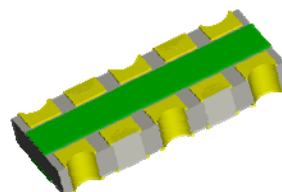


Features

- ESD protection for high speed data lines to
IEC61000-4-2 ESD contact discharge typical 8KV, max 15KV
IEC61000-4-2 ESD air discharge typical 15KV, max 25KV
- Protect four data lines
- Flow through design, easy for lay-out
- Multilayer structure
- Surface mount
- Extremely low capacitance
- Very low leakage current
- Fast response time
- Bi-directional ESD protection
- Lead free solder termination
- The best ESD protection for high frequency, low voltage applications



Application

- High Definition Multi-Media Interface (HDMI)
- Digital Visual Interface (DVI)
- Display Port Interface
- Unified Display Interface (UDI)
- MDDI Ports
- Gigabit Ethernet
- USB2.0 and IEEE1394 interface

Caution: This component is designed for signal line protection only, not intended to be used under bias, not for application with a power line.

Electrical Characteristics

Electrical Characteristics						
Parameter	Symbol	Conditions	Min	Typ	Max	Units
Continuous operating voltage	V_{DC}	---	---	---	8	V
Trigger voltage	V_T	IEC61000-4-2 8KV contact discharge	---	300	---	V
Clamping voltage	V_C	IEC61000-4-2 8KV contact discharge	---	15	---	V
Leakage current	I_L	8V V_{DC}	---	0.10	10	nA
Capacitance	C_P	VR = 0V, f = 1MHz	---	0.15	0.3	pF
Operating Temperature	---	---	-40	---	90	°C
Storage Temperature	---	---	-55	---	150	°C
ESD pulse withstand	Pulses	IEC61000-4-2 8KV contact discharge	2000	---	---	---

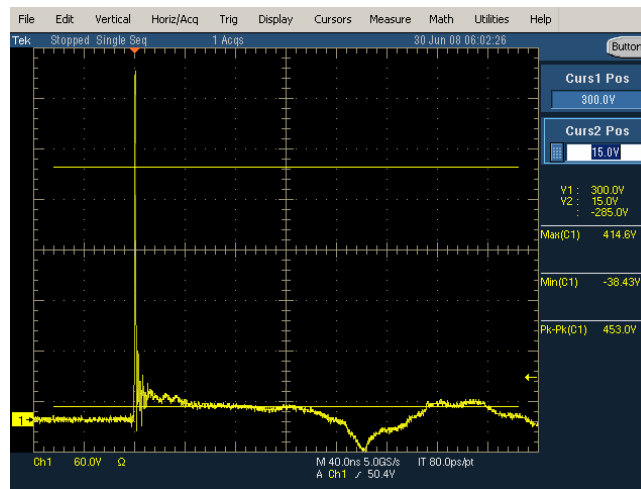
Notes:

1, Trigger and clamping voltage measure per IEC 61000-4-2, 8KV contact discharge method

