

## Features

- ❑ IEC61000-4-2 (ESD)      +/-30kV (air),  
                                         +/-30KV(contact)
- IEC61000-4-4 (EFT)      40A (5/50ns)
- IEC61000-4-5 (EOS) (1.2/50uS, 8/20uS)
- ❑ Protects one I/O line (bidirectional)
- ❑ Working voltages : 3.3V,8V,12V,15V,18V,  
                                 24V,36V
- ❑ Low leakage current
- ❑ ROHS compliant

## Description

The TSxx01TEX Series are ultra low capacitance transient voltage suppressor arrays, designed to protect applications such as portable electronics and SMART phones. The TSxx01TEX and Series meets IEC 61000-4-2 (ESD) and IEC 61000-4-4 (EFT) requirements. At higher operating frequencies or faster edge rates, insertion loss and signal integrity are a major concern. This series offers a ultra low capacitance and low leakage current in a miniature SOD323 package.

## Applications

- ❑ Cell Phone Handsets and Accessories
- ❑ Microprocessor based equipment
- ❑ Personal Digital Assistants (PDA's)
- ❑ Notebooks, Desktops, and Servers
- ❑ Portable Instrumentation
- ❑ Peripherals
- ❑ USB Interface

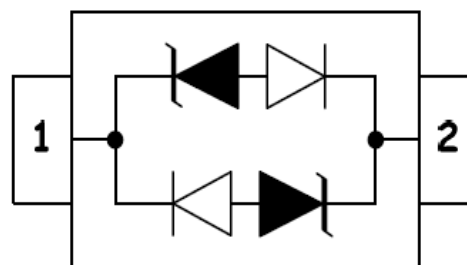
## Mechanical Characteristics

- ❑ SOD323 package
- ❑ Flammability Rating: UL 94V-0
- ❑ Packaging:Tape and Reel
- ❑ High temperature soldering guaranteed:260°C/10s
- ❑ Reel size: 7 inch

## Ordering Information

- Device: TSxx01TEX
- ❑ Package: SOD323
  - ❑ Material: Halogen free
  - ❑ Packing: Tape & Reel
  - ❑ Quantity per reel: 3,000pcs

## Pin Configuration



(Top View)

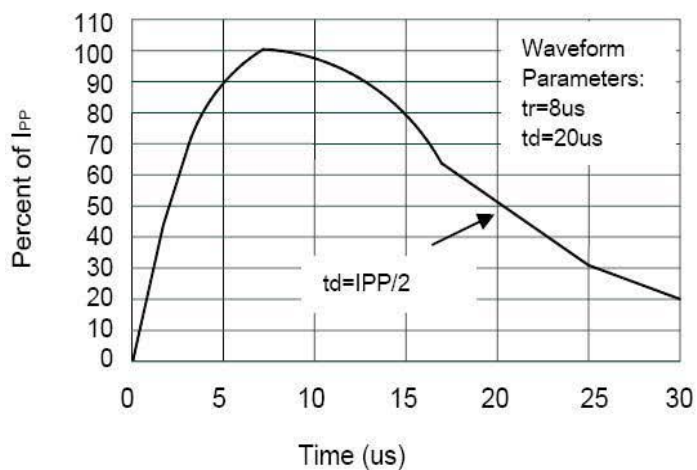
### Absolute Maximum Rating

| Symbol    | Parameter                       | Value       | Units |
|-----------|---------------------------------|-------------|-------|
| $V_{ESD}$ | ESD per IEC 61000-4-2 (Air)     | $\pm 30$    | kV    |
|           | ESD per IEC 61000-4-2 (Contact) | $\pm 30$    |       |
| $T_{OPT}$ | Operating Temperature           | -55 to +150 | °C    |
| $T_{STG}$ | Storage Temperature             | -55 to +150 | °C    |
| $T_{LST}$ | Lead Soldering Temperature      | 260         | °C    |

