

## 1. Features

- Ultra-Low capacitance:0.45pF(typ.)
- Reverse stand-off voltage:5V
- IEC 61000-4-2 (Air): ±20KV  
IEC 61000-4-2 (Contact): ±20KV

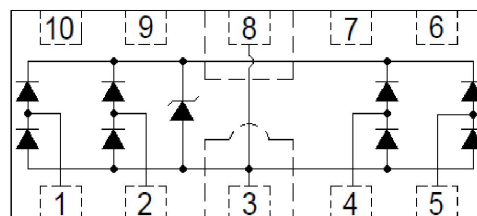
## 2. Pin Description



## 3. Applications

- USB 3.0, USB 2.0
- HDMI 1.3/1.4, Display Port 1.3, eSATA
- Unified Display Interface (UDI)
- Digital Visual Interface (DVI)
- High speed serial interfaces

## 4. Schematic Diagram



Top View

## 5. Order Information

| Type     | Package | Size (mm)      | Delivery Form | Delivery Quantity |
|----------|---------|----------------|---------------|-------------------|
| ESD5304D | DFN2510 | 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 | -   | ±20 | kV               |
|           |                                 | IEC 61000-4-2; Air Discharge     | -   | ±20 | kV               |
| $P_{PP}$  | Peak Pulse Power                | $t_p = 8/20\ \mu\text{s}$        | -   | 63  | W                |
| $I_{PPM}$ | Rated Peak Pulse Current        | $t_p = 8/20\ \mu\text{s}$        | -   | 4.5 | A                |
| $T_A$     | Ambient Temperature Range       | -                                | -55 | 125 | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature Range       | -                                | -55 | 150 | $^\circ\text{C}$ |

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

| Symbol    | Parameter               | Conditions   | Min | Typ. | Max | Unit |
|-----------|-------------------------|--|-----|------|-----|------|
| $V_{RWM}$ | Reverse Working Voltage | $T_A = 25\text{ }^\circ\text{C}$   | -   | -    | 5   | V    |
| $V_{BR}$  | Breakdown Voltage       | $I_R = 1\text{ mA}; T_A = 25\text{ }^\circ\text{C}$                      | 6   | -    | -   | V    |
| $I_R$     | Reverse Leakage Current | $V_{RWM} = 5\text{V}; T_A = 25\text{ }^\circ\text{C}$                    | -   | -    | 100 | nA   |
| $V_C$     | Clamping Voltage        | $I_{PP} = 1\text{A}, t_p = 8/20\mu\text{s}$ , Any I/O to GND, Positive   | -   | -    | 9.8 | V    |
|           |                         | $I_{PP} = 4.5\text{A}, t_p = 8/20\mu\text{s}$ , Any I/O to GND, Positive | -   | -    | 14  | V    |
| $C_L$     | Junction Capacitance    | $V_R = 0\text{V}, f = 1\text{ MHz}, \text{I/O to I/O}$                   | -   | 0.22 | 0.3 | pF   |
|           |                         | $V_R = 0\text{V}, f = 1\text{ MHz}, \text{I/O to GND}$                   | -   | 0.45 | 0.6 | pF   |

