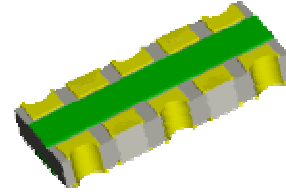


Features

- » 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.

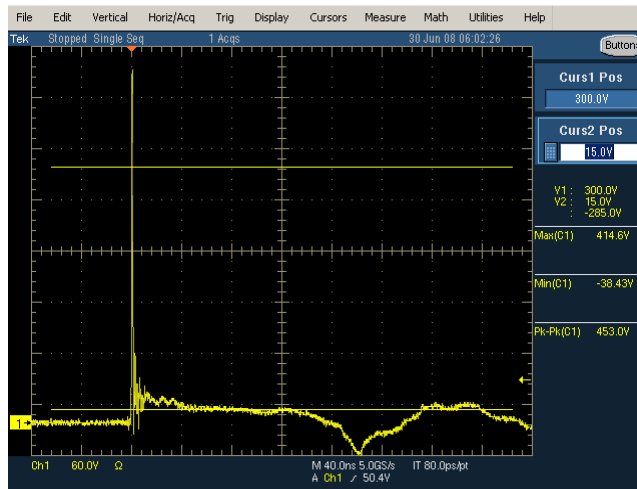
Electrical Characteristics

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	100	nA
Capacitance	C_P	$V_R = 0V, f = 1MHz$	---	0.05	0.15	pF
Operating Temperature	---	---	-40	---	90	°C
Storage Temperature	---	---	-55	---	150	°C
ESD pulse withstand	Pulses	IEC61000-4-2 8KV contact discharge	2000	---	---	---

Notes:

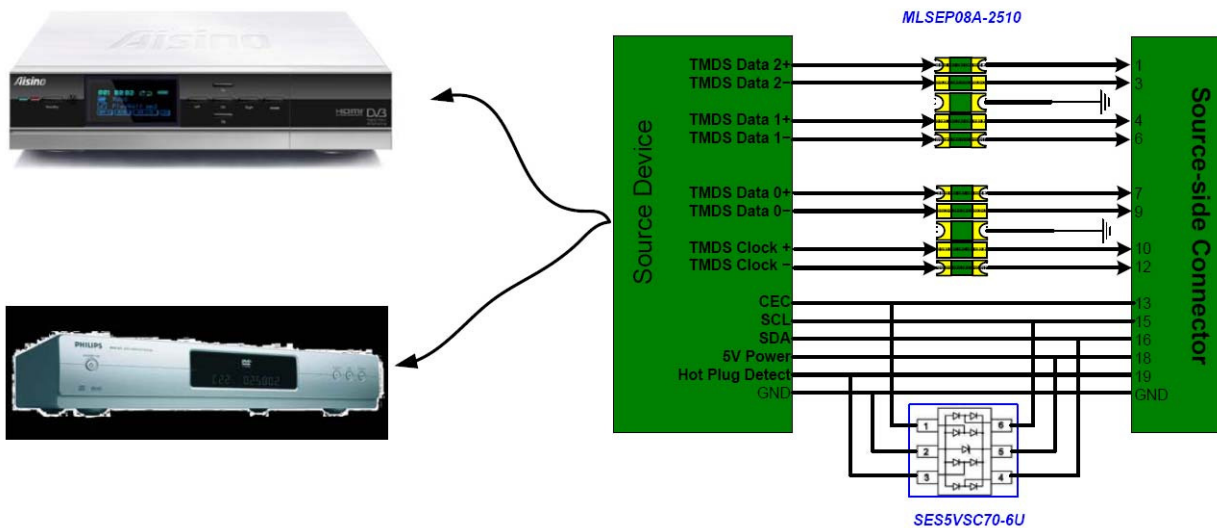
- 1, Trigger and clamping voltage measure per IEC 61000-4-2, 8KV contact discharge method

