

## SuperESD - CDSOD323-T12S-ES

## 1. Description

The CDSOD323-T12S-ES is a Transient Voltage Suppressor that designed to protect components which are connected to data and transmission lines against electrostatic discharge (ESD), electrical fast Transients (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
- 450W Peak pulse Power (8/20us)
- RoHS compliance
- Unidirectional configuration
- Low clamping voltage
- Working voltage:  
3.3V/5V/7V/12V/15V/18V/24V/36V

## 3. Applications

- Interfaces
  - USB 2.0/1.1
  - GPIO
  - Ethernet 10/100/1000 Mbps
  - Audio
  - Pushbuttons
- End Equipment
  - Industrial and Serve Robots
  - Laptops and Desktops
  - TV and Monitors
  - Wearables
  - Handheld-wireless Systems

## 4. Ordering Information

| Part Number      | Package | Marking | Material     | Packing     | Quantity per reel | Flammability Rating | Reel Size |
|------------------|---------|---------|--------------|-------------|-------------------|---------------------|-----------|
| CDSOD323-T12S-ES | SOD323  | 12W     | Halogen free | Tape & Reel | 3,000 PCS         | UL 94V-0            | 7 inches  |

Table-1 Ordering information

## 5. Pin Configuration and Functions

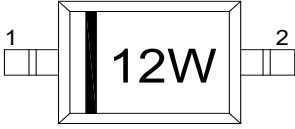
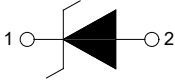
| Pin | Name | Description    | Outline                                                                            | Circuit Diagram                                                                     |
|-----|------|----------------|------------------------------------------------------------------------------------|---------------------------------------------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

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>  | -    | 450              | W    |
| Peak pulse current (tp=8/20us)@25°C        | I <sub>PP</sub>  |      | Refer to Table-5 | 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

| Symbol    | Description                                                                                   |
|-----------|-----------------------------------------------------------------------------------------------|
| $V_{RWM}$ | Rated reverse stand-off voltage                                                               |
| $V_{BR}$  | Minimum breakdown voltage @ $I_T = 1\text{mA}$                                                |
| $V_{CL}$  | Clamping voltage                                                                              |
| $I_{PP}$  | Maximum peak pulse current                                                                    |
| $I_R$     | Reverse leakage current @ $V_{RWM}$                                                           |
| $C_O$     | Typical line capacitance ( $V_{IO}=0\text{V}$ , $V_{P-P} = 30\text{mV}$ , $f = 1\text{MHz}$ ) |

