V_F	Forward Voltage	
P_{PK}	Peak Power Dissipation	
C_J	Capacitance @ V_R = 0 and f = 1MHz	

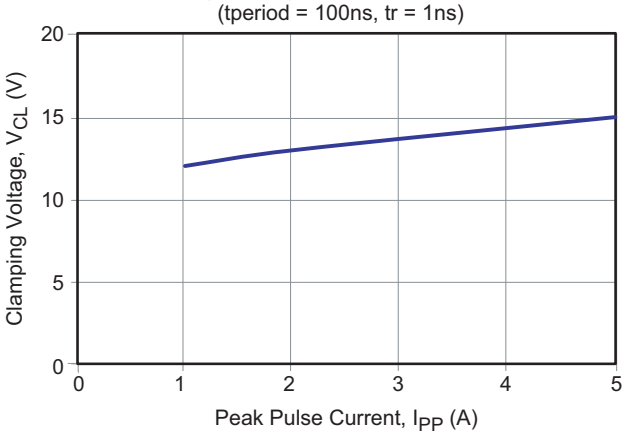
Electrical Characteristics

T_A = 25°C unless otherwise noted, V_F = 0.9V Max. @ I_F = 10mA for all types

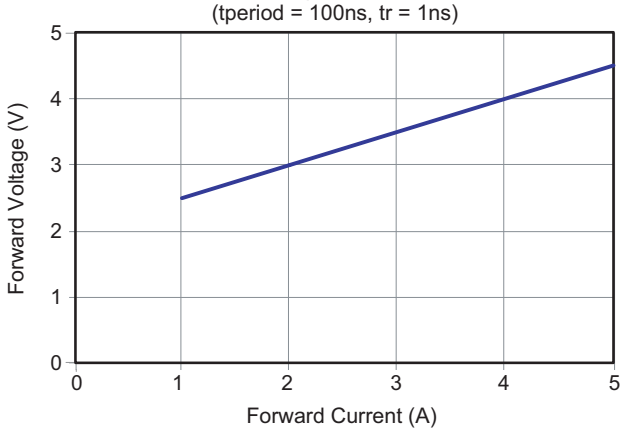
Device	Device Marking	V_{RWM} (V) Max.	V_{BR} (V) Max.	I_R (µA) Max.	V_F (V) Typ.	V_{CL} Max.			C_J (pF) Typ.
						I_{PP} = 1A	I_{PP} = 2A	I_{PP} = 5A	
AOZ8821DI-05	C	5.0	6.0	0.1	0.75	12	13	15	0.65

Typical Performance Characteristics

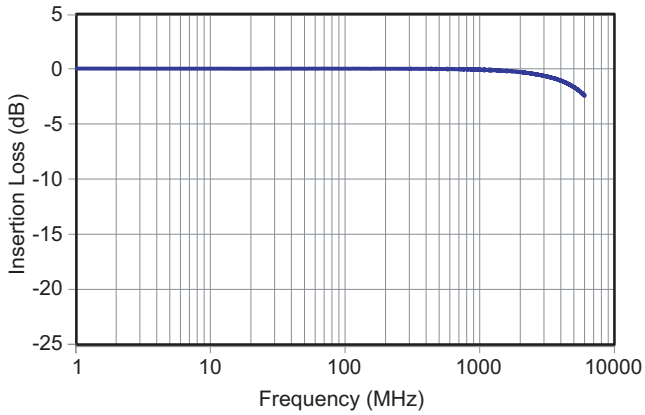
Clamping Voltage vs. Peak Pulse Current
(tperiod = 100ns, tr = 1ns)



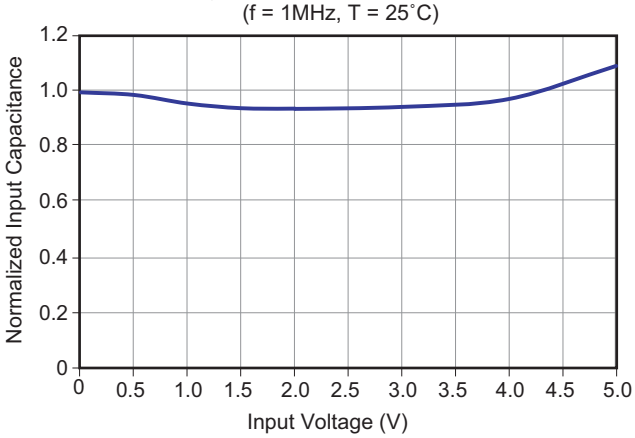
Forward Voltage vs. Forward Current
(tperiod = 100ns, tr = 1ns)



I/O – Gnd Insertion Loss (S21) vs. Frequency



Typical Variation of CIN vs. VR
(f = 1MHz, T = 25˚C)



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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.