

## Features

- ❑ IEC61000-4-2 (ESD)  $\pm 30\text{kV}$  (air),  
 $\pm 30\text{kV}$  (contact)
- IEC61000-4-4 (EFT) 40A (5/50 ns)
- IEC61000-4-5 (EOS) (1.2/50 $\mu\text{s}$ , 8/20 $\mu\text{s}$ )
- ❑ 350 Watts Peak Pulse Power per (tp=8/20 $\mu\text{s}$ )
- ❑ Protects one I/O line (bidirectional)
- ❑ Working voltages : 5V,8V,12V,15V,18V,24V  
36V
- ❑ Low leakage current
- ❑ ROHS compliant

## Description

The TSxx01LBX Series is designed for applications requiring transient overvoltage protection capability. They are intended for use in voltage and ESD sensitive equipment such as computers, printers, business machines, communication systems, medical equipment and other applications. These devices are ideal for situations where board space is at a premium. This series has been specifically designed to protect sensitive components which are connected to power data and transmission lines from overvoltage caused by ESD(electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients).

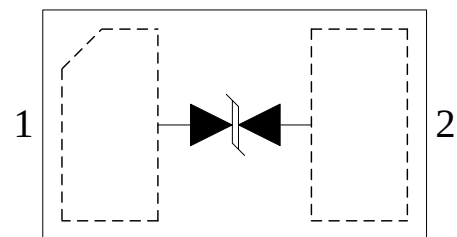
## Applications

- ❑ Cell Phone Handsets and Accessories
- ❑ Microprocessor based equipment
- ❑ Personal Digital Assistants (PDA's)
- ❑ Notebooks, Desktops, and Servers
- ❑ Portable Instrumentation
- ❑ Networking and Telecom
- ❑ Serial and Parallel Ports.
- ❑ Peripherals

## Mechanical Characteristics

- ❑ DFN1.0\*0.6-2L package
- ❑ Flammability Rating: UL 94V-0
- ❑ Packaging: Tape and Reel
- ❑ High temperature soldering guaranteed:260°C/10s
- ❑ Reel size: 7 inch

## Pin Configuration



DFN1.0\*0.6-2L  
(Top View)

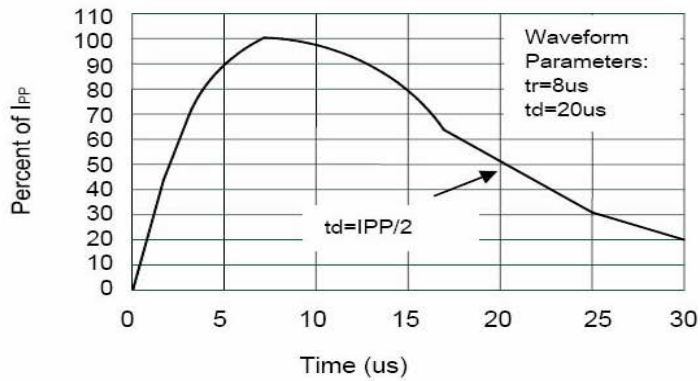
**Absolute Maximum Rating**

| Symbol    | Parameter                       | Value         | Units        |
|-----------|---------------------------------|---------------|--------------|
| $V_{ESD}$ | ESD per IEC 61000-4-2 (Air)     | $\pm 30$      | kV           |
|           | ESD per IEC 61000-4-2 (Contact) | $\pm 30$      |              |
| $P_{PP}$  | Peak Pulse Power (8/20 $\mu$ s) | 350           | W            |
| $T_{OPT}$ | Operating Temperature           | -55/+150      | $^{\circ}$ C |
| $T_{STG}$ | Storage Temperature             | -55/+150      | $^{\circ}$ C |
| $T_L$     | Lead Soldering Temperature      | 260 (10 sec.) | $^{\circ}$ C |

