

General Description

The AOZ8831 is an ultra low capacitance one-line bi-directional 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 TVS diode in an ultra-small DFN 1.0 x 0.6 package. 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 AOZ8831 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 1.0 x 0.6 x 0.5mm 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

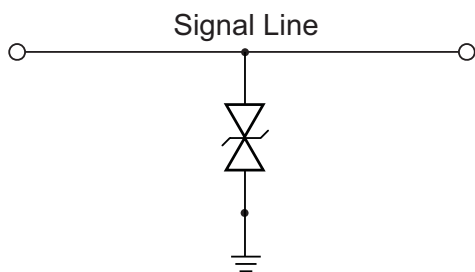
- ESD protection for high-speed data lines:
 - Exceeds: IEC 61000-4-2 (ESD) $\pm 15\text{kV}$ (air), $\pm 15\text{kV}$ (contact)
 - Human Body Model (HBM) $\pm 15\text{kV}$
- Small package saves board space
- Ultra low capacitance: 0.35pF
- Low clamping voltage
- Low operating voltage: 5.0V
- Pb-free device

Applications

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



Typical Application



Bidirection Protection of Single Line

Pin Configuration



Ordering Information

| Part Number | Ambient Temperature Range | Package | Environmental |
|--------------|---------------------------|---------------|---------------|
| AOZ8831DI-05 | -40°C to +85°C | DFN 1.0 x 0.6 | 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 = 8/20μs | 2A |
| Peak Pulse Power, t _P = 8/20μs | 40W |
| 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:

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

Maximum Operating Ratings

| Parameter | Rating |
|--|-----------------|
| Junction Temperature (T _J) | -40°C to +125°C |

Electrical Characteristics

T_A = 25°C unless otherwise specified.

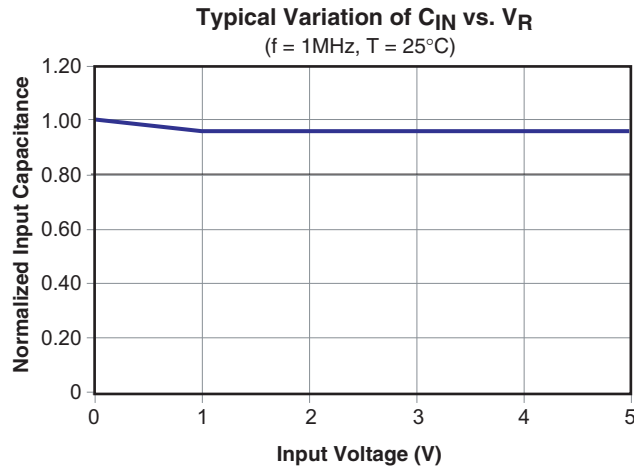
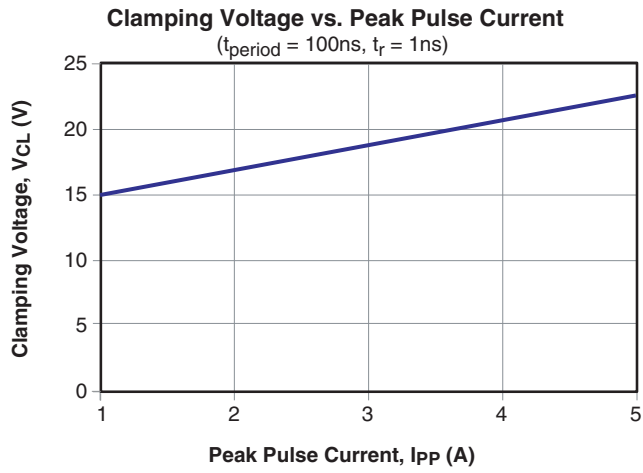
| Symbol | Parameter | Diagram |
|------------------|--|---------|
| I _{PP} | Maximum Reverse Peak Pulse Current ^(3,4) | |
| V _{CL} | Clamping Voltage @ I _{PP} ^(3,4) | |
| V _{RWM} | Working Peak Reverse Voltage | |
| I _R | Maximum Reverse Leakage Current | |
| V _{BR} | Breakdown Voltage | |
| P _{PK} | Peak Power Dissipation | |
| C _J | Capacitance @ V _R = 0 and f = 1MHz ^(3,4) | |

| Device | Device Marking | V _{RWM} (V) Max. | V _{BR} (V) Min. | I _R (μA) Max. | V _{CL} Max. | | | C _J (pF) | | |
|--------------|----------------|---------------------------|--------------------------|--------------------------|----------------------|----------------------|----------------------|---------------------|------|------|
| | | | | | I _{PP} = 1A | I _{PP} = 2A | I _{PP} = 5A | Min. | Typ. | Max. |
| AOZ8831DI-05 | A | 5.0 | 6.0 | 0.1 | 15.00 | 17.00 | 23.00 | 0.2 | 0.35 | 0.5 |

