

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 ($\pm 15\text{kV}$ air, $\pm 15\text{kV}$ contact discharge).

The AOZ8821DI-05 comes in an RoHS compliant DFN package and is rated over a -40°C to $+85^{\circ}\text{C}$ 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

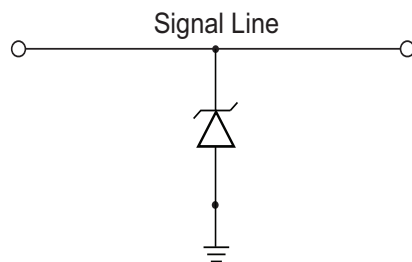
- ESD protection for high-speed data lines:
 - Exceeds: IEC 61000-4-2 (ESD) $\pm 15\text{V}$ (air), $\pm 15\text{kV}$ (contact)
 - Human Body Model (HBM) $\pm 15\text{kV}$
- Small package saves board space
- Ultra-low capacitance: 0.65pF
- Low clamping voltage
- Low operating voltage: 5V
- Green product

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}), $t_P = 8/20\mu s$	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:

- 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 Ratings

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

Electrical Characteristics

$T_A = 25^\circ\text{C}$ 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 $f = 1\text{MHz}$	

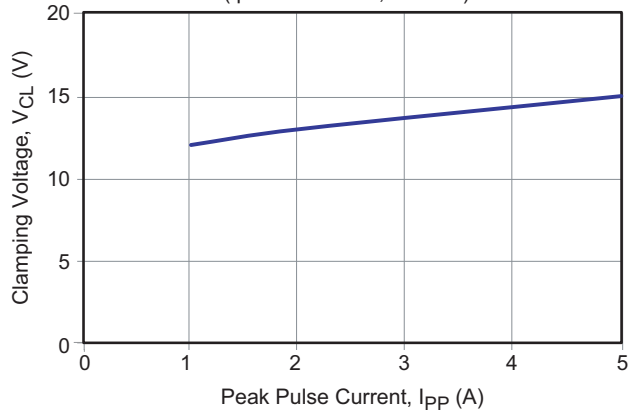
Electrical Characteristics

$T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 0.9\text{V Max.}$ @ $I_F = 10\text{mA}$ for all types

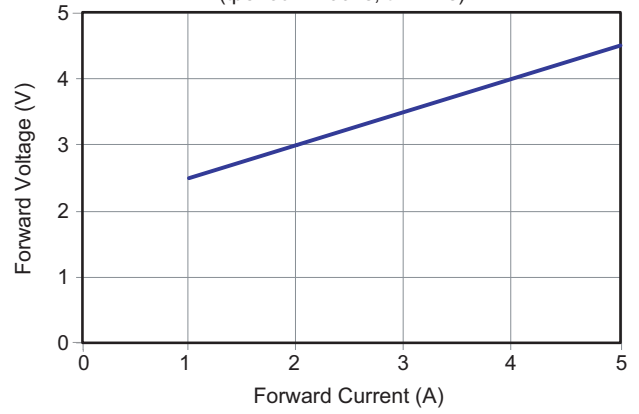
Device	Device Marking	V_{RWM} (V) Max.	V_{BR} (V) Max.	I_R (μA) Max.	V_F (V) Typ.	V_{CL} Max.			C_J (pF) Typ.
						$I_{PP} = 1\text{A}$	$I_{PP} = 2\text{A}$	$I_{PP} = 5\text{A}$	
AOZ8821DI-05	C	5.0	6.0	0.1	0.75	12	13	15	0.65

Typical Performance Characteristics

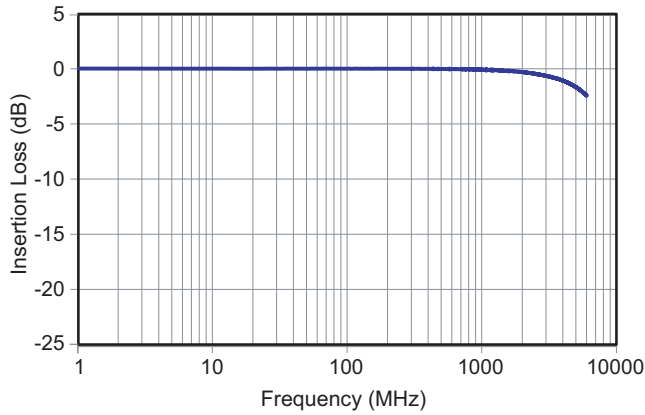
Clamping Voltage vs. Peak Pulse Current
(tperiod = 100ns, tr = 1ns)



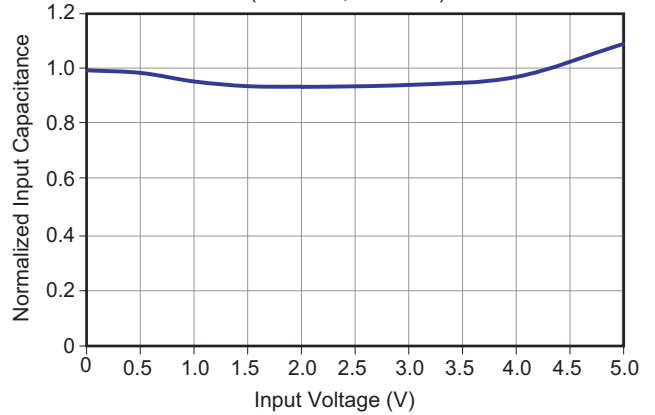
Forward Voltage vs. Forward Current
(tperiod = 100ns, tr = 1ns)



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



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



LEGAL DISCLAIMER

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