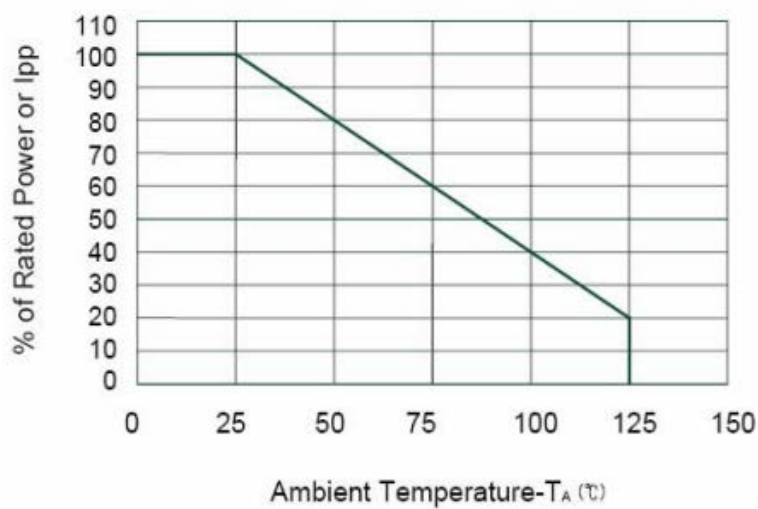
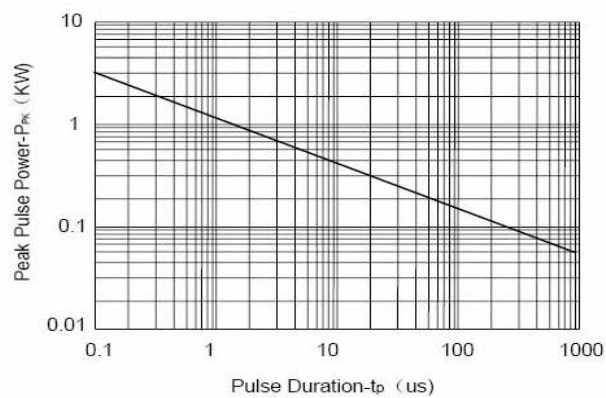
**Electrical Characteristics (T = 25 $^{\circ}$ C)**

| PART<br>NUMBER | $V_{RWM}$<br>(V) | $V_B$<br>(V) | $I_T$<br>(mA) | $V_C@1A$<br>(V) | $V_C$<br>(V) |      | $I_R$<br>( $\mu$ A) | $C_T$<br>(pF) | DEVICE<br>MARKING |
|----------------|------------------|--------------|---------------|-----------------|--------------|------|---------------------|---------------|-------------------|
|                | (max.)           | (min.)       |               | (max.)          | (max.)       | (@A) | (max.)              | (max.)        |                   |
| TS0501LBX      | 5                | 6.0          | 1             | 10              | 24           | 19   | 0.1                 | 80            | 5L                |
| TS0801LBX      | 8                | 9.2          | 1             | 15              | 28           | 15   | 0.1                 | 70            | 8L                |
| TS1201LBX      | 12               | 13.3         | 1             | 19              | 32           | 12   | 0.1                 | 60            | CL                |
| TS1501LBX      | 15               | 16.7         | 1             | 24              | 36           | 10   | 0.1                 | 50            | FL                |
| TS1801LBX      | 18               | 20.4         | 1             | 28              | 45           | 8    | 0.1                 | 40            | IL                |
| TS2401LBX      | 24               | 26.7         | 1             | 36              | 50           | 5    | 0.1                 | 30            | OL                |
| TS3601LBX      | 36               | 40.0         | 1             | 50              | 60           | 4    | 0.1                 | 20            | KL                |

