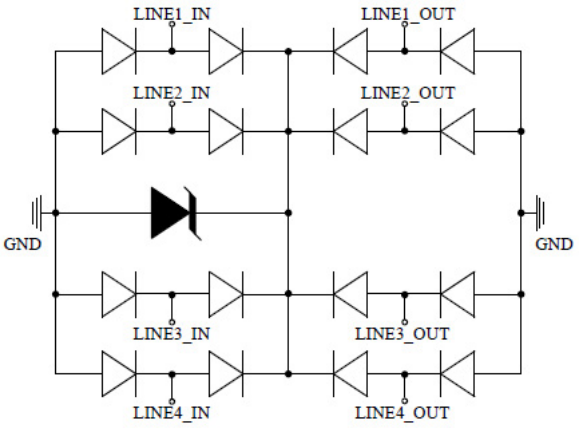
STEIFPOWER TECHNOLOGY

SP**ESLC3V3D3020-10U**
Ultra Low Capacitance ESD TVS Array

Features

- Transient protection for high-speed data lines
  IEC 61000-4-2 (ESD) ±30kV (Air)
  ±30kV (Contact)
  IEC 61000-4-4 (EFT) 40A (5/50 ns) IEC 61000-4-5 (Surge) 40A (8/20μs)
- Package optimized for high-speed lines
- Provides protection for two line pairs
- Low capacitance: 3.75pF @ 0V (MAX)
- Low leakage current: 0.1μA @ VRWM (Typical)
- Low operating and clamping voltag
- Each I/O pin can withstand over 1000 ESD strikes for ±8kV contact discharge



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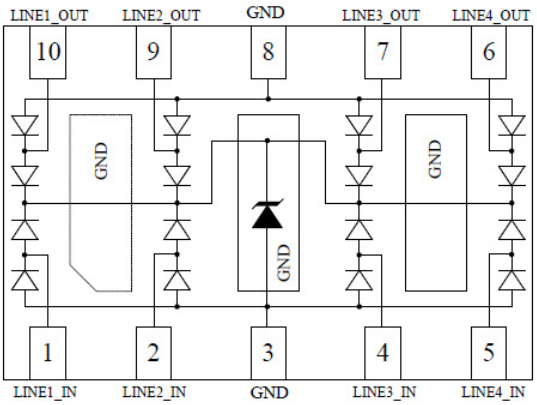
Applications

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



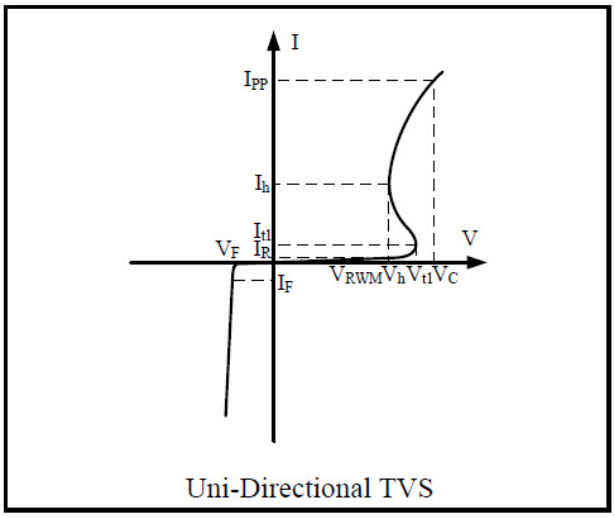
Schematic Diagram

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

Parameter	Symbol	Value	Units
IEC 61000-4-2 ESD Voltage Air Model	V_{ESD}	±30	kV
IEC 61000-4-2 ESD Voltage Contact Model		±30	
Peak Pulse Power (t_p = 8/20μs)	P_{PP}	1000	W
Peak Pulse Current	I_{PP}	40	A
Operating Temperature	T_{OPT}	-55 to +125	℃
Storage Temperature	T_{STG}	-55 to +150	

Electrical Parameter (T=25℃)

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}
I_{PP}	Maximum Peak Pulse Current
C_{ESD}	Parasitic Capacitance