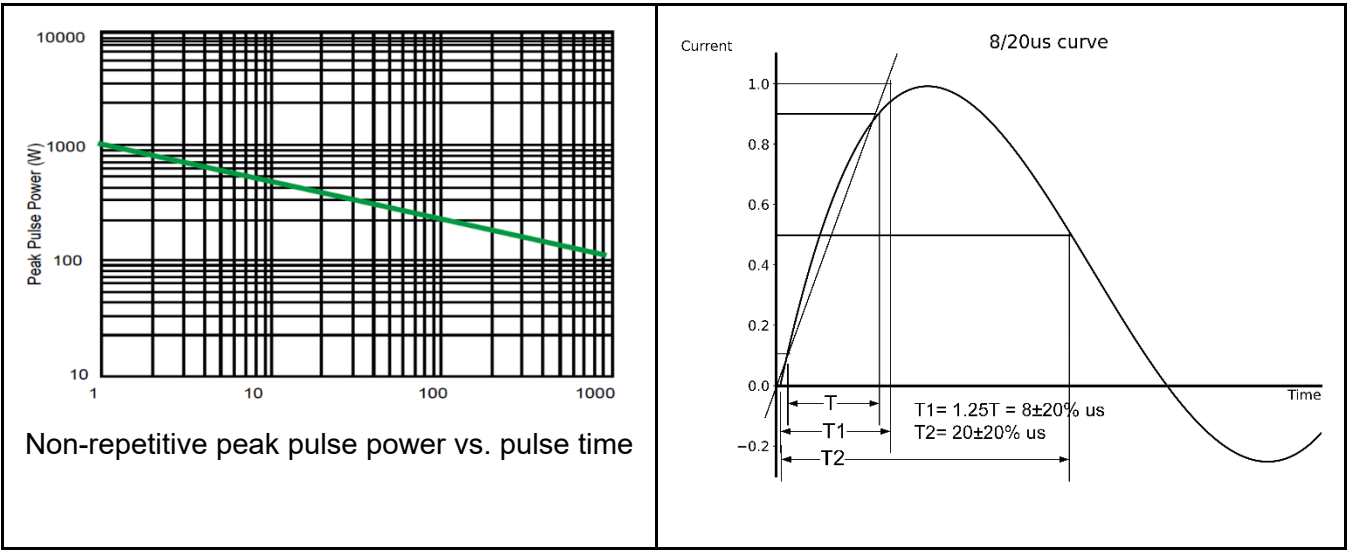
Table-4 Parameters Description

At  $T_A = 25^\circ\text{C}$  unless otherwise noted

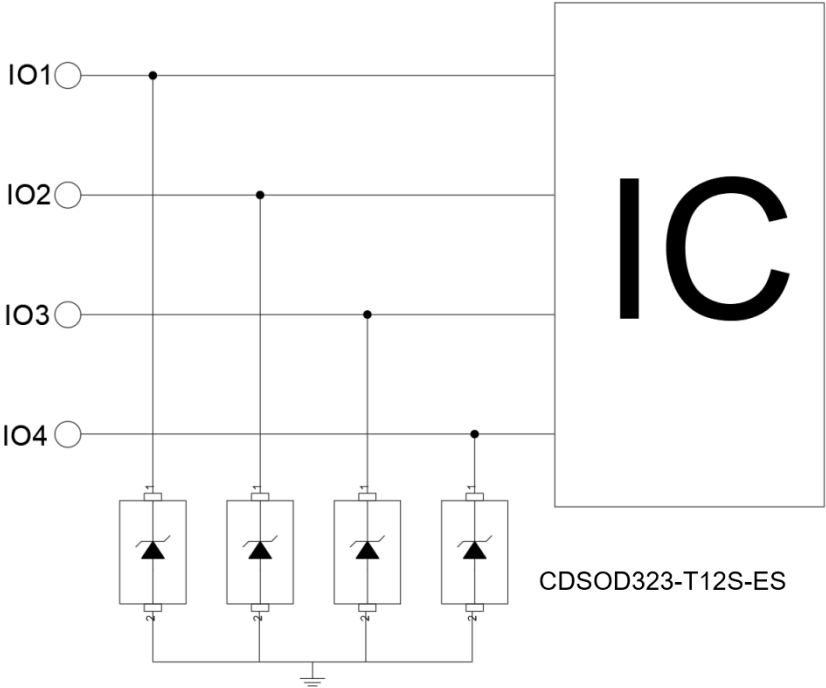
| Part Number      | $V_{RWM}$<br>(Max.) | $V_{BR}(\text{Min.})$ | $V_{CL}@I=1\text{A}$<br>(Typ.) | $I_{PP}$<br>(Max.) | $V_{CL}@I=I_{PP}$<br>(Typ.) | $I_R(\text{Max.})$ | $C_O(\text{Typ.})$ |
|------------------|---------------------|-----------------------|--------------------------------|--------------------|-----------------------------|--------------------|--------------------|
|                  | (V)                 | (V)                   | (V)                            | (A)                | (V)                         | ( $\mu\text{A}$ )  | (pF)               |
| CDSOD323-T12S-ES | 12.0                | 13.3                  | 16.0                           | 15                 | 20.0                        | 1.0                | 100                |

