

## Features

- ❑ IEC61000-4-2 (ESD) +/-30kV (air),  
+/-30KV(contact)  
IEC61000-4-4 (EFT) 80A (5/50ns)
- ❑ Peak Pulse Current(tp=8/20us) 50A
- ❑ Protects one I/O line
- ❑ Working voltages : 5.0V
- ❑ Low leakage current

## Description

The TS0531LDX 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).

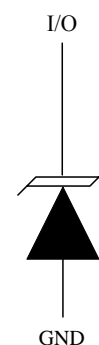
## Applications

- ❑ 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

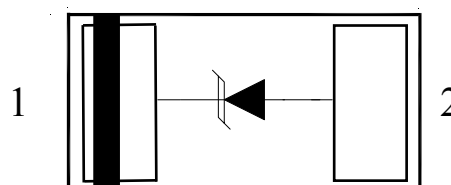
## Mechanical Characteristics

- ❑ DFN1610-2L package
- ❑ Flammability Rating: UL 94V-0
- ❑ Packaging: Tape and Reel
- ❑ High temperature soldering guaranteed:260°C/10s
- ❑ Reel size: 7 inch
- ❑ ROHS compliant
- ❑ MSL-1

## Circuit Diagram



## Pin Configuration



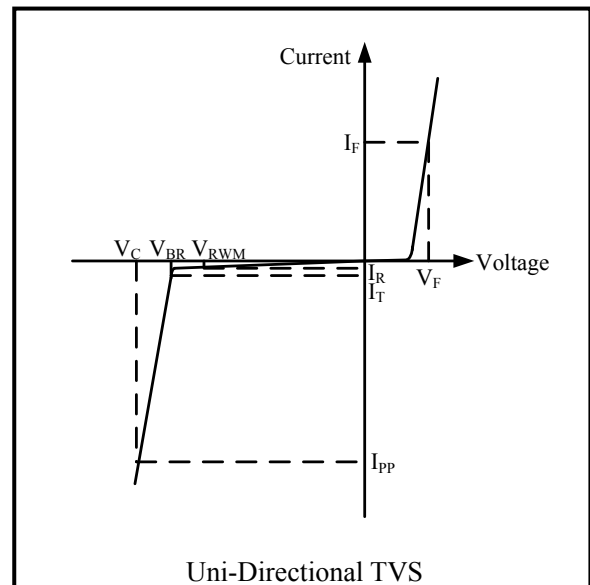
DFN1610-2L  
(Top View)

### Absolute Maximum Rating

Symbol	Parameter	Value	Units
$V_{ESD}$	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	$\pm 30$ $\pm 30$	kV
$I_{PP}$	Peak Pulse Current(8/20us)	50	A
$T_{OPT}$	Operating Temperature	-55/+150	°C
$T_{STG}$	Storage Temperature	-55/+150	°C
$T_L$	Lead Soldering Temperature	260 (10 sec.)	°C

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

Symbol	Parameter
$V_{RWM}$	Nominal Reverse Working Voltage
$I_R$	Reverse Leakage Current @ $V_{RWM}$
$V_{t1}$	Trigger Voltage
$I_{t1}$	Trigger Current @ $V_{t1}$
$V_h$	Holding Voltage
$I_h$	Holding Current @ $V_h$
$V_C$	Clamping Voltage @ $I_{PP}$
$V_{CR}$	Reverse Clamping Voltage @ $I_{PP}$
$I_{PP}$	Maximum Peak Pulse Current
$C_{ESD}$	Parasitic Capacitance



Symbol	Test Condition	Minimum	Typical	Maximum	Units
$V_{RWM}$				5.0	V
$I_R$	$V_{RWM} = 5.0V, T = 25\text{ }^\circ\text{C}$		0.01	0.1	$\mu\text{A}$
$V_{BR}$	$I_T = 1\text{mA}$	6.0			V
$V_F$	$I_T = 1\text{mA}$			0.9	V
$V_C$	$I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$			10.0	V
$V_C$	$I_{PP} = 30\text{A}, t_p = 8/20\mu\text{s}$			13.0	V
$V_C$	$I_{PP} = 50\text{A}, t_p = 8/20\mu\text{s}$			16.0	V
$C_{ESD}$	$V_R = 0V, f = 1\text{MHz}$			360	pF