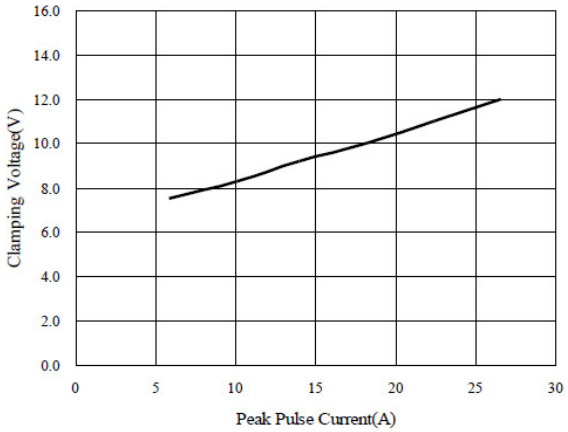
Uni-Directional TVS

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

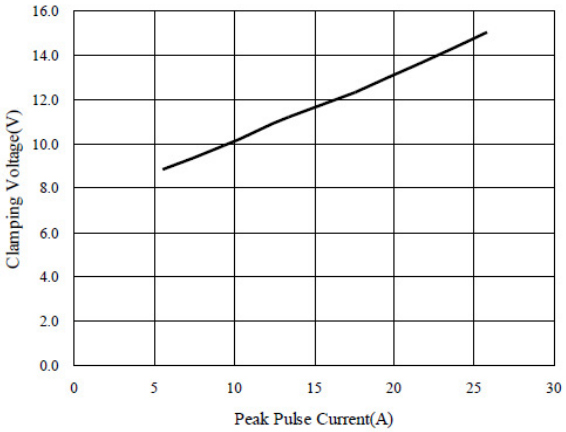
Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}	-	-	-	3.3	V
I_R	V_{RWM} = 3.3V	-	5	500	nA
I_R	V_{RWM} = 3.3V, Ta=100℃	-	20	-	nA
V_{t1}	I_{t1} = 1μA	3.8	4.5	5.5	V
V_h	I_h = 1mA	3.5	-	5.5	V
V_C	Any I/O to Ground I_{PP} = 1A, t_p = 8/20μs	-	-	5.5	V
V_C	Any I/O to Ground I_{PP} = 10A, t_p = 8/20μs	-	-	10.5	V
V_C	Any I/O to Ground I_{PP} = 25A, t_p = 8/20μs	-	-	18.0	V
V_C	Line-to-Line / Line-to-GND, two I/O Pins connected together on each line I_{PP} = 40A, t_p = 8/20μs	-	-	25.0	V
C_{ESD}	Between I/O Pins and Ground V_R = 0V, f = 1MHz	-	3.8	5.0	pF
C_{ESD}	Between I/O Pins V_R = 0V, f = 1MHz	-	1.7	2.5	pF

Typical Characteristic Curve

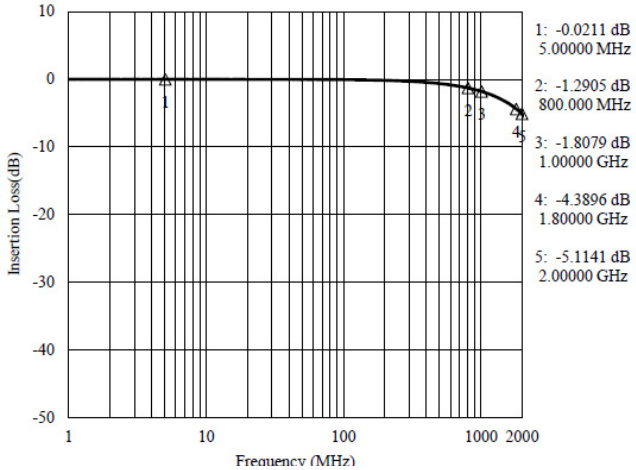
Clamping Voltage V_C vs. Current I_{PP}
Any I/O to GND



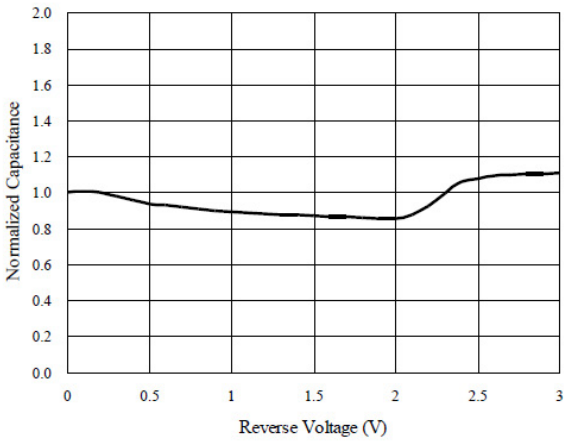
Clamping Voltage V_C vs. Current I_{PP}
Line-to-Line, Two I/O Pins Connected Together



