

Electrostatic Discharge Protection Devices (ESD)

Low Capacitance

ESD05V88D-LC

Description

The ESD05V88D-LC is ultra low capacitance TVS arrays designed to protect high speed data interfaces. This series has been specifically designed to protect sensitive components which are connected to high-speed data and transmission lines from over-voltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients).

Feature

- u Protects one data or I/O line
- u Low capacitance
- u Low clamping voltage
- u IEC 61000-4-2, level 4
- u IEC 61000-4-2 (ESD), > ±20KV (air), > ±11KV (contact)

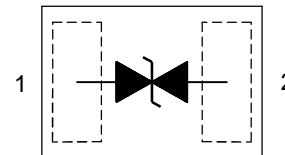
Applications

- u Cellular Handsets & Accessories
- u Digital Visual Interface (DVI)
- u RF Circuits
- u Display Port
- u USB Ports
- u MDDI Ports
- u PCI Express

SOD-882 / DFN-1006



Functional Diagram



Mechanical Data

- u Case Material: "Green" molding compound UL flammability classification 94V-0 (No Br,Sb, Cl)
- u Terminals: Lead Free Plating (Matte Tin Finish)
- u Component in accordance to RoHs 2002/95/E

Mechanical Characteristics

Symbol	Parameter	Value	Units
P _{PP}	Peak Pulse Power (tp=8/20µs waveform)	60	W
I _{PP}	Peak Pulse Current (tp=8/20µs waveform)	2.5	A
T _J	Operating Junction Temperature Range	-55 to +125	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C
T _L	Soldering Temperature, t max = 10s	260	°C
	IEC61000-4-2 (ESD)	Air Discharge	>±20
		Contact Discharge	>±11
			KV

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Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise noticed)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse standoff voltage	V_{RWM}		---	---	5.0	V
Breakdown voltage	V_{BR}	$I_R = 1\text{ mA}$	6.0	---	---	V
Reverse leakage current	I_{RM}	$V_{DRM} = 5\text{V}$	---	---	1	μA
Clamping Voltage	V_C	$I_{PP} = 1\text{A}$, $t_p = 8/20\mu\text{s}$	---	---	14	V
Clamping Voltage	V_C	$I_{PP} = 2.5\text{A}$, $t_p = 8/20\mu\text{s}$	---	---	25	V
Junction capacitance	C_J	$V_R = 0\text{V}$, $f = 1\text{MHz}$, Between I/O pins	---	0.3	0.5	pF

Characteristic Curves

Fig1. 8/20 us Pulse Waveform

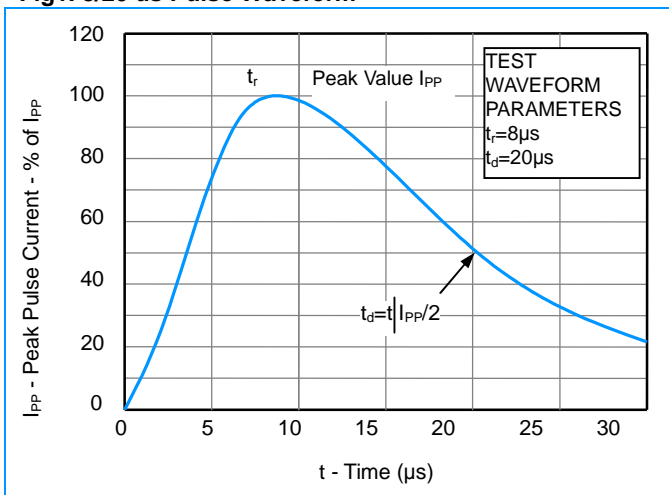


Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)