### Typical Characteristics

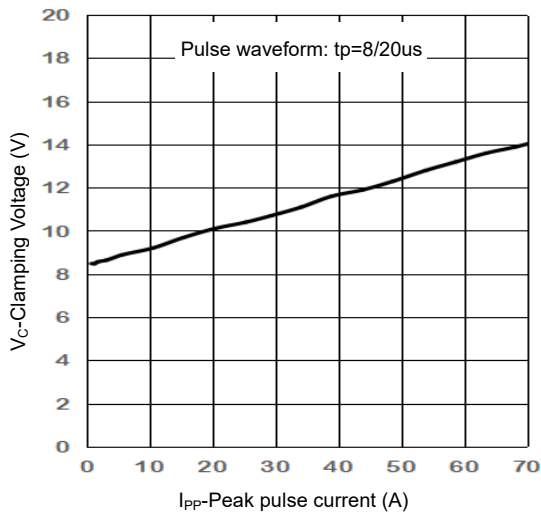


Fig 3. Clamping voltage vs. Peak pulse current

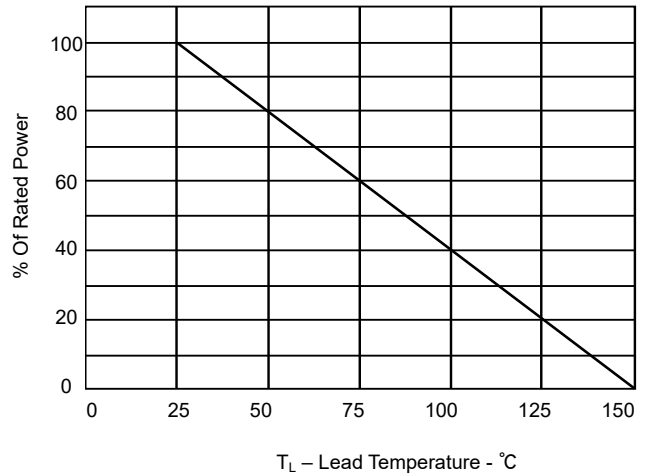
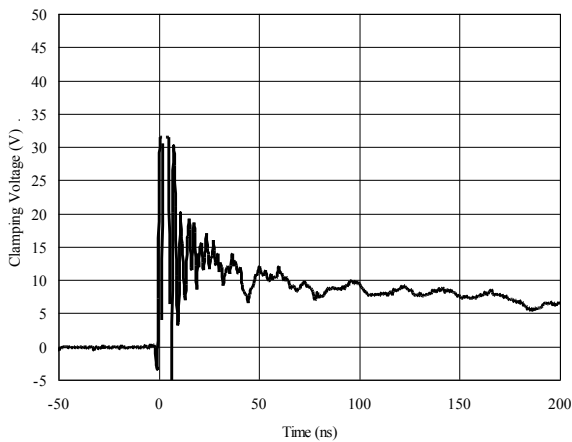
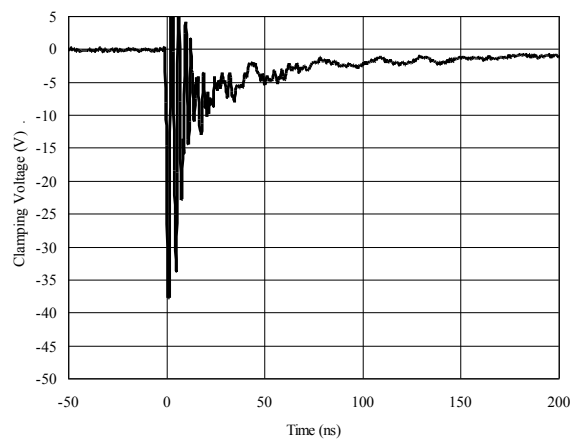


Fig 2. Power Derating Curve

#### ESD Clamping of I/O to I/O (+8kV Contact per IEC 61000-4-2)



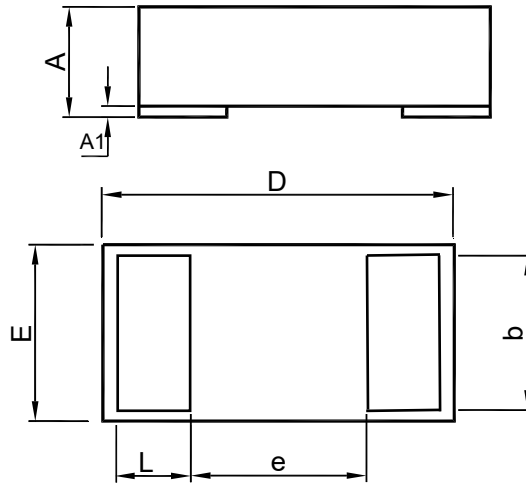
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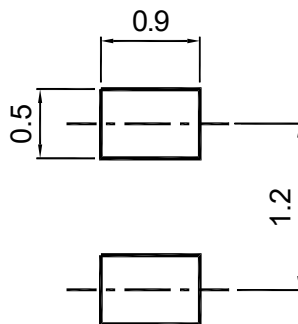
### Package Outline Dimensions

- DFN1610-2L Package
- MSL-1



UNIT	A	A1	b	D	E	e	L
mm	0.55	0.05	0.85	1.65	1.05	0.75	0.45
	0.45	0	0.65	1.55	0.75	0.65	0.35

