

Features

- Transient protection for high-speed data lines
IEC61000 -4-2 (ESD) $\pm 10\text{kV}$ (Air)
 $\pm 10\text{kV}$ (Contact)
IEC 61000-4-5 (Lightning) 6.0A (8/20 μs)
- Array of surge rated diodes with internal TVS diode
- Small package saves board space
- Protects I/O line (bidirectional)
- Low capacitance: 0.2pF@0V(Typical)
- Low leakage current: 0.1 μA @ VRWM (Typical)
- Low clamping voltage
- Each I/O pin can withstand over 1000 ESD strikes for $\pm 8\text{kV}$ contact discharge

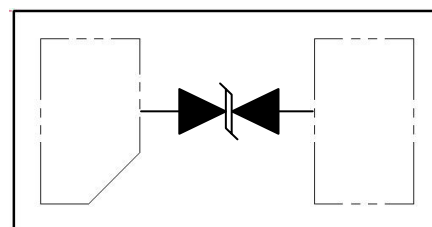
Circuit Diagram



Description

TT2421SAX is a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.20pF only, TT2421SAX is designed to protect parasitic-sensitive systems against over-voltage and over-current transient events.

Pin Configuration



DFN0603-2L
(Top View)

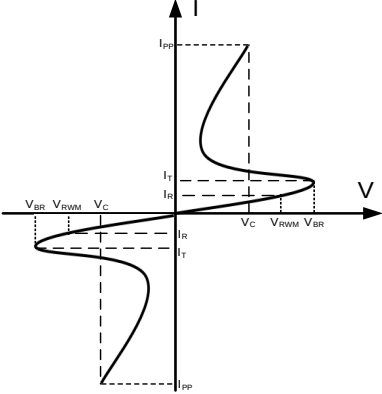
Mechanical Characteristics

- Package: DFN0603-2L
- Marking: Part number
- Packaging: Tape and Reel
- ROHS compliant
- MSL1

Absolute Maximum Rating

Symbol	Parameter	Value	Units
I_{PP}	Peak Pulse Current (8/20 μ s)	6	A
P_{PK}	Peak Pulse Power (8/20 μ s)	30	W
V_{ESD}	ESD per IEC61000-4-2 (Air) ESD per IEC61000-4-2 (Contact)	± 10 ± 10	kV
T_{OPT}	Operating Temperature	-55/+125	°C
T_{STG}	Storage Temperature	-55/+150	°C

Electrical Characteristics (T = 25°C)

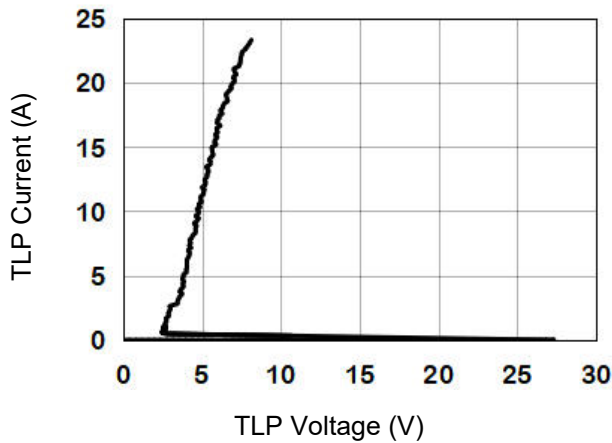
Symbol	Parameter	Diagram
V_{RWM}	Nominal Reverse Working Voltage	
I_R	Reverse Leakage Current @ V_{RWM}	
V_{BR}	Reverse Breakdown Voltage @ I_T	
I_T	Test Current for Reverse Breakdown	
V_C	Clamping Voltage @ I_{PP}	
I_{PP}	Maximum Peak Pulse Current	
C_{ESD}	Parasitic Capacitance	

Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				24	V
I_R	$V_{RWM} = 24V$, T = 25°C		0.1	1.0	μA
V_{BR}	$I_T = 100\mu A$	24.5	26.0		V
V_C	$I_{PP} = 6A$, $t_p = 8/20\mu s$		5.8	7.0	V
V_C	$I_{PP} = 8.0A$, $t_p = 100ns^{(1)}$		4.70		V
	$I_{PP} = 16.0A$, $t_p = 100ns^{(1)}$		6.40		V
R_{dyn}	$I_{PP} = 12.0A$, $t_p = 100ns^{(1)}$		0.21		Ω
C_{ESD}	$V_R = 0V$, f = 1MHz		0.20		pF