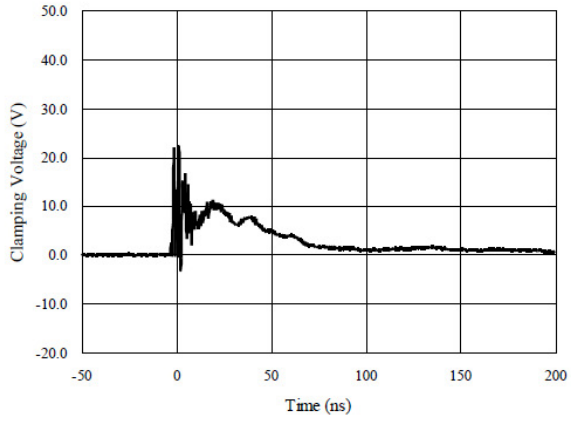
Insertion Loss S21



Normalized Capacitance vs. Voltage



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



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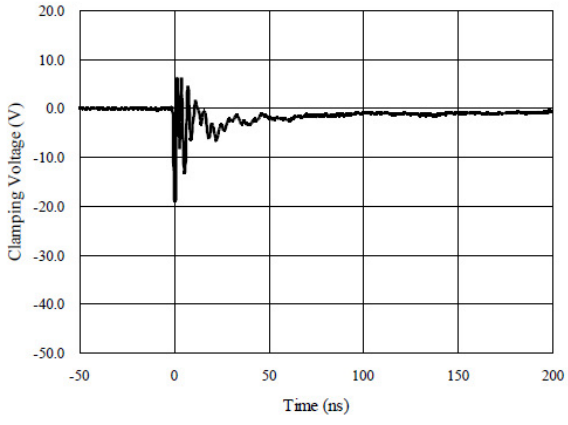
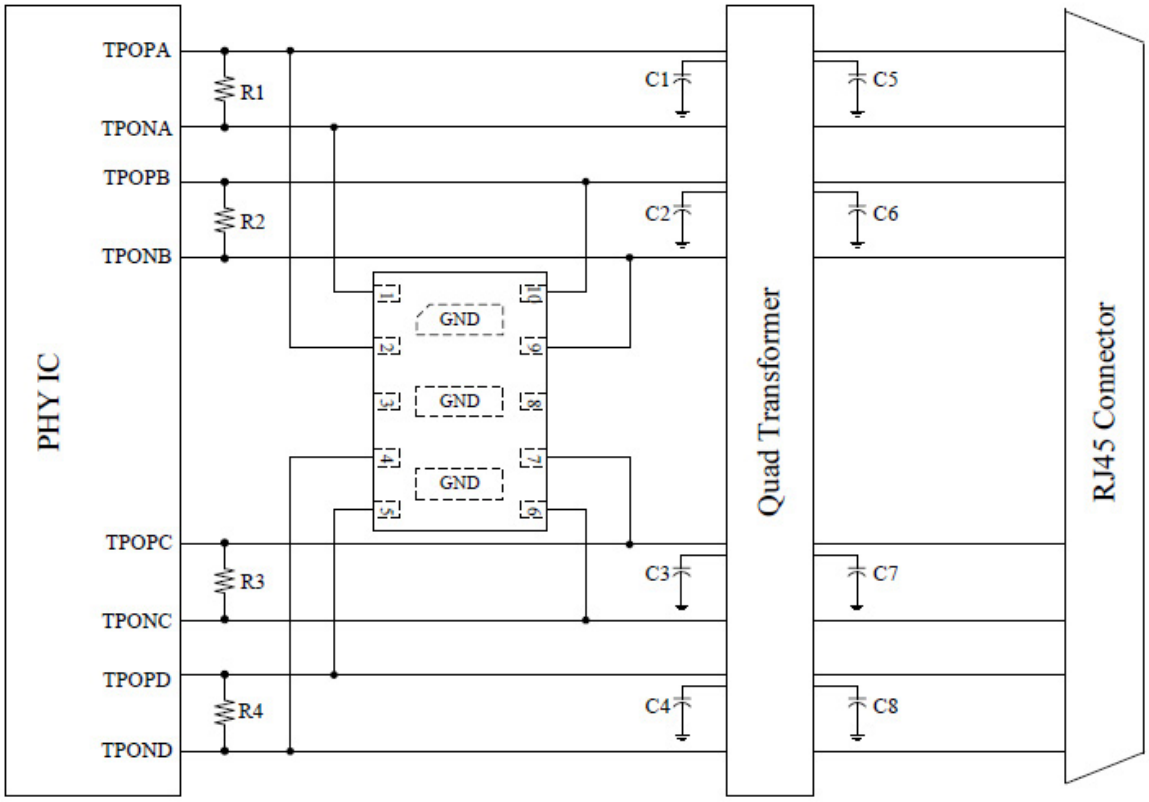