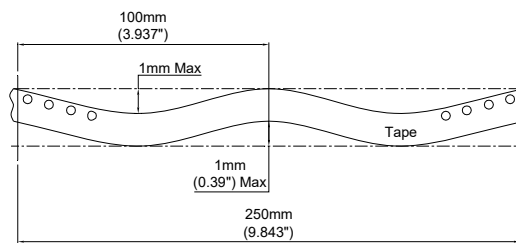
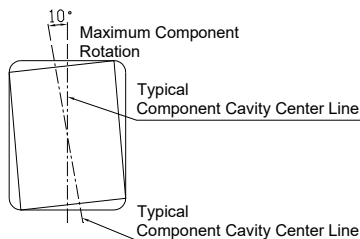
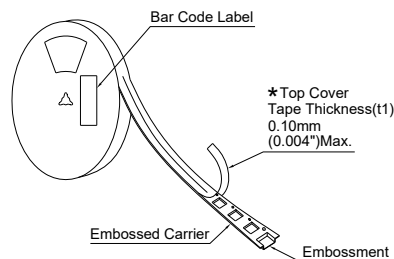
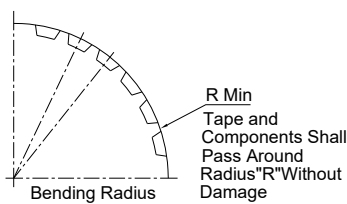
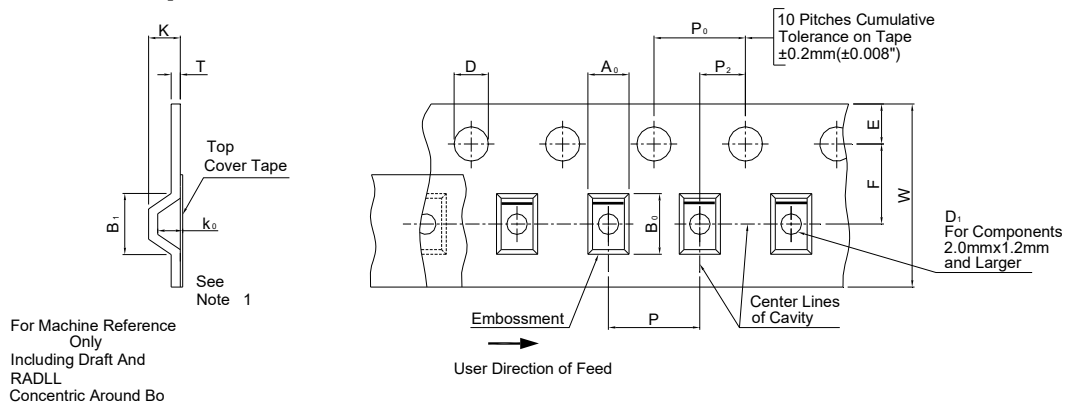
### Recommended Soldering Footprint



### Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
DFN1610-2L	8	4 ± 0.1	0.157 ± 0.004	178	7	3,000

## Tape and Reel Specification



Camber (Top View)

Allowable Camber To Lmm/100mm Nonaccumulative Over 250mm

### Dimensions

Tape Size	B1 Max.	D	D1	E	F	K	P0	P2	R Min.	T Max.	W Max.
8 mm	4.55mm (0.179")	1.5 +0.1mm -0.0 (0.059")	1.0 mm Min (0.039")	1.75± 0.1 mm (0.069± 0.004")	3.5 ± 0.05 mm (0.138 ± 0.002")	2.4 mm Max (0.094")	4 ± 0.1 mm (0.157 ± 0.004")	2 ± 0.1 mm (0.079 ± 0.002")	25 mm (0.98")	0.6 mm (0.024")	8.3 mm (0.327")
12 mm	8.2mm (0.323")	1.5 +0.1mm -0.0 (0.059")	1.5 mm Min (0.060")	1.75± 0.1 mm (0.069± 0.004")	5.5 ± 0.05 mm (0.217 ± 0.002")	6.4 mm Max (0.252")	4 ± 0.1 mm (0.157 ± 0.004")	2 ± 0.05 mm (0.079 ± 0.002")	30 mm (1.18")		12 ± 0.30 mm (0.47±0.012")

Metric dimensions govern-English are in parentheses for reference only.

 Note 1: A<sub>0</sub>, B<sub>0</sub>, and K<sub>0</sub> are determined by component size. The clearance between the components and the cavity must be within 0.05 mm min. to 0.5 mm max.

The component cannot rotate more than 10° within the determined cavity.

 If B<sub>1</sub> exceeds 4.2 mm(0.165") for 8 mm embossed tape, the tape may not feed through all tape feeders.

### Marking Codes



Note:

(1) "S53D" is part number, fixed

### Ordering Information

Part Number	Working Voltage	Quantity Per Reel	Reel Size
TS0531LDX	5.0V	3,000	7 Inch

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