AOZ8822DI-05

Ultra-Low Capacitance Two-line TVS Diode

General Description

The AOZ8822DI-05 is an ultra-low capacitance two-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 two TVS diodes in an ultra-small DFN 1.0 x 0.6 package. During transient conditions, the ultra-low capacitance TVS diodes directs the transient to ground. The AOZ8822DI-05 may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 (± 15 kV air, ± 15 kV contact discharge).

The AOZ8822DI-05 comes in an RoHS compliant 3-lead DFN package and is rated over a -40 °C to +85 °C ambient temperature range.

The ultra-small 1.0 mm x 0.6 mm x 0.5 mm DFN 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

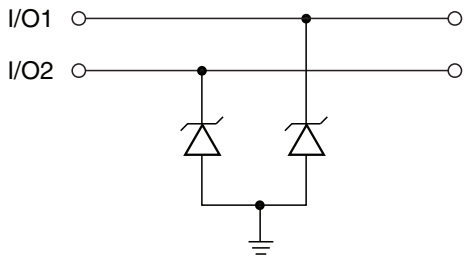
- ESD protection for high-speed data lines:
  - Exceeds: IEC 61000-4-2 (ESD) ± 15 kV (air), ± 15 kV (contact)
  - Human Body Model (HBM) ± 15 kV
- Ultra-low capacitance: 0.55 pF
- Low clamping voltage
- Low operating voltage: 5 V
- Green product

Applications

- Portable handheld devices
- Keypads, data lines, buttons
- Notebook computers
- Digital Cameras
- Portable GPS
- MP3 players

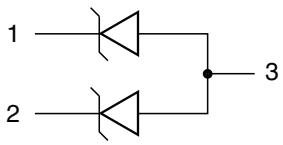
Green Product

Typical Application



Unidirection Protection of Two Line

Pin Configuration



Downloaded from Arrow.com.

Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8822DI-05	-40 °C to +85 °C	DFN 1.0 x 0.6-3L	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	5 V
Peak Pulse Current (I_{PP}), t_P = 8/20µs	2 A
Storage Temperature (T_S)	-65 °C to +150 °C
ESD Rating per IEC61000-4-2, Contact(1)	± 15 kV
ESD Rating per IEC61000-4-2, Air(1)	± 15 kV
ESD Rating per Human Body Model(2)	± 15 kV

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

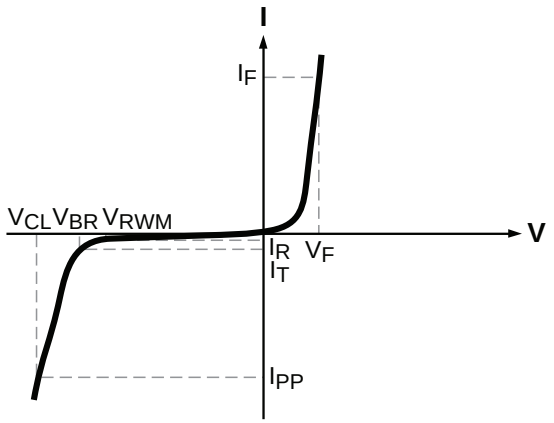
Maximum Operating Ratings

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

Downloaded from Arrow.com.

Electrical Characteristics

T_A = 25°C unless otherwise specified. Specifications in **BOLD** indicate a temperature range of -40 °C to +85 °C.

