

## General Description

The AOZ8336DI-03 is a 1-channel bidirectional high surge transient voltage suppressor designed to protect data lines such as audio line and power rail from damaging ESD or surge events

This device incorporates two unidirectional TVS diodes in a single package. During transient conditions, the bidirectional diodes direct the transient to either the positive side of the power supply line or to ground.

The AOZ8336DI-03 provides a typical capacitance of 100 pF and low clamping voltage making it ideally suited for data transmission protection in mobile and computing devices.

The AOZ8336DI-03 comes in a RoHS compliant and Halogen Free 1.0 mm×0.6 mm×0.5 mm package and is rated for -40°C to +125°C junction temperature range.

## Features

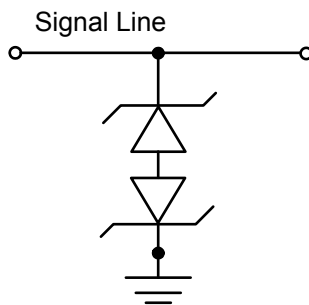
- ESD protection for high-speed data lines:
  - IEC 61000-4-2 (ESD) immunity: ±30 kV (air), ±30kV (contact)
  - Human Body Model (HBM) ±8 kV
  - IEC 61000-4-5 (Lightning) 50A (8/20µs)
- Low capacitance between I/O to GND: 100 pF
- Low clamping voltage
- Low operating voltage: 3.3 V

## Applications

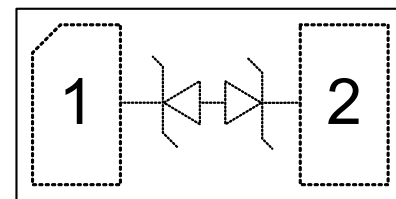
- Audio lines
- Power Amplifiers
- Mobile phone
- Notebook computers



## Typical Application



## Pin Configuration



DFN1.0x0.6\_2L

## Ordering Information

| Part Number  | Ambient Temperature Range | Package             | Environmental |
|--------------|---------------------------|---------------------|---------------|
| AOZ8336DI-03 | -40°C to +125°C           | DFN1.0mm x 0.6mm-2L | Green Product |



AOS Green Products use reduced levels of Halogens, and are also RoHS compliant. Please visit [www.aosmd.com/media/AOSGreenPolicy.pdf](http://www.aosmd.com/media/AOSGreenPolicy.pdf) for additional information.

## Absolute Maximum Ratings

Exceeding the Absolute Maximum ratings may damage the device.

| Parameter   | Rating          |
|---|-----------------|
| Storage Temperature (T <sub>S</sub> )               | -65°C to +150°C |
| ESD Rating per IEC61000-4-2, Contact <sup>(1)</sup> | ±30 kV          |
| ESD Rating per IEC61000-4-2, Air <sup>(1)</sup>     | ±30 kV          |
| 8/20us Surge IEC61000-4-5                           | ±50 A           |

### Notes:

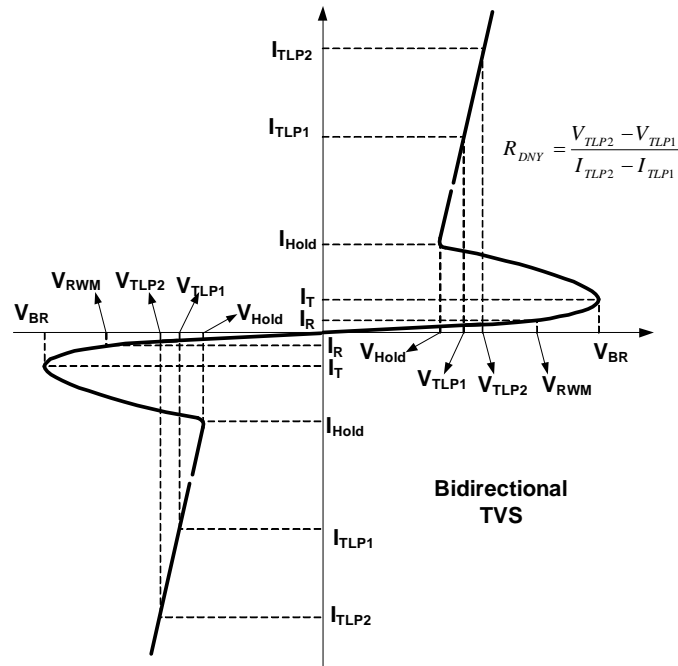
- IEC 61000-4-2 discharge with C<sub>Discharge</sub> = 150pF, R<sub>Discharge</sub> = 330Ω.
- Human Body Discharge per MIL-STD-883, Method 3015 C<sub>Discharge</sub> = 100pF, R<sub>Discharge</sub> = 1.5kΩ.