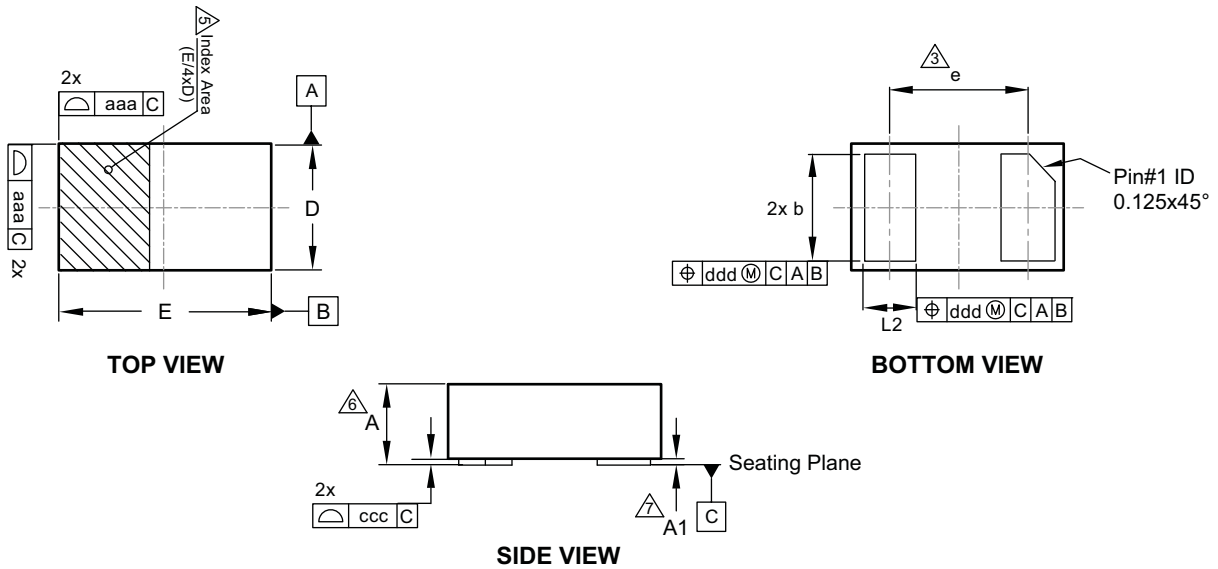
Notes:

- 3. Measurements performed using a 100ns Transmission Line Pulse (TLP) system.
- 4. These specifications are guaranteed by design and characterization.