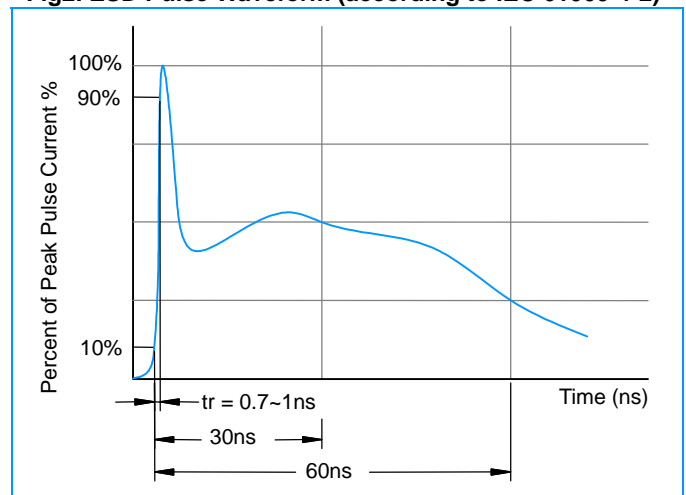


Fig3. Power Dissipation Versus Pulse Time

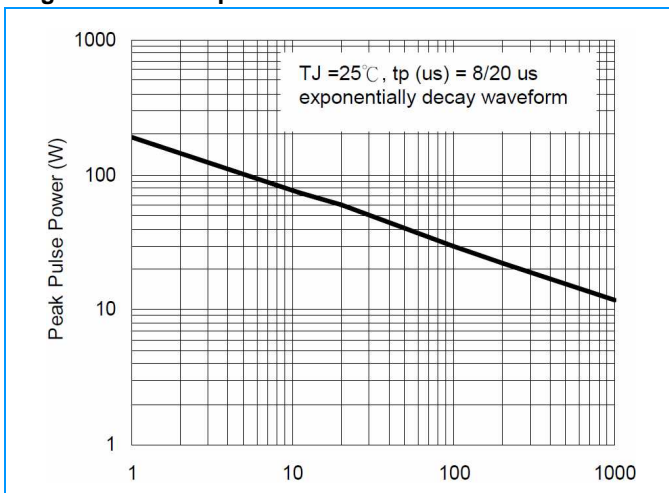
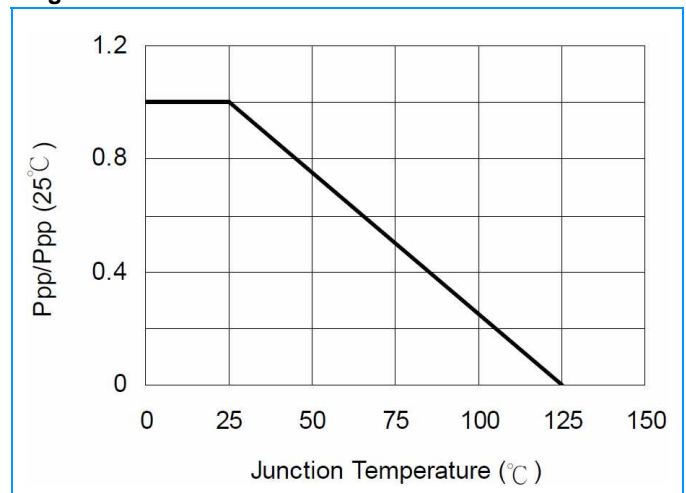