## Maximum Operating Ratings

| Parameter                              | Rating          |
|--|-----------------|
| Junction Temperature (T <sub>J</sub> ) | -40°C to +125°C |

### Electrical Characteristics

T<sub>A</sub> = 25°C unless otherwise specified.



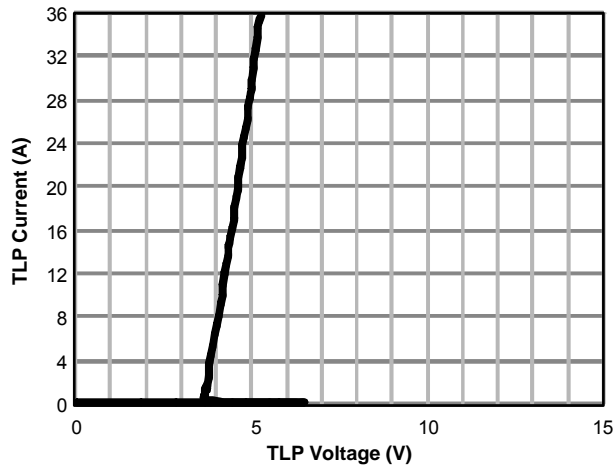
| Symbol            | Parameter  | Conditions                            | Min. | Typ. | Max. | Units |
|-------------------|--|---------------------------------------|------|------|------|-------|
| V <sub>RWM</sub>  | Reverse Working Voltage  |                                       |      |      | 3.3  | V     |
| V <sub>BR</sub>   | Reverse Breakdown Voltage  | I <sub>T</sub> =1mA                   | 3.6  | 5.5  | 8    |       |
| I <sub>R</sub>    | Reverse Leakage Current  | V <sub>T</sub> =Max. V <sub>RWM</sub> |      | 1    | 100  | nA    |
| V <sub>HOLD</sub> | Hold Voltage of Snapback <sup>(3)</sup>                          |                                       | 3.3  |      |      | V     |
| V <sub>CL</sub>   | Clamping Voltage <sup>(3)</sup><br>100ns Transmission Line Pulse | I <sub>TLP</sub> =1A                  |      | 5    | 6.5  |       |
|                   |  | I <sub>TLP</sub> =16A                 |      | 5.5  | 7    |       |
|                   |  | I <sub>TLP</sub> =30A                 |      | 6    | 7.5  |       |
| V <sub>CL</sub>   | Clamping Voltage <sup>(3)</sup><br>IEC61000-4-5 Surge 8/20μs     | I <sub>PP</sub> =1A                   |      | 5    | 6.9  |       |
|                   |  | I <sub>PP</sub> =50A                  |      | 8    | 9.9  |       |
| C <sub>J</sub>    | Junction Capacitance   | V <sub>IO</sub> = 0V, f = 1MHz        |      | 100  | 120  | pF    |

**Note:**

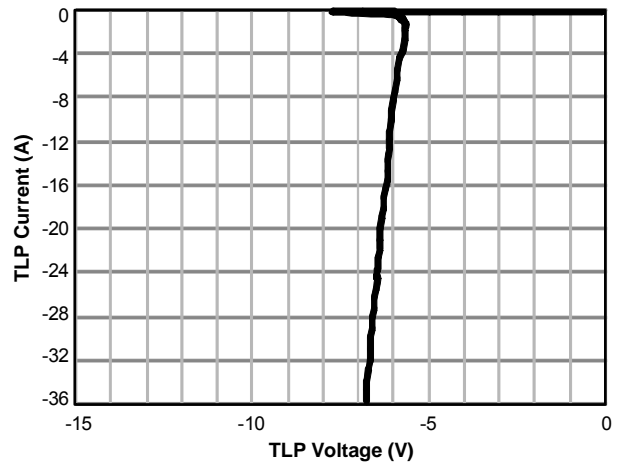
- 3. These specifications are guaranteed by design and characterization.
- 4. Measurements performed using a 100ns Transmission Line Pulse (TLP) system.

