TS0321TDX

Ultra-low Capacitance ESD/Surge Protection

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

Applications

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

Mechanical Characteristics

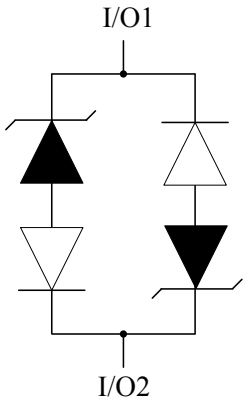
- DFN1610-2L Package
- Flammability Rating: UL 94V-0
- Marking: Part number
- Packaging: Tape and Reel

Description

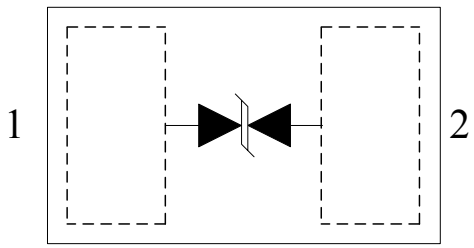
TS0321TDX is an ultra-low capacitance ESD and Surge Protector designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. TS0321TDX is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (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.

Circuit Diagram



Pin Configuration



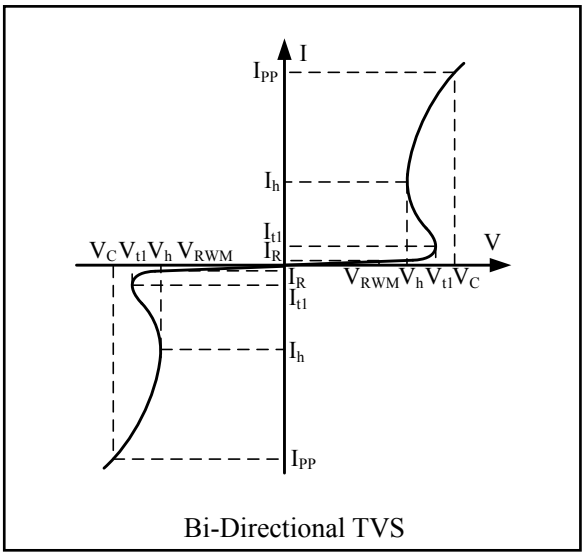
DFN1610-2L
(Top View)

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)

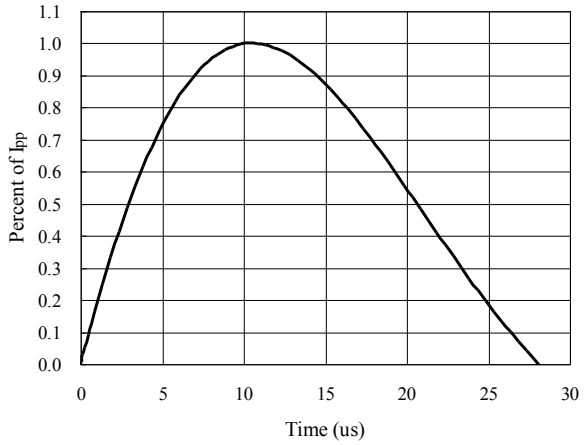
Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{t1}	Trigger Voltage
I_{t1}	Trigger Current @ V_{t1}
V_h	Holding Voltage
I_h	Holding Current @ V_h
V_C	Clamping Voltage @ I_{PP}
V_{CR}	Reverse Clamping Voltage @ I_{PP}
I_{PP}	Maximum Peak Pulse Current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



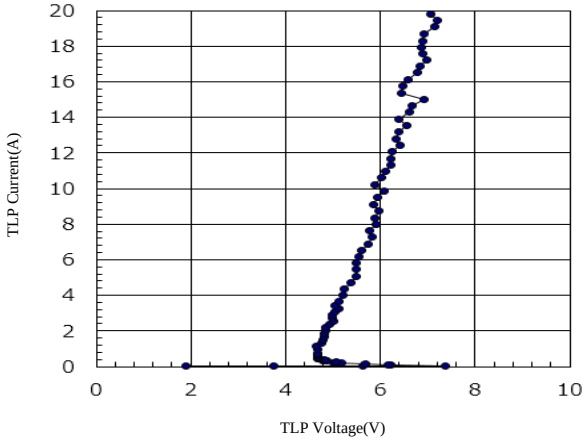
Bi-Directional TVS

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} = 25 A, t_p = 8/20μs			16.0	V
C_{ESD}	V_R = 0V, f = 1MHz		0.6		pF