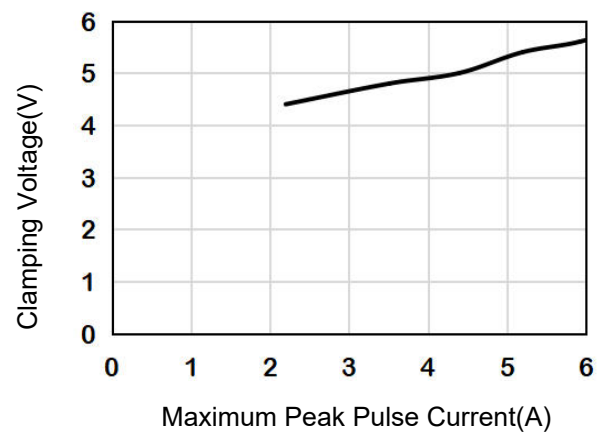
Notes:(1)Measurements performed using a 100ns Transmission Line Pulse(TLP) system.

Typical Performance Characteristics

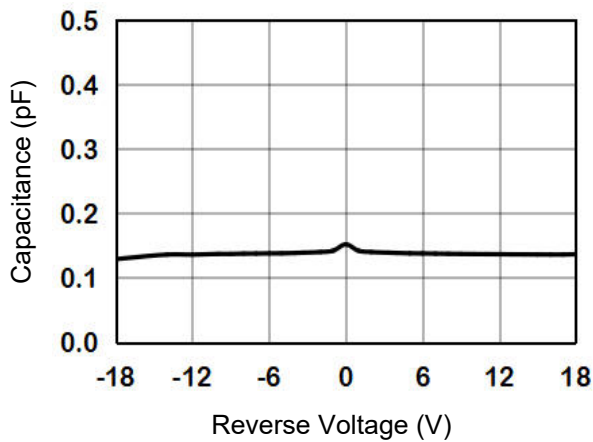
TLP Measurement of I/O to I/O



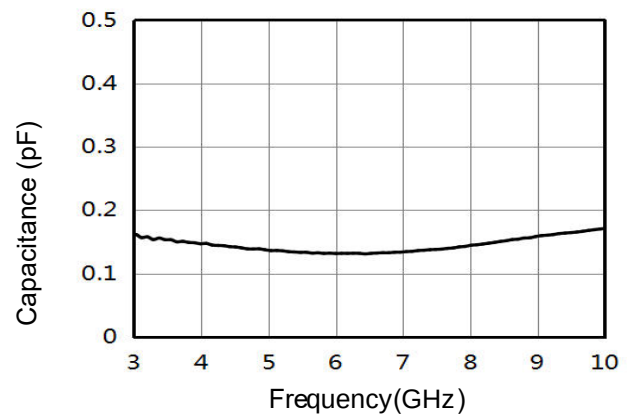
8/20us Current of I/O to I/O



Capacitance vs Reverse Voltage of I/O to I/O

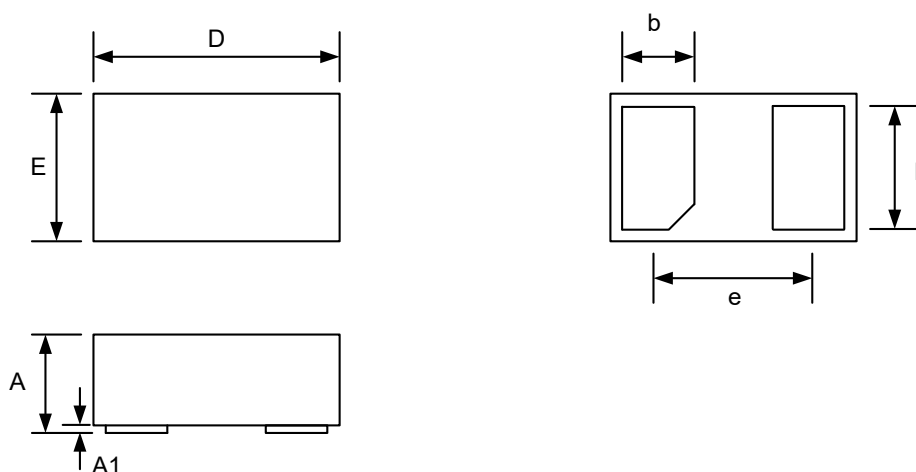


Capacitance vs Frequency of I/O to I/O



Package Outline

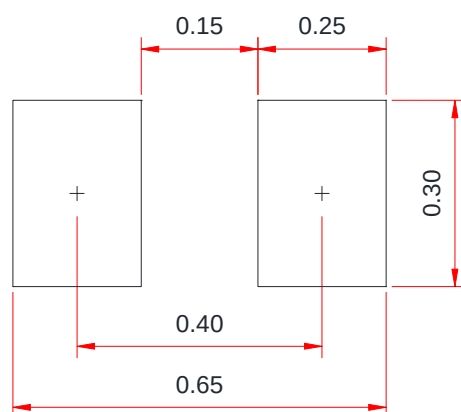
- ❑ DFN0603-2L package
- ❑ 2 leads, very small package
- ❑ MSL-1