## Typical Performance Characteristics

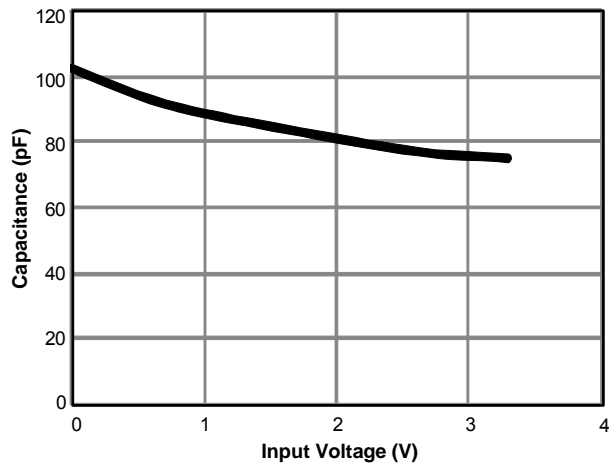
Pin1 to Pin2 Transmission Line Pulse  
( $t_p=100\text{ns}$ ,  $t_r=0.2\text{ns}$ )



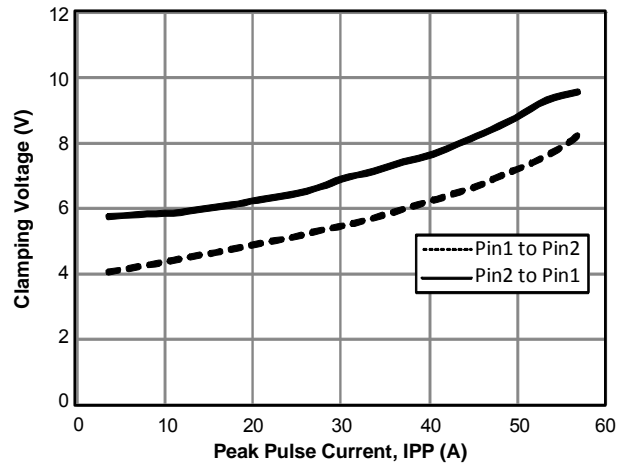
Pin2 to Pin1 Transmission Line Pulse  
( $t_p=100\text{ns}$ ,  $t_r=0.2\text{ns}$ )



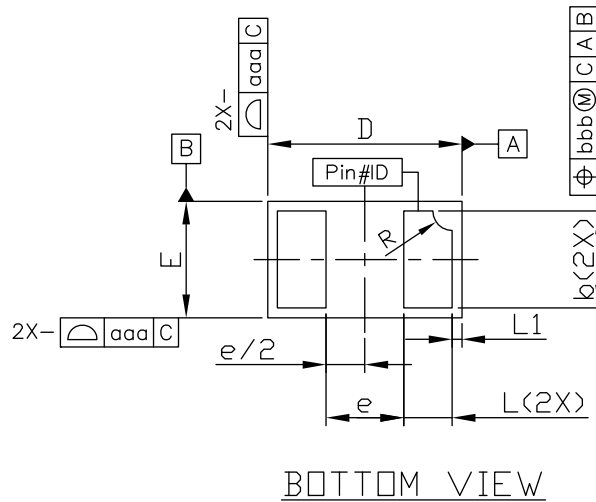
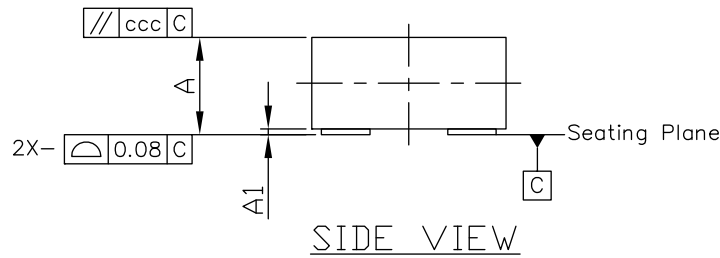
Typical Variations of CJ vs. Input Voltage



