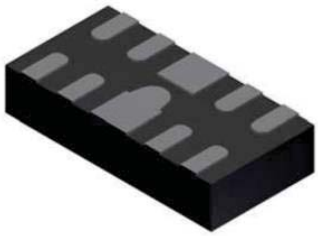
## Features

- ❖ 4A peak pulse current (tp=8/20μs)
- ❖ Transient protection for high speed data lines to IEC 61000-4-2 (ESD) ±15KV (Air), ±8KV (Contact)
- ❖ Working voltage : 5V
- ❖ Protect four I/O lines
- ❖ Low capacitance : 0.9pF (typical any I/O pin to Ground )
- ❖ Fast turn-on and low clamping voltage
- ❖ Solid-state silicon-avalanche and active circuit triggering technology

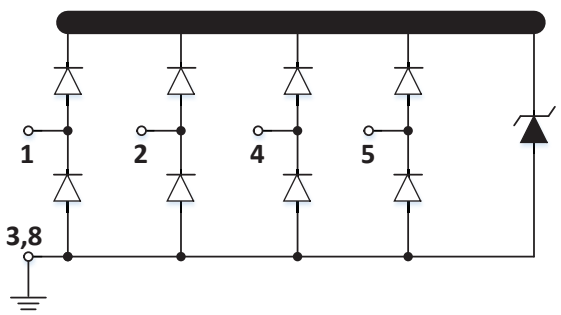


**DFN2510**

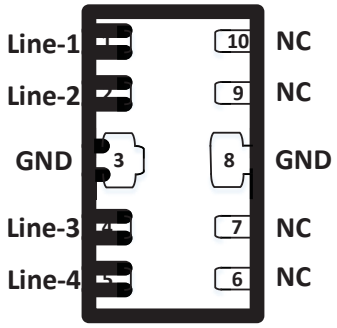
## Applications

- ❖ High Definition Multi-Media Interface (HDMI) 1.3 & 1.4 version
- ❖ Display Port interface
- ❖ SATA and eSATA interface
- ❖ USB 3.0
- ❖ Digital Visual Interface (DVI)
- ❖ USB 2.0 up to 480Mb/s
- ❖ IEEE 1394 up to 3.2 Gb/s
- ❖ Ethernet port : 10/100/1000 Mb/s
- ❖ Desktop and Notebooks PCs
- ❖ Consumer Electronics
- ❖ Set Top Box

**Circuit Diagram**




**Pin Configuration**




**DFN2510 (Top View)**

## Absolute Maximum Ratings ($T_A$=25℃, RH=45%-75%, unless otherwise noted)

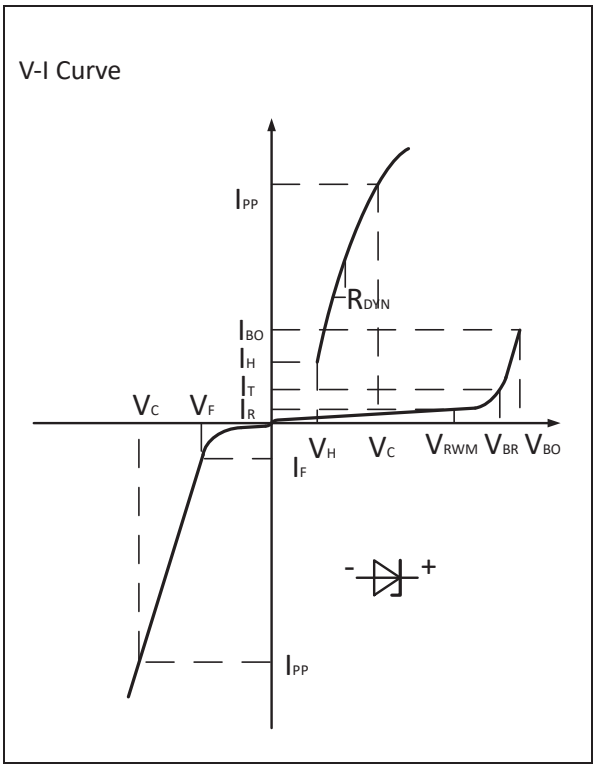
| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak Pulse Current (tp=8/20μs) | $I_{PP}$ | 4 | A |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | $V_{ESD}$ | 15<br>8 | KV |
| Lead Soldering Temperature | $T_{SOL}$ | 260 (10 sec.) | ℃ |
| Operating temperature range | $T_J$ | -55 to +125 | ℃ |
| Storage temperature range | $T_{STG}$ | -55 to +150 | ℃ |