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	

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V_{RWM}	Reverse Working Voltage[3]	I/O pin to ground			5.0	V
V_{BR}	Reverse Breakdown Voltage[4]	I_T = 1 mA, I/O pin to ground	6.0		10.0	V
I_R	Reverse Leakage Current	V_{RWM} = 5 V, between I/O pin to ground			0.1	µA
V_{CL}	Channel Clamp Voltage	I_{PP} = 1 A, t_P = 100 ns, I/O pin to ground			13	V
		I_{PP} = 2 A, t_P = 100 ns, I/O pin to ground			14	V
		I_{PP} = 5 A, t_P = 100 ns, I/O pin to ground			17	V
		I_{PP} = 1 A, IEC61000-4-5, 8/20 µs, I/O pin to ground			14.5	V
		I_{PP} = 2 A, IEC61000-4-5, 8/20 µs, I/O pin to ground			19	V
C_J	Junction Capacitance	V_R = 0 V, f = 1 MHz, I/O pin to ground		0.55	0.75	pF

Notes:

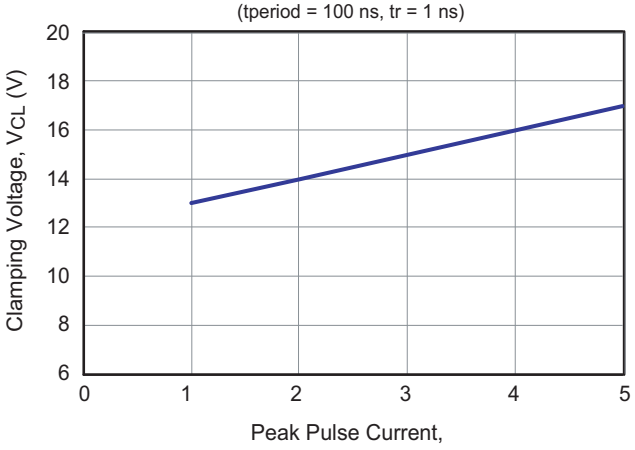
3. The working peak reverse voltage (V_{RWM}) should be equal to or greater than the DC or continuous peak operating voltage level.

4. V_{BR} is measured at the pulse test current I_T.

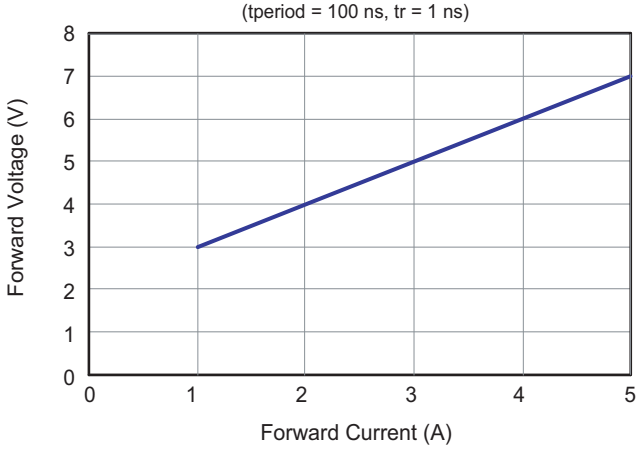
Downloaded from Arrow.com.

Typical Performance Characteristics

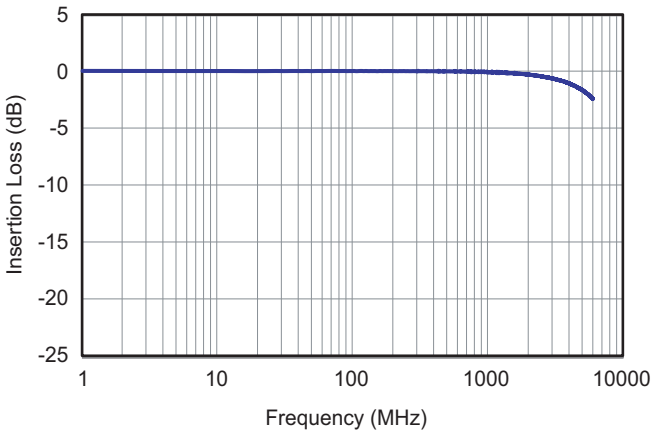
Clamping Voltage vs. Peak Pulse Current
(tperiod = 100 ns, tr = 1 ns)



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



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



Downloaded from Arrow.com.

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.

Downloaded from Arrow.com.