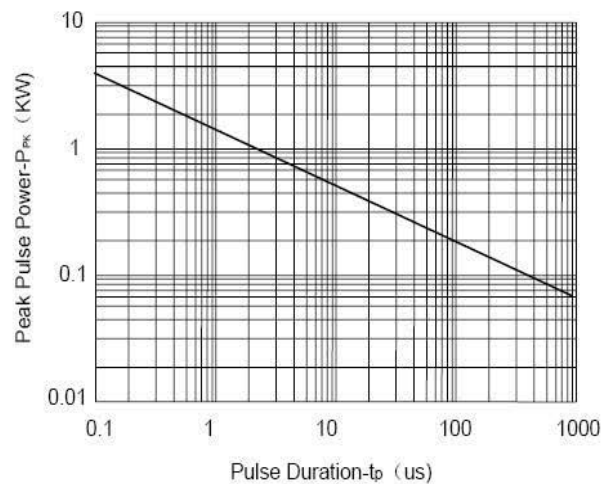
### Electrical Characteristics (T = 25°C)

| PART<br>NUMBER | DEVICE<br>MARKING | $V_{RWM}$<br>(V)<br>(max.) | $V_B$<br>(V)<br>(min.) | $I_{pp}$<br>(A)<br>(max.) | $V_{C@1A}$<br>(V)<br>(max.) | $V_C$<br>(V)<br>(max.) (@A) |    | $I_R$<br>(nA)<br>(max.) | $C_T$<br>(pF)<br>(typ.) |
|----------------|-------------------|----------------------------|------------------------|---------------------------|-----------------------------|-----------------------------|----|-------------------------|-------------------------|
| TS0301TEX      | AC/CC             | 3.3                        | 4.0                    | 20                        | 8.0                         | 16                          | 20 | 50                      | 0.9                     |
| TS0801TEX      | BC                | 8.0                        | 9.2                    | 15                        | 15.0                        | 28                          | 15 | 50                      | 0.9                     |
| TS1201TEX      | DC                | 12.0                       | 13.3                   | 13                        | 19.0                        | 32                          | 13 | 50                      | 0.9                     |
| TS1501TEX      | EC                | 15.0                       | 16.7                   | 10                        | 24.0                        | 36                          | 10 | 50                      | 0.9                     |
| TS1801TEX      | GC                | 18.0                       | 20.0                   | 8                         | 28.0                        | 45                          | 8  | 50                      | 0.9                     |
| TS2401TEX      | HC                | 24.0                       | 26.7                   | 7                         | 36.0                        | 50                          | 7  | 50                      | 0.9                     |
| TS3601TEX      | KC                | 36.0                       | 40.0                   | 6                         | 50.0                        | 60                          | 6  | 50                      | 0.9                     |

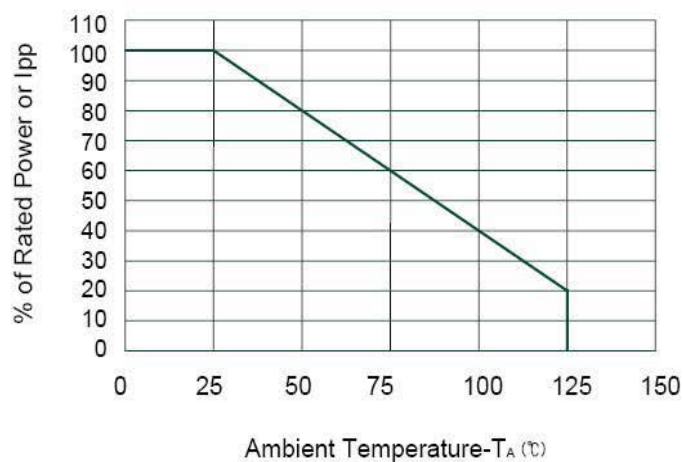
## Electrical Characteristics Curve



**Pulse Waveform**



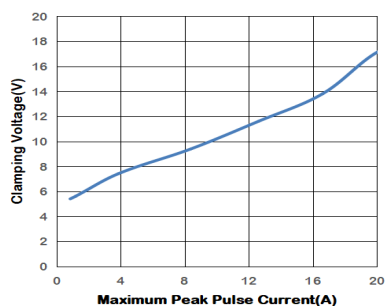
**Non-Repetitive Peak Pulse Power vs. Pulse Time**