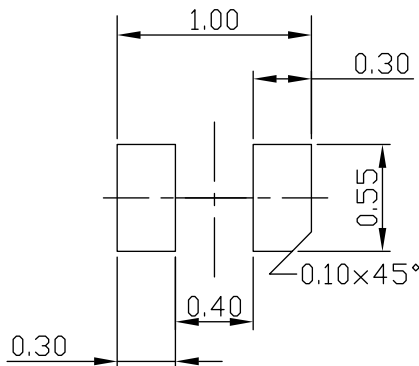
IEC61000-4-5 Surge 8/20us



Package Dimensions, DFN1.0 x 0.6-2L, EP2\_S



RECOMMENDED LAND PATTERN



UNIT: mm

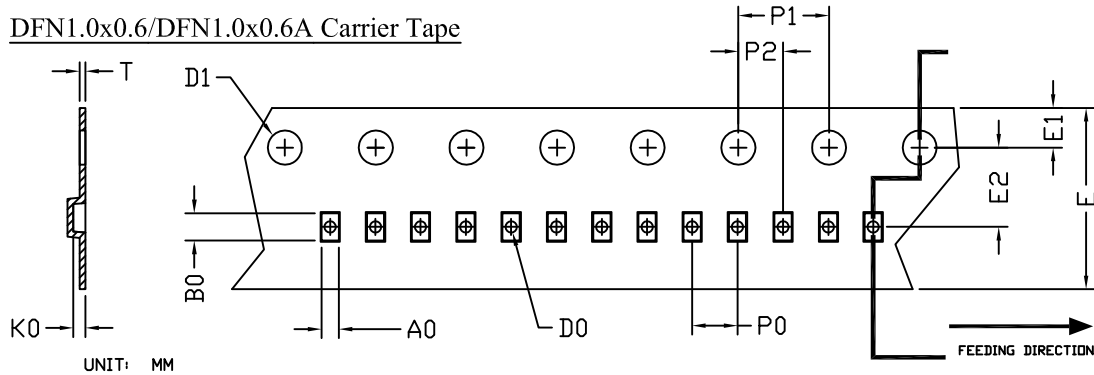
| SYMBOLS | DIMENSIONS IN MILLIMETERS |      |      | DIMENSIONS IN INCHES |       |       |
|---------|---------------------------|------|------|----------------------|-------|-------|
|         | MIN                       | NOM  | MAX  | MIN                  | NOM   | MAX   |
| A       | 0.47                      | 0.50 | 0.53 | 0.019                | 0.020 | 0.021 |
| A1      | 0.00                      | 0.03 | 0.05 | 0.000                | 0.001 | 0.002 |
| b       | 0.45                      | 0.50 | 0.55 | 0.018                | 0.020 | 0.022 |
| D       | 0.95                      | 1.00 | 1.05 | 0.037                | 0.039 | 0.041 |
| E       | 0.55                      | 0.60 | 0.65 | 0.022                | 0.024 | 0.026 |
| e       | ---                       | 0.40 | ---  | ---                  | 0.016 | ---   |
| L       | 0.20                      | 0.25 | 0.30 | 0.008                | 0.010 | 0.012 |
| L1      | 0.05±0.03 Ref.            |      |      | 0.002±0.001 Ref.     |       |       |
| R       | 0.05                      | 0.10 | 0.15 | 0.002                | 0.004 | 0.006 |
| aaa     | 0.15                      |      |      | 0.006                |       |       |
| bbb     | 0.05                      |      |      | 0.002                |       |       |
| ccc     | 0.05                      |      |      | 0.002                |       |       |

NOTE

1. ALL DIMENSION ARE IN MILLIMETERS.ANGLES ARE IN DEGREES.
2. COPLANARITY APPLIES TO THE EXPOSED HEAT SINK SLUG AS WELL AS THE TERMINALS.
3. THE SHAPE OF PIN ID CAN BE DIFFERENT PER MANUFACTURING LOCATION