Fig4. Peak Pulse Power Versus T_J



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Characteristic Curves

Fig5. Typical Junction Capacitance

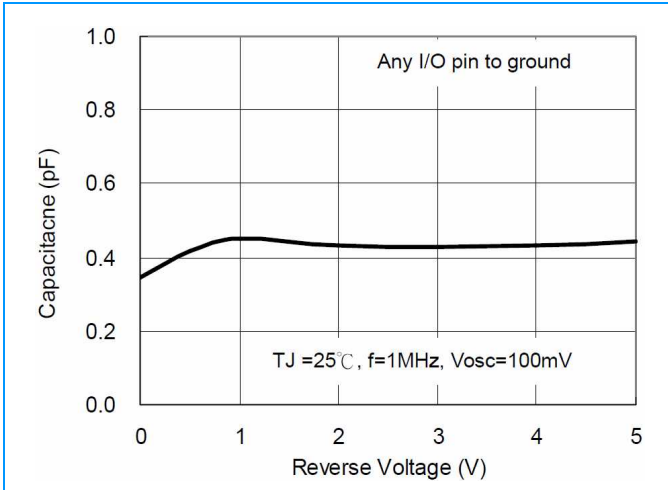


Fig6. Reverse Leakage Current Versus T_J

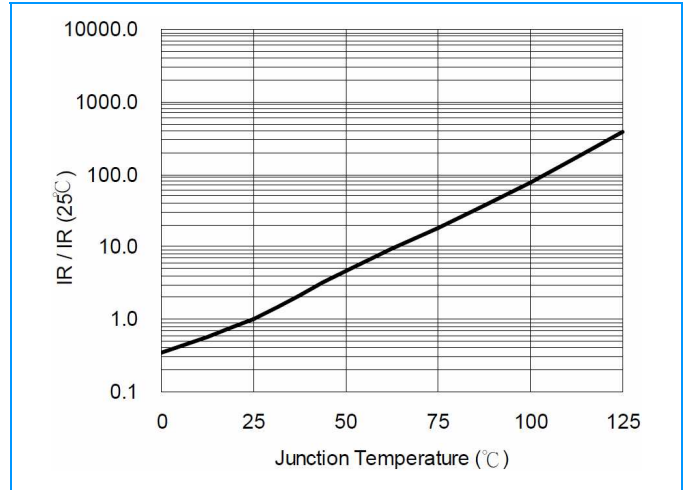


Fig7. ESD Test Configuration

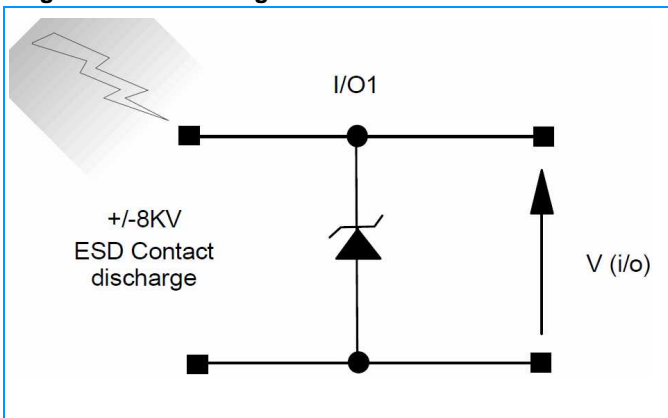


Fig8. Clamped +8 kV ESD Voltage Waveform

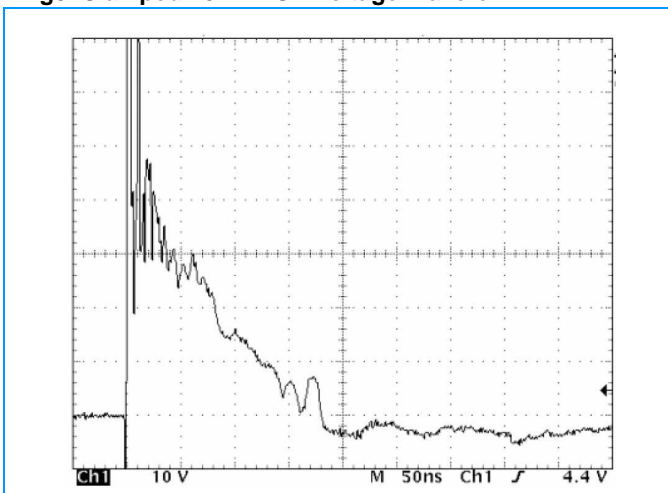
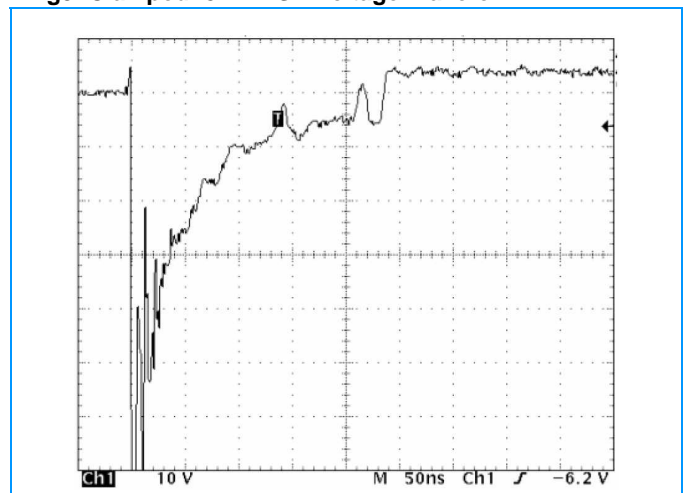