Package Dimensions (Controlling dimensions are in millimeters)

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Minimum	Maximum	Minimum	Maximum
A	0.250	0.350	0.010	0.014
A1	0.000	0.020	0.000	0.001
D	0.550	0.650	0.022	0.026
E	0.250	0.350	0.010	0.014
b	0.150	0.250	0.006	0.010
e	0.350 BSC		0.014 BSC	
L	0.180	0.280	0.007	0.011

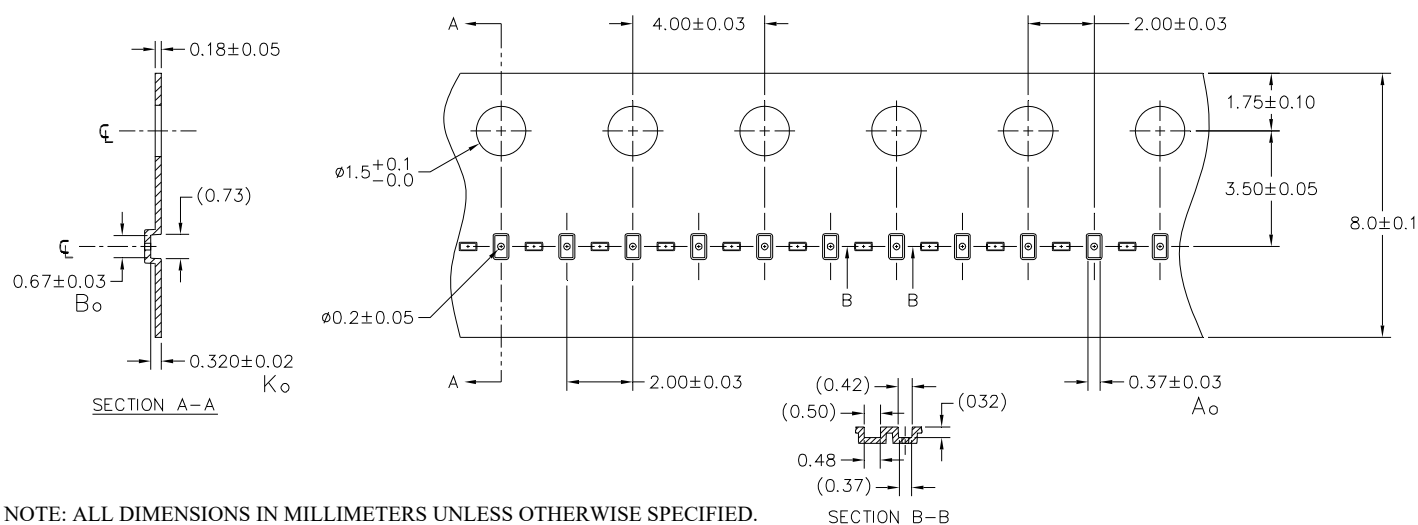
Recommended PCB Layout (Unit: mm)



Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

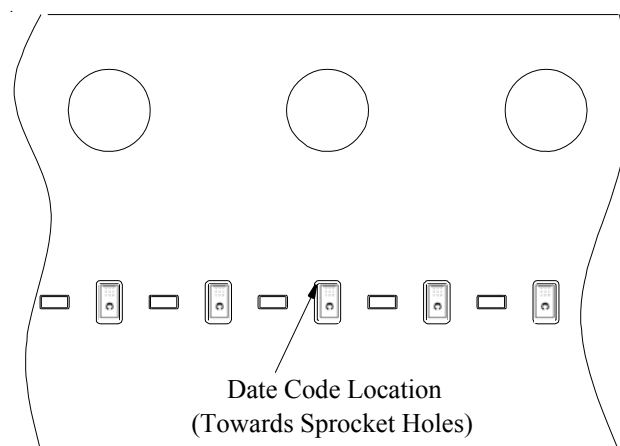
Tape and Reel Specification



Device Orientation in Tape

A0	B0	K0
0.37 +/-0.03	0.67 +/-0.03	0.32 +/-0.02 mm

Note: All dimensions in mm unless otherwise specified



Marking Codes



Ordering Information

Part Number	Working Voltage	Quantity Per Reel	Reel Size
TT2421SAX	24V	10,000	7 Inch

Note:

- (1) "N" is part number.
- (2) "X" is the internal code.