

## General Description

The AOZ8821 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 AOZ8821 comes in an RoHS compliant DFN package and is rated over a  $-40^{\circ}\text{C}$  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

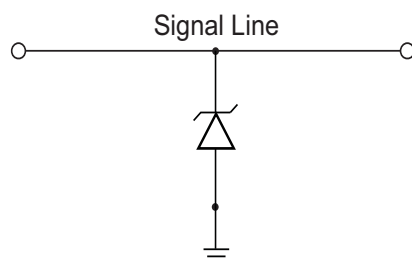
- ESD protection for high-speed data lines:
  - Exceeds: IEC 61000-4-2 (ESD)  $\pm 15\text{V}$  (air),  $\pm 15\text{kV}$  (contact)
  - Human Body Model (HBM)  $\pm 15\text{kV}$
- Small package saves board space
- Ultra-low capacitance: 0.65pF
- Low clamping voltage
- Low operating voltage: 5V
- Green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

## Applications

- Portable handheld 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](http://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 <sup>(1)</sup>	±20kV
ESD Rating per IEC61000-4-2, Air <sup>(1)</sup>	±20kV
ESD Rating per Human Body Model <sup>(2)</sup>	±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<sub>A</sub> = 25°C unless otherwise specified.

Symbol	Parameter	Diagram
I <sub>PP</sub>	Maximum Reverse Peak Pulse Current	
V <sub>CL</sub>	Clamping Voltage @ I <sub>PP</sub>	
V <sub>RWM</sub>	Working Peak Reverse Voltage	
I <sub>R</sub>	Maximum Reverse Leakage Current	
V <sub>BR</sub>	Breakdown Voltage	
I <sub>T</sub>	Test Current	
I <sub>F</sub>	Forward Current	
V <sub>F</sub>	Forward Voltage	
P <sub>PK</sub>	Peak Power Dissipation	
C <sub>J</sub>	Capacitance @ V <sub>R</sub> = 0 and f = 1MHz	

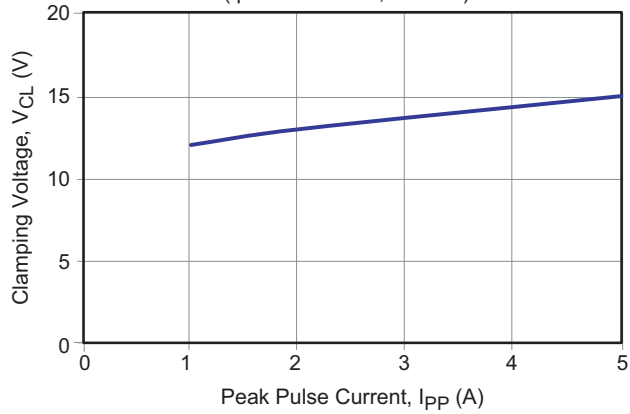
### Electrical Characteristics

T<sub>A</sub> = 25°C unless otherwise noted, V<sub>F</sub> = 0.9V Max. @ I<sub>F</sub> = 10mA for all types

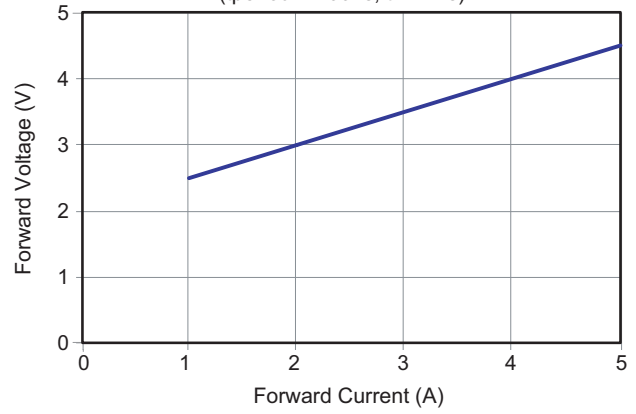
Device	Device Marking	V <sub>RWM</sub> (V) Max.	V <sub>BR</sub> (V) Max.	I <sub>R</sub> (μA) Max.	V <sub>F</sub> (V) Typ.	V <sub>CL</sub> Max.			C <sub>J</sub> (pF) Typ.
						I <sub>PP</sub> = 1A	I <sub>PP</sub> = 2A	I <sub>PP</sub> = 5A	
AOZ8821DI-05	C	5.0	6.0	0.1	0.75	12	13	15	0.65

## Typical Performance Characteristics

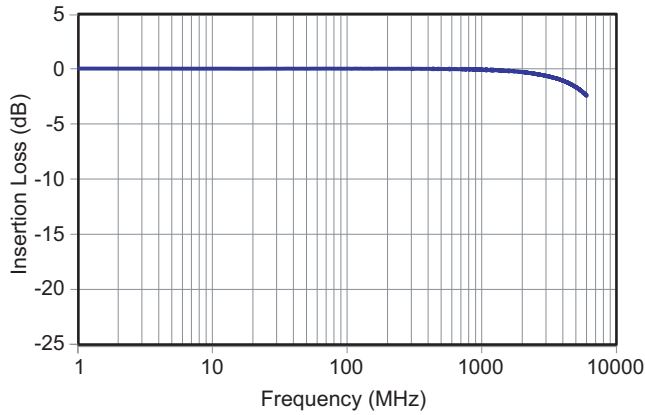
**Clamping Voltage vs. Peak Pulse Current**  
(tperiod = 100ns, tr = 1ns)



