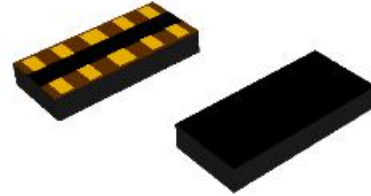


1. Features

- Ultra-Low capacitance:0.05pF(typ.)
- Low leakage current(<10nA)
- Fast response time(<1ns)
- Protects four I/O lines
- IEC 61000-4-2 (ESD Air): 15kV
IEC 61000-4-2 (ESD Contact): 8kV

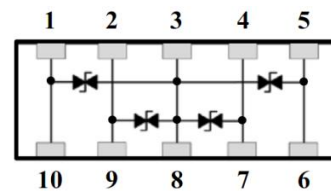
2. Pin Description



3. Applications

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

4. Schematic Diagram



5. Order Information

Type	Package	Size (mm)	Delivery Form	Delivery Quantity
MKESD2510AQ12	DFN2510-10L	2.50x1.00x0.50	7" T&R	3,000

6. Limiting Values($T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified)

Symbol	Parameter	Conditions	Min	Max	Unit
V_{ESD}	Electrostatic Discharge Voltage	IEC 61000-4-2; Contact Discharge	-	8	kV
		IEC 61000-4-2; Air Discharge	-	15	kV
T_A	Operating Temperature Range	-	-55	125	$^\circ\text{C}$
T_{stg}	Storage Temperature Range	-	-40	85	$^\circ\text{C}$

7. Electrical Characteristics($T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ.	Max	Unit
V_{DC}	Continuous Operating Voltage	-	-	-	12.0	V
V_T	Trigger Voltage	IEC61000-4-2 8kV contact discharge	-	450	-	V
V_C	Clamping Voltage	IEC61000-4-2 8kV contact discharge	-	40	-	V
I_L	Leakage Current	DC 12V shall be applied on component	-	-	10	nA
C_J	Capacitance	Measured at 10MHz	-	0.05	-	pF

8. Typical Characteristics

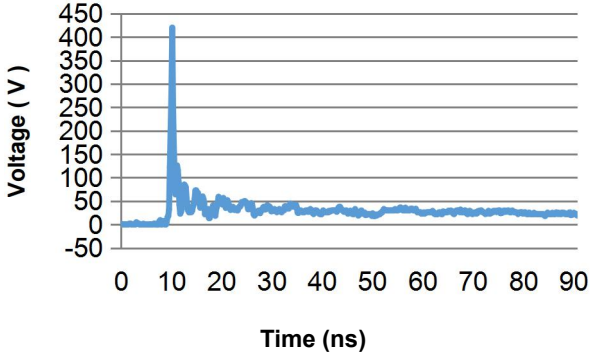


Fig.1 Typical ESD Response
(IEC 61000-4-2, 8kV contact discharge)