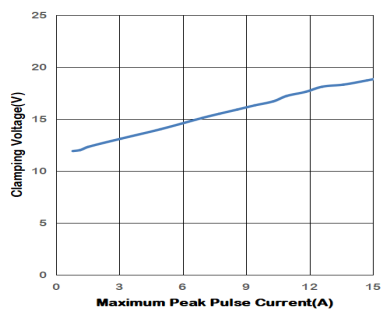
**Power Derating Curve**

**IEC61000-4-5 EOS Test (1.2/50uS, 8/20uS)**

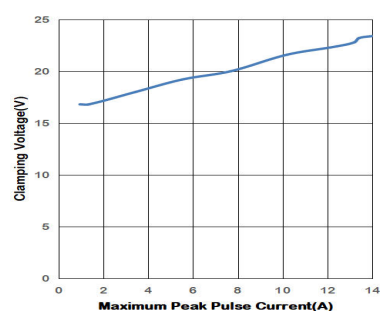
TS0301TEX



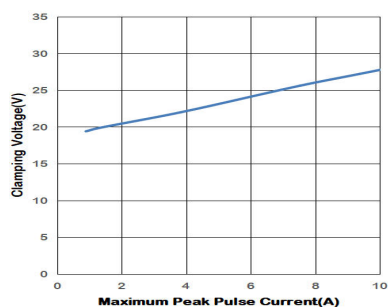
TS0801TEX



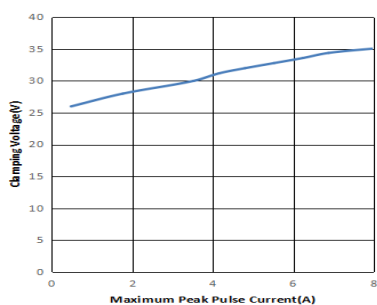
TS1201TEX



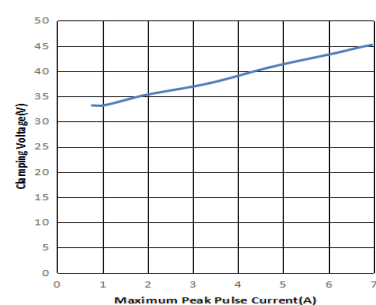
TS1501TEX



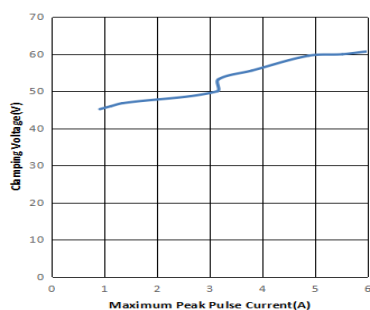
TS1801TEX



TS2401TEX



TS3601TEX

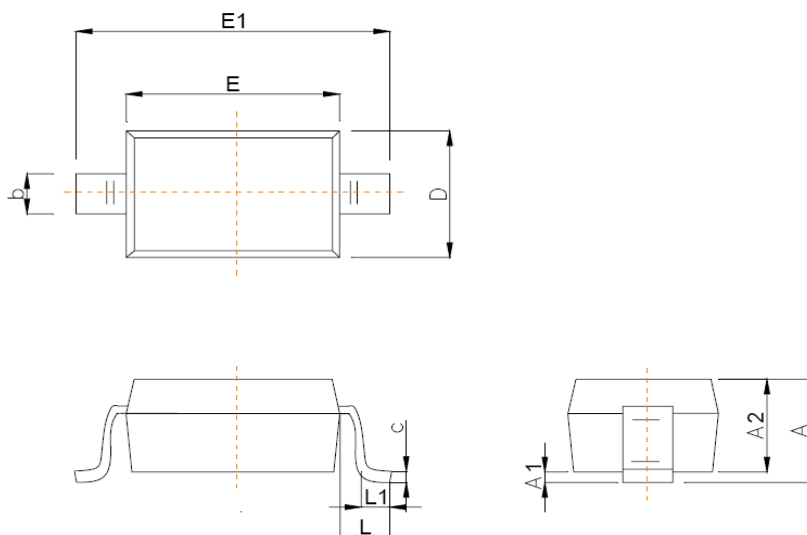


## Package Outline

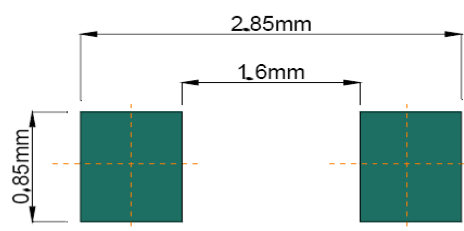
□ SOD323 package



## Package Outline Dimensions



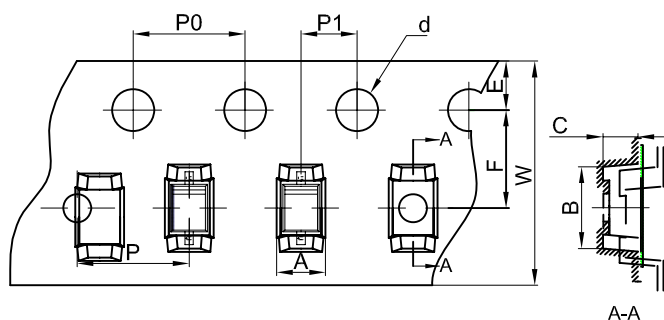
| Symbol | Dimensions In Millimeters |       |
|--------|---------------------------|-------|
|        | Min                       | Max   |