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

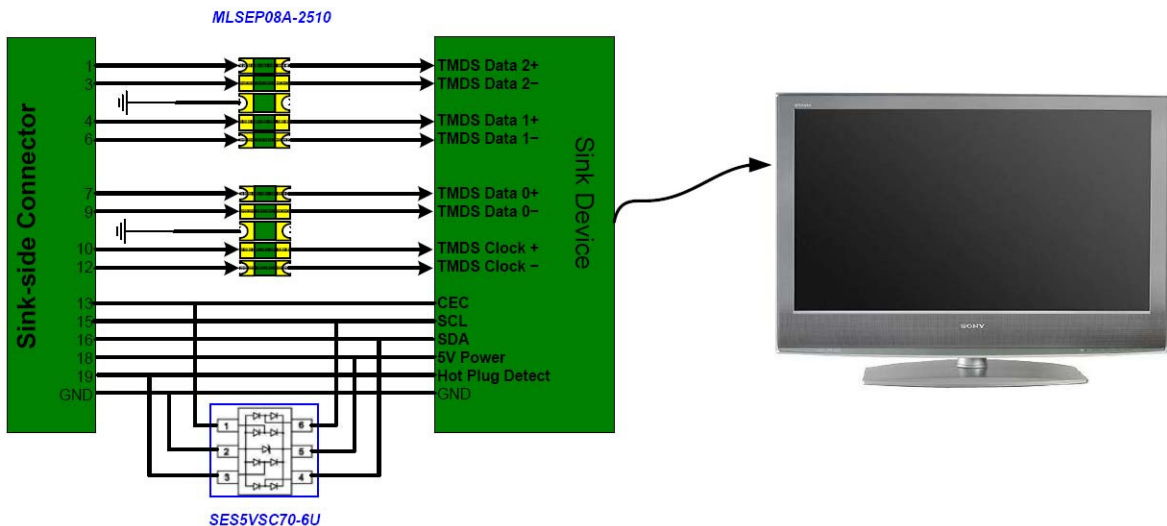


Design Recommendations for HDMI

For HDMI Source Device

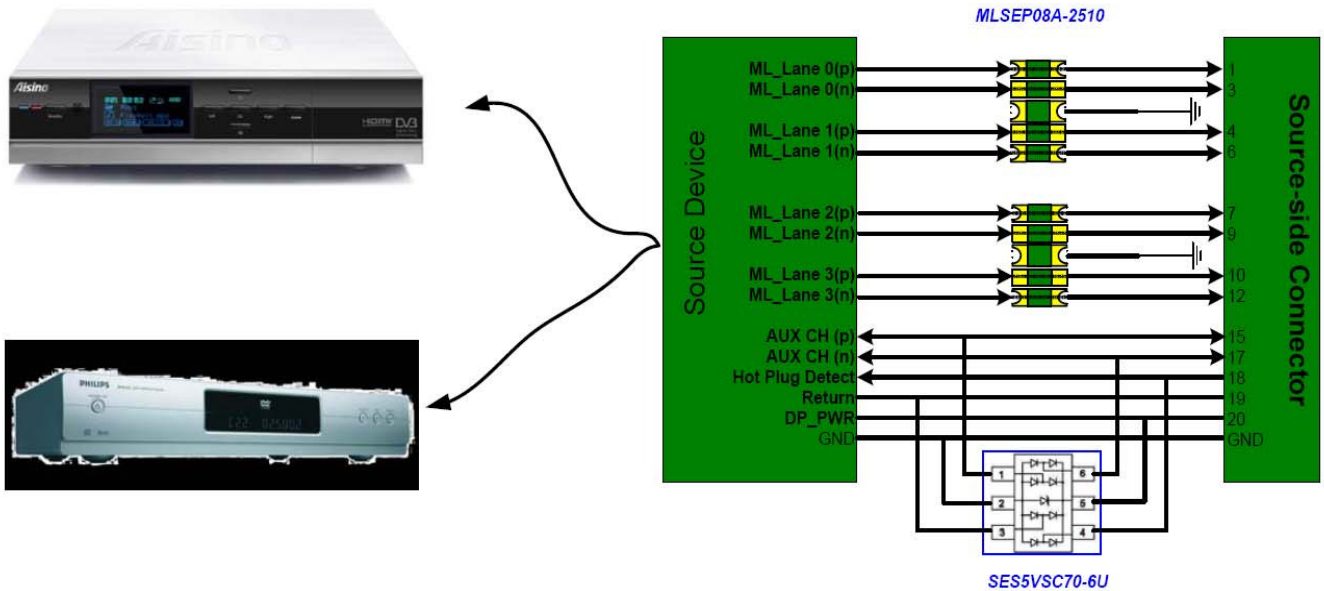


For HDMI Sink Device

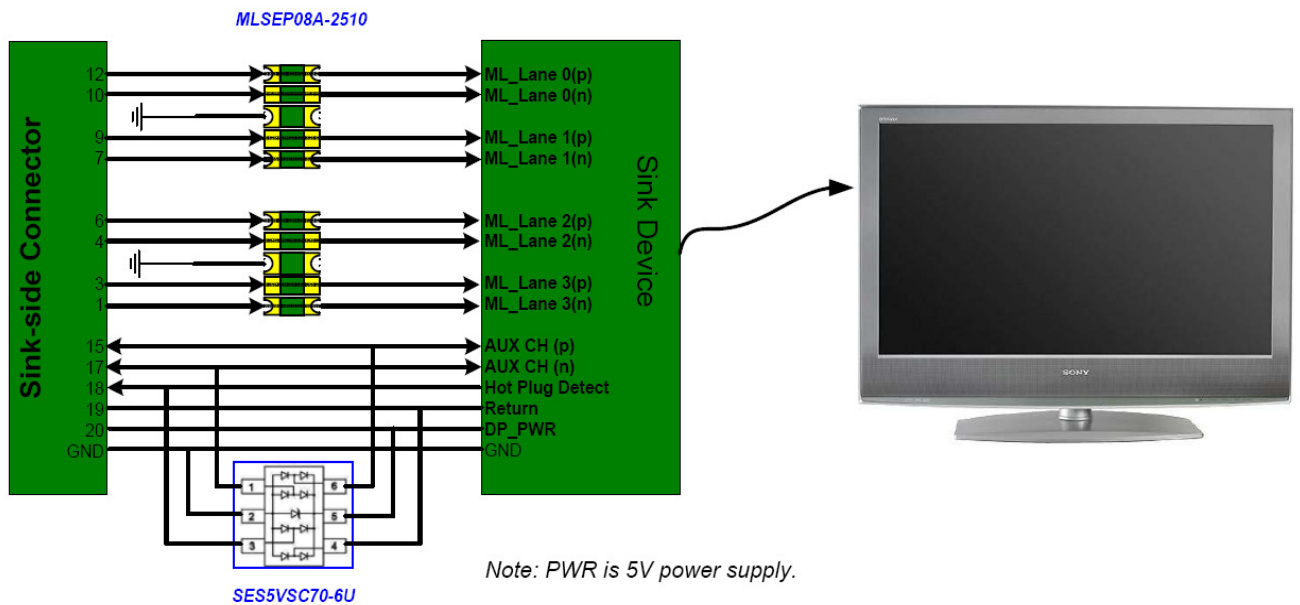


