# AOZ8832

## Ultra Low Capacitance Two-line Bidirectional TVS Diode

## General Description

The AOZ8832 is an ultra low capacitance 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 AOZ8832 comes in an RoHS compliant package and is rated over a -40 °C to +85 °C ambient temperature range.

The ultra-small 1.0mm x 0.6 mm x 0.5 mm DFN package makes the AOZ8832 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

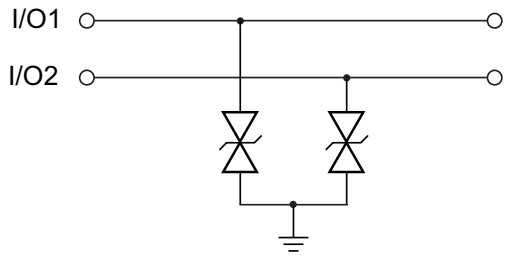
- ESD protection for high-speed data lines:
  - Exceeds: IEC 61000-4-2 (ESD) ±12 kV (air), ±12 kV (contact)
  - Human Body Model (HBM) ±15 kV
- Ultra low capacitance: 0.4 pF
- Low clamping voltage
- Low operating voltage: 5.0 V
- Pb-free device

## Applications

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

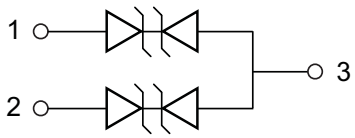
Green Product

## Typical Application




**Bidirection Protection of Two Lines**

## Pin Configuration



## Ordering Information

| Part Number | Ambient Temperature Range | Package | Environmental |
|---|---|---|---|
| AOZ8832DI-05 | -40 °C to +85 °C | DFN 1.0 x 0.6 | Green Product<br>RoHS Compliant |

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 (IEC61000-4-5) | 2 A |
| Peak Pulse Power, $t_P$ = 8/20µs | 30 W |
| Storage Temperature ($T_S$) | -65 °C to +150 °C |
| ESD Rating per IEC61000-4-2, Contact(1) | ±12 kV |
| ESD Rating per IEC61000-4-2, Air(1) | ±12 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 $C_{Discharge}$ = 100 pF, $R_{Discharge}$ = 1.5 kΩ.

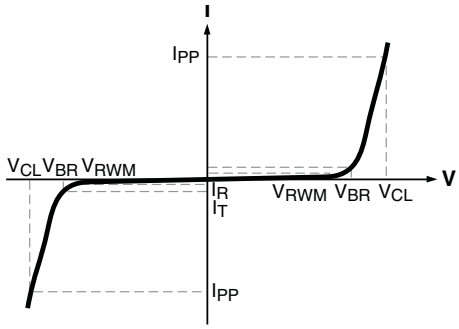
## Maximum Operating Conditions

*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. 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 | |
| $P_{PK}$ | Peak Power Dissipation | |
| $C_J$ | Capacitance @ $V_R$ = 0 and f = 1 MHz | |



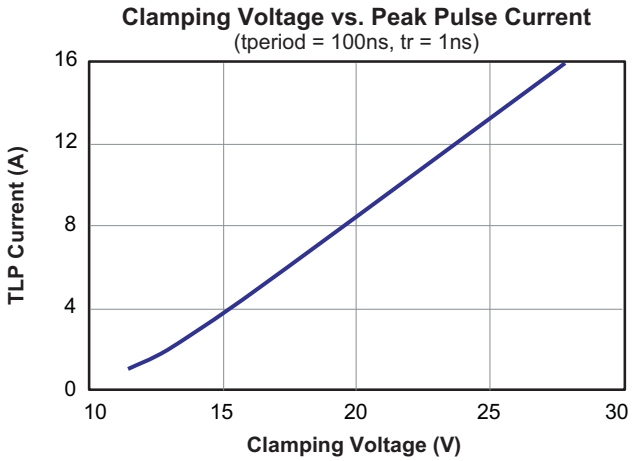
| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| $V_{RWM}$ | Reverse Working Voltage[3] | Between pins 1 and 2 | | | 5.0 | V |
| $V_{BR}$ | Reverse Breakdown Voltage[4] | $I_T$ = 1 mA, between pins 1 and 2 | 6.0 | 9.4 | 10.0 | V |
| $I_R$ | Reverse Leakage Current | $V_{RWM}$ = 5 V, between pins 1 and 2 | | 0.05 | 0.1 | µA |
| $V_{CL}$ | Channel Clamp Voltage | $I_{PP}$ = 1 A, $t_P$ = 100 ns, between pins 1 and 2 | | 11.5 | 14.0 | V |
| | | $I_{PP}$ = 2 A, $t_P$ = 100 ns, between pins 1 and 2 | | 13.0 | 16.0 | V |
| | | $I_{PP}$ = 5 A, $t_P$ = 100 ns, between pins 1 and 2 | | 16.3 | 19.5 | V |
| | | $I_{PP}$ = 1 A, IEC61000-4-5, 8/20 µs, between pins 1 and 2 | | 12.8 | 15.5 | V |
| | | $I_{PP}$ = 2 A, IEC61000-4-5, 8/20 µs, between pins 1 and 2 | | 15.3 | 20.0 | V |
| $C_J$ | Junction Capacitance | $V_R$ = 0 V, f = 1 MHz, between pins 1 and 2 | | 0.4 | 0.6 | pF |