| A      |                           | 1.00  |
| A1     | 0.000                     | 0.100 |
| A2     | 0.800                     | 0.900 |
| b      | 0.250                     | 0.350 |
| c      | 0.080                     | 0.150 |
| D      | 1.200                     | 1.400 |
| E      | 1.600                     | 1.800 |
| E1     | 2.500                     | 2.700 |
| e      | 1.800                     | 2.040 |
| L      | 0.475 REF                 |       |
| L1     | 0.250                     | 0.400 |
| θ      | 0°                        | 8°    |



**Recommended Pad outline**

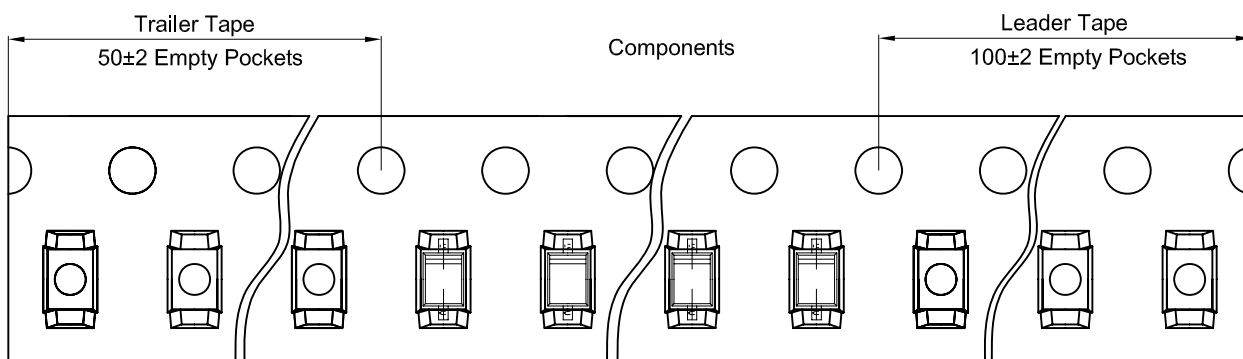
P.S. TSxx01TEX series are the bidirectional TVS. The device marking is directionless. Then the device orientation in tape is not requested.

