

## SuperESD - AOZ8S204BLS-03

## 1. Description

The AOZ8S204BLS-03 is an ultra-low capacitance TVS (Transient Voltage Suppressor) designed to protect high speed data interfaces. It has been specifically designed to protect sensitive electronic components which are connected to data and transmission lines from over-stress caused by ESD (Electrostatic Discharge). The AOZ8S204BLS-03 may be used to provide ESD protection up to  $\pm 15\text{kV}$  (contact discharge) according to IEC61000-4-2, and withstand peak pulse current up to 6.5A (8/20 $\mu\text{s}$ ) according to IEC61000-4-5.

## 2. Features

- IEC 61000-4-2 Level 4 ESD Protection
  - $\pm 15\text{kV}$  Contact Discharge
  - $\pm 15\text{kV}$  Air Discharge
- 50W Peak pulse Power (8/20 $\mu\text{s}$ )
- Low clamping voltage
- Working voltage: 3.3V
- Low leakage current
- RoHS compliant
- Protecting one bi-directional line
- Low Junction capacitance: 0.14pF Typ.

## 3. Applications

- High-speed interfaces
- HDMI and USB 3.2
- Cellular handsets and accessories
- Portable Electronics and Notebooks
- TVs and monitors
- Digital cameras

## 4. Ordering Information

| Part Number    | Package    | Marking | Material     | Packing     | Quantity per reel | Flammability Rating | Reel Size |
|----------------|------------|---------|--------------|-------------|-------------------|---------------------|-----------|
| AOZ8S204BLS-03 | DFN0603-2L | 3B      | Halogen free | Tape & Reel | 10,000 PCS        | UL 94V-0            | 7 inches  |

Table-1 Ordering information

## 5. Pin Configuration and Functions

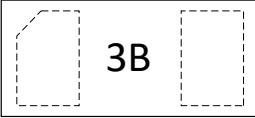
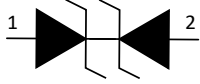
| Pin | Name | Description   | Outline                                                                            | Circuit Diagram                                                                     |
|-----|------|---------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1   | IO   | Connect to IO |  |  |
| 2   | IO   | Connect to IO |                                                                                    |                                                                                     |

Table-2 Pin configuration

## 6. Specification

### 6.1. Absolute Maximum rating

Over operating free-air temperature range (unless otherwise noted)

| Parameters                                 | Symbol           | Min. | Max. | Unit |
|--------------------------------------------|------------------|------|------|------|
| Peak pulse power (tp=8/20us)@25°C          | P <sub>pk</sub>  | -    | 50   | W    |
| Peak pulse current (tp=8/20us)@25°C        | I <sub>PP</sub>  |      | 6.5  | A    |
| ESD (IEC61000-4-2 air discharge) @25°C     | V <sub>ESD</sub> | -    | ±15  | kV   |
| ESD (IEC61000-4-2 contact discharge) @25°C | V <sub>ESD</sub> | -    | ±15  | kV   |
| Junction temperature                       | T <sub>J</sub>   | -    | 150  | °C   |
| Operating temperature                      | T <sub>OP</sub>  | -50  | 125  | °C   |
| Storage temperature                        | T <sub>STG</sub> | -55  | 150  | °C   |
| Lead temperature                           | T <sub>L</sub>   | -    | 260  | °C   |