**8. Typical Characteristics**

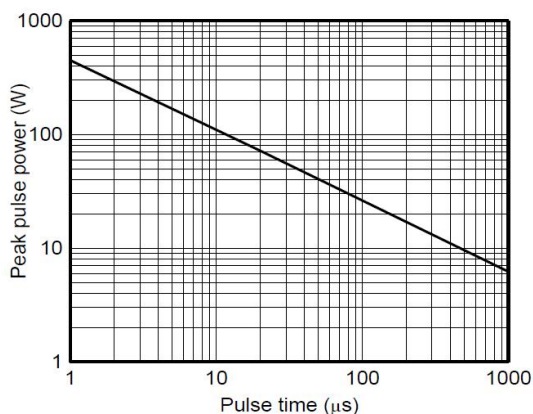


Fig.1 Peak Pulse Power Rating Curve

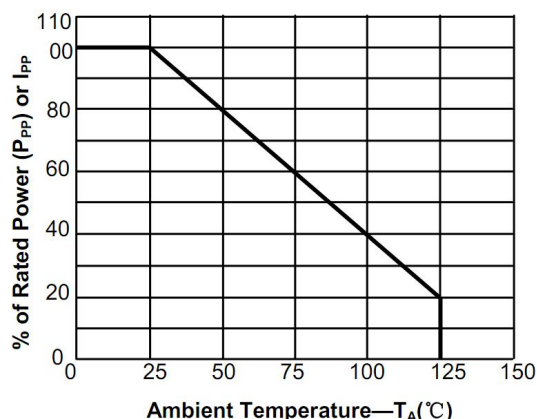


Fig.2 Pulse Derating Curve

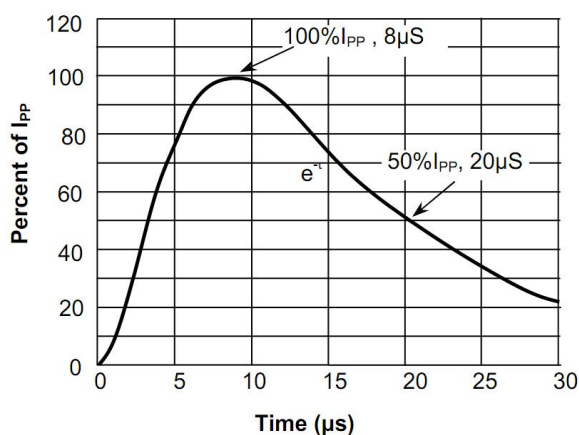


Fig.3 Pulse Waveform-8/20 $\mu\text{s}$

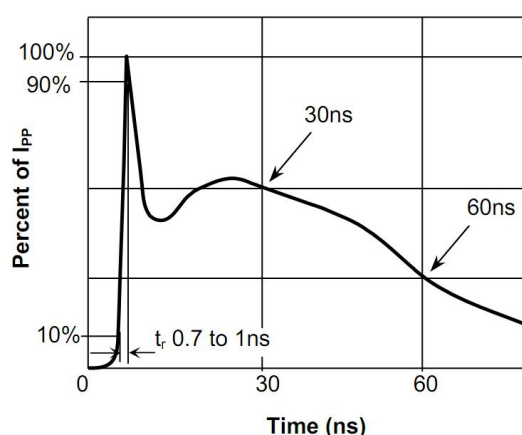
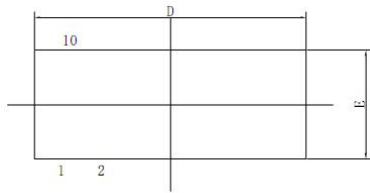


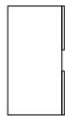
Fig.4 Pulse Waveform-ESD (IEC61000-4-2)

9. Package Dimension

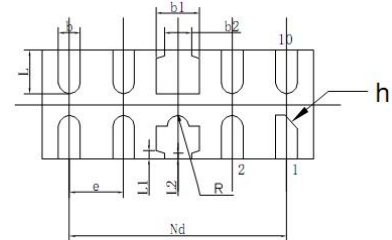
DFN2510 Package Outline



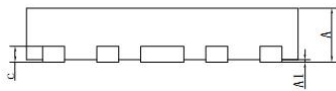
Top View



Side View

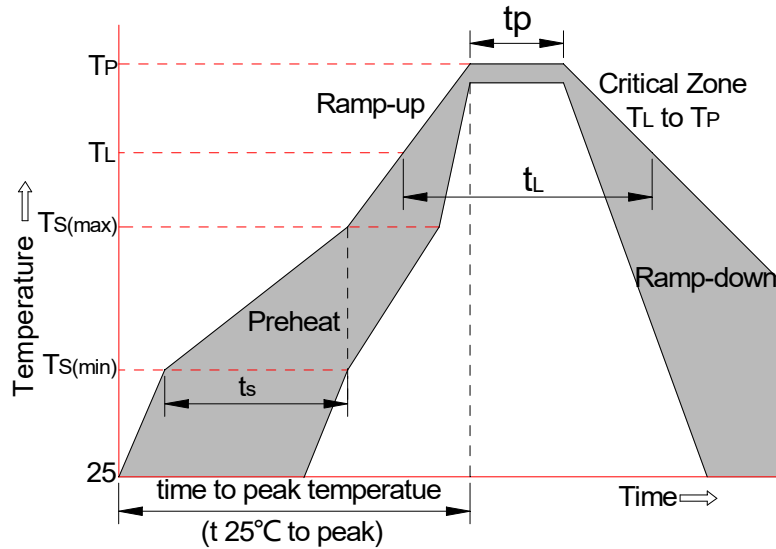


BottomView



| Symbol    | Dimensions in millimeters |      |      |
|-----------|---------------------------|------|------|
|           | Min                       | Nom  | Max  |
| <b>A</b>  | 0.45                      | 0.50 | 0.55 |
| <b>A1</b> | -                         | 0.02 | 0.05 |
| <b>b</b>  | 0.15                      | 0.20 | 0.25 |
| <b>b1</b> | 0.35                      | 0.40 | 0.45 |
| <b>b2</b> | 0.20                      | 0.25 | 0.30 |
| <b>c</b>  | 0.10                      | 0.15 | 0.20 |
| <b>D</b>  | 2.45                      | 2.50 | 2.55 |
| <b>e</b>  | 0.50BSC                   |      |      |
| <b>Nd</b> | 2.00 BSC                  |      |      |
| <b>E</b>  | 0.95                      | 1.00 | 1.05 |
| <b>L</b>  | 0.35                      | 0.40 | 0.45 |
| <b>L1</b> | 0.075 REF                 |      |      |
| <b>L2</b> | 0.05 REF                  |      |      |
| <b>h</b>  | 0.08                      | 0.12 | 0.15 |
| <b>R</b>  | 0.05                      | 0.10 | 0.15 |

**10. 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           |