



Features

- ❑ Transient protection for high-speed data lines
IEC 61000-4-2 (ESD) ±30kV (Air)
±30kV (Contact)
IEC 61000-4-4 (EFT) 40A (5/50ns)
IEC 61000-4-5(Lightning) 25A (8/20us)
- ❑ Low leakage current: 10nA @ V_{RWM} (Typical)
- ❑ Low operating and clamping voltage
- ❑ Each I/O pin can withstand over 1000 ESD strikes for ±8kV contact discharge
- ❑ ROHS compliant

Description

TS0321TDX is an ultra-low capacitance ESD and Surge Protector designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces.

TS0321TDX 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) (40A, 5/50 ns), IEC 61000-4-5 (Surge) (25 A, 8/20µs), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

TS0321TDX is in an DFN1610-2L package. The combined features of ultra-low capacitance and high ESD robustness make TS0321TDX ideal for applications where arrays are not practical. The low clamping voltage of the TS0321TDX guarantees a minimum stress on the protected IC.

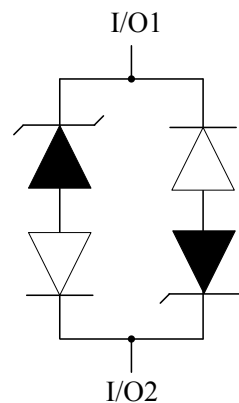
Applications

- ❑ Desktops, Servers and Notebooks
- ❑ Cellular Phones
- ❑ Portable Instruments
- ❑ Analog Inputs

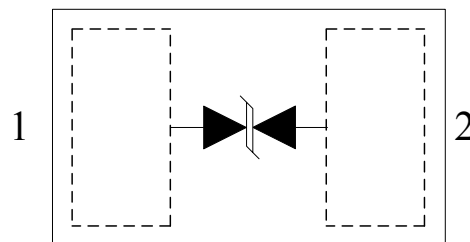
Mechanical Characteristics

- ❑ DFN1610-2L Package
- ❑ Flammability Rating: UL 94V-0
- ❑ Marking: Part number
- ❑ Packaging: Tape and Reel

Circuit Diagram



Pin Configuration



DFN1610-2L
(Top View)

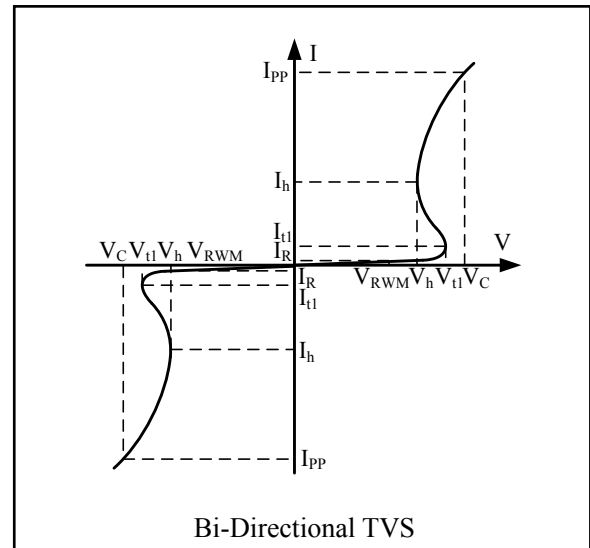


Absolute Maximum Rating

Symbol	Parameter	Value	Units
P _{PK}	Peak Pulse Power (8/20μs)	350	Watts
V _{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	±30 ±30	kV
T _{OPT}	Operating Temperature	-45 to +85	°C
T _{STG}	Storage Temperature	-55 to +150	°C

Electrical Characteristics (T = 25°C)

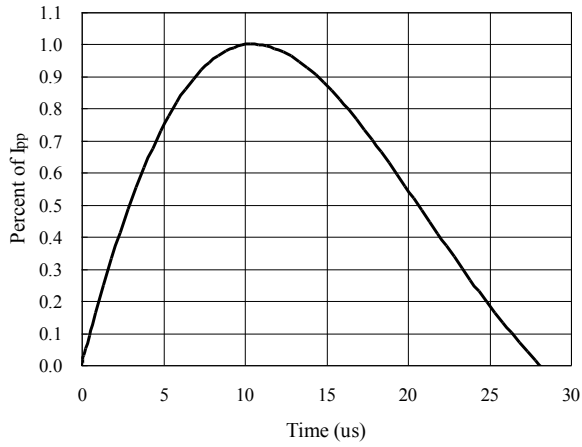
Symbol	Parameter
V _{RWM}	Nominal Reverse Working Voltage
I _R	Reverse Leakage Current @ V _{RWM}
V _{t1}	Trigger Voltage
I _{t1}	Trigger Current @ V _{t1}
V _h	Holding Voltage
I _h	Holding Current @ V _h
V _C	Clamping Voltage @ I _{PP}
V _{CR}	Reverse Clamping Voltage @ I _{PP}
I _{PP}	Maximum Peak Pulse Current
C _{ESD}	Parasitic Capacitance