Fig9. Clamped -8 kV ESD Voltage Waveform

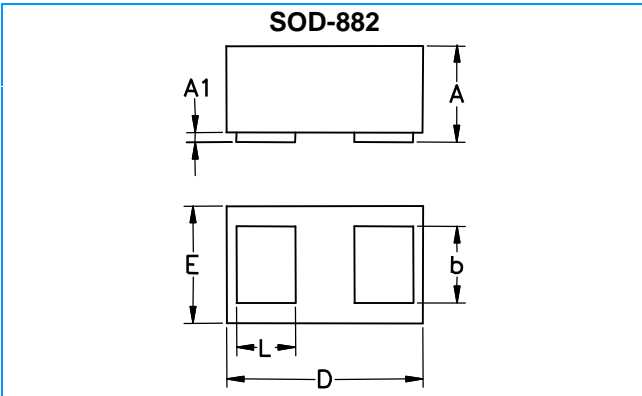


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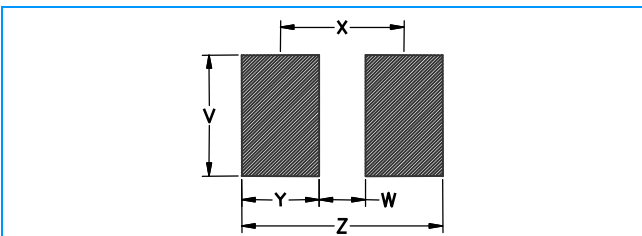
Dimension



Dimension	Min.	Max.
A	0.47	0.53
A1	0.00	0.05
B	0.25	0.55
D	0.95	1.075
E	0.55	0.675
L	0.20	0.45

All Dimensions in millimeter

Soldering Pad Layout

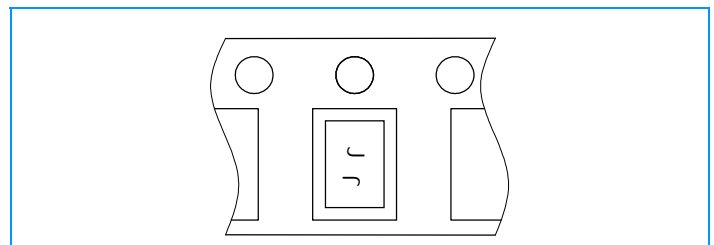


Dimension	Millimeters	Inches
Z	1.30	0.051
X	0.75	0.029
W	0.20	0.007
Y	0.55	0.021
V	0.80	0.031