## Tape and Reel Specification

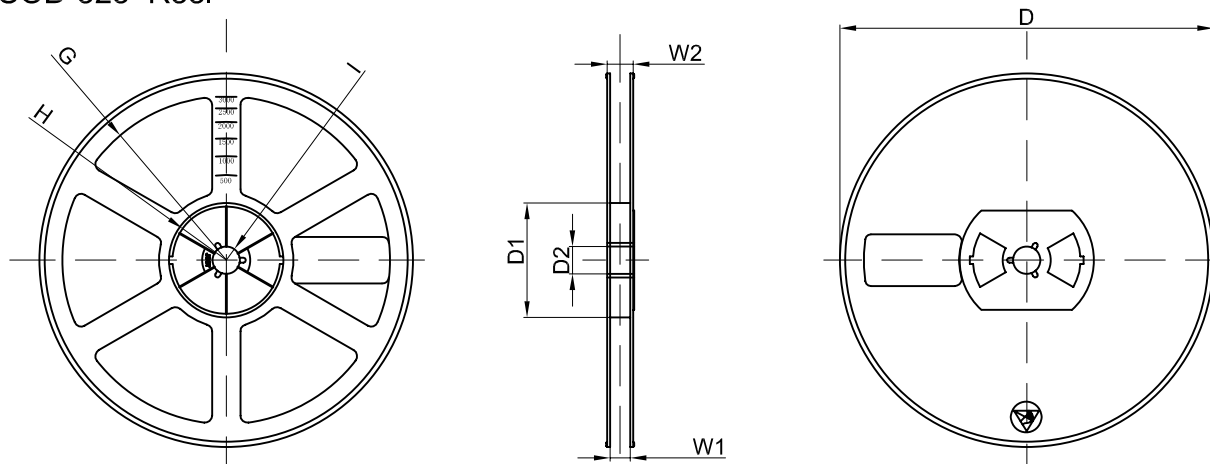


| Dimensions are in millimeter |         |         |         |        |        |        |        |        |        |           |
|------------------------------|---------|---------|---------|--------|--------|--------|--------|--------|--------|-----------|
| Pkg type                     | A       | B       | C       | d      | E      | F      | P0     | P      | P1     | W         |
| SOD-323                      | 1.46    | 2.90    | 1.25    | Ø1.50  | 1.75   | 3.50   | 4.00   | 4.00   | 2.00   | 8.00      |
| (Tolerance)                  | +/-0.05 | +/-0.05 | +/-0.05 | +/-0.1 | +/-0.1 | +/-0.1 | +/-0.1 | +/-0.1 | +/-0.1 | +0.3/-0.1 |

### SOD-323 Tape Leader and Trailer



### SOD-323 Reel



| Dimensions are in millimeter |         |       |       |        |        |       |      |       |
|------------------------------|---------|-------|-------|--------|--------|-------|------|-------|
| Reel Option                  | D       | D1    | D2    | G      | H      | I     | W1   | W2    |
| 7" Dia                       | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |
| Tolerance                    | +/-2    | +/-1  | +/-1  | +/-1   | +/-1   | +/-1  | +/-1 | +/-1  |

| REEL     | Reel Size | Box        | Box Size(mm) | Carton      | Carton Size(mm) | G.W.(kg) |
|----------|-----------|------------|--------------|-------------|-----------------|----------|
| 3000 pcs | 7 inch    | 45,000 pcs | 203×203×195  | 180,000 pcs | 438×438×220     |          |