Features

- Transient protection for high-speed data lines
  - IEC 61000-4-2 (ESD) ±30kV (Air)
    ±30kV (Contact)
  - IEC 61000-4-4 (EFT) 80 A (5/50ns)
  - IEC 61000-4-5 (Surge) 120A (8/20μs)
- Low leakage current: 10nA @ V_{RWM} (Maximum)
- Low operating and clamping voltage
- Each I/O pin can withstand over 1000 ESD strikes for ±8kV contact discharge
- ROHS compliant

Description

TS2451LJX is a Transient Voltage Suppressor designed to provide electrostatic discharge (ESD) protection for one I/O data or power line. TS2451LJX is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4 (±15kV air, ±8kV contact discharge), IEC 61000-4-4 (electrical fast transient - EFT) (80A, 5/50 ns), IEC 61000-4-5 (Surge) (120A, 8/20μs), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

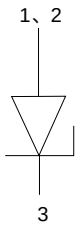
Applications

- 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

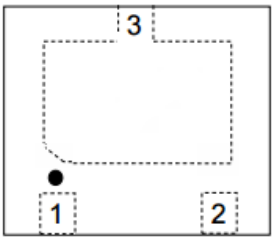
Mechanical Characteristics

- DFN2x2-3L package
- Flammability Rating: UL 94V-0
- Marking: Part number
- Packaging: Tape and Reel
- High temperature soldering guaranted:260°C/10s

Circuit Diagram



Pin Configuration



DFN2x2-3L

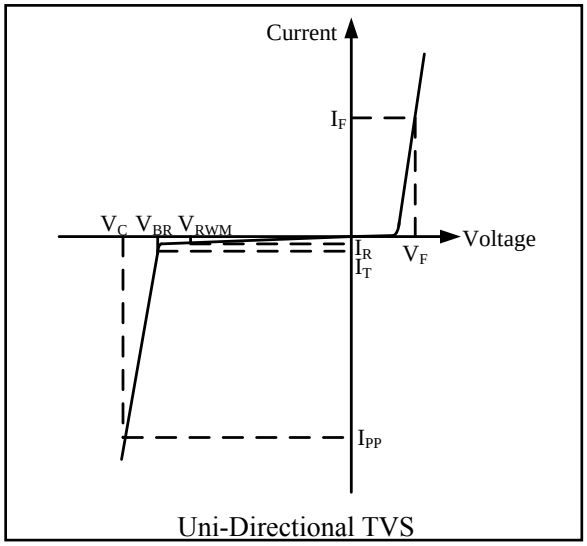
Top view

Absolute Maximum Rating

Symbol	Parameter	Value	Units
I_{PP}	Peak Pulse Current (8/20μs)	120	A
P_{PK}	Peak Pulse Power (8/20μs)	6000	Watts
V_{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	±30 ±30	kV
T_{OPT}	Operating Temperature	-55 to +150	°C
T_{STG}	Storage Temperature	-55 to +150	°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



Uni-Directional TVS

Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				24.0	V
I_R	V_{RWM} = 24.0V, T = 25°C			1	uA
V_{BR}	I_T = 1mA	26			V
V_F	I_F = 1mA			0.8	V
V_C	I_{PP} = 50A, t_p = 8/20μs			50	V
V_C	I_{PP} = 120A, t_p = 8/20μs			60	V
C_{ESD}	V_R = 0V, f = 1MHz		750		pF

FIG.1: Pulse derating curve

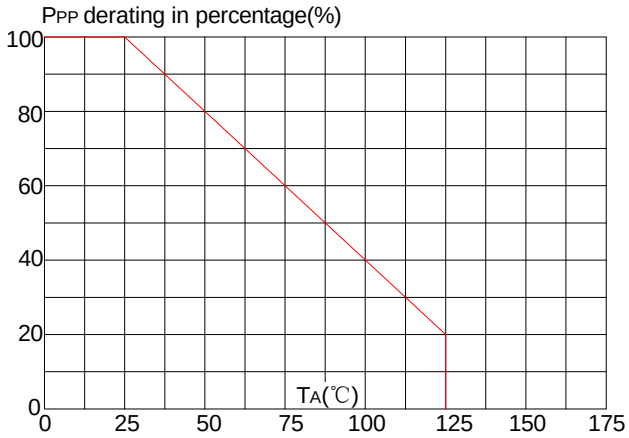


FIG.2: ESD clamping(30kV contact)