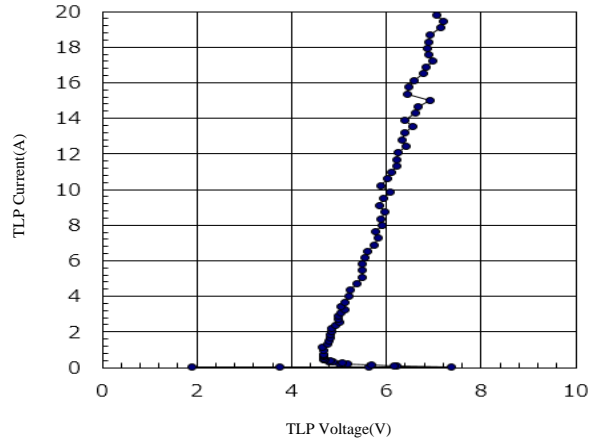
Symbol	Test Condition	Minimum	Typical	Maximum	Units
V _{RWM}				3.3	V
I _R	V _{RWM} = 3.3V, T = 25°C		0.01	0.1	μA
V _{t1}	I _{t1} = 1μA	6.0		7.5	V
V _h	I _h = 10mA	4.0		5.0	V
V _C	I _{PP} = 1A, t _p = 8/20μs			8.0	V
V _C	I _{PP} = 25A, t _p = 8/20μs			16.0	V
C _{ESD}	V _R = 0V, f = 1MHz		0.6		pF