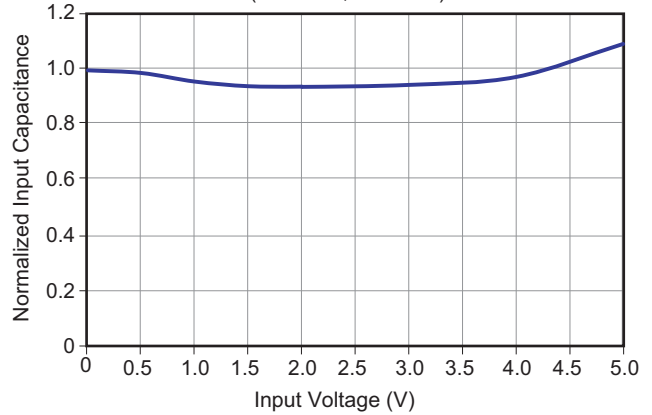
**Forward Voltage vs. Forward Current**  
(tperiod = 100ns, tr = 1ns)



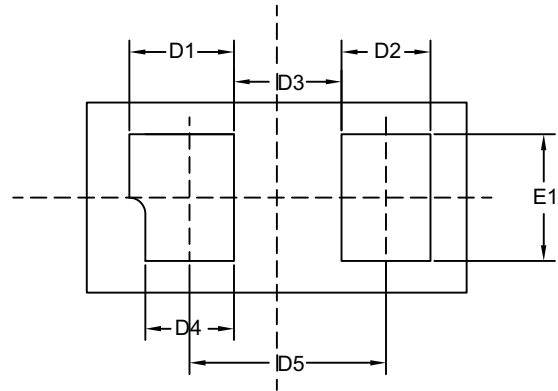
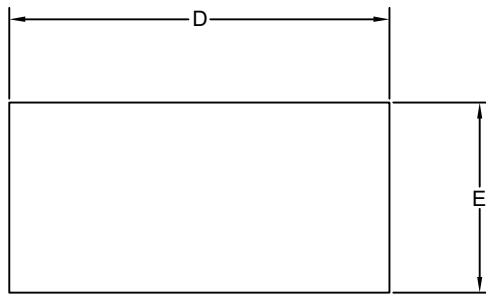
**I/O – Gnd Insertion Loss (S21) vs. Frequency**



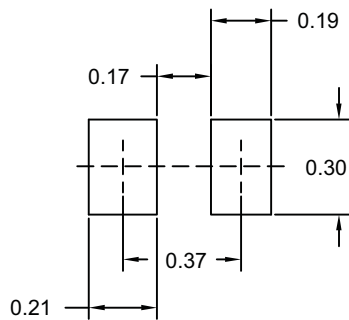
**Typical Variation of CIN vs. VR**  
(f = 1MHz, T = 25°C)



Package Dimensions, DFN 0.6 x 0.3, 2L EP2 S



RECOMMENDED LAND PATTERN



Unit: mm

Dimensions in millimeters

Symbols	Min.	Nom.	Max.
A	0.27	0.30	0.33
D	0.55	0.60	0.65
D1	0.165 TYP		
D2	0.14 TYP		
D3	0.17 TYP		
D4	0.14 TYP		
D5	0.31 TYP		
E	0.25	0.30	0.35
E1	0.20 TYP		

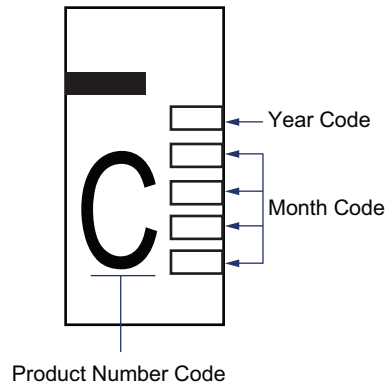
Dimensions in inches

Symbols	Min.	Nom.	Max.
A	0.0106	0.0118	0.0130
D	0.0216	0.0236	0.0256
D1	0.0065 TYP		
D2	0.0055 TYP		
D3	0.0067 TYP		
D4	0.0055 TYP		
D5	0.0122 TYP		
E	0.0098	0.0118	0.0138
E1	0.0079 TYP		

Notes:

1. All dimensions are in millimeters.
2. Dimensions are inclusive of plating.
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6mil each.
4. Controlling dimension is millimeter. Converted inch dimensions are not necessarily exact.
5. Paddle exposed on bottom.

## Part Marking



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