Table-5 Electrical Characteristics for All Series

7. Typical Characteristic



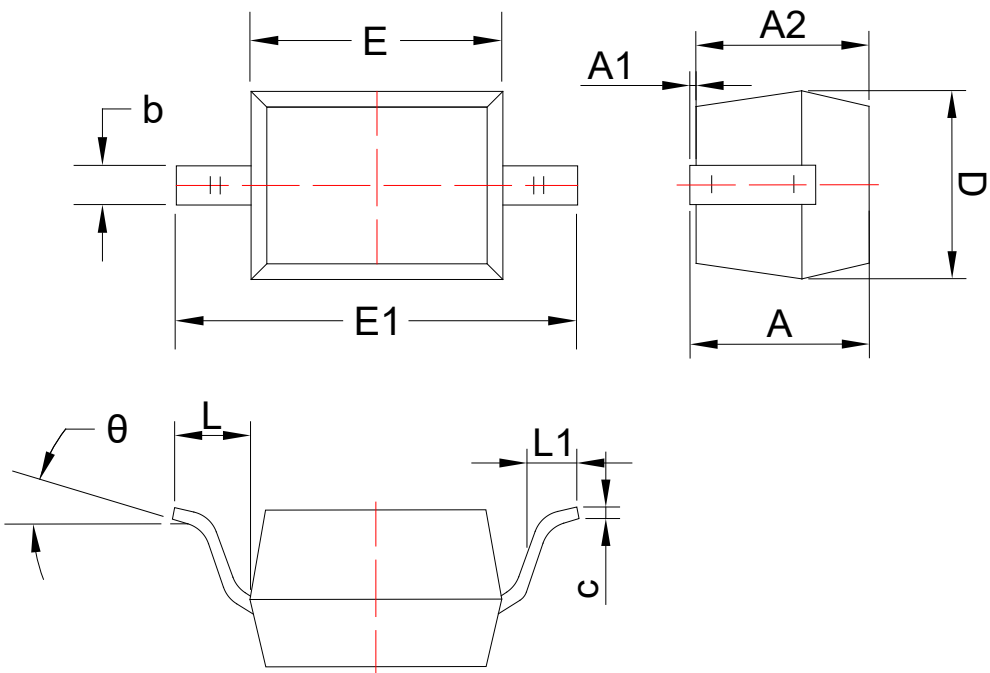
8. Typical Application



Pic-3 Typical Internet 1G Interface Application

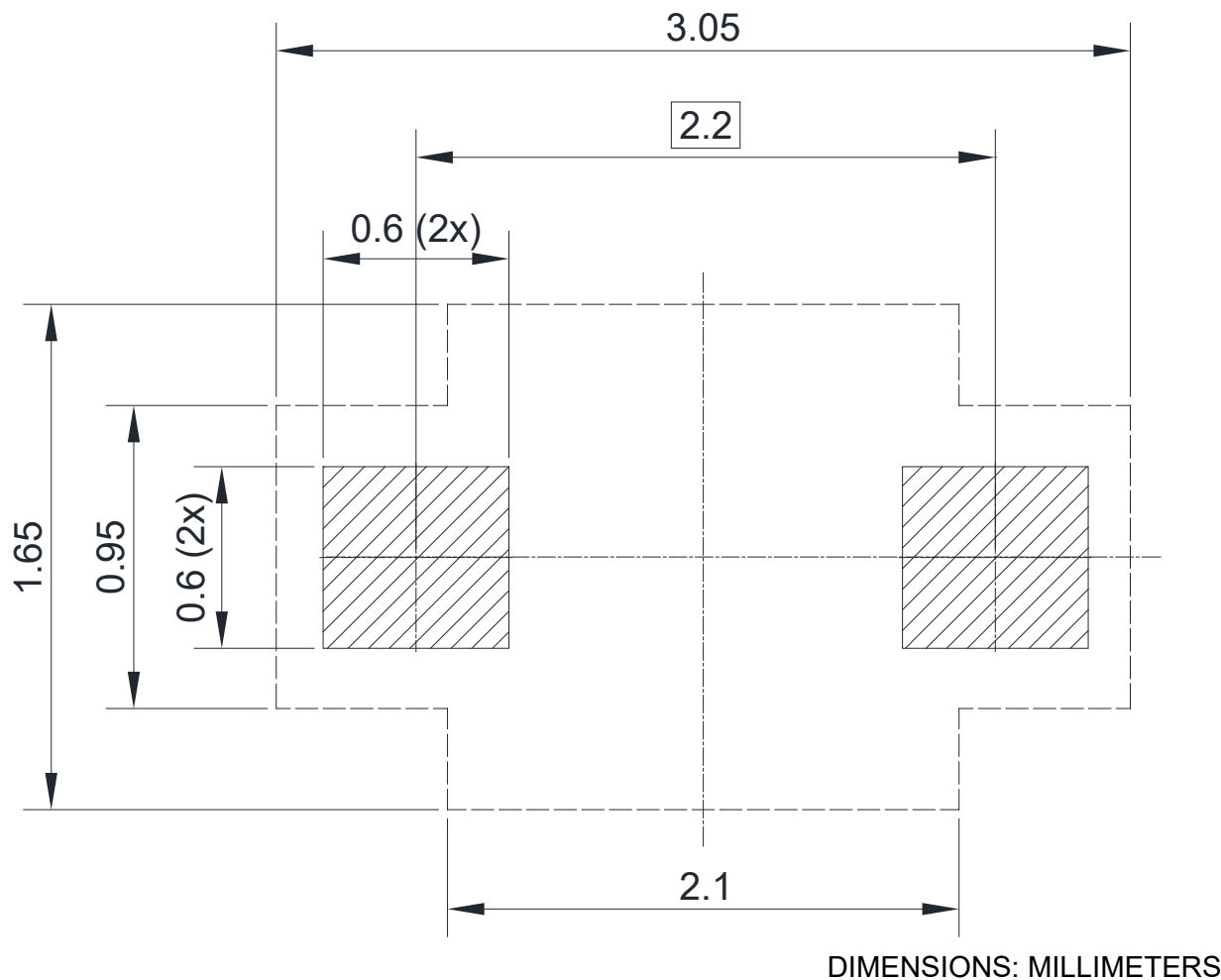
9. Dimension (SOD-323)

POD(Z)



| Symbol | Dimensions in Millimeters |      |
|--------|---------------------------|------|
|        | Min.                      | Max. |
| A      | 0.80                      | 1.00 |
| A1     | 0.00                      | 0.14 |
| A2     | 0.66                      | 0.97 |
| b      | 0.25                      | 0.35 |
| c      | 0.08                      | 0.18 |
| D      | 1.20                      | 1.40 |
| E      | 1.55                      | 1.80 |
| E1     | 2.50                      | 2.80 |
| L      | 0.475REF                  |      |
| L1     | 0.25                      | 0.40 |
| θ      | 0°                        | 8°   |

10. Recommended Soldering Footprint



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