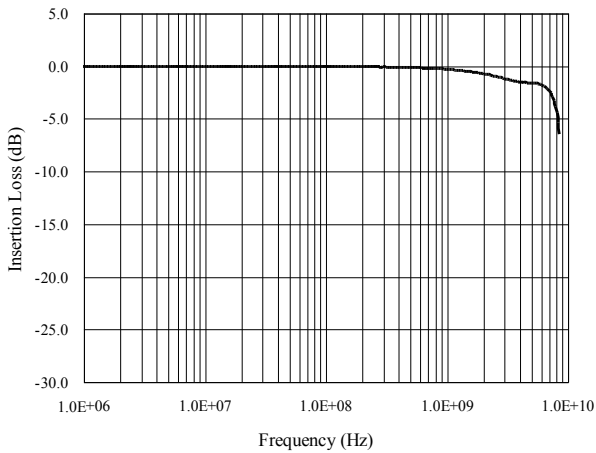
8/20µs Pulse Waveform



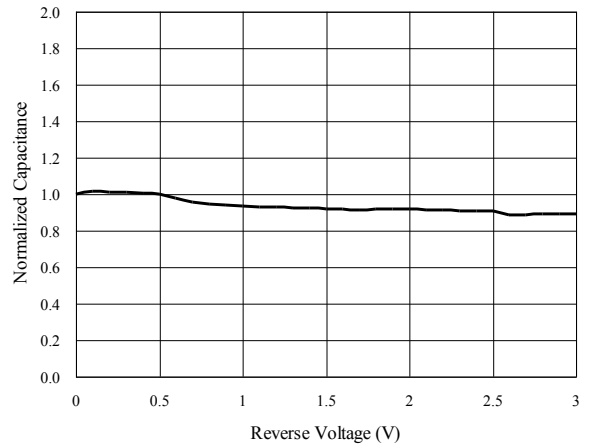
TLP Measurement of I/O to I/O



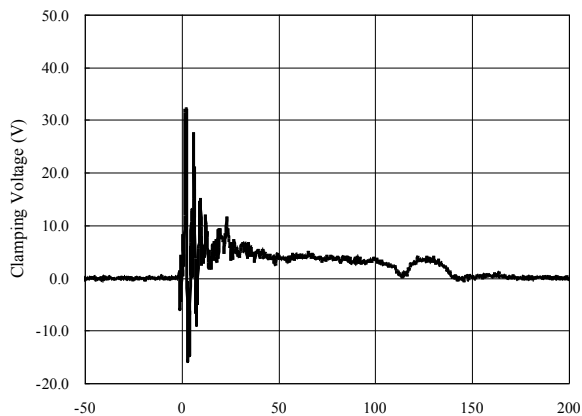
Insertion Loss S21



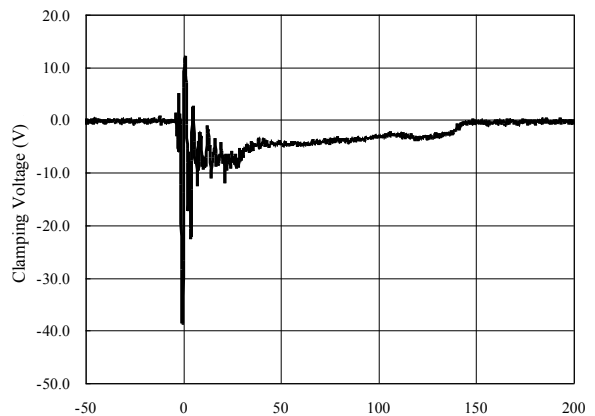
Normalized Capacitance vs. Voltage



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



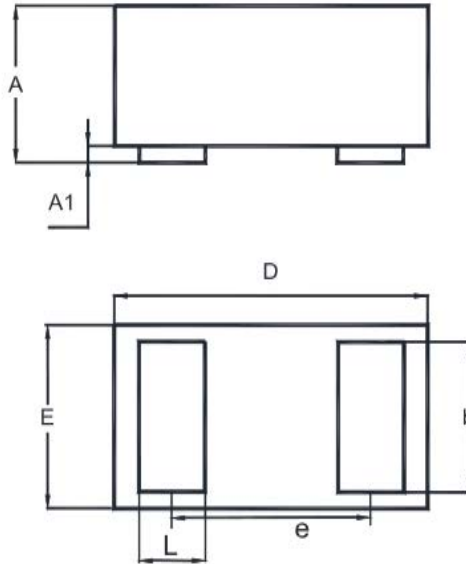
ESD Clamping of I/O to I/O
(-8kV Contact per IEC 61000-4-2)





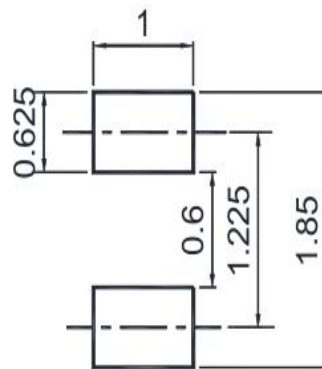
Package Outline Demensions

□ DFN1610-2L Package



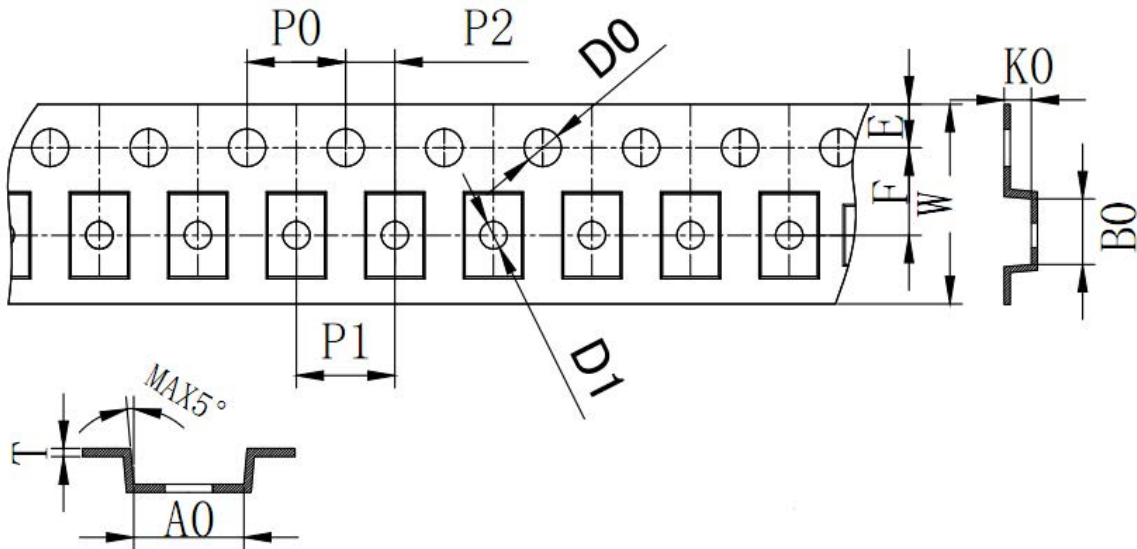
UNIT	A	A1	b	D	E	e	L
mm	0.55	0.05	0.95	1.65	1.05	1.1	0.45
	0.45	0	0.85	1.55	0.95		0.35

Recommended Soldering Footprint



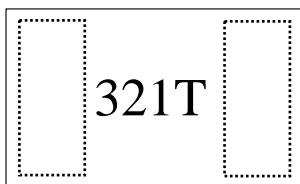


Tape and Reel Specification



SYMBOL	A0	B0	K0	P0	P1	P2
SPEC	1.15±0.05	1.80±0.05	0.63±0.05	4.00±0.10	2.00±0.10	2.00±0.05
SYMBOL	T	E	F	D0	D1	W
SPEC	0.20±0.05	1.75±0.10	3.50±0.05	1.55±0.05	0.60 ^{+0.10} ₋₀	8.00 ^{+0.30} _{-0.10}

Marking Codes



Note:

- (1) "321T" is part number, fixed
- (2) no cathode line and date code

Ordering Information

Part Number	Working Voltage	Quantity Per Reel	Reel Size
TS0321TDX	3.3V	3,000	7 Inch

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