Multilayer Polymer ESD Suppressor

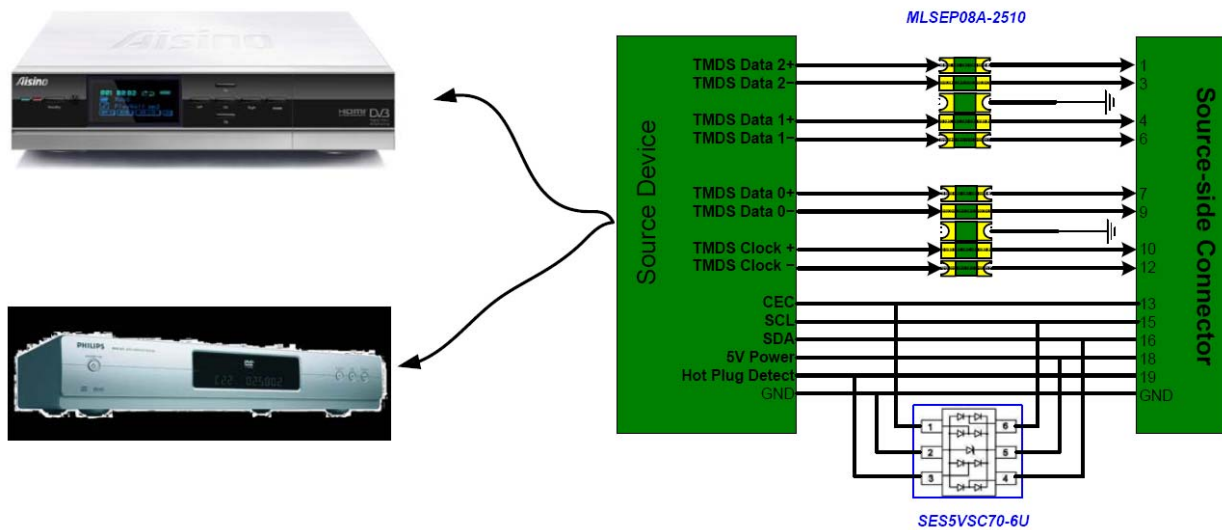
MLSEP08A-2510

Typical PESD clamping for +8KV pulse per IEC61000-4-2

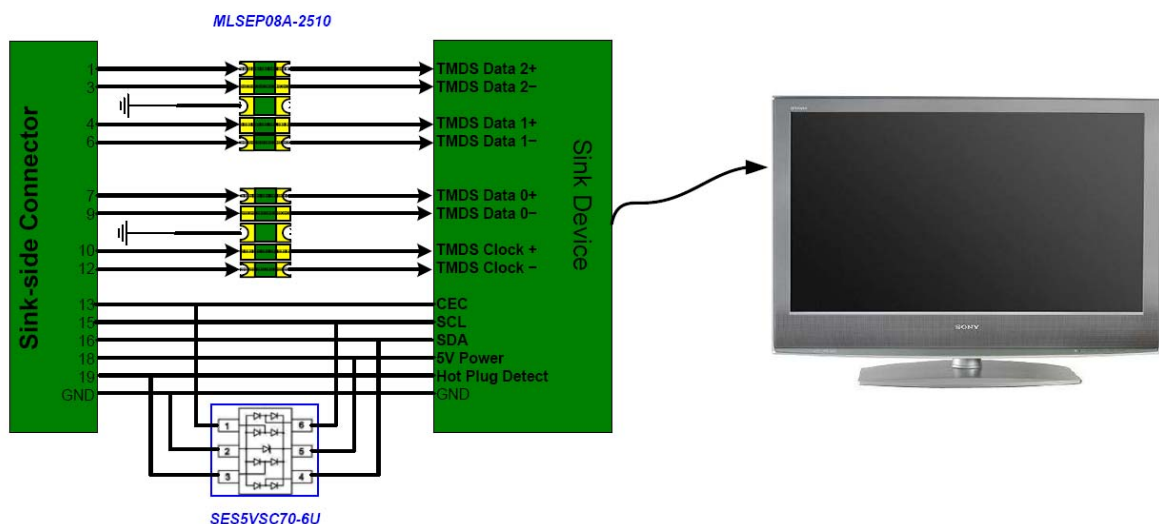


Design Recommendations for HDMI

For HDMI Source Device

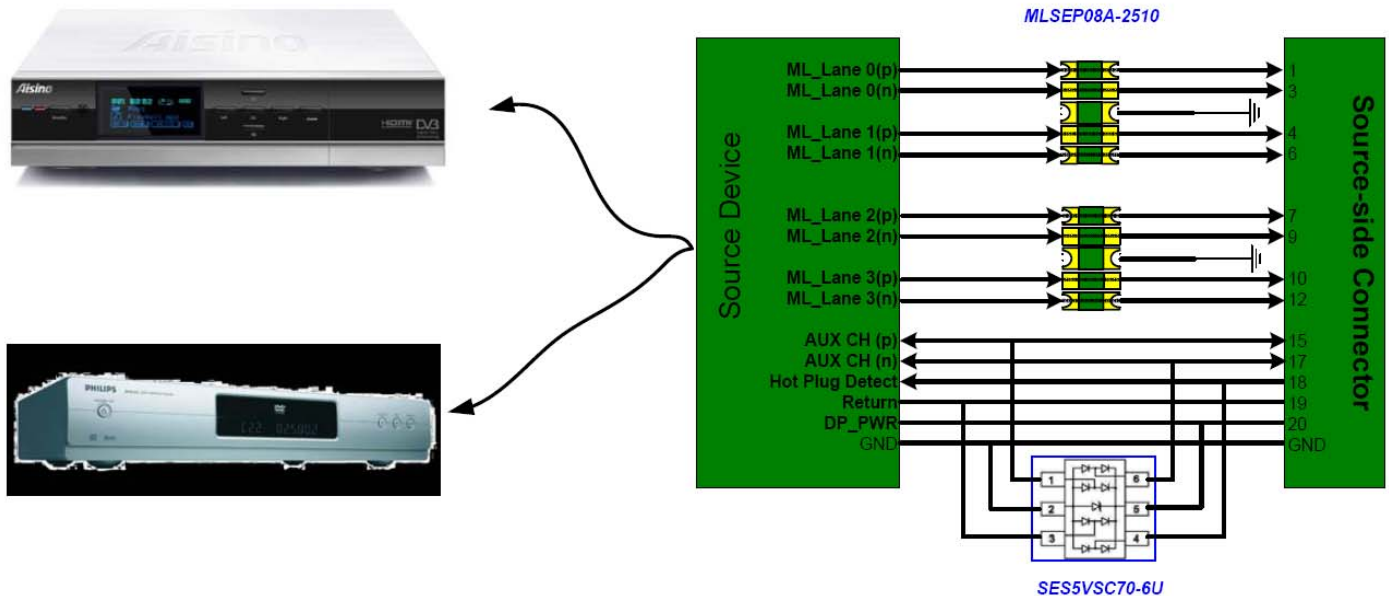


For HDMI Sink Device

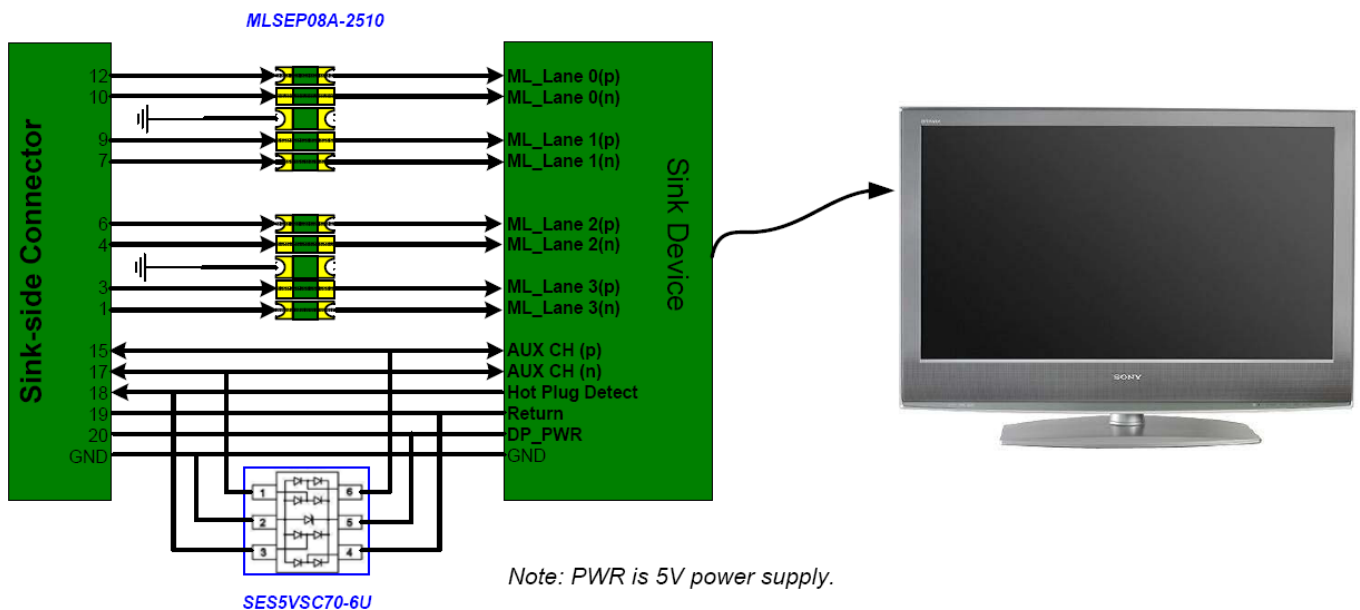


