

## 1. Description

The TVS3V3L4U(ES) is Transient Voltage Suppressor that designed to protect components which are connected to data and transmission lines against electrostatic discharge (ESD), electrical fast transient (EFT), and lightning. All pins are rated to withstand 30kV ESD pulses using the IEC61000-4-2 air discharge method.

## 2. Features

- IEC 61000-4-2 Level 4 ESD Protection
  - $\pm 30\text{kV}$  Contact Discharge
  - $\pm 30\text{kV}$  Air Discharge
- 300W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 5.0V
- Low leakage current
- RoHS compliant
- Protecting 4 Uni-directional lines
- Ultra Low Junction capacitance: 1.35pF Typ. (IO-GND)

## 3. Applications

- USB 2.0
- Portable electronics
- Servers, notebooks, and desktop PCs
- Digital Visual Interface (DVI)
- 10/100/1000 Ethernet
- Analog Video

## 4. Ordering Information

| Part Number   | Package  | Marking | Material     | Packing     | Quantity per reel | Flammability Rating | Reel Size |
|---------------|----------|---------|--------------|-------------|-------------------|---------------------|-----------|
| TVS3V3L4U(ES) | SOT23-6L | .3V4UC  | Halogen free | Tape & Reel | 3,000 PCS         | UL 94V-0            | 7inches   |

Table-1 Ordering information

## 5. Pin Configuration and Functions

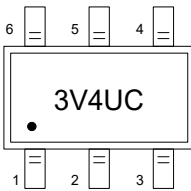
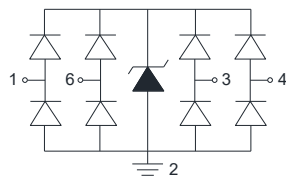
| Pin     | Name | Description    | Outline                                                                           | Circuit Diagram                                                                     |
|---------|------|----------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1,3,4,6 | IO   | Connect to IO  |  |  |
| 2       | GND  | Connect to GND |                                                                                   |                                                                                     |
| 5       | NC   | No Connection  |                                                                                   |                                                                                     |

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>  | -    | 300  | W    |
| Peak pulse current (tp=8/20us)@25°C        | I <sub>pp</sub>  |      | 25   | A    |
| ESD (IEC61000-4-2 air discharge) @25°C     | V <sub>ESD</sub> | -    | ±30  | kV   |
| ESD (IEC61000-4-2 contact discharge) @25°C | V <sub>ESD</sub> | -    | ±30  | kV   |
| Junction temperature                       | T <sub>J</sub>   | -    | 150  | °C   |
| Operating temperature                      | T <sub>OP</sub>  | -40  | 125  | °C   |
| Storage temperature                        | T <sub>STG</sub> | -55  | 150  | °C   |
| Lead temperature                           | T <sub>L</sub>   | -    | 260  | °C   |