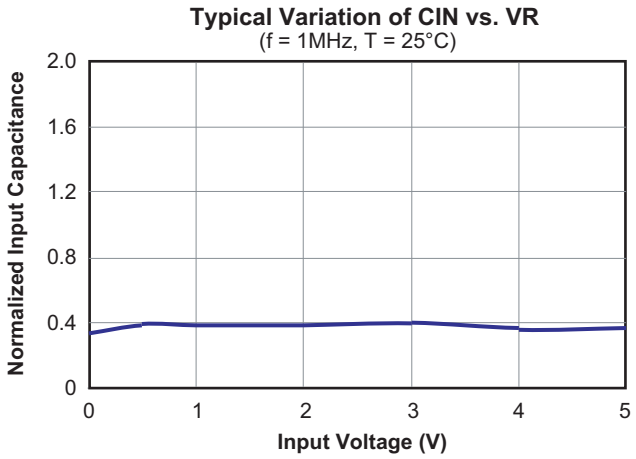
**Notes:**

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

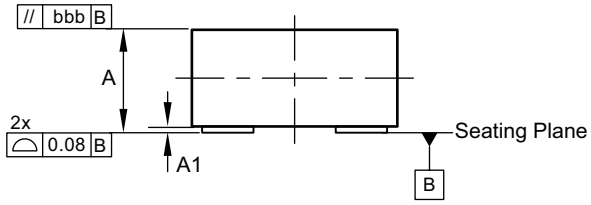
4. $V_{BR}$ is measured at the pulse test current $I_T$.

## Typical Performance Characteristics

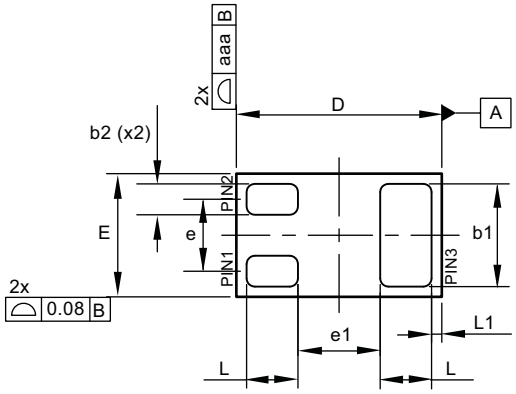


## Package Dimensions, DFN 1.0x0.6_3L

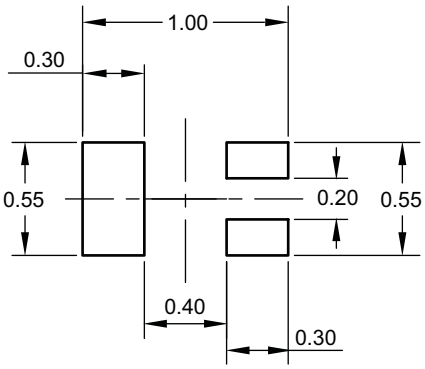



**SIDE VIEW**




**BOTTOM VIEW**

### RECOMMENDED LAND PATTERN




UNIT: mm

**Dimensions in millimeters**

| Symbols | Min. | Nom. | Max. |
|---|---|---|---|
| A | 0.50 | 0.52 | 0.55 |
| A1 | 0.00 | 0.03 | 0.05 |
| b1 | 0.45 | 0.50 | 0.55 |
| b2 | 0.10 | 0.15 | 0.20 |
| D | 0.95 | 1.00 | 1.075 |
| E | 0.55 | 0.60 | 0.675 |
| e | --- | 0.35 | --- |
| e1 | --- | 0.40 | --- |
| L | 0.20 | 0.25 | 0.30 |
| L1 | --- | 0.05 | --- |
| aaa | | 0.15 | |
| bbb | | 0.05 | |

