

General Description

The AOZ8811 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 1.0 x 0.6 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 AOZ8811 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 1.0 x 0.6 x 0.5mm 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

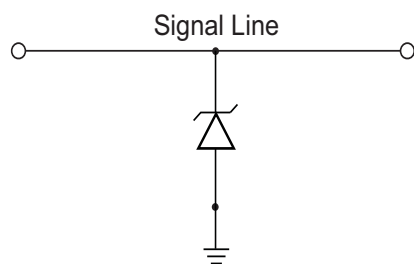
- ESD protection for high-speed data lines:
 - Exceeds: IEC 61000-4-2 (ESD) $\pm 15\text{V}$ (air), $\pm 15\text{kV}$ (contact)
 - Human Body Model (HBM) $\pm 15\text{kV}$
- Small package saves board space
- Ultra-low capacitance: 0.65pF
- Low clamping voltage
- Low operating voltage: 5V
- Green product

Applications

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

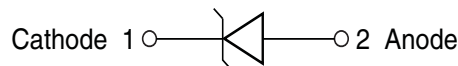


Typical Application



Unidirection Protection of Single Line

Pin Configuration



Ordering Information

| Part Number | Ambient Temperature Range | Package | Environmental |
|--------------|---------------------------|---------------|---------------------------------|
| AOZ8811DI-05 | -40°C to +85°C | DFN 1.0 x 0.6 | 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⁾ | ±15kV |
| ESD Rating per IEC61000-4-2, Air ⁽¹⁾ | ±15kV |
| ESD Rating per Human Body Model ⁽²⁾ | ±15kV |

Notes:

1. IEC 61000-4-2 discharge with $C_{Discharge} = 150pF$, $R_{Discharge} = 330\Omega$.
2. 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 $f = 1\text{MHz}$ | |

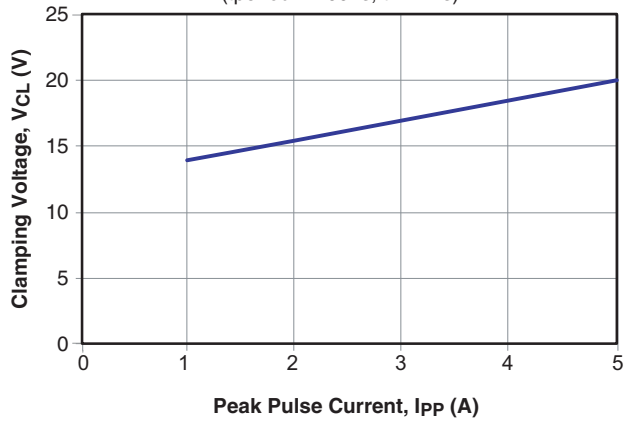
Electrical Characteristics

$T_A = 25^\circ\text{C}$ unless otherwise noted, $V_F = 0.95\text{V Max.}$ @ $I_F = 15\text{mA}$ for all types

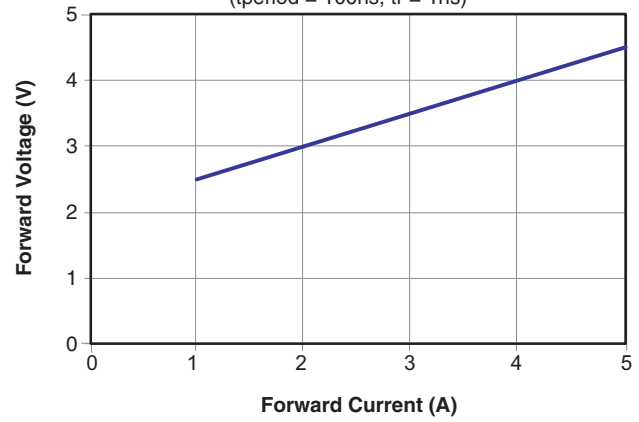
| Device | Device Marking | V_{RWM} (V) Max. | V_{BR} (V) Max. | I_R (μA) Max. | V_F (V) Typ. | V_{CL} Max. | | | C_J (pF) Typ. | C_J (pF) Max. |
|--------------|----------------|-----------------------|----------------------|---------------------------------|-------------------|----------------------|----------------------|----------------------|--------------------|--------------------|
| | | | | | | $I_{PP} = 1\text{A}$ | $I_{PP} = 2\text{A}$ | $I_{PP} = 5\text{A}$ | | |
| AOZ8811DI-05 | C | 5.0 | 6.0 | 1.0 | 0.75 | 14.00 | 15.50 | 20.00 | 0.65 | 0.75 |