Table-3 Absolute Maximum rating

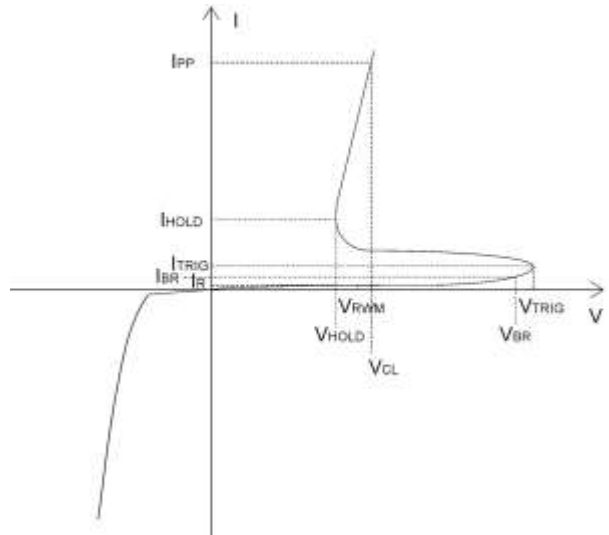
## 6.2. Electrical Characteristics

At TA = 25°C unless otherwise noted

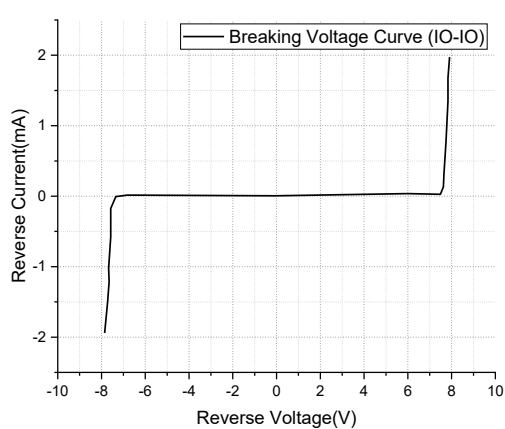
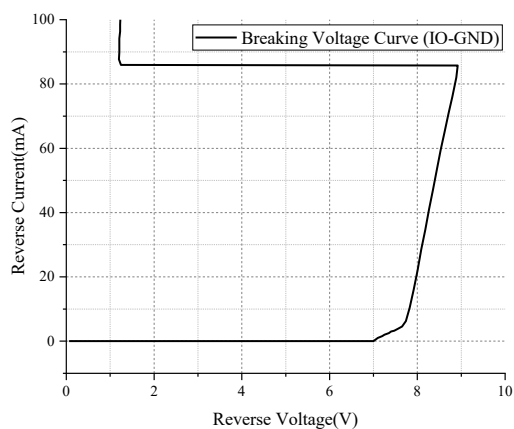
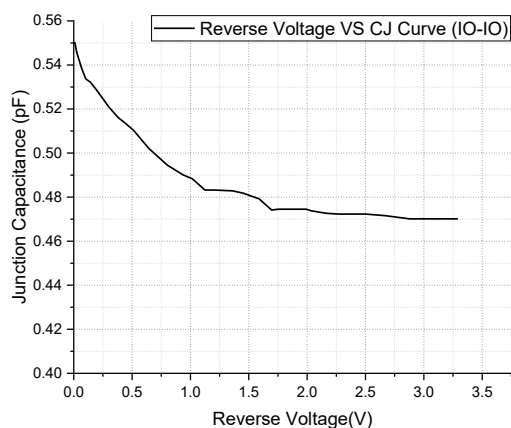
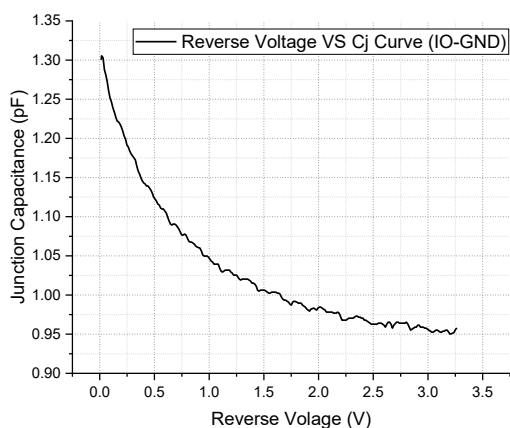
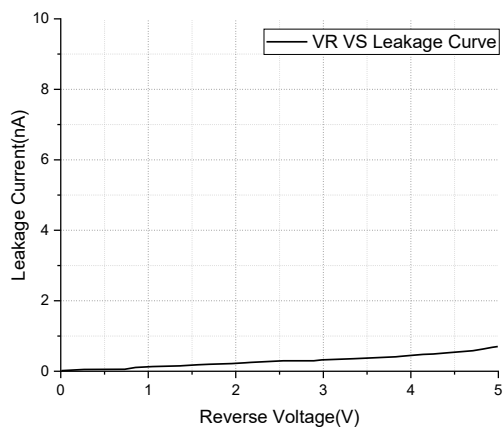
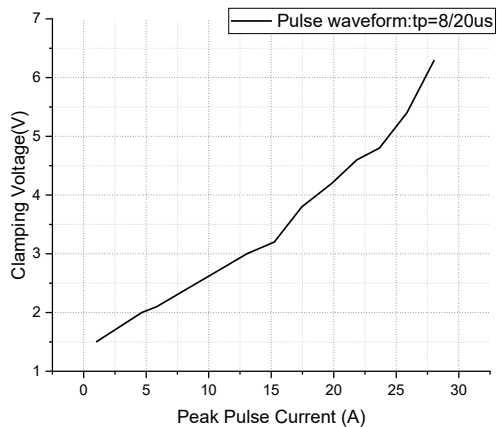
| Parameter                 | Symbol    | Conditions                       | Min. | Typ. | Max. | Units    |
|---------------------------|-----------|----------------------------------|------|------|------|----------|
| Reverse Stand-off Voltage | $V_{RWM}$ |                                  |      | 3.3  | 5.0  | V        |
| Reverse Breakdown Voltage | $V_{BR}$  | $I_T=1mA$ (IO-GND)               | 5.5  | 7.3  |      | V        |
| Reverse Leakage Current   | $I_R$     | $V_{RWM}=5V$                     |      |      | 100  | nA       |
| Clamping Voltage          | $V_{CL}$  | $I_{PP}=1A$ ; $t_p=8/20\mu s$    |      | 1.3  |      | V        |
| Clamping Voltage          | $V_{CL}$  | $I_{PP}=25A$ ; $t_p=8/20\mu s$   |      | 5.4  |      | V        |
| Dynamic Resistance        | $R_{dyn}$ | $I_T=16A$ ; $T_{amb}=25^\circ C$ |      | 0.17 |      | $\Omega$ |
| Junction Capacitance      | $C_J$     | $V_R=0V$ ; $f=1MHz$ ; IO-GND     |      | 1.35 | 1.50 | pF       |
|                           |           | $V_R=0V$ ; $f=1MHz$ ; IO-IO      |      | 0.55 | 0.65 |          |

