

Features

- ❑ Transient protection for high-speed data lines
 - IEC 61000-4-2 (ESD) $\pm 30\text{kV}$ (Air)
 - $\pm 30\text{kV}$ (Contact)
 - IEC 61000-4-4 (EFT) 40A (5/50 ns)
 - IEC 61000-4-5 (Surge) 23A (8/20 μs)
- ❑ Package optimized for high-speed lines
- ❑ Provides protection for two line pairs
- ❑ Low capacitance: 2.6pF @ 0V (Typical)
- ❑ Low leakage current: 0.1 μA @ V_{RWM} (Typical)
- ❑ Low operating and clamping voltage
- ❑ ROHS compliant

Description

TS0334PLX is a low-capacitance Transient Voltage Suppressor (TVS) array designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 2.6 pF only, TS0334PLX 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 ($\pm 15\text{kV}$ air, $\pm 8\text{kV}$ contact discharge), IEC 61000-4-4 (electrical fast transient - EFT) (40A, 5/50 ns), IEC 61000-4-5 (Surge) (23A, 8/20 μs), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

TS0334PLX is in a SOT23-5L package. Each TS0334PLX device can protect two high-speed line pairs. The combined features of low capacitance and high ESD robustness make TS0334PLX ideal for high-speed data port and high-frequency line (e.g., Gigabit Ethernet Ports) applications.

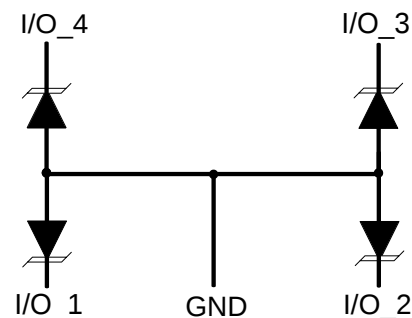
Applications

- ❑ 10/100/1000M Ethernet Ports
- ❑ WAN/LAN Equipment
- ❑ Desktops, Servers and Notebooks
- ❑ Cellular Phones
- ❑ Switching Systems
- ❑ Audio/Video Inputs

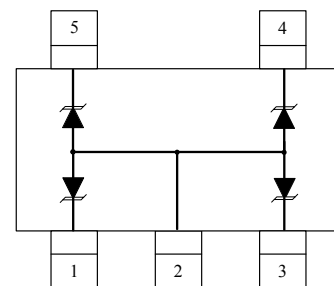
Mechanical Characteristics

- ❑ SOT23-5L package
- ❑ Flammability Rating: UL 94V-0
- ❑ Marking: Part number
- ❑ Packaging: Tape and Reel

Circuit Diagram



Pin Configuration

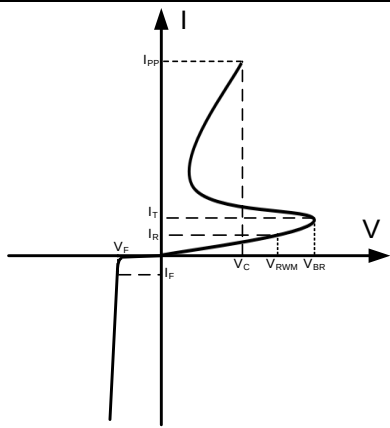


SOT23-5L
(Top View)

Absolute Maximum Rating

Symbol	Parameter	Value	Units
I_{PP}	Peak Pulse Current (8/20 μ s)	23	A
P_{PK}	Peak Pulse Power (8/20 μ s)	100	W
V_{ESD}	ESD per IEC61000-4-2 (Air) ESD per IEC61000-4-2 (Contact)	± 30 ± 30	kV
T_{OPT}	Operating Temperature	-55/+125	°C
T_{STG}	Storage Temperature	-55/+150	°C

Electrical Characteristics (T = 25°C)