Design Recommendations for Display Port

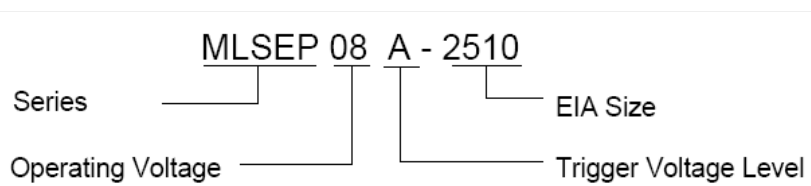
For Display Port Source Device

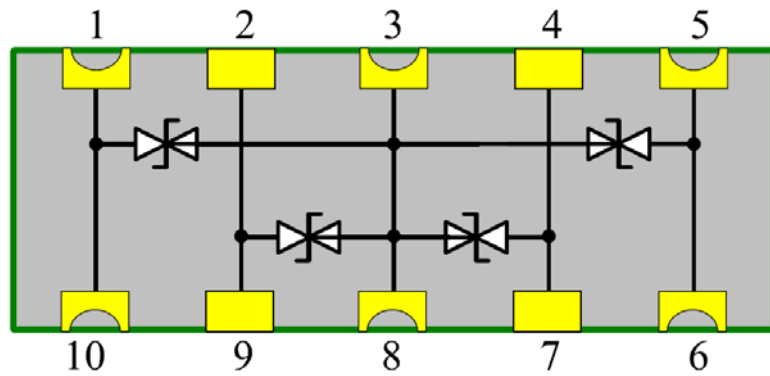


For Display Port Sink Device



Part Numbering

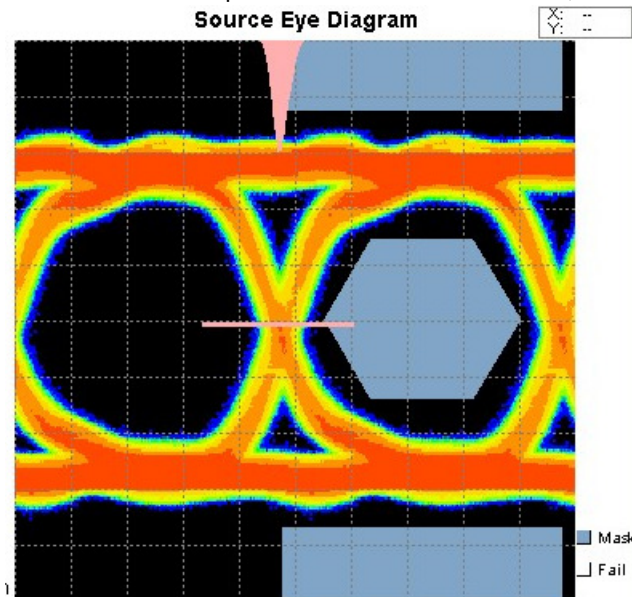