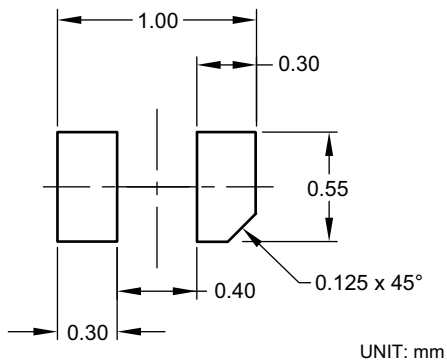
Typical Performance Characteristics



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

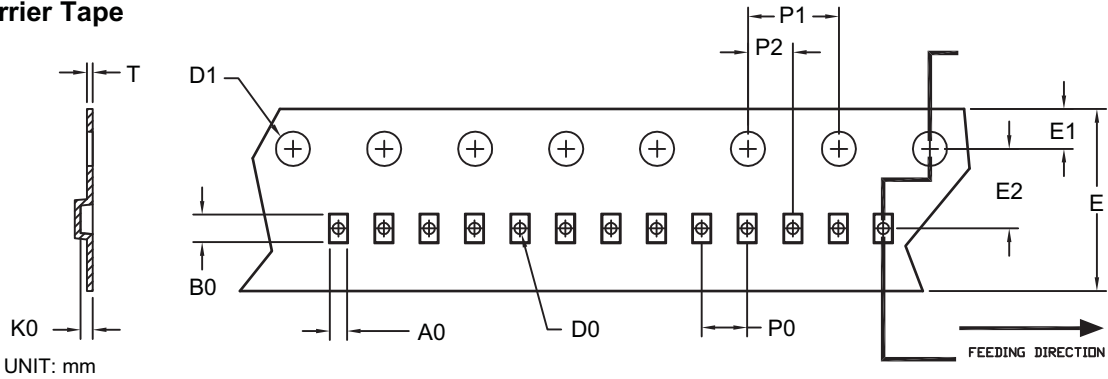
| Symbols | Min. | Nom. | Max. |
|---------|-------|-------|-------|
| A | 0.019 | 0.020 | 0.022 |
| A1 | 0.000 | 0.001 | 0.002 |
| b | 0.018 | 0.020 | 0.022 |
| D | 0.024 | | |
| E | 0.039 | | |
| e | 0.026 | | |
| L | 0.008 | 0.010 | 0.012 |
| aaa | 0.002 | | |
| ccc | 0.001 | | |
| ddd | 0.004 | |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

Notes:

1. Dimensions and tolerancing conform to ASME Y14.5-2009.
2. All dimensions are in millimeters.
3. \triangle "e" represents the terminal grid pitch.
4. N is the total number of terminals.
5. \triangle 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. \triangle 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. \triangle Dimension "A1" is primarily terminal plating, and does not include small metal protrusions.

Tape and Reel Dimensions, DFN 1.0 x 0.6

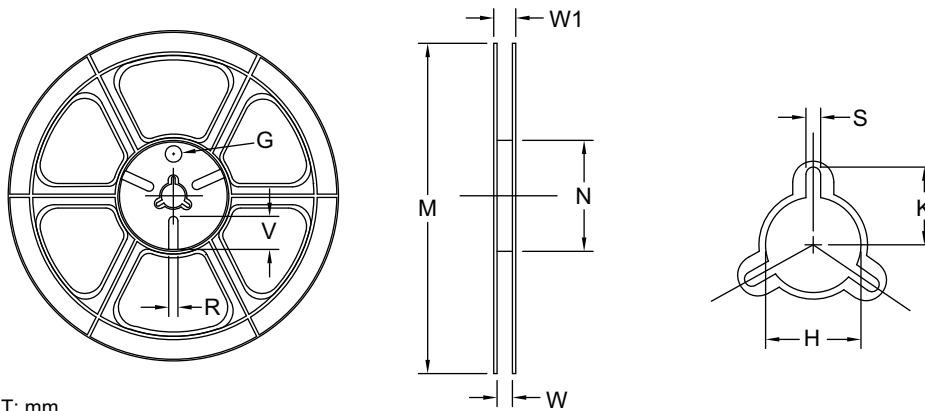
Carrier Tape



UNIT: mm

| 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

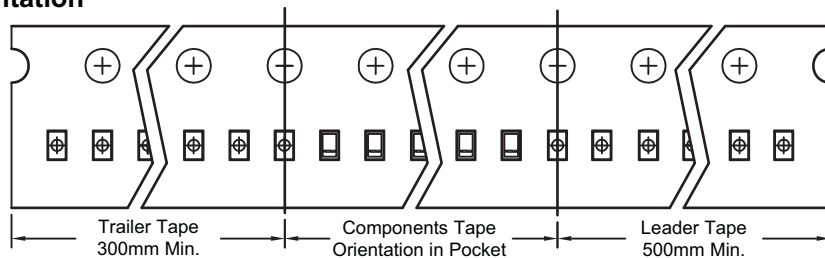


UNIT: mm

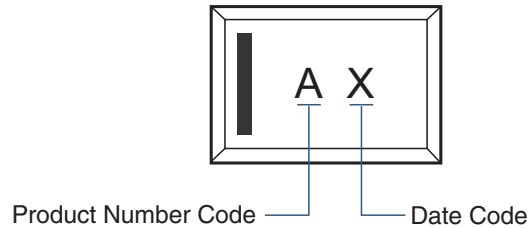
| Tape Size | Reel Size | M | N | W | W1 | H | K | S | G | R | V |
|-----------|-----------|--------------|-----------|----------------|--------------|---------------|--------------|-------------|-----|-----|-----|
| 8mm | ø178 | ø178 ±0.5 | ø55 ±1 | 8.4 +1.5/-0 | Max. 14.4 | ø13.0 ±0.5 | Max. 10.1 |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

Leader / Trailer & Orientation

TVS
Unit Per Reel:
10000pcs



Part Marking



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