Typical Performance Characteristics

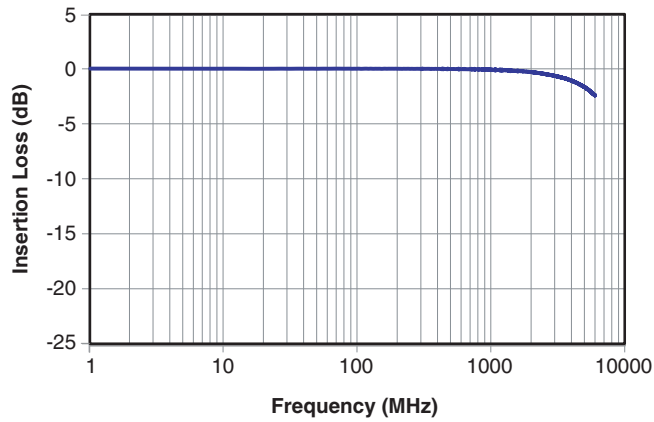
Clamping Voltage vs. Peak Pulse Current
(tperiod = 100ns, tr = 1ns)



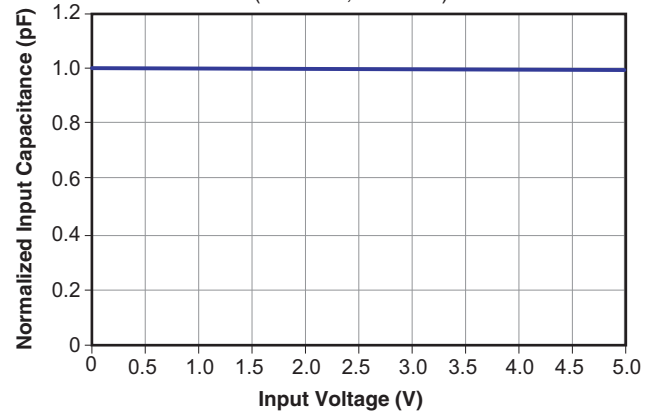
Forward Voltage vs. Forward Current
(tperiod = 100ns, tr = 1ns)



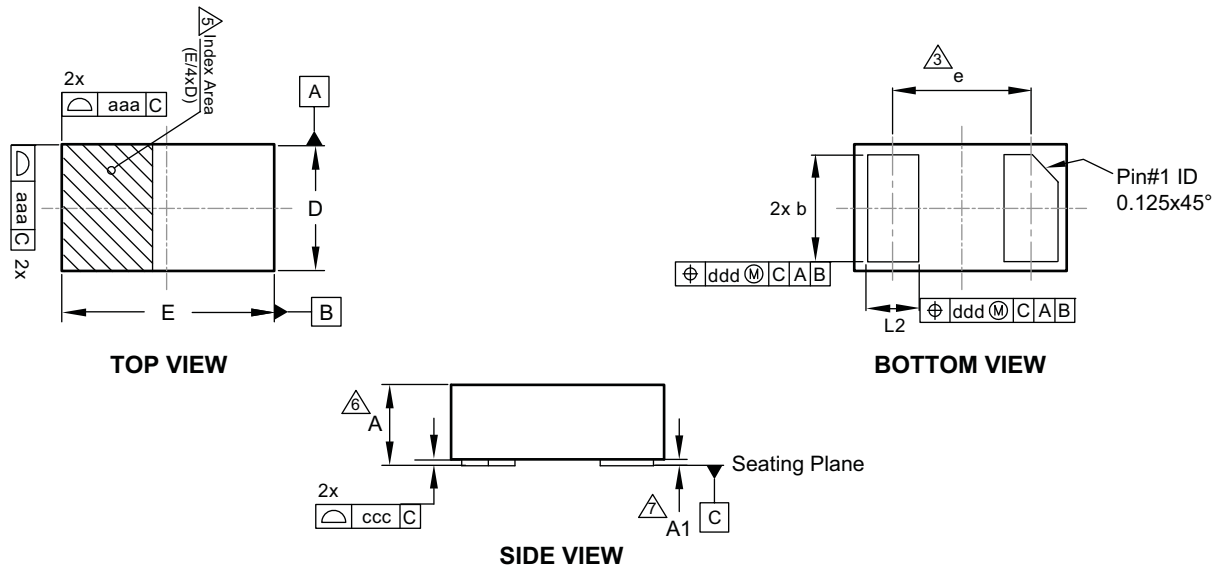
I/O – Gnd Insertion Loss (S21) vs. Frequency



