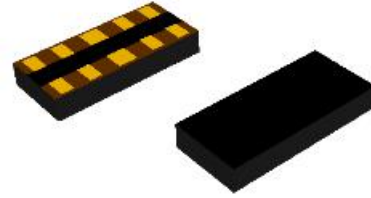


## 1. Features

- 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

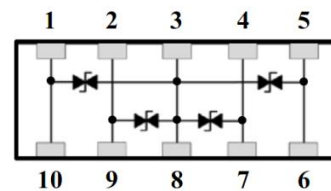
## 2. Pin Description



## 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 |
|---------------|-------------|----------------|---------------|-------------------|
| MKESD2510AQ05 | 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 | -                                   | -   | -    | 5.0 | 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 5V shall be applied on component | -   | -    | 10  | nA   |
| $C_J$    | Capacitance                  | Measured at 10MHz                   | -   | 0.05 | -   | pF   |

**8. Typical Characteristics**

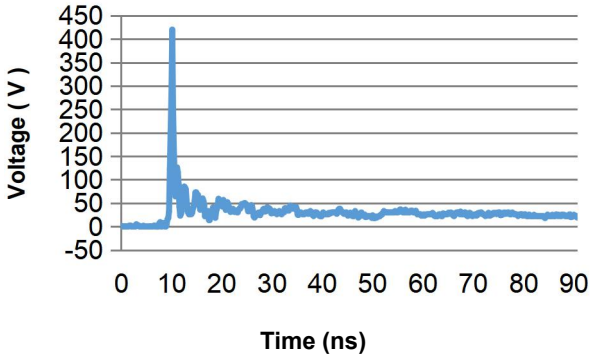


Fig.1 Typical ESD Response  
(IEC 61000-4-2, 8kV contact discharge)