Application Information

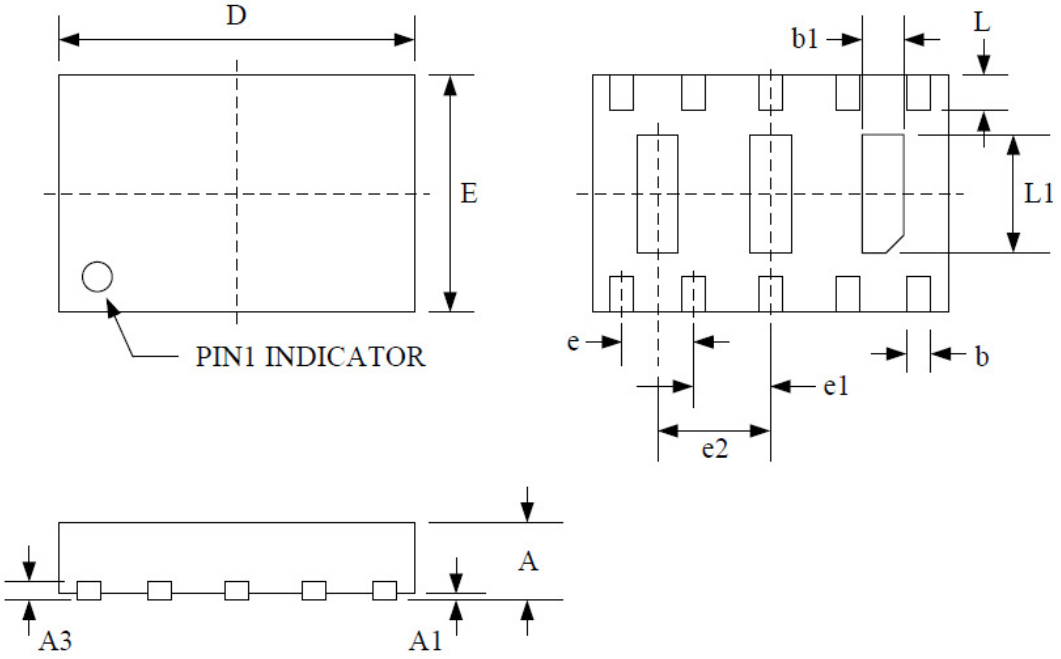
Electronic equipment is susceptible to damage caused by a variety of sources, including Electrostatic Discharge (ESD), Electrical Fast Transients (EFT) and Lightning strikes. The SPESLC3V3D3020-10U was designed to protect the sensitive equipment from damage which may be induced by such transient events. This product can be configured in different connections to meet the requirement of common-mode and differential-mode as follows:

Gigabit Ethernet Protection



NOTE: Please connect pin3, Pin8 and all GND Tabs of SPESLC3V3D3020-10U to the ground plane of the systems.

Package Outline Dimensions



Symbol	Dimensions (mm)			Dimensions (Inches)		
	Minimum	Typical	Maximum	Minimum	Typical	Maximum
A	0.500	0.600	0.650	0.020	0.024	0.026
A1	0.000	0.030	0.050	0.000	0.001	0.002
A3	0.15 REF			0.006 REF		
b	0.150	0.200	0.250	0.006	0.008	0.010
b1	0.250	0.350	0.450	0.010	0.014	0.018
D	2.900	3.000	3.100	0.114	0.118	0.122
E	1.900	2.000	2.100	0.075	0.079	0.083
e	0.600 BSC			0.024 BSC		
e1	0.650 BSC			0.026 BSC		
e2	0.950 BSC			0.037		
L	0.250	0.300	0.350	0.010	0.012	0.014
L1	0.950	1.000	1.050	0.037	0.039	0.041