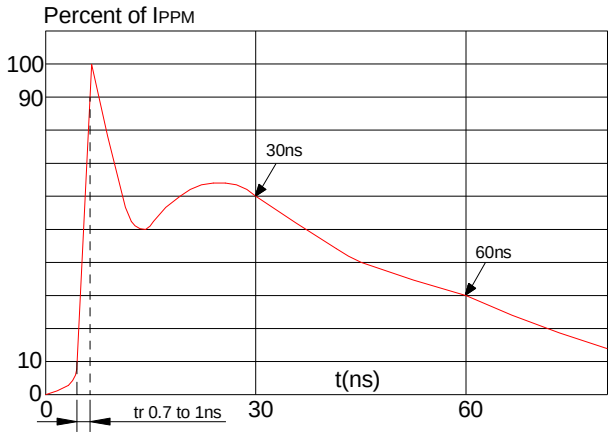


FIG.3:Clamping voltage vs.peak pulse current

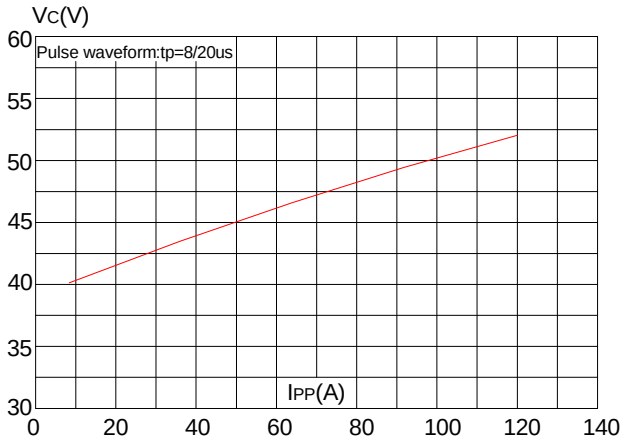
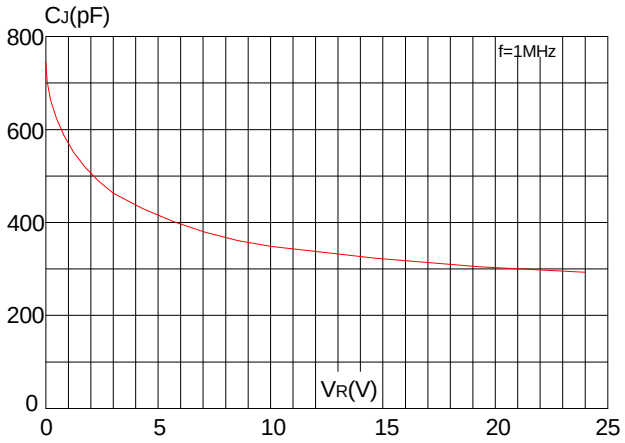
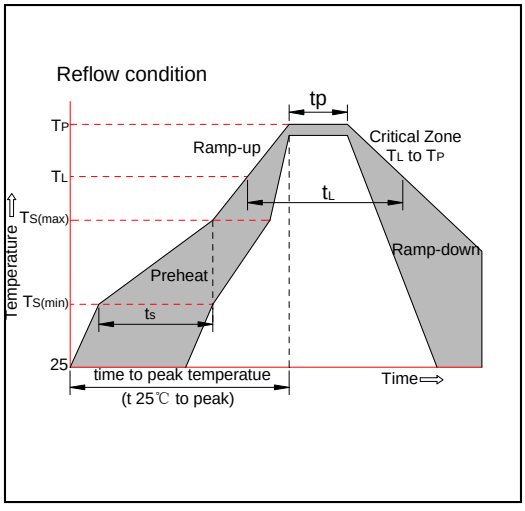