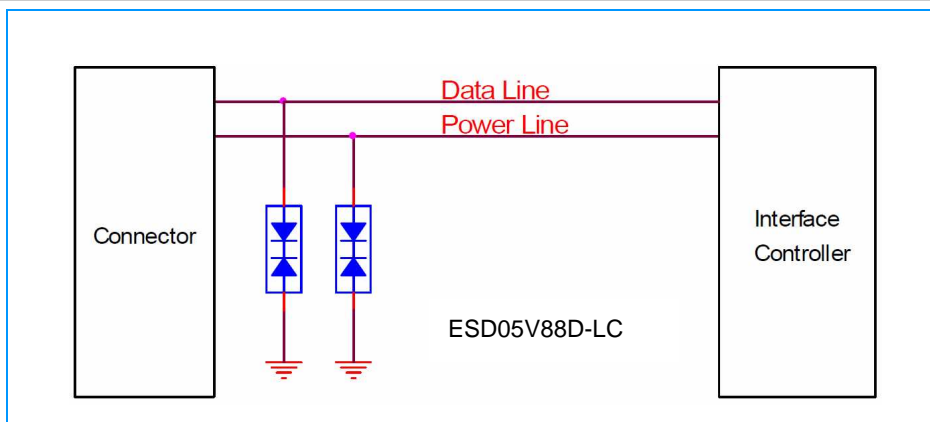
Packaging Information

Device	Q'TY/REEL (PCS)	REEL DIA. (INCH)
ESD05V88D-LC	3,000	7
	10,000	7

Marking & Orientation



Application Information



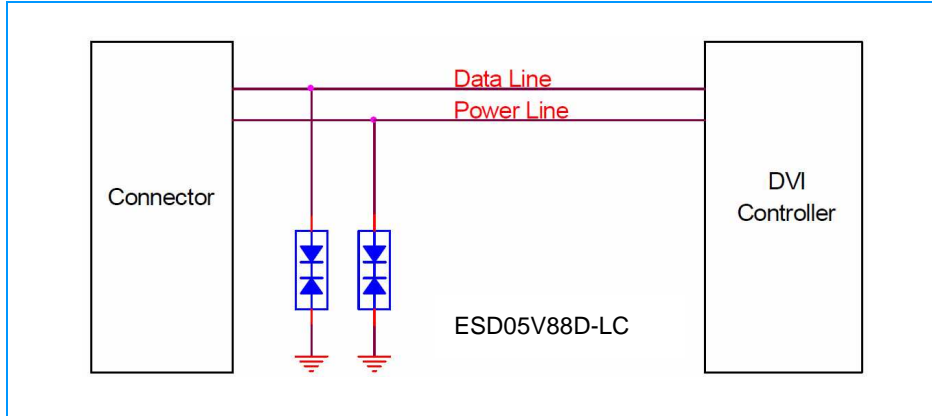
Cellular Handsets & Accessories ESD Protection

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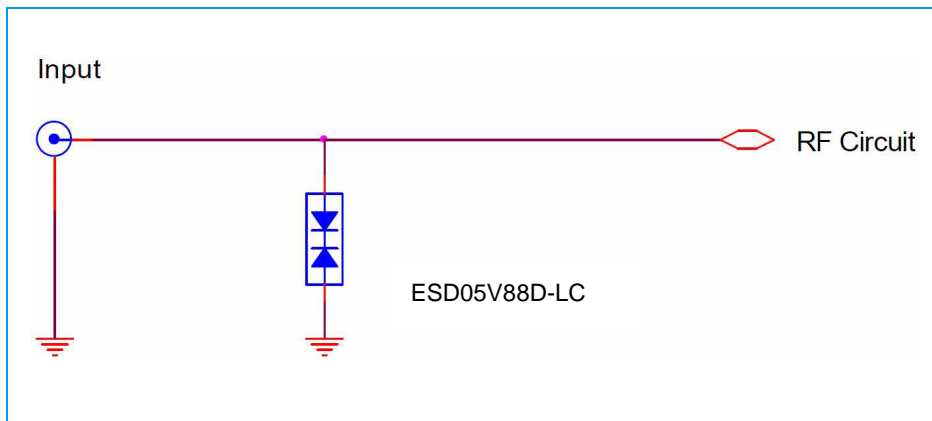
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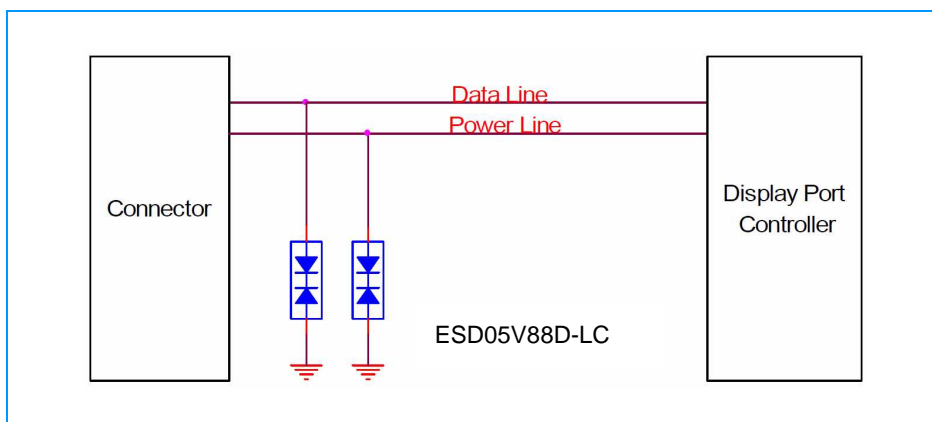
Application Information (Continue)