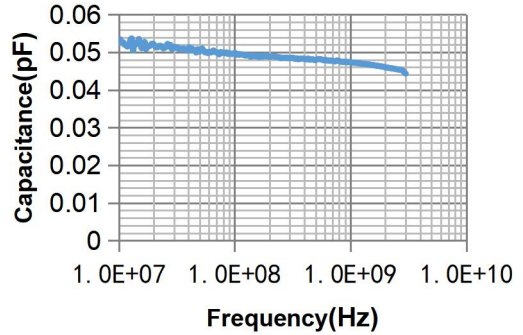


Fig.2 Typical Device Capacitance VS. Frequency

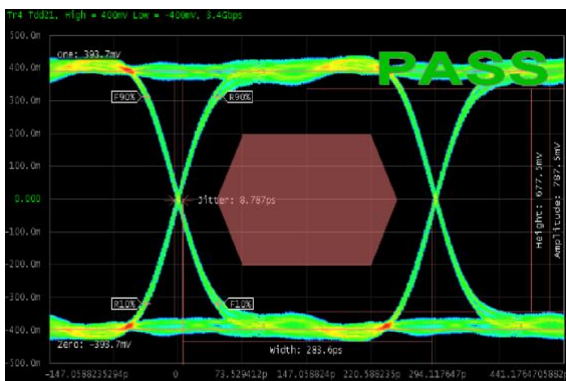


Fig.3 HDMI 1.4 Mask at 3.4 Gbps

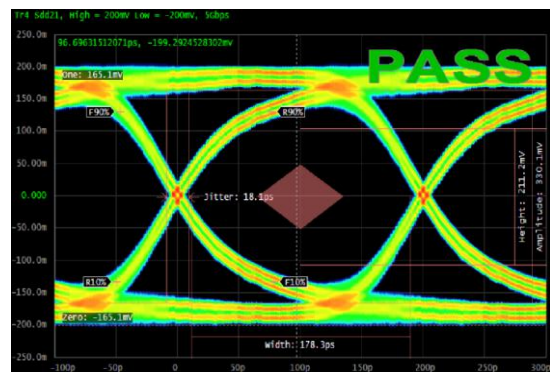


Fig.4 USB 3.0 Mask at 5.0 Gbps



Fig.5 HDMI 2.0 Mask at 6.0 Gbps

9. Applications Information

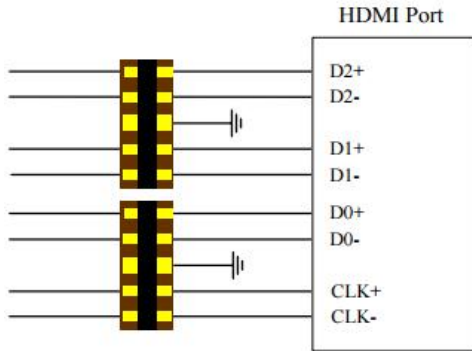


Fig.6 ESD Protection for HDMI

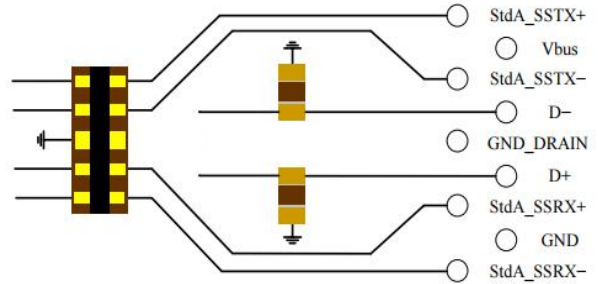


Fig.7 ESD Protection for USB 3.0 Type A

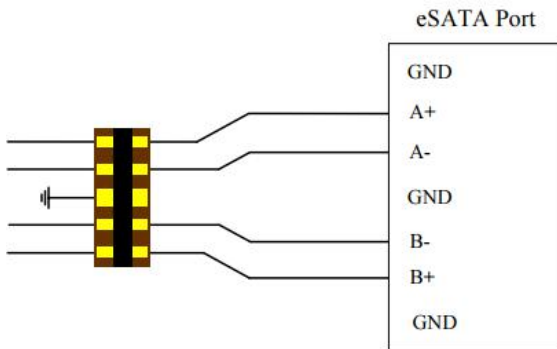
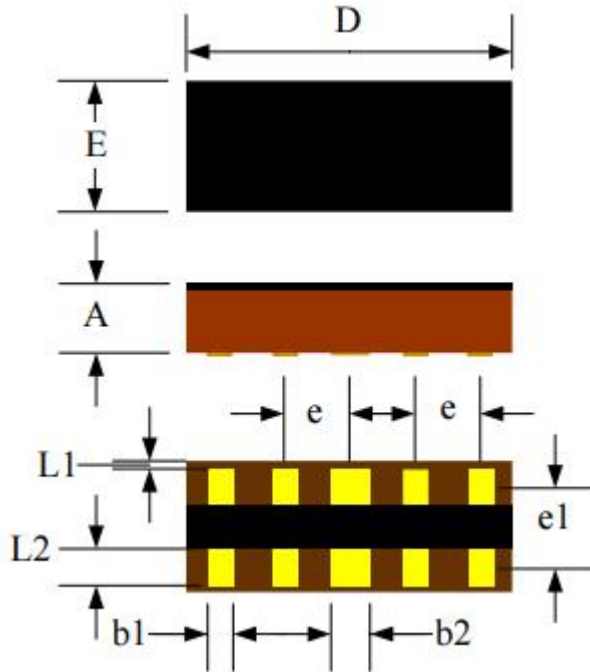
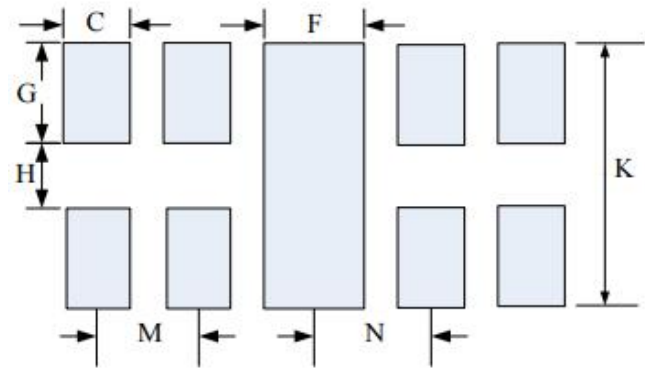


Fig.8 ESD Protection for eSATA

## 10. Package Dimension



### Recommended Solder Pad Footprint



**\*Sizes in mm**

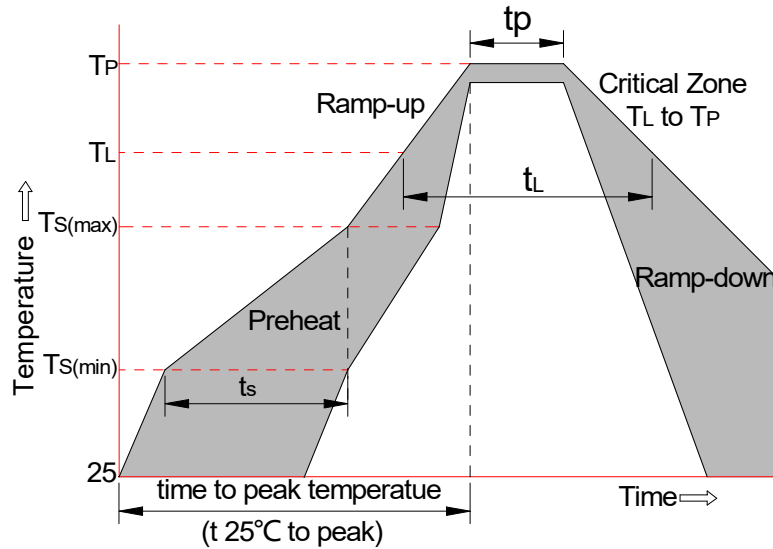
Notes:

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](http://www.mkfounder.com)

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

e-mail us at: [sales@mkfounder.com](mailto:sales@mkfounder.com)

## 13. Copyrights & Disclaimer

---

Copyright MK Founder, trademarks Registered. All rights reserved. The material herein may not be reproduced, adapted, merged, translated, stored, or used without the prior written consent of the copyright owner.

Devices sold by MK Founder are covered by the warranty and patent indemnification provisions appearing in its General Terms of Trade. MK Founder makes no warranty, express, statutory, implied, or by description regarding the information set forth herein.

MK Founder reserves the right to change specifications and prices at any time and without notice. Therefore, prior to designing this product into a system, it is necessary to check with MK Founder for current information.

This product is intended for use in commercial applications.

Applications requiring extended temperature range, unusual environmental requirements, or high reliability applications, such as military, medical life-support or life-sustaining equipment are specifically not recommended without additional processing by MK Founder for each application.

This product is provided by MK Founder "AS IS" and any express or implied warranties, including, but not limited to th implied warranties of merchantability and fitness for a particular purpose are disclaimed.

MK Founder shall not be liable to recipient or any third party for any damages, including but not limited to personal injury, property damage, loss of profits, loss of use, interruption of business or indirect, special, incidental or consequential damages, of any kind, in connection with or arising out of the furnishing, performance or use of the technical data herein. No obligation or liability to recipient or any third party shall arise or flow out of MK Founder rendering of technical or other services.

## 14. Reversion History

---

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

单击下面可查看定价，库存，交付和生命周期等信息

[>>MK\\_Founder\(米客方德\)](#)