Table-4 Electrical Characteristics

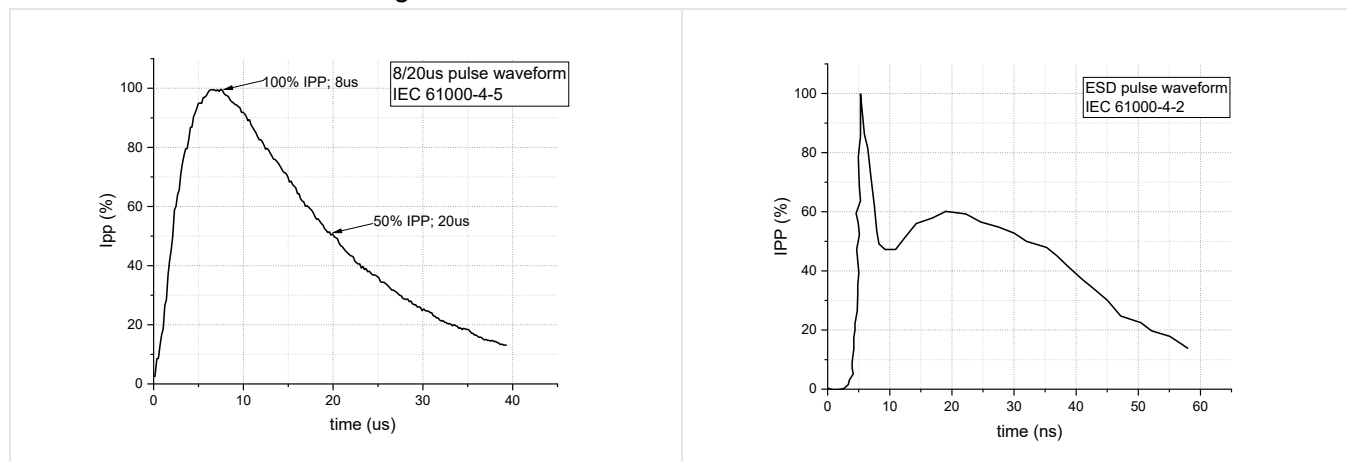
| Symbol     | Parameters                |
|------------|---------------------------|
| $V_{RWM}$  | Reverse stand-off voltage |
| $I_R$      | Reverse leakage current   |
| $V_{BR}$   | Reverse breakdown voltage |
| $I_{BR}$   | Reverse breakdown current |
| $V_{CL}$   | Clamping voltage          |
| $V_{TRIG}$ | 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