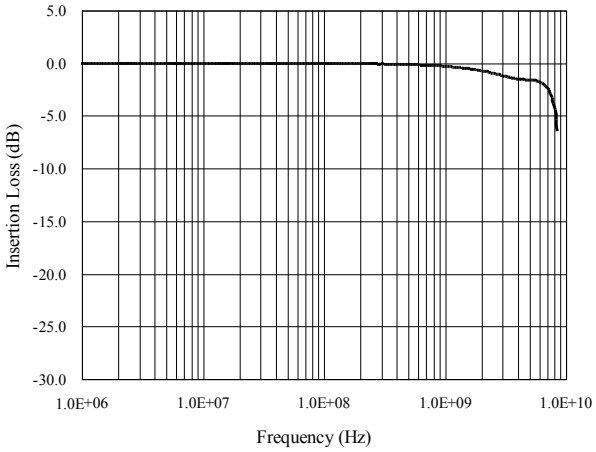
8/20μs Pulse Waveform



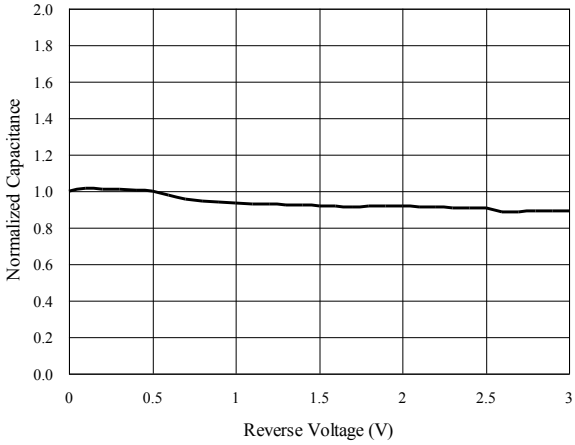
TLP Measurement of I/O to I/O



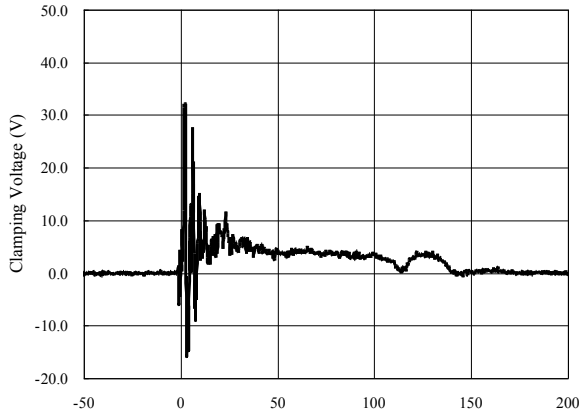
Insertion Loss S21



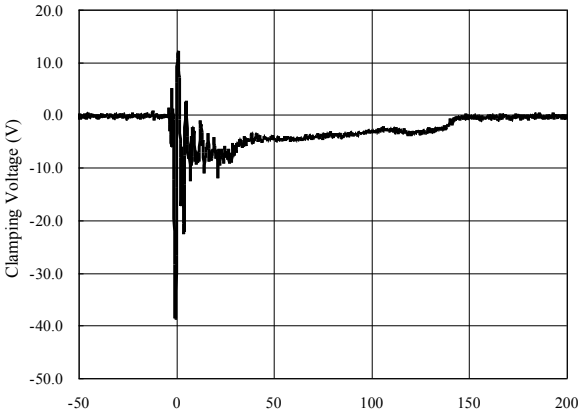
Normalized Capacitance vs. Voltage



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

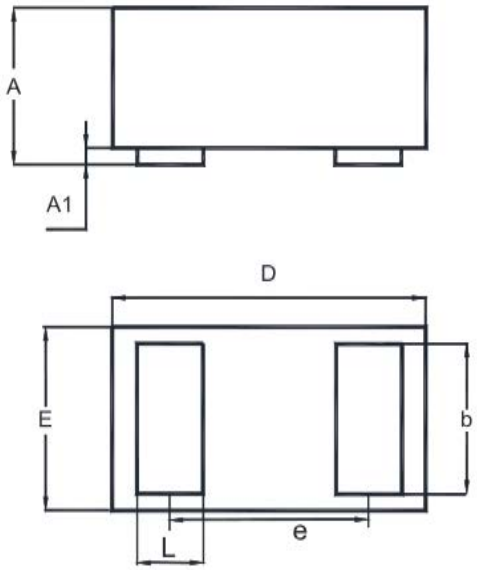


ESD Clamping of I/O to I/O (-8kV Contact per IEC 61000-4-2)