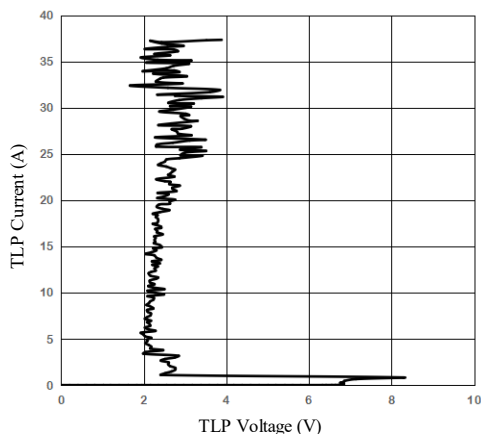
Symbol	Parameter	Diagram
V_{RWM}	Nominal Reverse Working Voltage	
I_R	Reverse Leakage Current @ V_{RWM}	
V_{BR}	Reverse Breakdown Voltage @ I_T	
I_T	Test Current for Reverse Breakdown	
V_C	Clamping Voltage @ I_{PP}	
I_{PP}	Maximum Peak Pulse Current	
C_{ESD}	Parasitic Capacitance	
I_F	Forward Current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

Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				3.3	V
I_R	$V_{RWM} = 3.3V$, T = 25°C Between I/O and GND		0.01	0.1	μA
V_{BR}	$I_T = 1mA$ Between I/O and GND	5.0	7.0	9.0	V
V_C	$I_{PP} = 23A$, $t_p = 8/20\mu s$ Between I/O and GND		5.4		V
V_C	$I_{PP} = 8.0A$, $t_p = 100ns^{(1)}$		3.00		V
	$I_{PP} = 16.0A$, $t_p = 100ns^{(1)}$		4.05		V
R_{dyn}	$I_{PP} = 12.0A$, $t_p = 100ns^{(1)}$		0.13		Ω
C_{ESD}	$V_R = 0V$, f = 1MHz Between I/O and GND		2.60		pF
C_{ESD}	$V_R = 0V$, f = 1MHz Between I/O and I/O		1.30		pF

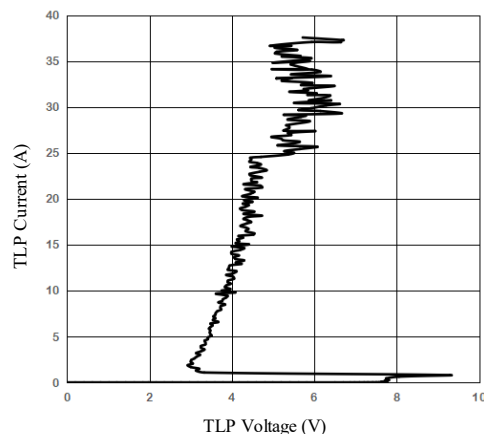
Notes:(1)Measurements performed using a 100ns Transmission Line Pulse(TLP) system,Between I/O and GND.

Typical Performance Characteristics

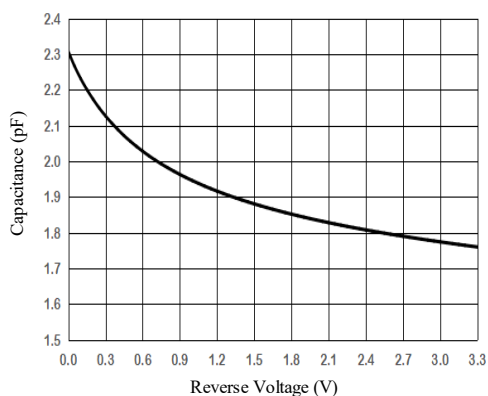
TLP Measurement of I/O to GND



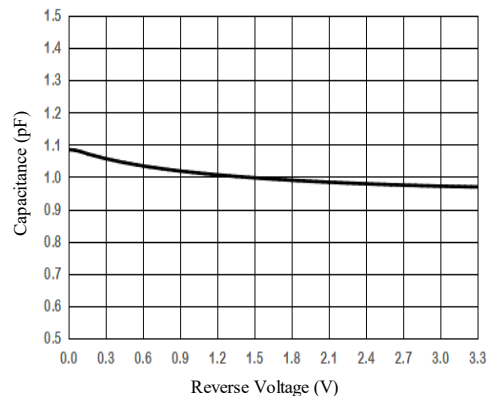
TLP Measurement of I/O to I/O



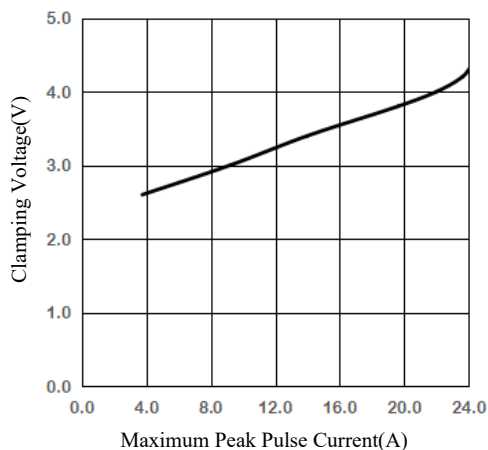
Capacitance vs Reverse Voltage IO to GND