DVI ESD Protection



RF Circuit ESD Protection



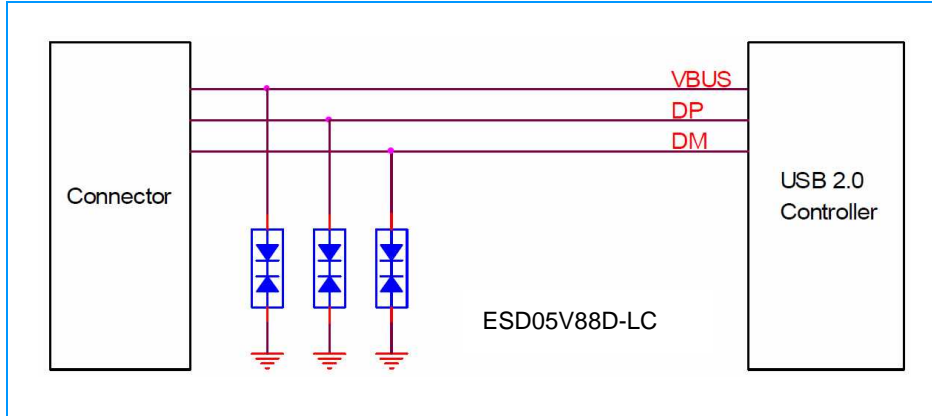
Display Port ESD Protection

Electrostatic Discharge Protection Devices (ESD)

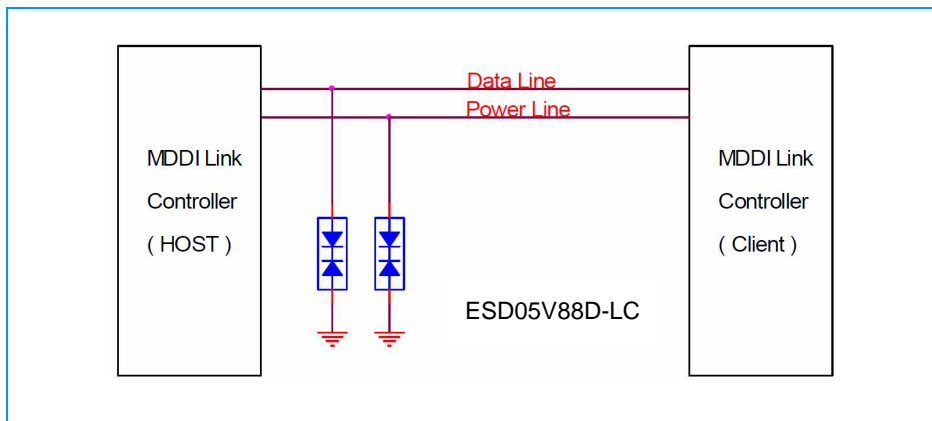
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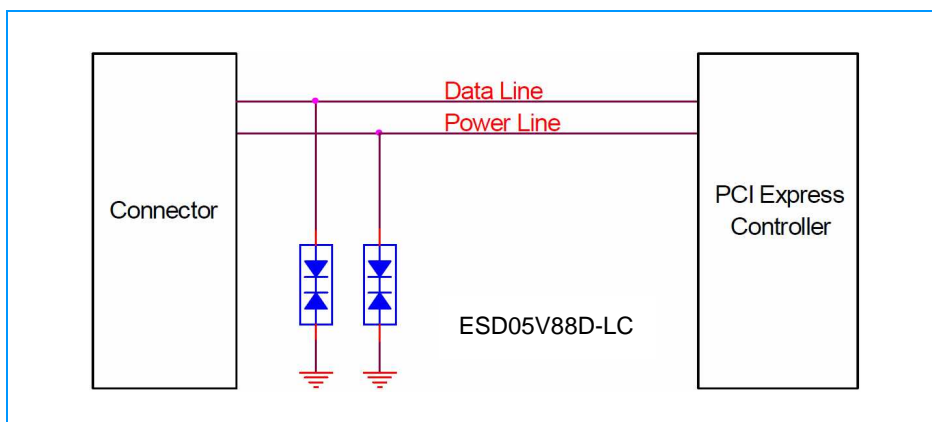
Application Information (Continue)



USB2.0 Interface ESD Protection



MDDI ESD Protection



PCI Express ESD Protection