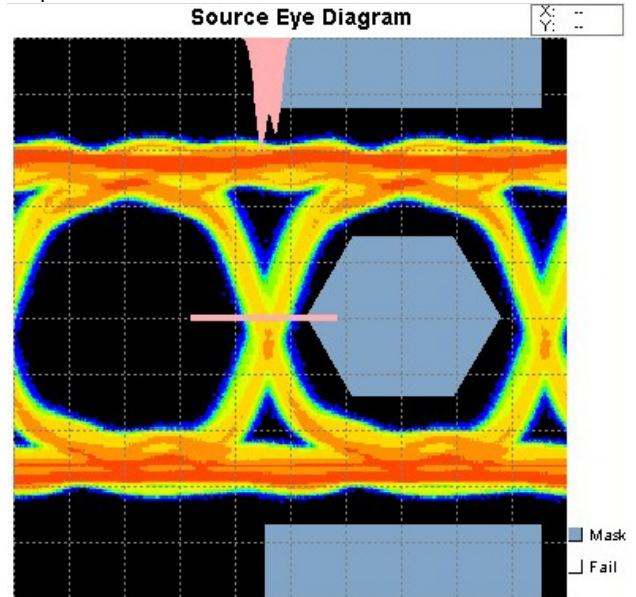
MLSEP08A-2510

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

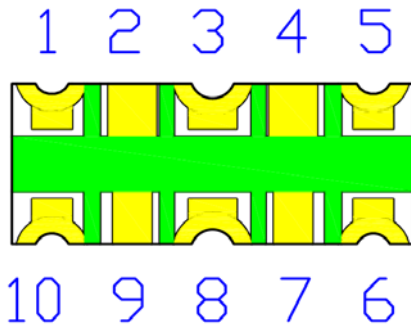
Thermal Shock: MIL-STD-202, Method 107G,-55°Cto150°C,30 min cycle,10 cycles.