**Dimensions in inches**

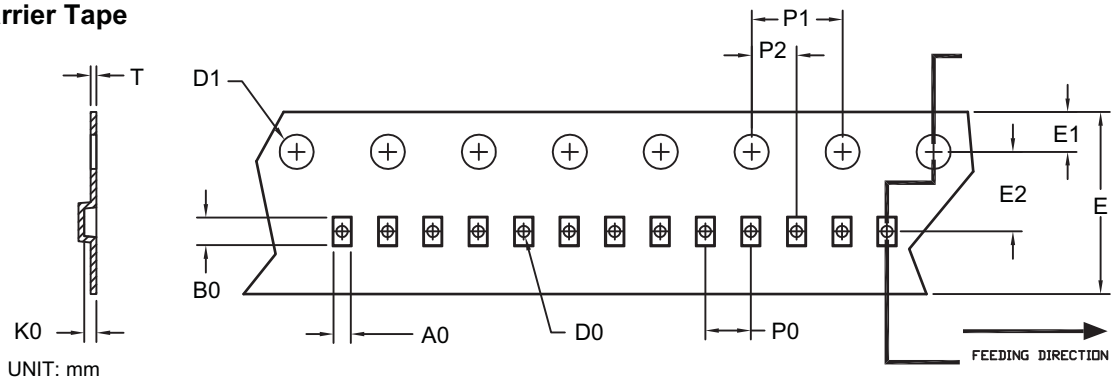
| Symbols | Min. | Nom. | Max. |
|---|---|---|---|
| A | 0.019 | 0.020 | 0.022 |
| A1 | 0.000 | 0.001 | 0.002 |
| b | 0.018 | 0.020 | 0.022 |
| b2 | 0.004 | 0.006 | 0.008 |
| D | 0.037 | 0.039 | 0.042 |
| E | 0.022 | 0.024 | 0.027 |
| e | --- | 0.014 | --- |
| e1 | --- | 0.016 | --- |
| L | 0.008 | 0.010 | 0.012 |
| L1 | --- | 0.002 | --- |
| aaa | | 0.006 | |
| bbb | | 0.002 | |

**Notes:**

1. All dimensions are in milliteters. Angles are in degrees.
2. Coplanarity applies to the exposed heat sink slug as well as the terminals.

## Tape and Reel Dimensions, DFN 1.0x0.6

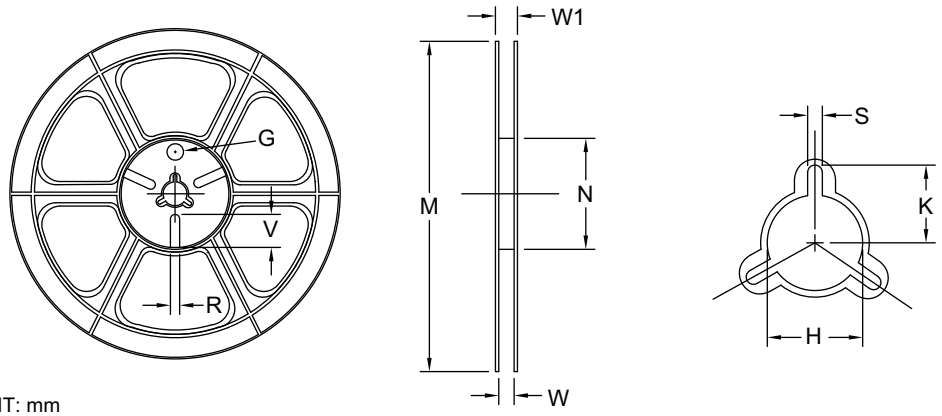
### Carrier Tape




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

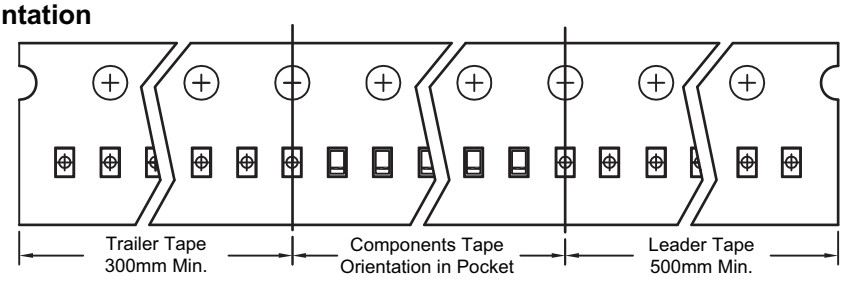



UNIT: mm

| 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