FIG.4:Capacitance vs.reverse voltage



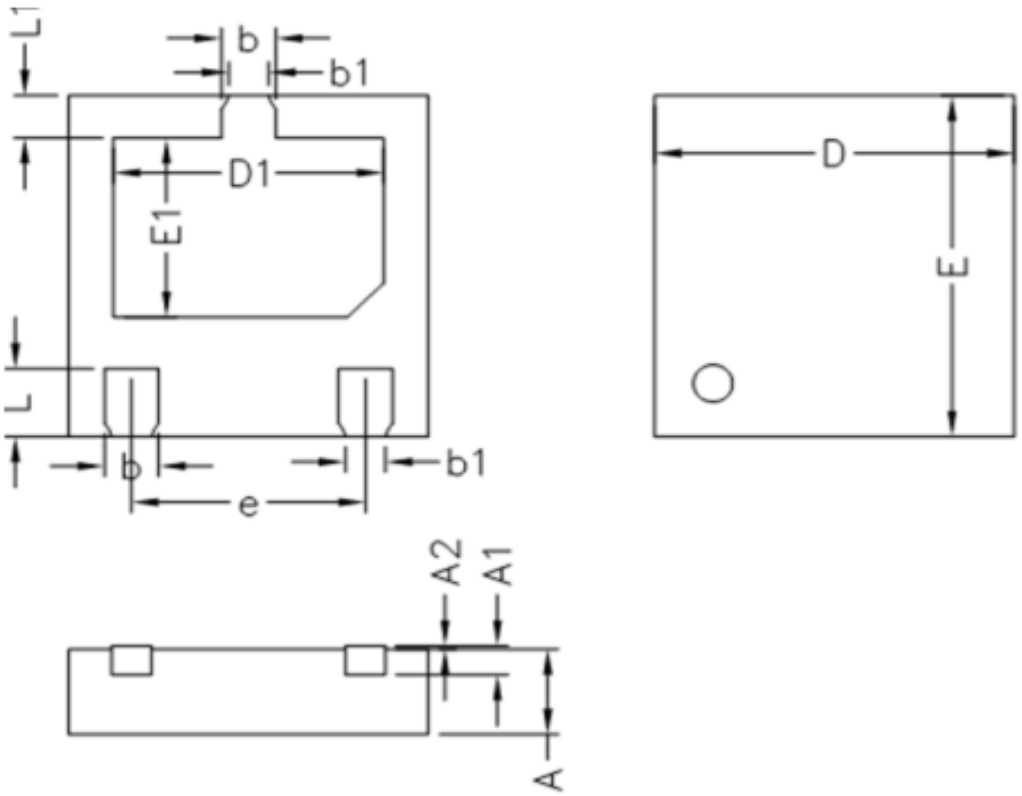
SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L)to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquidus)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃