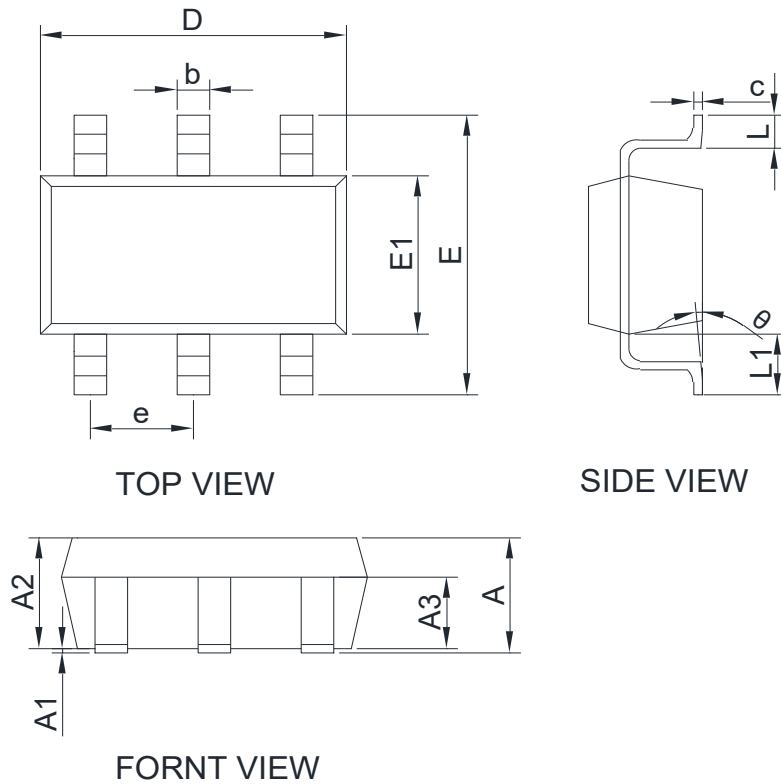


Measurement Wave According to IEC Standard



## 8. Dimension (SOT-23-6L)

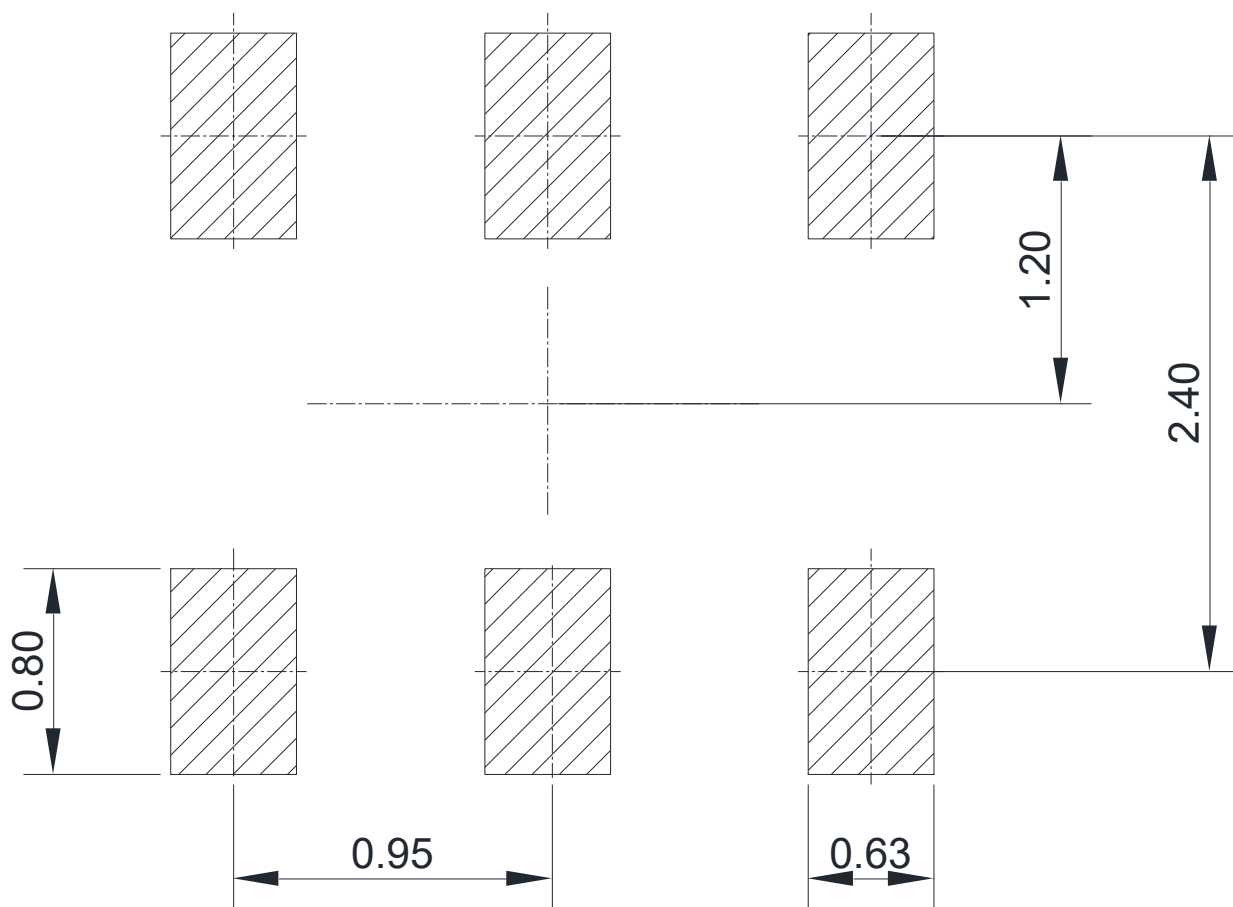
POD(Z)



Unit: mm

| Symbol |     | A     | A1    | A2    | A3    | b     | c        | D     |
|--------|-----|-------|-------|-------|-------|-------|----------|-------|
| Spec   | Min | 1.000 | 0.000 | 1.000 | 0.500 | 0.300 | 0.100    | 2.700 |
|        | Max | 1.300 | 0.110 | 1.200 | 0.800 | 0.500 | 0.250    | 3.100 |
| Symbol |     | E     | E1    | e     | L     | L1    | $\theta$ |       |
| Spec   | Min | 2.600 | 1.500 | 0.850 | 0.300 | 0.550 | 0°       |       |
|        | Max | 3.000 | 1.800 | 1.050 | 0.600 | 0.700 | 8°       |       |

## 9. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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