## Electronics Characteristics ($T_A$=25℃, continued)

| Symbol | Parameter | Conditons | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| $V_{RWM}$ | Reverse Working Voltage | Any I/O to Ground | | | 5.0 | V |
| $V_{BR}$ | Reverse Breakdown Voltage | $I_T$=1mA, Any I/O to Ground | 6.0 | | | V |
| $I_R$ | Reverse Leakage Current | $V_{RWM}$=5V,<br>Any I/O to Ground | | | 1.0 | μA |
| $V_F$ | Diode Forward Voltage | $I_F$=15mA | | 0.9 | 1.1 | V |
| $V_C$ | Clamping Voltage | $I_{PP}$=1A, tp=8/20μs,<br>Any I/O to Ground | | 7.4 | | V |
| | | $I_{PP}$=4A, tp=8/20μs,<br>Any I/O to Ground | | 9.4 | | V |
| | | IEC 61000-4-2 +8KV<br>($I_{TLP}$=16A) Contact mode,<br>Any I/O to Ground | | 14.8 | | V |
| $C_J$ | Junction Capacitance | $V_R$=0V, f=1MHz,<br>Any I/O to Ground | | 0.9 | 1.0 | pF |
| | | $V_R$=0V, f=1MHz,<br>between I/O pins | | 0.45 | 0.5 | pF |

## Electrical Characteristics

| Symbol | Parameter |
|---|---|
| $V_{RWM}$ | Reverse Standoff Voltage |
| $I_R$ | Max Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$ | Breakdown Voltage @ $I_T$ |
| $I_T$ | Test Current |
| $V_{BO}$ | Break Over Voltage |
| $I_{BO}$ | Break Over Current |
| $V_C$ | Clamping Voltage @ $I_{PP}$ |
| $I_{PP}$ | Max Peak Pulse Current |
| $R_{DYN}$ | Dynamic Resistance |
| $V_H$ | Holding Voltage |
| $I_H$ | Holding Current |
| $V_F$ | Diode Forward Voltage |
| $I_F$ | Diode Forward Current |