Table-3 Absolute Maximum rating

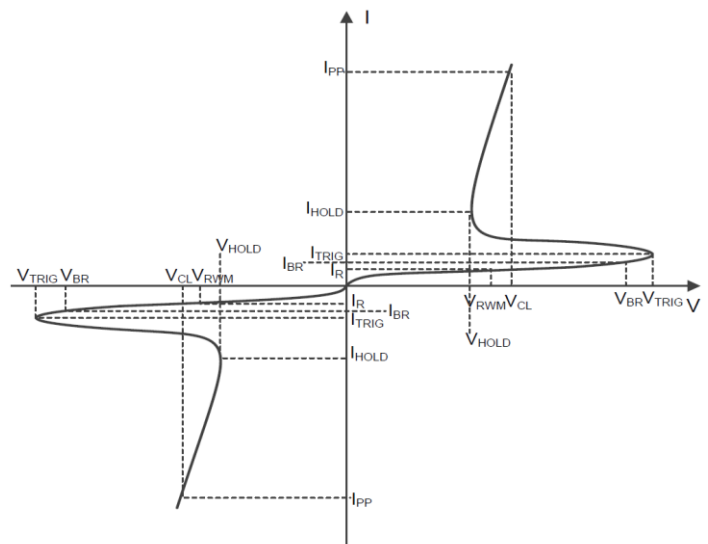
## 6.2. Electrical Characteristics

At TA = 25°C unless otherwise noted

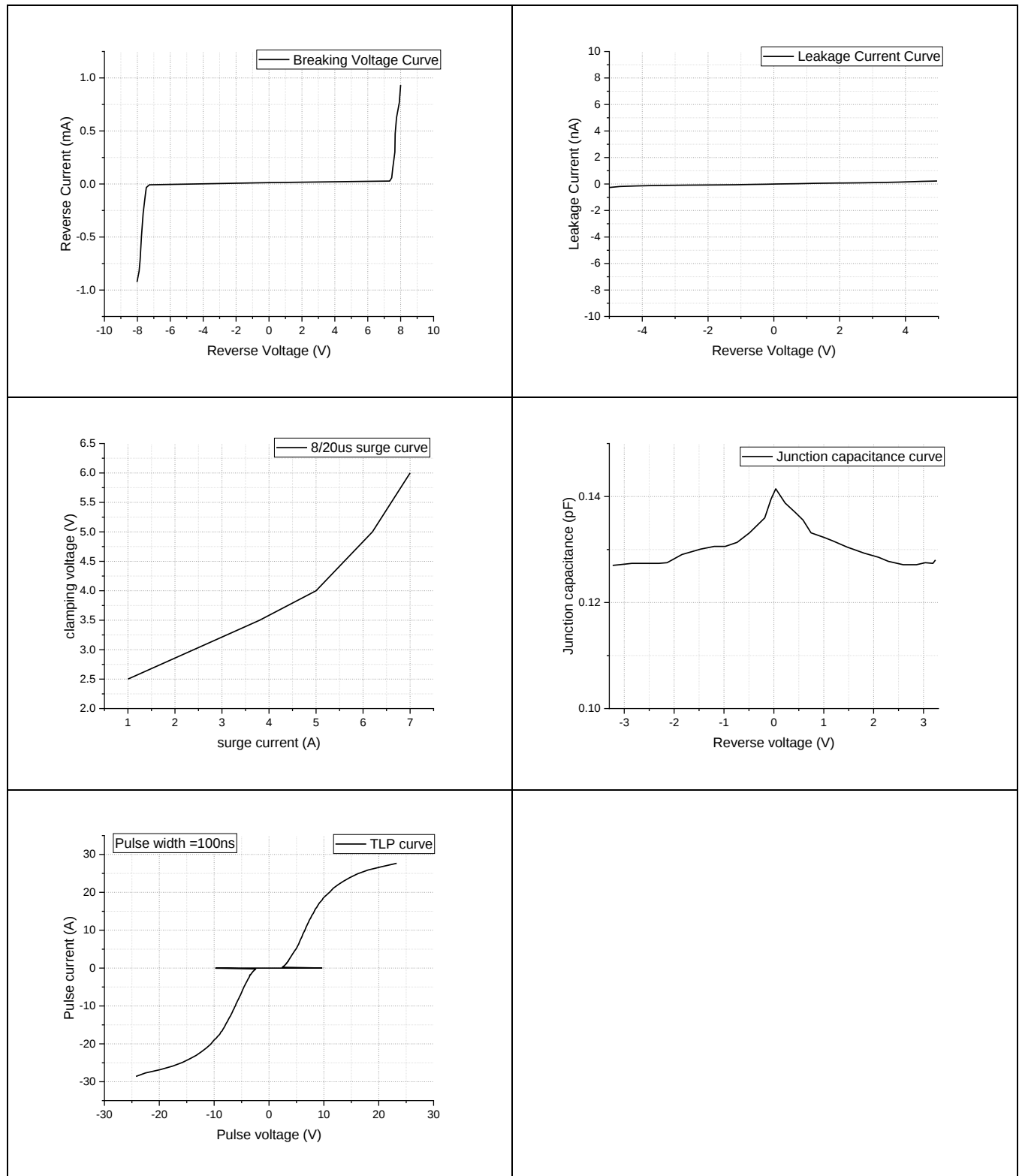
| Parameter                 | Symbol    | Conditions                      | Min. | Typ. | Max. | Units    |
|---------------------------|-----------|---------------------------------|------|------|------|----------|
| Reverse Stand-off Voltage | $V_{RWM}$ |                                 |      | 3.3  | 5.0  | V        |
| Reverse Breakdown Voltage | $V_{BR}$  | $I_T=1mA$                       | 6.0  | 8.1  |      | V        |
| Reverse Leakage Current   | $I_R$     | $V_{RWM}=3.3V$                  |      | 1    | 100  | nA       |
| Clamping Voltage          | $V_C$     | $I_{PP}=1A$ ; $t_p=8/20\mu s$   |      | 2.5  |      | V        |
| Clamping Voltage          | $V_C$     | $I_{PP}=6.5A$ ; $t_p=8/20\mu s$ |      | 5.5  |      | V        |
| Dynamic Resistance        | $R_{dyn}$ |                                 |      | 0.4  |      | $\Omega$ |
| Junction Capacitance      | $C_J$     | $V_R=0V$ ; $f=1MHz$             |      | 0.14 | 0.20 | pF       |