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)

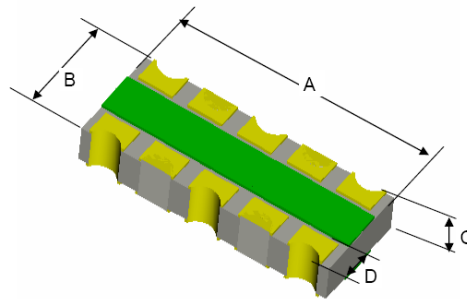
Solder leach resistance and terminal adhesion: Per EIA-576 test

Pin configuration



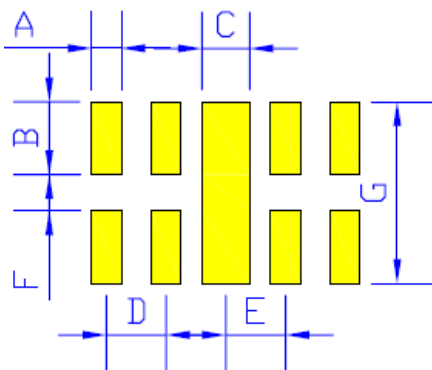
Pin	Identification
1, 2, 4, 5	Input lines
6, 7, 9,10	Output lines
3, 8	Ground

Product Dimensions (mm)



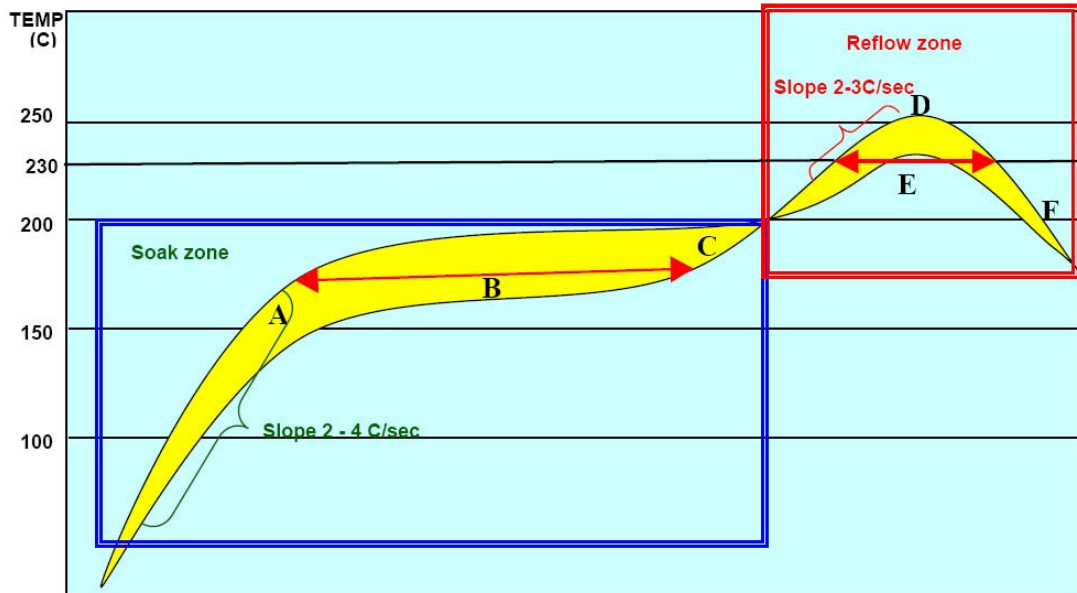
Length A		Width B		Height C		Terminal width D		Unit
Min	Max	Min	Max	Min	Max	Min	Max	
2.45	2.55	0.90	1.10	0.33	0.43	0.20	0.40	mm

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

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.

Contact Information

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Rev. letter	B0	Date	2009-6-10
Design	Check	Audit	Approve
Tony	Michael	Ken	Ken