Design Recommendations for Display Port

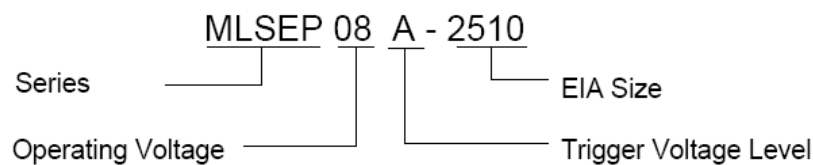
For Display Port Source Device



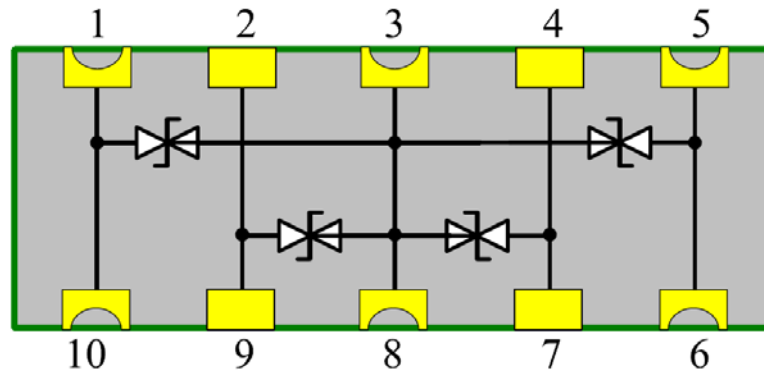
For Display Port Sink Device



Part Numbering



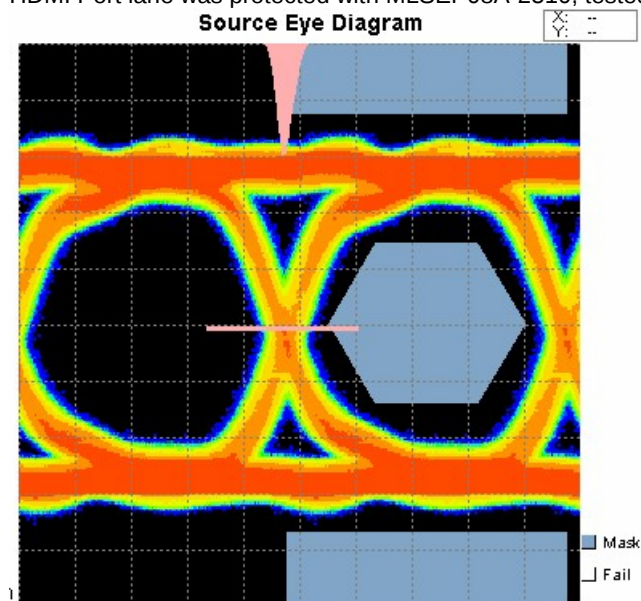
Circuit diagram



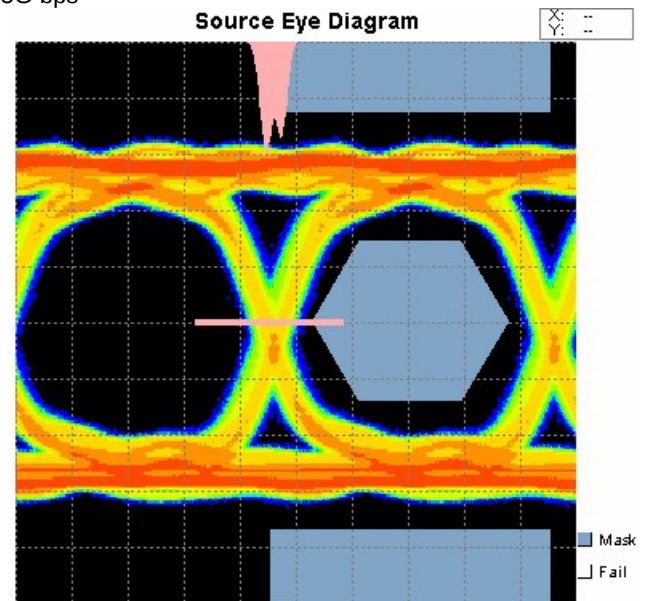
MLSEP08A-2510

Eye Pattern Test