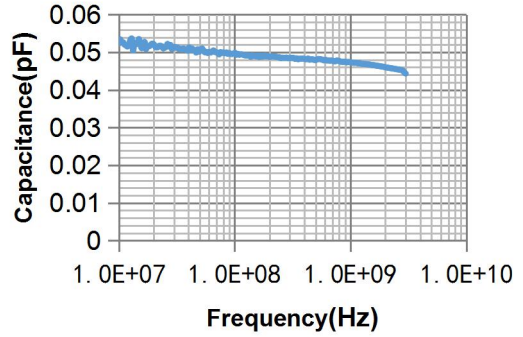


Fig.2 Typical Device Capacitance VS. Frequency

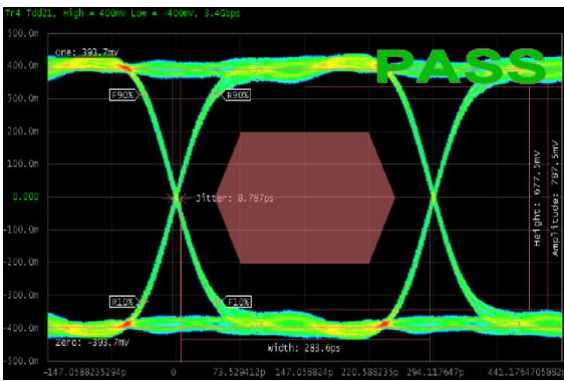


Fig.3 HDMI 1.4 Mask at 3.4 Gbps

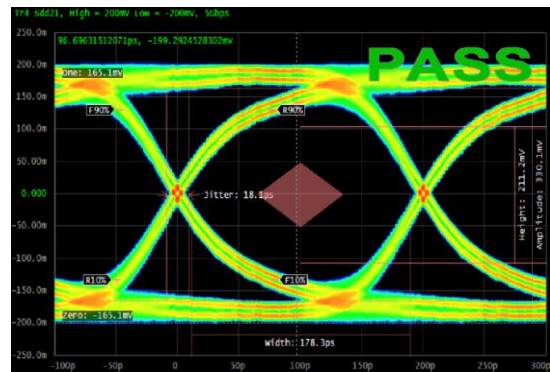


Fig.4 USB 3.0 Mask at 5.0 Gbps

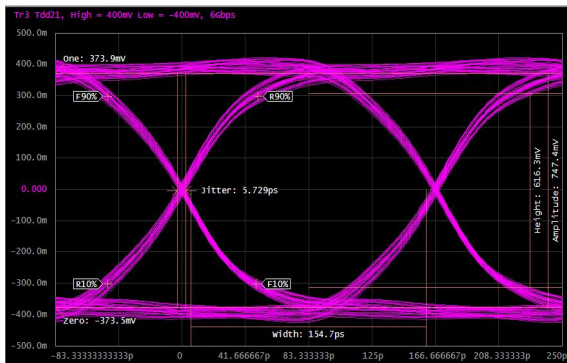


Fig.5 HDMI 2.0 Mask at 6.0 Gbps

9. Applications Information

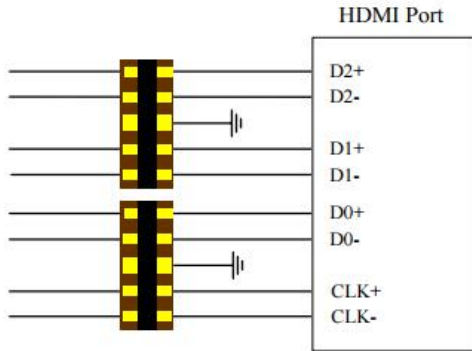


Fig.6 ESD Protection for HDMI

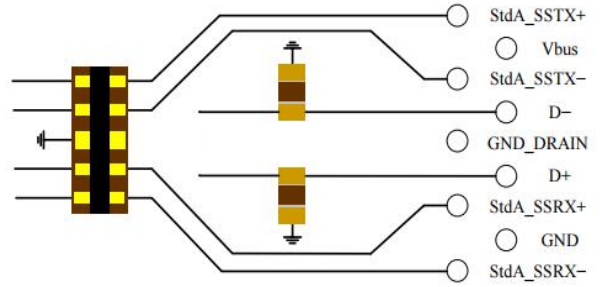


Fig.7 ESD Protection for USB 3.0 Type A

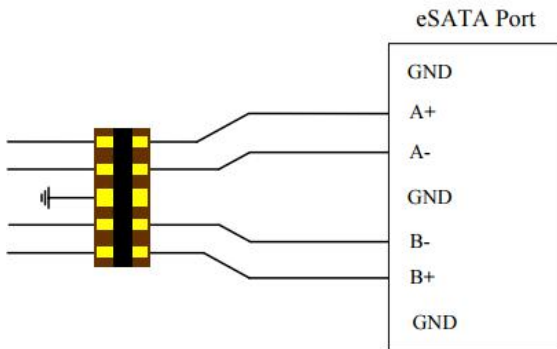
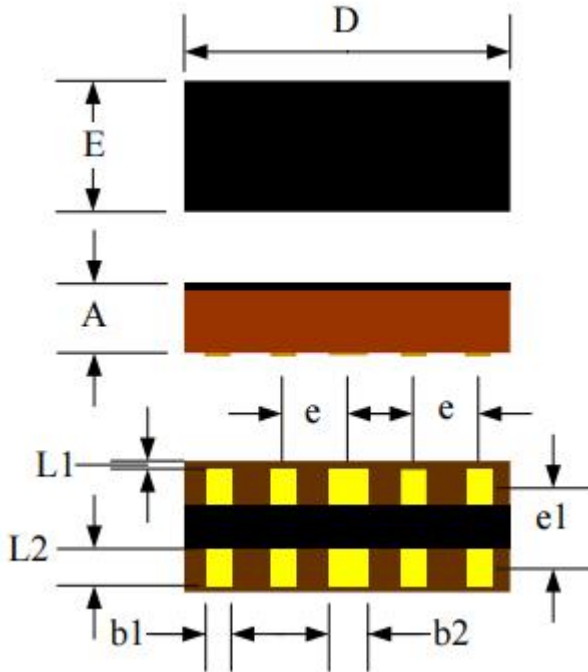
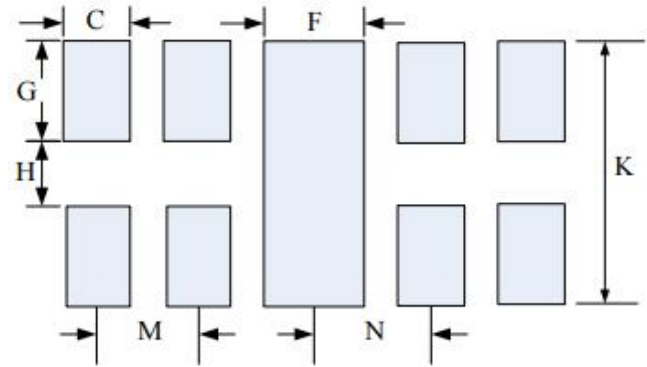


Fig.8 ESD Protection for eSATA

10. Package Dimension

Recommended Solder Pad Footprint


***Sizes in mm**

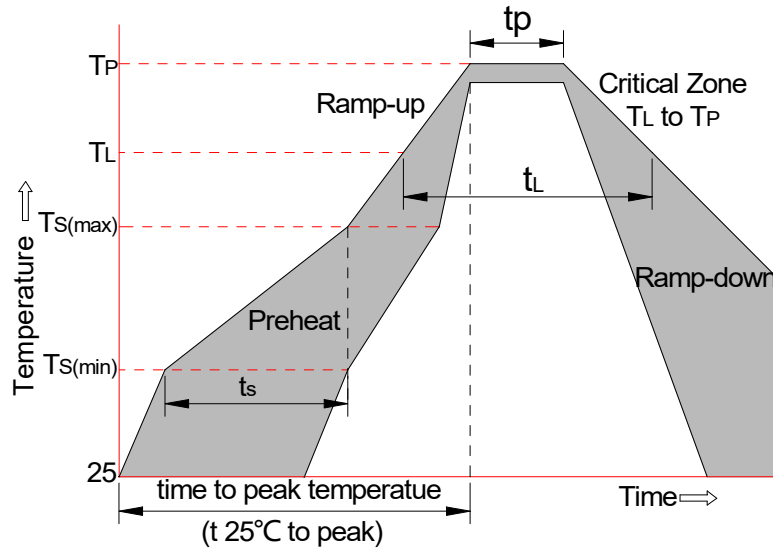
Notes:

This solder pad layout is for reference purposes only.

Dimension	Unit: Millimeters	
	Min.	Max.
A	0.40	0.60
b1	0.10	0.30
b2	0.20	0.40
D	2.40	2.60
E	0.90	1.10
e	0.40	0.60
e1	0.50	0.70
L1	0.04	0.06
L2	0.20	0.40

Dimension	Unit: Millimeters	
	Min.	Max.
C	0.20	0.30
F	0.35	0.45
G	0.55	0.65
H	0.25	0.35
K	1.40	1.60
M	0.45	0.55
N	0.45	0.55

11. Soldering Parameters



Reflow Condition		Pb-Free Assembly
Pre-heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
xTime 25°C to Peak Temp (T_p)		8 min. Max
Do not exceed		+260°C

12. Contact Information

Online product information is available at www.mkfounder.com

Buy our products or get free samples, for further information and requests,

e-mail us at: mk@mkfounder.com

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14. Reversion History

Document ID	Release Data	Sheet Status	Change Notice	Supersedes
0.1	08-Mar-2018	Product data sheet	-	-