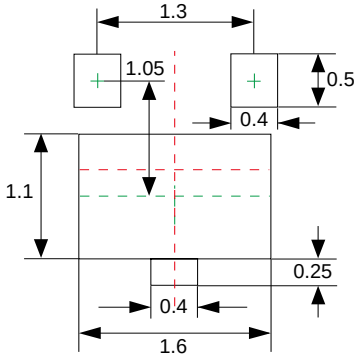
Package Outline

DFN2x2-3L



Units: mm

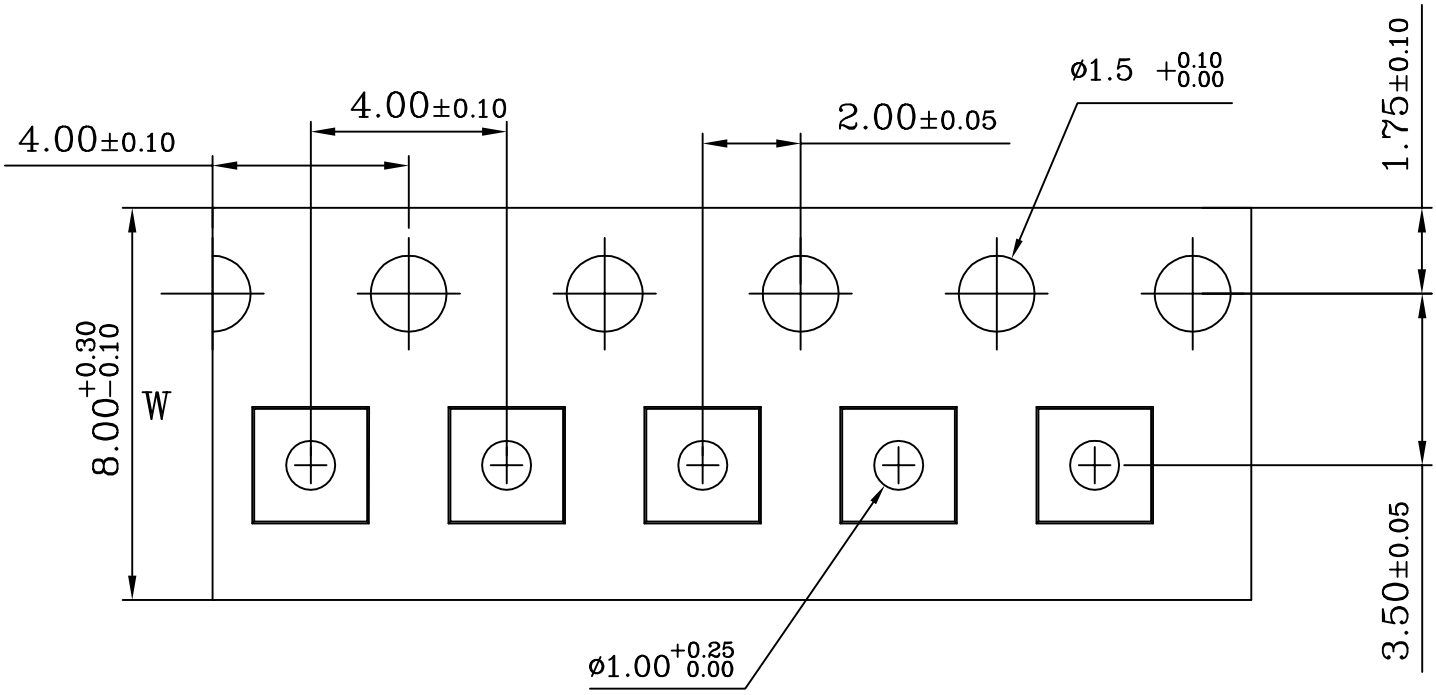
	Min	Nom	Max
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D1	1.45	1.50	1.55
E1	1.00	1.05	1.10
L1	0.20	0.25	0.30
L	0.35	0.40	0.45
b1	0.22REF		
b	0.25	0.30	0.35
e	1.30BSC		
A1	0.15REF		
A2	0.00	0.02	0.05
A	0.45	0.50	0.55

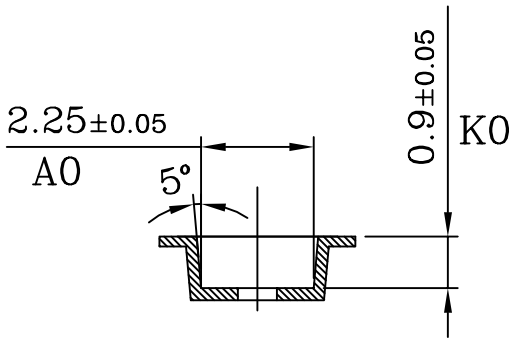


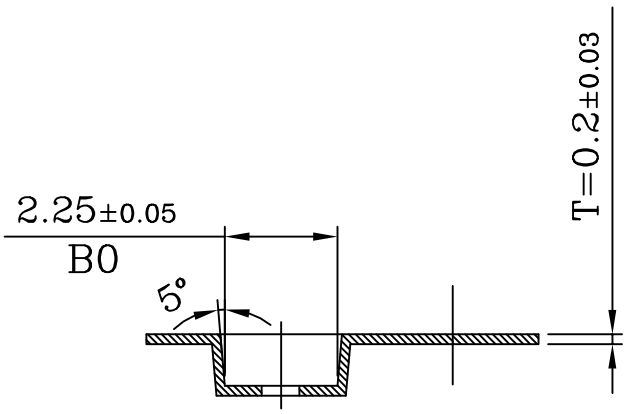
Recommended Soldering Pad

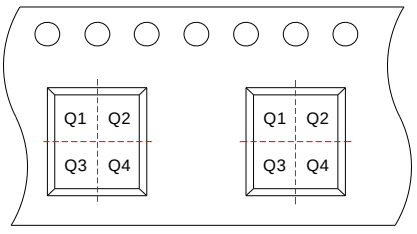
Unit:mm

Tape and Reel Specification





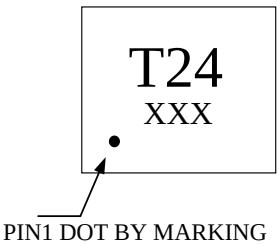




User direction of feed

Pin 1 quadrant:Q2

Marking Codes



Note:

(1) "T24" is part number, fixed.

(2) "XXX" is the linternal code.

Ordering Information

Part Number	Working Voltage	Quantity Per Reel	Reel Size
TS2451LJX	24.0V	3,000	7 Inch