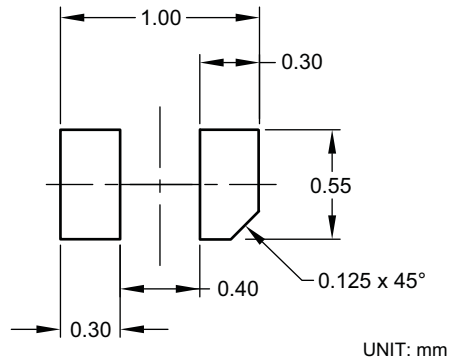
Typical Variation of C_{IN} vs. V_R
(f = 1MHz, T = 25°C)



Package Dimensions, DFN 1.0 x 0.6



RECOMMENDED LAND PATTERN



Dimensions in millimeters

| Symbols | Min. | Nom. | Max. |
|---------|----------|------|------|
| A | 0.47 | 0.51 | 0.55 |
| A1 | 0.00 | 0.02 | 0.05 |
| b | 0.45 | 0.50 | 0.55 |
| D | 0.60 BSC | | |
| E | 1.00 BSC | | |
| e | 0.65 BSC | | |
| L | 0.20 | 0.25 | 0.30 |
| aaa | 0.05 | | |
| ccc | 0.03 | | |
| ddd | 0.10 | | |

Dimensions in inches

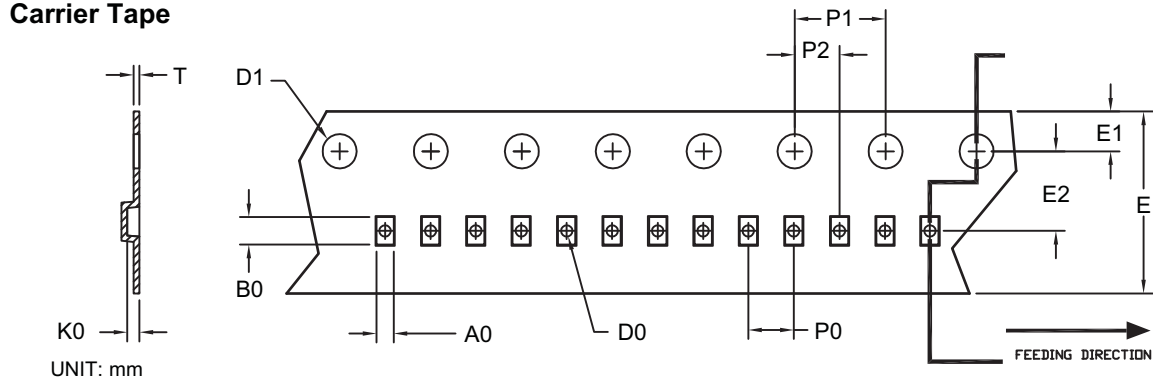
| Symbols | Min. | Nom. | Max. |
|---------|-------|-------|-------|
| A | 0.019 | 0.020 | 0.022 |
| A1 | 0.000 | 0.001 | 0.002 |
| b | 0.018 | 0.020 | 0.022 |
| D | 0.024 | | |
| E | 0.039 | | |
| e | 0.026 | | |
| L | 0.008 | 0.010 | 0.012 |
| aaa | 0.002 | | |
| ccc | 0.001 | | |
| ddd | 0.004 | | |

Notes:

1. Dimensions and tolerancing conform to ASME Y14.5-2009.
2. All dimensions are in millimeters.
3. "e" represents the terminal grid pitch.
4. N is the total number of terminals.
5. A visual index feature must be located within the hatched area. Typical index feature (chamfer) must be located on the edge of the Pin#1 feature.
6. This dimension includes stand-off height "A1" and packaged body thickness, but does not include attached feature e.g. external heatsink or chip capacitors, an internal heatslug is not considered as attached feature.
7. Dimension "A1" is primarily terminal plating, and does not include small metal protrusions.