HDMI Port lane was protected with MLSEP08A-2510, tested for 2.25G bps



HDMI Port without MLSEP08A-2510



HDMI Port with MLSEP08A-2510

Environmental Specifications

Operation temperature: -40~90°C

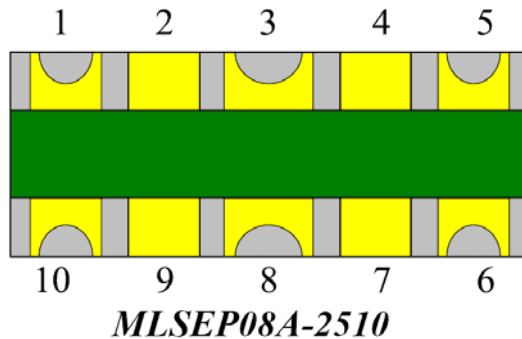
Moisture Resistance, Steady state: MIL-STD-833, Method 1004.7, 85% RH, 85°C, 1000hrs

Thermal Shock: MIL-STD-202, Method 107G, -55°C to 150°C, 30 min cycle, 10 cycles.

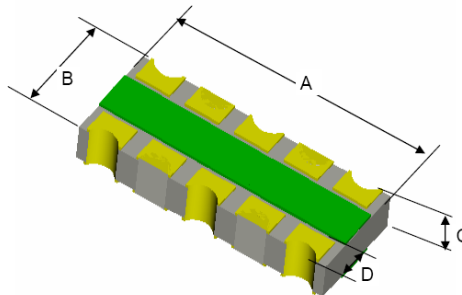
Vibration: MIL-STD-202F, Method 201A, (10 to 55 to 10HZ, 1 min. cycle, 2hrs each in X-Y-Z)

Chemical Resistance: ASTM D-543, 4hrs @40°C, 3 solutions (H₂O, detergent solution, deluxer)

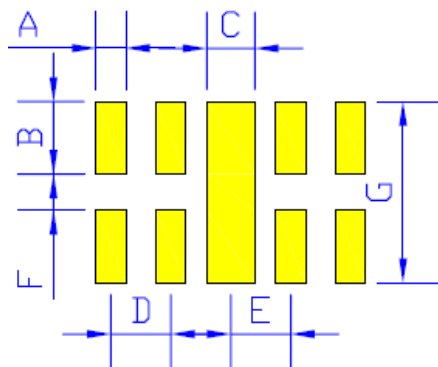
Solder leach resistance and terminal adhesion: Per EIA-576 test

