AOZ8251

One-line Bidirectional TVS Diode

General Description

The AOZ8251 is a one-line bidirectional transient voltage suppressor diode designed to protect high speed data lines and voltage sensitive electronics from high transient conditions and ESD.

This device incorporates one bidirectional TVS diode in an ultra-small 0201 footprint package. It may be used to meet the ESD immunity requirements of IEC 61000-4-2, Level 4 (±15 kV air, ±15 kV contact discharge).

The AOZ8251 comes in an RoHS compliant package and is rated over a -40 °C to +85 °C ambient temperature range.

The ultra-small 0.6mm x 0.3 mm x 0.3 mm 0201 footprint package makes the AOZ8251 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

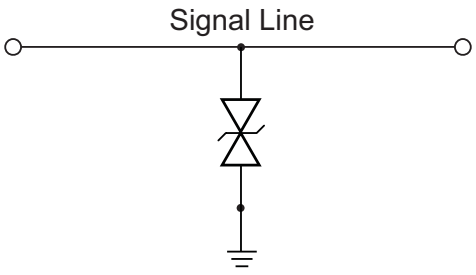
- ESD protection for high-speed data lines:
  - Exceeds: IEC 61000-4-2 (ESD) ±30 kV (air), ±25 kV (contact)
  - Human Body Model (HBM) ±25 kV
- Small package saves board space
- Low capacitance: 8.0 pF
- Low clamping voltage
- Low operating voltage: 5.0 V
- Pb-free device

Applications

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

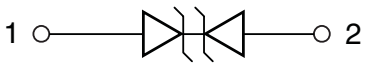
Green Product

Typical Application



Bidirection Protection of Single Line

Pin Configuration



Ordering Information

Part Number	Ambient Temperature Range	Package	Environmental
AOZ8251DI-05	-40 °C to +85 °C	DFN 0.6 x 0.3	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
Peak Pulse Power, t_P = 8/20µs	40 W
Storage Temperature (T_S)	-65 °C to +150 °C
ESD Rating per IEC61000-4-2, Contact(1)	±25 kV
ESD Rating per IEC61000-4-2, Air(1)	±30 kV
ESD Rating per Human Body Model(2)	±25 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 $C_{Discharge}$ = 100 pF, $R_{Discharge}$ = 1.5 kΩ.

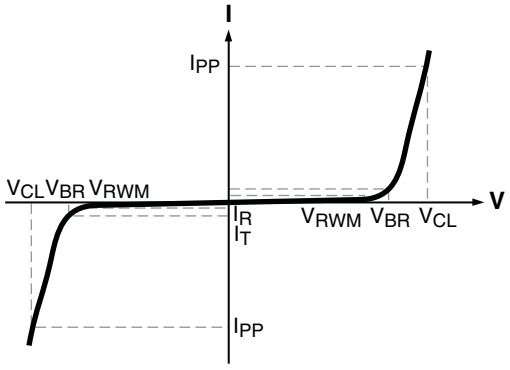
Maximum Operating Conditions

The device is not guaranteed to operate beyond the Maximum Operating Conditions.

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

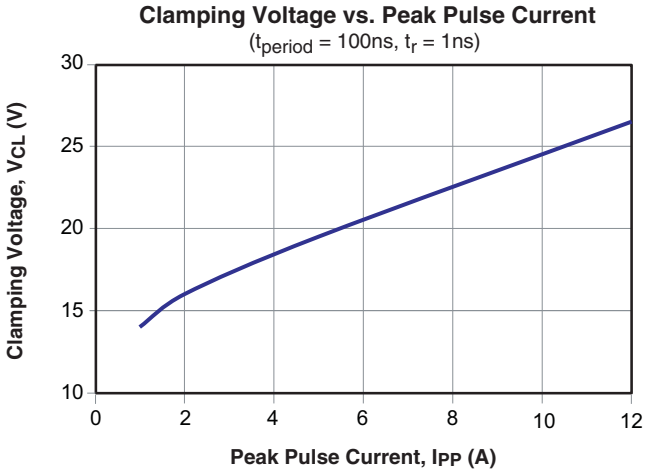
Electrical Characteristics

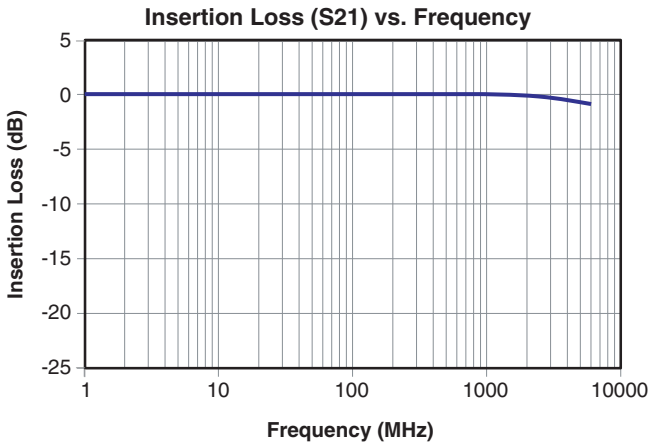
T_A = 25°C unless otherwise specified.

