

Features

- Ultra-Low capacitance:0.05pF(typ.)
- Low leakage current(<10nA)
- Fast response time(<1ns)
- Bi-directional,single line protection
- IEC 61000-4-2 (ESD Air): 15kV
IEC 61000-4-2 (ESD Contact): 8kV

Mechanical Characteristics

- USB 3.0/3.1
- HDMI 1.3/1.4/2.0
- RF Antenna
- SATA and eSATA Interface



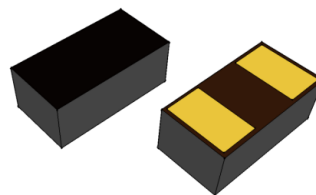
Applications

- Smart Phone/Mobile Internet Device
- Laptop/Desktop Computer
- Bi-directional, single line protection
- Antennas (Cell Phones, GPS...)
- High Speed Ethernet
- USB 3.0 and USB 3.1

Ordering Information

Part Number	Qty per Reel	Reel Size
TPESD0402G Series	10000	7"

Dimensions and Pin Configuration



Absolute Maximum Ratings (Tamb=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
ESD per IEC 61000-4-2 (Air)	VESD	±15	kV
ESD per IEC 61000-4-2 (Contact)		±8	
Operating Temperature Range	TJ	-55 to +125	°C
Storage Temperature Range	Tstg	-40 to +85	°C

Electrical Characteristics (TA=25°C unless otherwise specified)

TPESD0402G03V

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Continuous Operating Voltage	V _{DC}			5	V	
Trigger Voltage	V _T		450		V	IEC61000-4-2 8kV contact discharge
Clamping Voltage	V _C		40		V	IEC61000-4-2 8kV contact discharge
Leakage Current	I _L			10	nA	DC 5V shall be applied on component
Capacitance	C _J		0.05		pF	Measured at 10MHz

TPESD0402G05V

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Continuous Operating Voltage	V _{DC}			5	V	
Trigger Voltage	V _T		450		V	IEC61000-4-2 8kV contact discharge
Clamping Voltage	V _C		40		V	IEC61000-4-2 8kV contact discharge
Leakage Current	I _L			10	nA	DC 5V shall be applied on component
Capacitance	C _J		0.05		pF	Measured at 10MHz

TPESD0402G08V

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Continuous Operating Voltage	V_{DC}			8	V	
Trigger Voltage	V_T		450		V	IEC61000-4-2 8kV contact discharge
Clamping Voltage	V_C		40		V	IEC61000-4-2 8kV contact discharge
Leakage Current	I_L			10	nA	DC 8V shall be applied on component
Capacitance	C_J		0.05		pF	Measured at 10MHz

TPESD0402G12V

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Continuous Operating Voltage	V_{DC}			12	V	
Trigger Voltage	V_T		450		V	IEC61000-4-2 8kV contact discharge
Clamping Voltage	V_C		40		V	IEC61000-4-2 8kV contact discharge
Leakage Current	I_L			10	nA	DC 12V shall be applied on component
Capacitance	C_J		0.05		pF	Measured at 10MHz

TPESD0402G15V

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Continuous Operating Voltage	V_{DC}			15	V	
Trigger Voltage	V_T		450		V	IEC61000-4-2 8kV contact discharge
Clamping Voltage	V_C		40		V	IEC61000-4-2 8kV contact discharge
Leakage Current	I_L			10	nA	DC 15 V shall be applied on component
Capacitance	C_J		0.05		pF	Measured at 10MHz

TPESD0402G24V

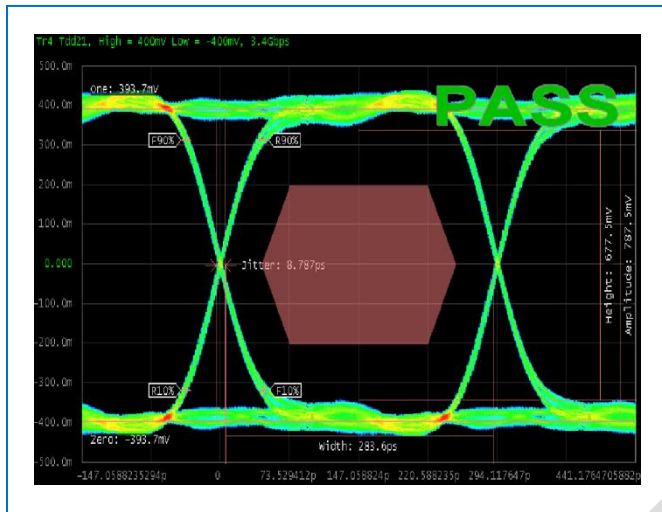
Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
Continuous Operating Voltage	V_{DC}			24	V	
Trigger Voltage	V_T		450		V	IEC61000-4-2 8kV contact discharge
Clamping Voltage	V_C		40		V	IEC61000-4-2 8kV contact discharge
Leakage Current	I_L			10	nA	DC 24V shall be applied on component
Capacitance	C_J		0.05		pF	Measured at 10MHz