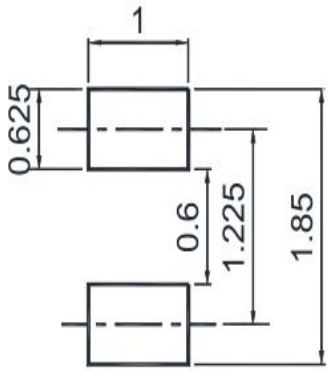
Package Outline Demensions

❑ DFN1610-2L Package

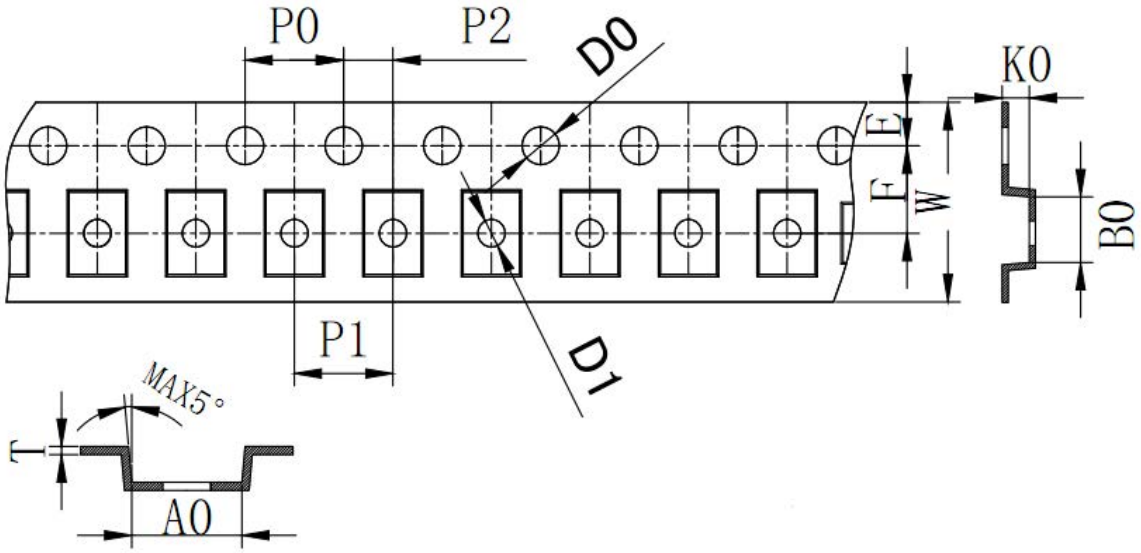


UNIT	A	A1	b	D	E	e	L
mm	0.55 0.45	0.05 0	0.95 0.85	1.65 1.55	1.05 0.95	1.1	0.45 0.35

Recommended Soldering Footprint

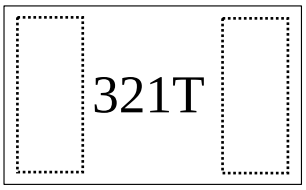


Tape and Reel Specification



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

Unikeyic Electronics

Global Electronic Components Distributor

Click to view pricing, inventory, delivery, and lifecycle information:

JY:

P3100SCX JY1103-H390BX RCLAMP0524P TT0201SAX TT1501SBX JY1103-H330QX JY1106-ADJBX TS0421LEX TT0301MAX B5819WX JY2312X MMBT3906X TP6063F-TDX JY1106-180EX TL431 TS0512PMX SMCJ20AX JY2126AX JY9425X TS0334PLX TT0401TBX TT0514TLX P0300SCX TNM01K20FX TS0321LEX TT0511TEX JY1117E50AX TS1811LD-CX TS2411LEX TT0314TPX