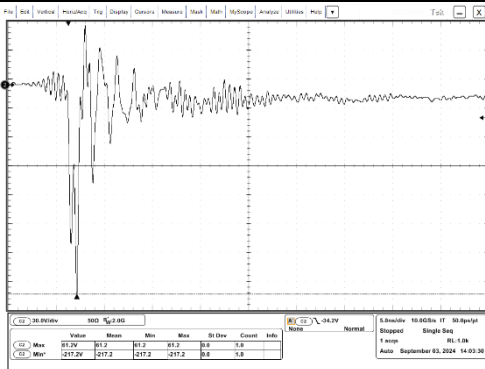
Table-4 Electrical Characteristics

| Symbol     | Parameters                |
|------------|---------------------------|
| $V_{RWM}$  | Reverse stand-off voltage |
| $I_R$      | Reverse leakage current   |
| $V_{BR}$   | Reverse breakdown voltage |
| $I_{BR}$   | Reverse breakdown current |
| $V_{CL}$   | Clamping voltage          |
| $V_{TRIG}$ | Reverse trigger voltage   |
| $I_{TRIG}$ | Reverse trigger current   |
| $V_{HOLD}$ | Reverse holding voltage   |
| $I_{HOLD}$ | Reverse holding current   |
| $I_{PP}$   | Peak pulse current        |

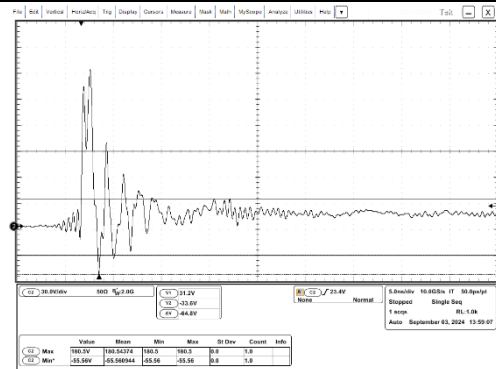


## 7. Typical Characteristic

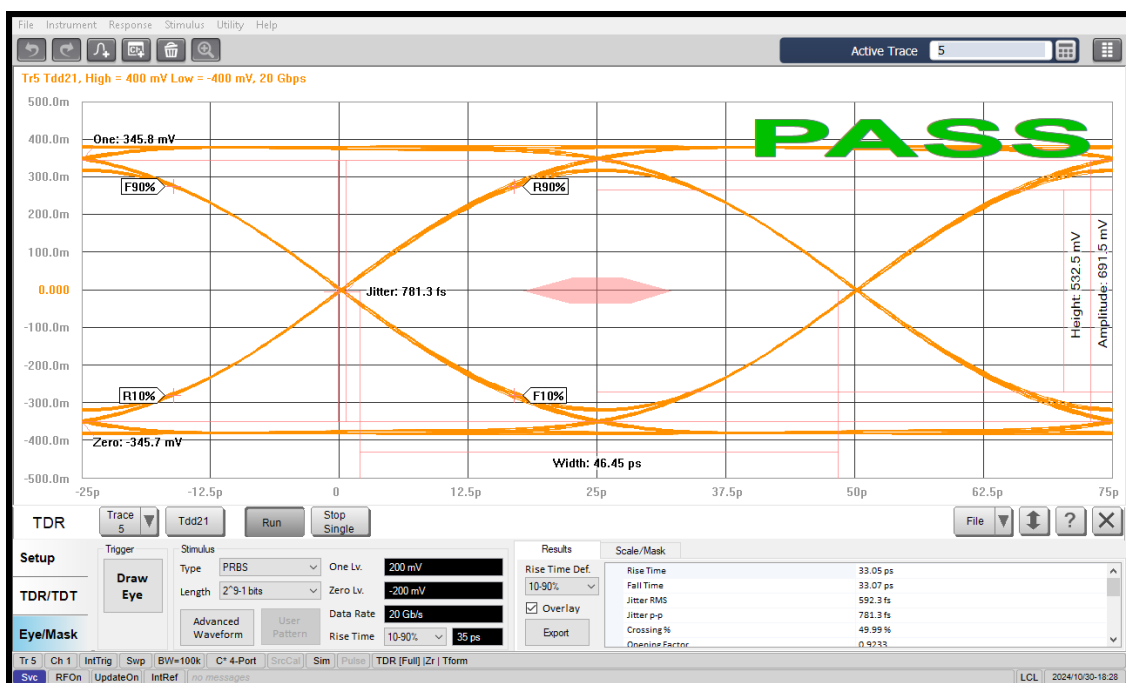




IEC 61000-4-2 waveform (-15kV)