Pin configuration


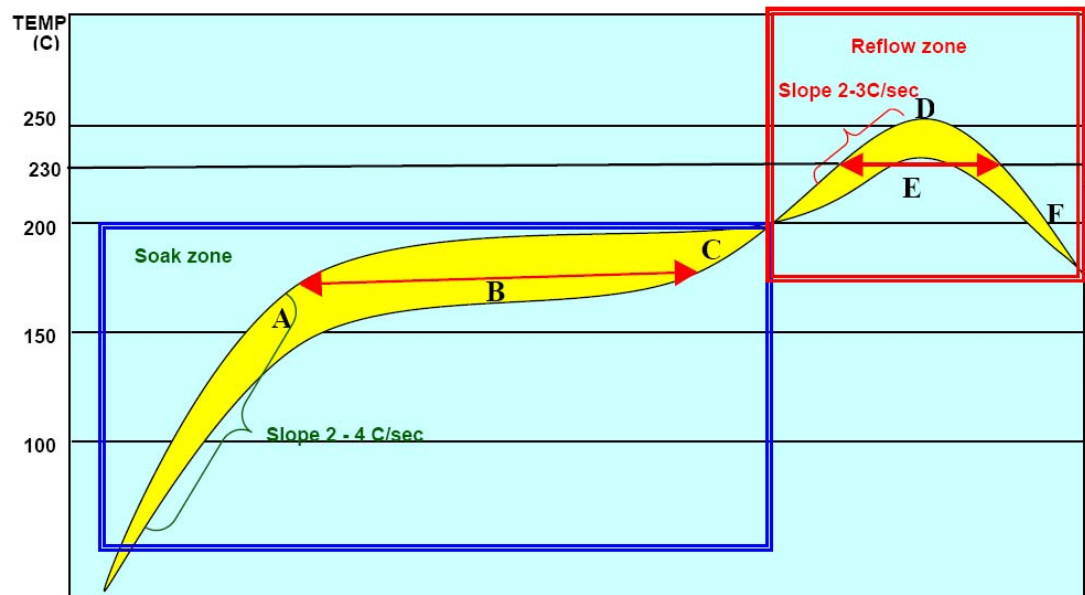
Pin	Identification
1, 2, 4, 5	Input lines
6, 7, 9,10	Output lines
3, 8	Ground

Product Dimensions (mm)


Length A		Width B		Height C		Terminal width D		Unit
Min	Max	Min	Max	Min	Max	Min	Max	
2.45	2.55	0.90	1.1	0.33	0.43	0.25	0.45	mm

Solder Pad Layouts


A		B		C		D		Unit
Min	Max	Min	Max	Min	Max	Min	Max	
0.20	0.30	0.55	0.65	0.35	0.45	0.45	0.55	mm
E		F		G				Unit
Min	Max	Min	Max	Min	Max			
0.45	0.55	0.25	0.35	1.4	1.6			mm

Solder Reflow Recommendation
PESD Solder Profile


Item	Process	Description	Reach Temp.	Time or Rate
A	Soak Start	From ambient to soak temperature and soak start	150°C - 180°C	2°C - 4°C / sec
B	Soak time	Soak time	---	60s - 120s
C	Soak end	Soak end	180°C - 200°C	---
D	Peak Temp.	From soak temperature to Peak temperature	260°C	2°C - 3°C / sec
E	Time above	Main heating time	230°C - 260°C	40s - 60s
F	Cooling	From main heating temperature to 100°C	100°C	Max. 4°C / sec

Notes:

1* Peak temperature can be high to 260°C, and the recommendation time is as below

at 230°C	40s ~ 60s
at 240°C	30s ~ 40s
at 260°C	5s ~ 10s

2* Recommended reflow methods: IR, Vapor phase oven, hot air oven, wave solder.

3* Devices can be cleaned using standard industry methods and solvents.

4* Component can withstand 270°C 10 sec.

5* If reflow temperatures exceed the recommended profile, devices may not meet the performance requirements.

Package Information

Tape & Reel: 3000pcs per reel.

Rev. letter	E	Date	2008-7-22
Design	Check	Audit	Approve
Tony	Michael	Ken	Ken