Capacitance vs Reverse Voltage IO to IO

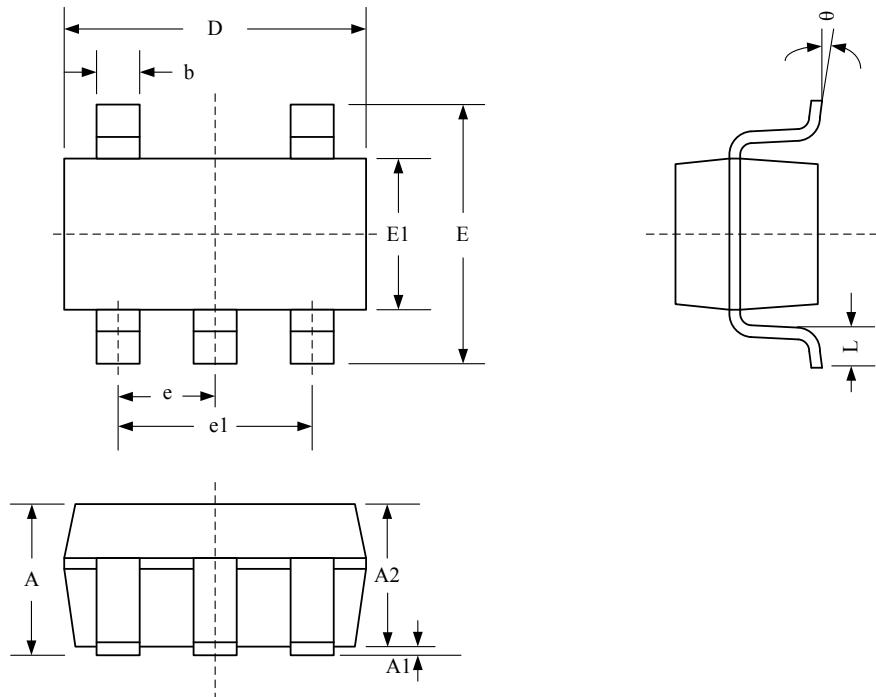


8/20us Current IO to GND



Package Outline

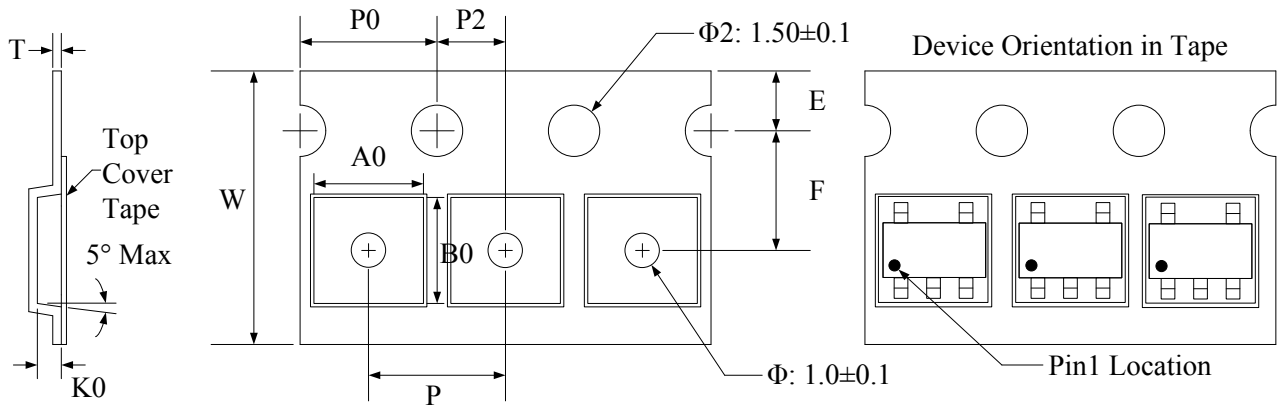
- SOT23-5L package
- MSL-3 Level



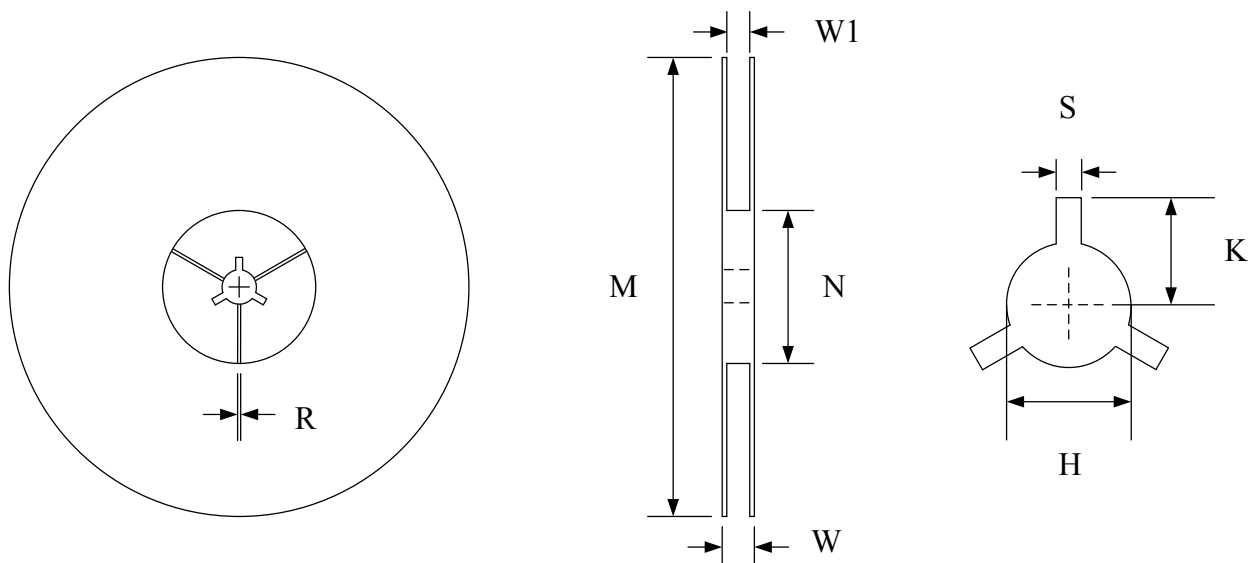
Package Dimensions (Controlling dimensions are in millimeters)

Symbol	Dimensions (mm)			Dimensions (Inches)		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
A	—	—	1.450	—	—	0.057
A1	0.000	—	0.150	0.000	—	0.006
A2	—	—	1.300	—	—	0.012
b	0.300	—	0.500	0.012	—	0.020
D	2.90 BSC			0.114 BSC		
e	0.95 BSC			0.037 BSC		
e1	1.90 BSC			0.075 BSC		
E	2.80 BSC			0.110 BSC		
E1	1.60 BSC			0.063 BSC		
L	0.300	0.450	0.600	0.012	0.018	0.024
θ	0°	4°	8°	0°	4°	8°

Tape and Reel Specification (SOT23-5L)

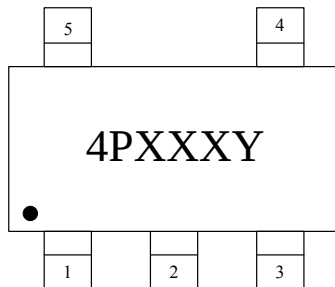


Symbol	W	A0	B0	K0	E	F	P	P0	P2	T
Dimensions (mm)	8.00+0.3 -0.1	3.23±0.05	3.17±0.05	1.37±0.05	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.1	2.0±0.05	0.25±0.02



Symbol	Reel Size	M	N	W	W1	H	S	K	R
Dimensions (mm)	Φ178	178.0±1.0	60.0±1.0	11.5±0.5	9.0±0.5	13.0±0.5	2.0±0.1	11.0±0.2	1.0±0.05

Marking Codes



Note:

- (1) “4P” is part number, fixed.
- (2) “XXX” is the last 3 characters of the wafer's Lot No.,
“Y” is the internal code.

Ordering Information

Part Number	Working Voltage	Quantity Per Reel	Reel Size
TS0334PLX	3.3V	3,000	7 Inch