Tape and Reel Dimensions, DFN1.0 x 0.6-2L, EP2\_S

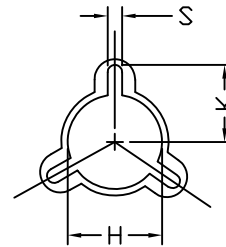
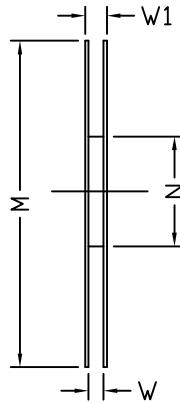
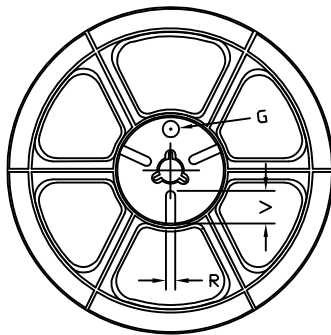
DFN1.0x0.6/DFN1.0x0.6A Carrier Tape



UNIT: MM

| PACKAGE                              | A0            | B0            | K0            | D0            | D1            | E                      | E1            | E2            | P0            | P1            | P2            | T             |
|--------------------------------------|---------------|---------------|---------------|---------------|---------------|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| DFN1.0x0.6/<br>DFN1.0x0.6A<br>(8 mm) | 0.65<br>±0.04 | 1.05<br>±0.04 | 0.61<br>±0.04 | 0.40<br>±0.05 | 1.50<br>+0.10 | 8.00<br>+0.30<br>-0.10 | 1.75<br>±0.10 | 3.50<br>±0.05 | 2.00<br>±0.10 | 4.00<br>±0.10 | 2.00<br>±0.05 | 0.20<br>±0.05 |

DFN1.0x0.6/DFN1.0x0.6A Reel



UNIT: MM

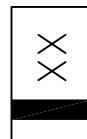
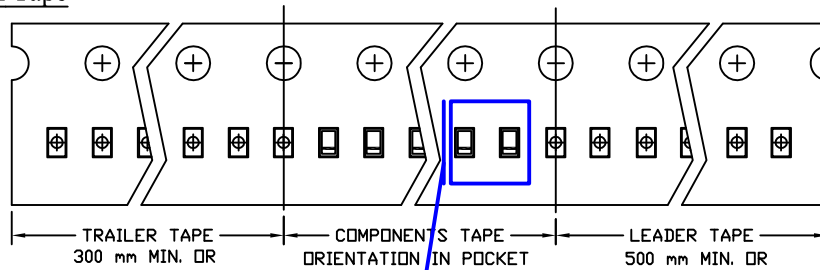
| TAPE SIZE | REEL SIZE | M            | N         | W                   | W1           | H             | K            | S           | G   | R   | V   |
|-----------|-----------|--------------|-----------|---------------------|--------------|---------------|--------------|-------------|-----|-----|-----|
| 8 mm      | φ178      | φ178<br>±0.5 | φ55<br>±1 | 8.4<br>+0.5<br>-0.5 | MAX.<br>14.4 | φ13.0<br>±0.5 | MAX.<br>10.1 | 2.0<br>±0.5 | N/A | N/A | N/A |

DFN1.0x0.6/DFN1.0x0.6A Tape

Leader / Trailer  
& Orientation

TVS

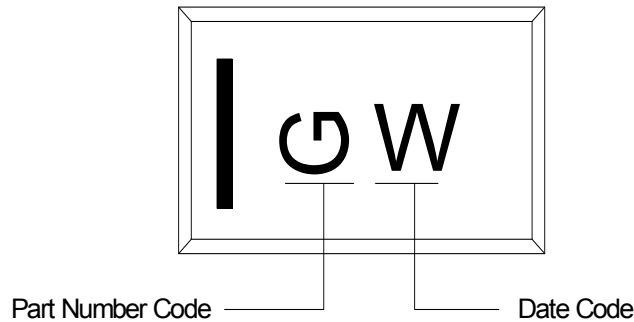
Unit Per Reel:  
10000pcs



DETAIL:  
UNIT DIRECTION IN POCKET

**Part Marking**

**AOZ8336DI-03**  
(DFN 1.0 x 0.6\_2L)



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- |   |   |
|---|---|
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|---|---|