IEC 61000-4-2 waveform (15kV)

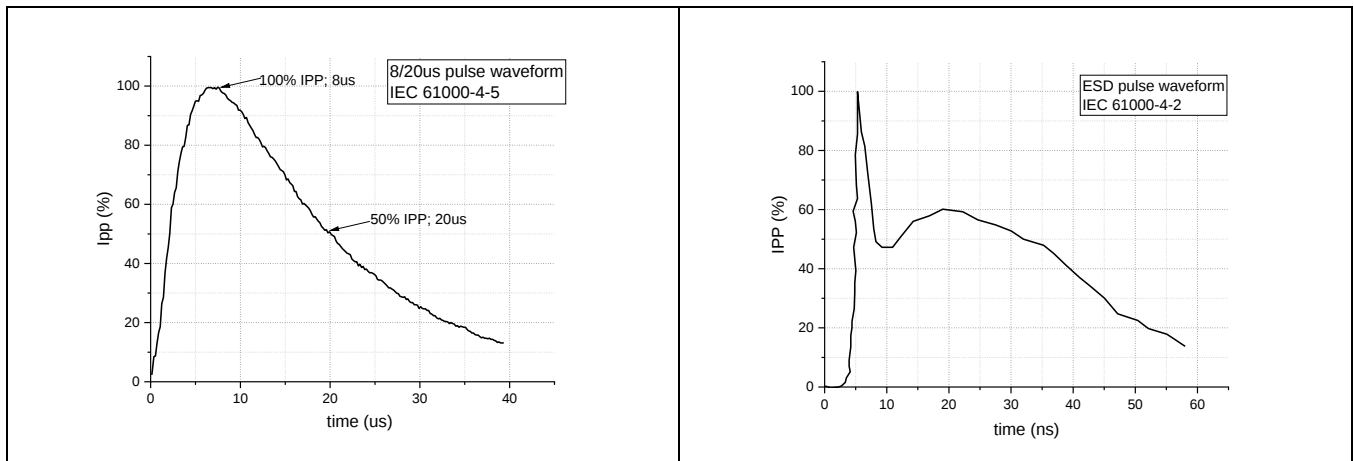


20 Gbps USB4 Eye Diagram

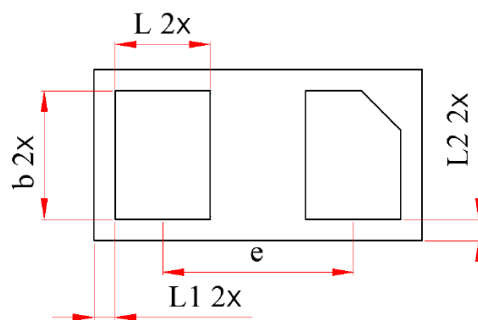
Measurement Wave According to IEC Standard