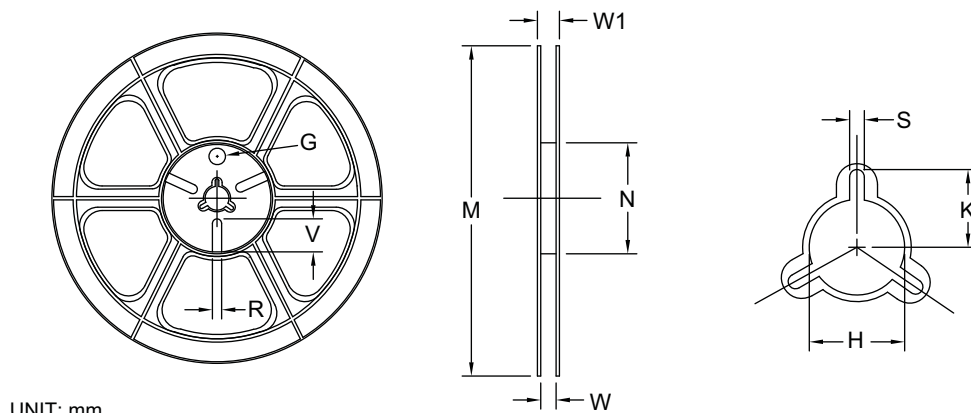
Tape and Reel Dimensions, DFN 1.0 x 0.6

Carrier Tape



| Option | Package | A0 | B0 | K0 | D0 | D1 | E | E1 | E2 | P0 | P1 | P2 | T |
|--------|--|---------------|---------------|---------------|---------------|---------------|-------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| A | DFN 1.0x0.6/ DFN 1.0x0.6A (8 mm) | 0.69 ±0.05 | 1.19 ±0.05 | 0.66 ±0.05 | 0.40 ±0.05 | 1.50 ±0.10 | 8.00 +0.3/-0.1 | 1.75 ±0.10 | 3.50 ±0.05 | 2.00 ±0.05 | 4.00 ±0.10 | 2.00 ±0.05 | 0.23 ±0.02 |
| B | DFN 1.0x0.6/ DFN 1.0x0.6A (8 mm) | 0.65 ±0.04 | 1.05 ±0.04 | 0.61 ±0.04 | 0.40 ±0.05 | 1.50 ±0.10 | 8.00 +0.3/-0.1 | 1.75 ±0.10 | 3.50 ±0.05 | 2.00 ±0.10 | 4.00 ±0.10 | 2.00 ±0.05 | 0.20 ±0.05 |

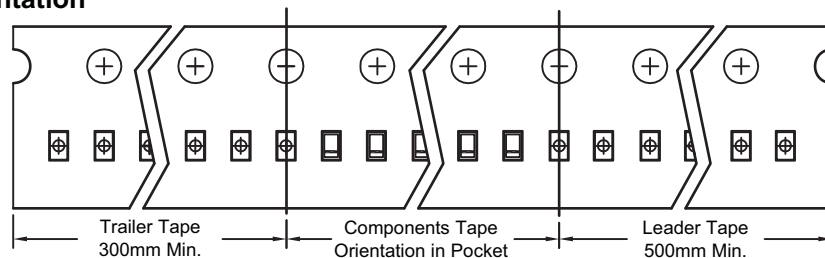
Reel



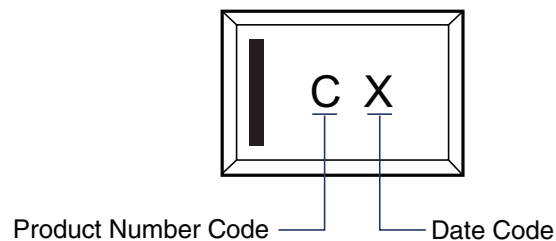
| Tape Size | Reel Size | M | N | W | W1 | H | K | S | G | R | V |
|-----------|-----------|--------------|-----------|----------------|--------------|---------------|--------------|-------------|-----|-----|-----|
| 8mm | ø178 | ø178 ±0.5 | ø55 ±1 | 8.4 +1.5/-0 | Max. 14.4 | ø13.0 ±0.5 | Max. 10.1 | 2.0 ±0.5 | N/A | N/A | N/A |

Leader / Trailer & Orientation

TVS
Unit Per Reel:
10000pcs



Part Marking



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