TPESD0402G36V

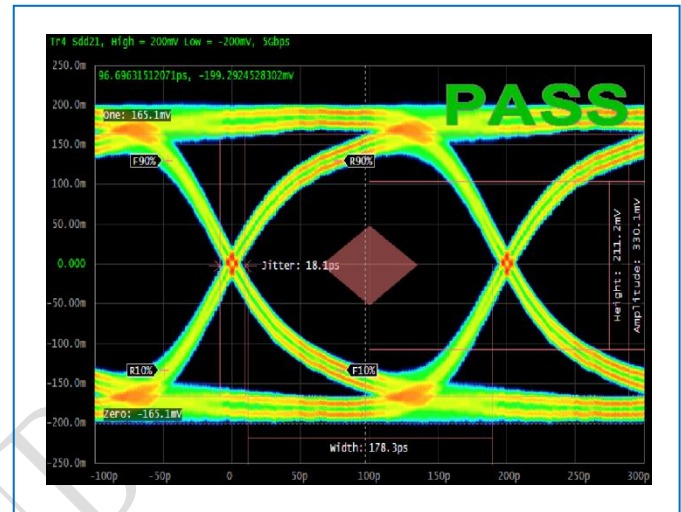
Parameter	Symbol	Min	3	Typ	Max	Unit	Test Condition
Continuous Operating Voltage	V_{DC}				36	V	
Trigger Voltage	V_T			450		V	IEC61000-4-2 8kV contact discharge
Clamping Voltage	V_C			40		V	IEC61000-4-2 8kV contact discharge
Leakage Current	I_L				10	nA	DC 36V shall be applied on component
Capacitance	C_J			0.05		pF	Measured at 10MHz

PROTECTION PRODUCTS
Typical characteristics

HDMI Mask at 3.4 Gbps



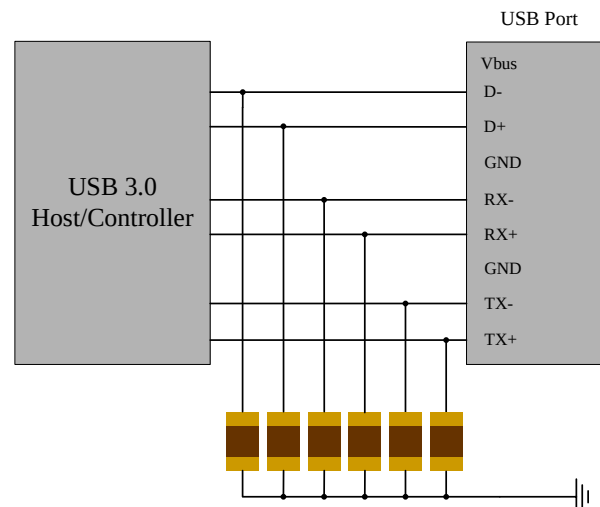
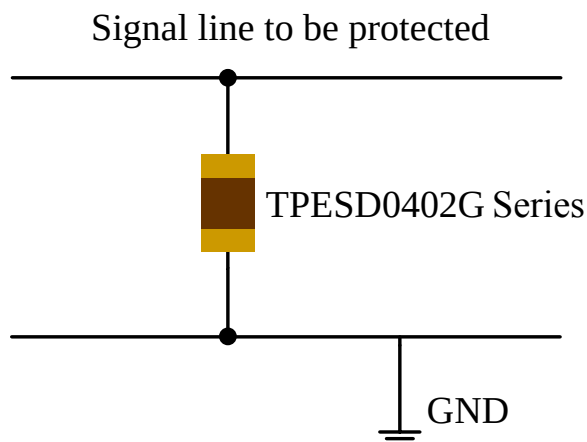
USB3.0 Mask at 5.0 Gbps



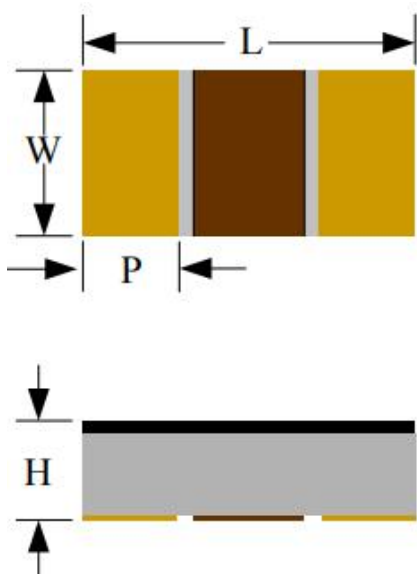
ESD Protection for Signal Line

The TPESD0402G is designed for the protection of one bidirectional data line from ESD damage.

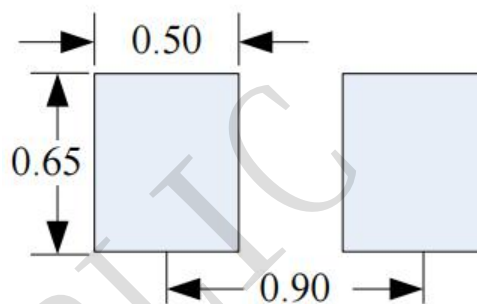
- Place the TPESD0402G as close to the input terminal or connector as possible.
- Minimize the path length between the TPESD0402G and the protected signal line.
- Use ground planes whenever possible.



Package Dimension



Recommended Solder Pad Footprint



***Sizes in mm**

Notes:

This solder pad layout is for reference purposes only.

Dimension	Unit: Millimeters	
	Min.	Max.
L	0.90	1.10
W	0.42	0.62
p	0.15	0.35
H	0.25	0.45