## AOZ8S204BLS-03

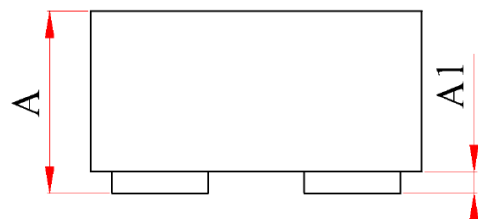
Rev-1.2



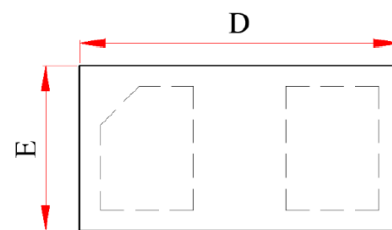
## 8. Dimension



Bottom View



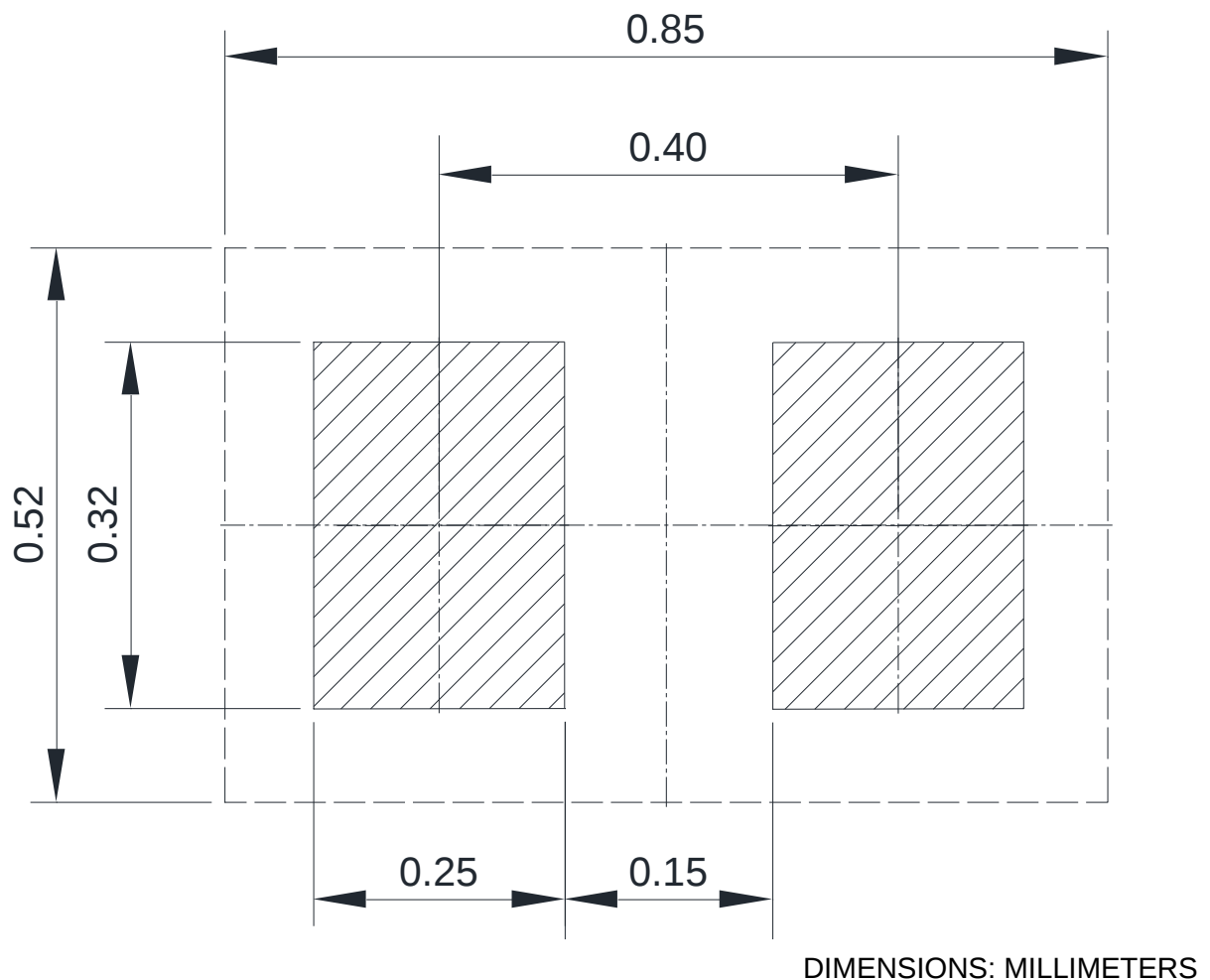
Side View



Top View

| Symbol | Dimension In Millimeters |       |       | Dimension In Inches |       |       |
|--------|--------------------------|-------|-------|---------------------|-------|-------|
|        | Normal                   | Min   | Max   | Normal              | Min   | Max   |
| A      | --                       | 0.280 | 0.340 | --                  | 0.011 | 0.013 |
| A1     | --                       | --    | 0.050 | --                  | --    | 0.002 |
| D      | 0.620                    | 0.590 | 0.640 | 0.024               | 0.023 | 0.025 |
| E      | 0.320                    | 0.290 | 0.340 | 0.013               | 0.011 | 0.013 |
| b      | 0.240                    | 0.215 | 0.265 | 0.009               | 0.008 | 0.010 |
| L      | 0.180                    | 0.155 | 0.205 | 0.007               | 0.006 | 0.008 |
| L1     | 0.040 REF                |       |       | 0.002 REF           |       |       |
| L2     | 0.040 REF                |       |       | 0.002 REF           |       |       |
| e      | 0.360 BSC                |       |       | 0.014 BSC           |       |       |

## 9. Recommended Soldering Footprint



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