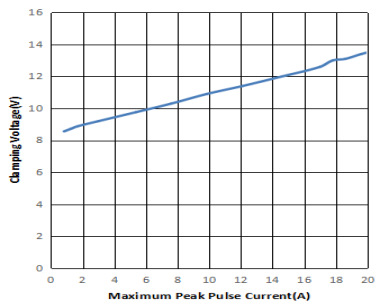
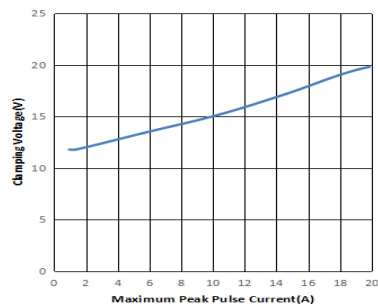
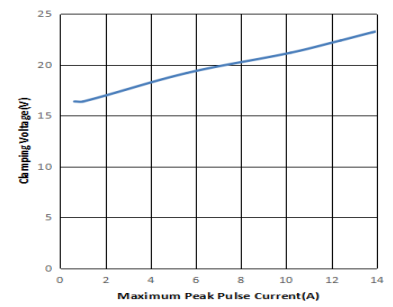
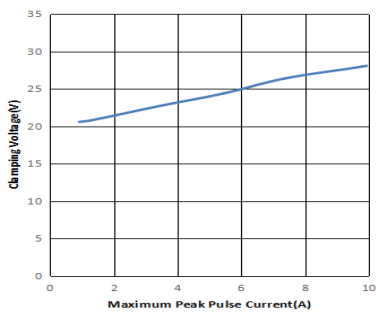
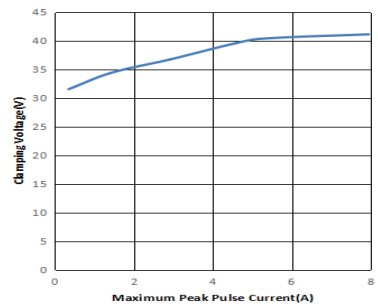
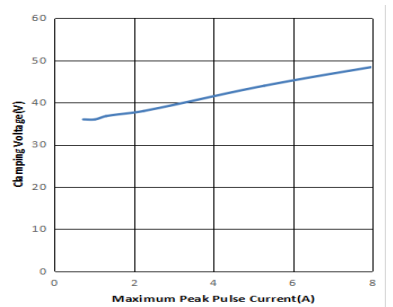
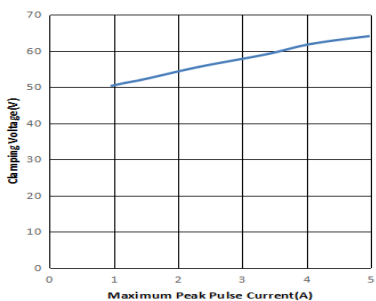
## Typical Characteristics