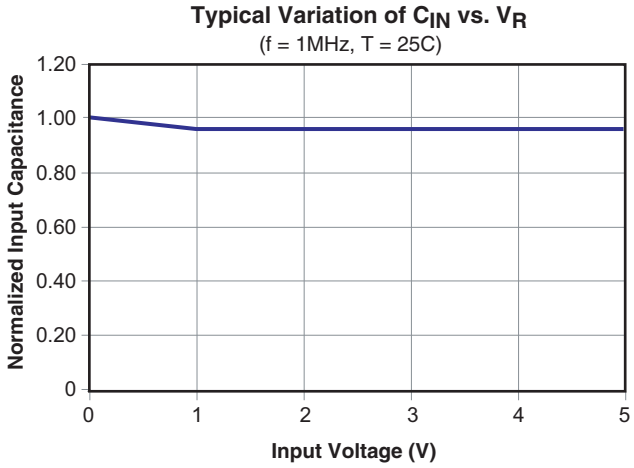
Symbol	Parameter	Diagram
I_{PP}	Maximum Reverse Peak Pulse Current	
V_{CL}	Clamping Voltage @ I_{PP}	
V_{RWM}	Working Peak Reverse Voltage	
I_R	Maximum Reverse Leakage Current	
V_{BR}	Breakdown Voltage	
I_F	Forward Current	
V_F	Forward Voltage	
P_{PK}	Peak Power Dissipation	
C_J	Capacitance @ V_R = 0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

Device	Device Marking	V_{RWM} (V) Max.	V_{BR} (V) Min.	I_R (µA) Max.	V_F (V) Typ.	V_{CL} Max.			C_J (pF) Typ.
						I_{PP} = 1 A	I_{PP} = 2 A	I_{PP} = 5 A	
AOZ8251DI-05	B	5.0	6.0	0.1	1.0	14.00	16.00	19.50	8.0

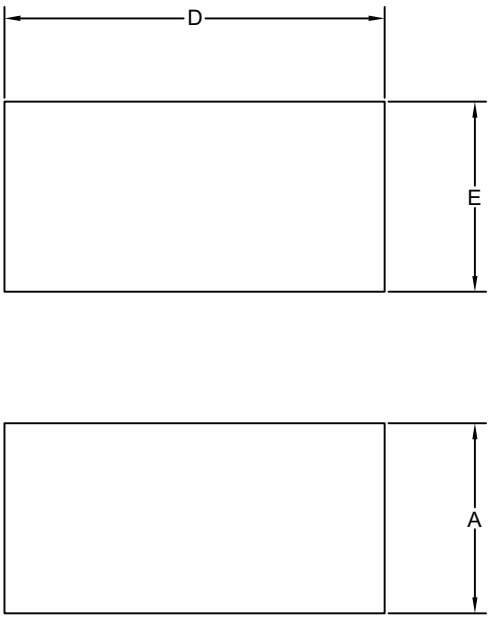
Typical Performance Characteristics

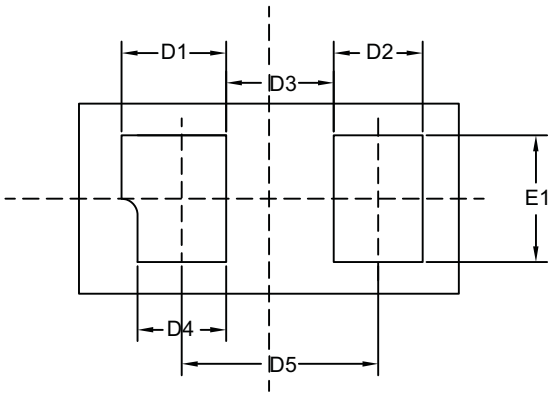




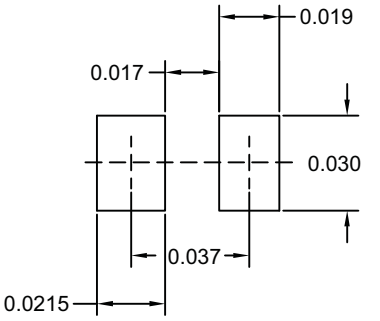


Package Dimensions, DFN 0.6x0.3, 2L EP2 S





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

AOZ8251DI-05
(DFN0.6x0.3)