**Pulse Waveform**

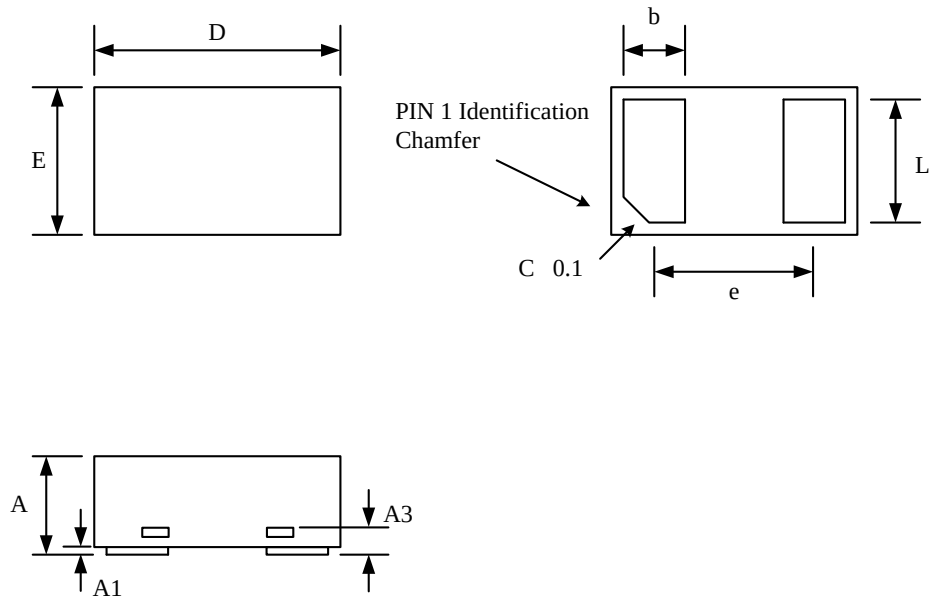


**Power Derating Curve**

**IEC61000-4-5 EOS Test (1.2/50uS, 8/20uS)**
**TS0501LBX**

**TS0801LBX**

**TS1201LBX**

**TS1501LBX**

**TS1801LBX**

**TS2401LBX**

**TS3601LBX**


## Package Outline Dimensions

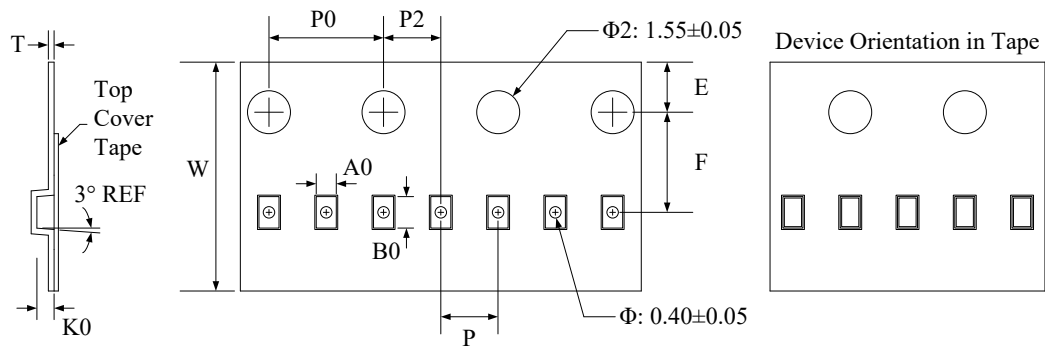
- DFN1.0\*0.6-2L Package
- MSL-1



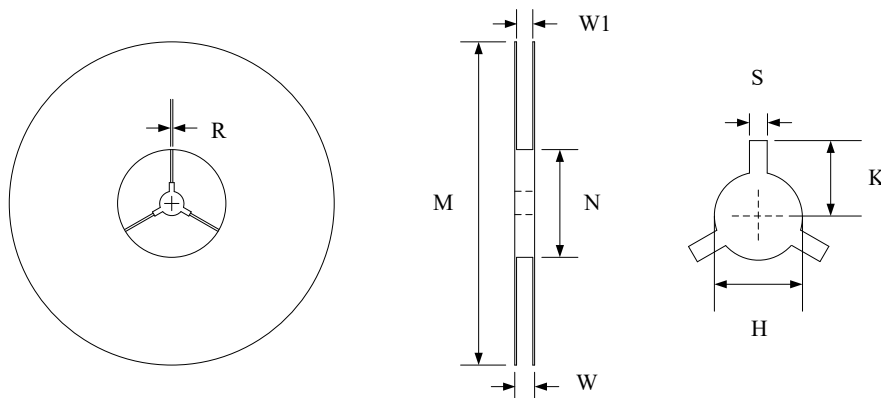
Package Dimensions (Controlling dimensions are in millimeters)

| Symbol | Dimensions In Millimeters |         | Dimensions In Inches |         |
|--------|---------------------------|---------|----------------------|---------|
|        | Minimum                   | Maximum | Minimum              | Maximum |
| A      | 0.400                     | 0.550   | 0.016                | 0.022   |
| A1     | 0.000                     | 0.050   | 0.000                | 0.002   |
| A3     | 0.125 REF                 |         | 0.005 REF            |         |
| D      | 0.950                     | 1.050   | 0.037                | 0.041   |
| E      | 0.550                     | 0.650   | 0.022                | 0.026   |
| b      | 0.200                     | 0.300   | 0.008                | 0.012   |
| e      | 0.650 BSC                 |         | 0.026 BSC            |         |
| L      | 0.450                     | 0.550   | 0.018                | 0.022   |

## Tape and Reel Specification



| Symbol          | W        | A0       | B0        | K0        | E        | F        | P       | P0      | P2       | T        |
|-----------------|----------|----------|-----------|-----------|----------|----------|---------|---------|----------|----------|
| Dimensions (mm) | 8.00±0.1 | 0.7±0.05 | 1.15±0.05 | 0.55±0.05 | 1.75±0.1 | 3.5±0.05 | 2.0±0.1 | 4.0±0.1 | 2.0±0.05 | 0.2±0.05 |



| Symbol          | Reel Size | M         | N        | W        | W1      | H        | S       | K        | R        |
|-----------------|-----------|-----------|----------|----------|---------|----------|---------|----------|----------|
| Dimensions (mm) | Φ178      | 178.0±1.0 | 60.0±1.0 | 11.5±0.5 | 9.0±0.5 | 13.0±0.5 | 2.0±0.1 | 11.0±0.2 | 1.0±0.05 |

## Ordering Information

| Part Number | Qty per Reel | Reel Size |
|-------------|--------------|-----------|
| TSxx01LBX   | 10, 000      | 7 inch    |