## Typical Characteristics

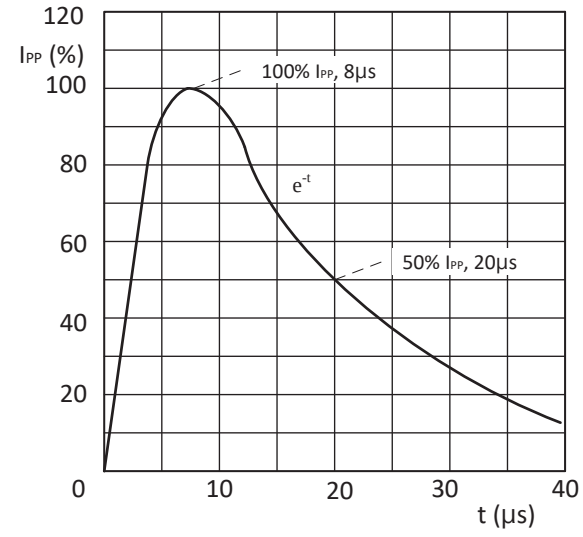



Fig. 1. 8/20 µs pulse waveform according to IEC 61000-4-5 and IEC 61643-321

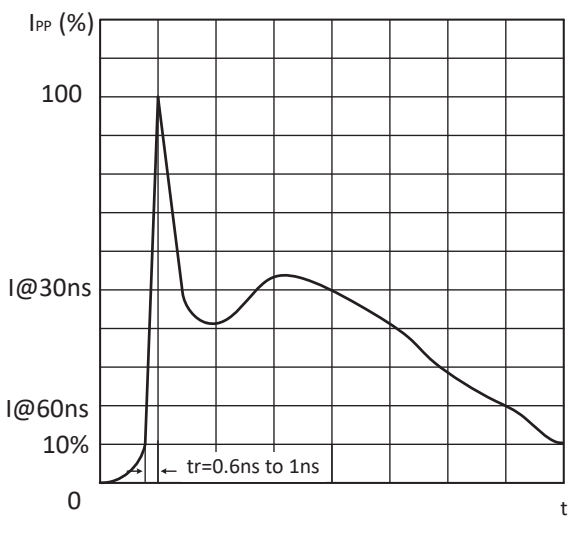



Fig. 2. ESD pulse waveform according to IEC 61000-4-2

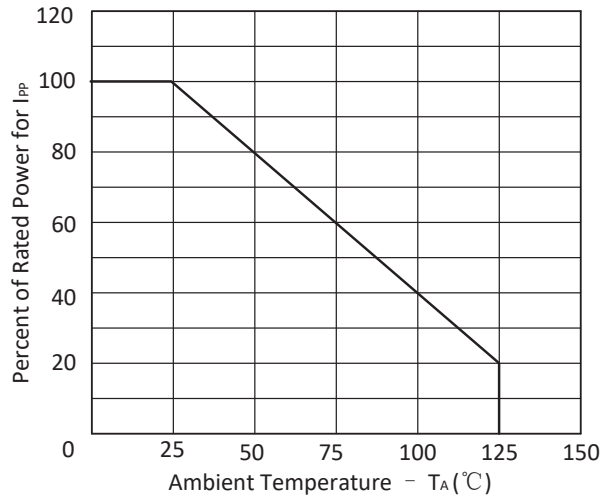



Fig. 3. Power Derating Curve

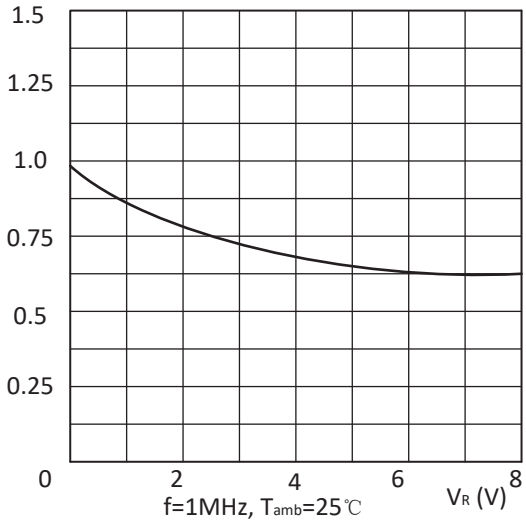



Fig. 4. Junction Capacitance vs $V_R$

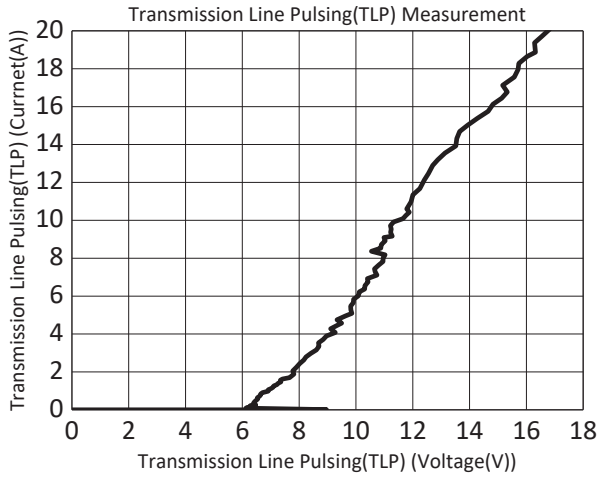



Fig.5. Transmission Line Pulsing(TLP) Measurement
(Tr=200ps, Tp=100ns)

## Soldering Parameters

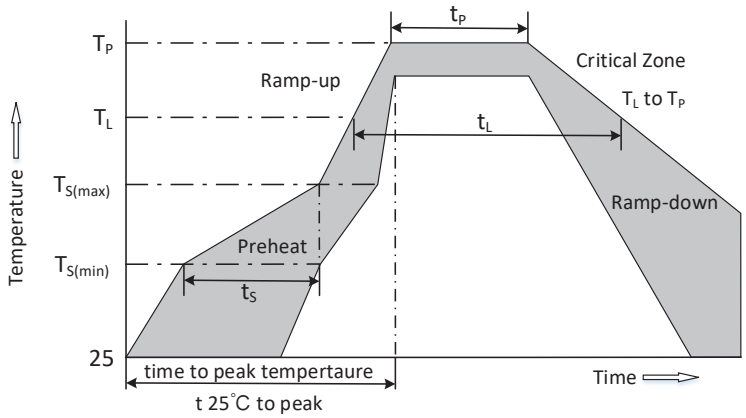
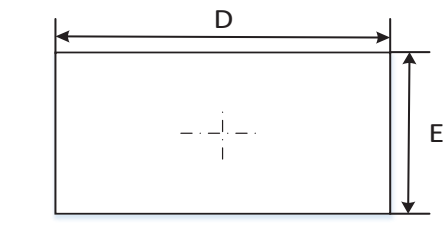


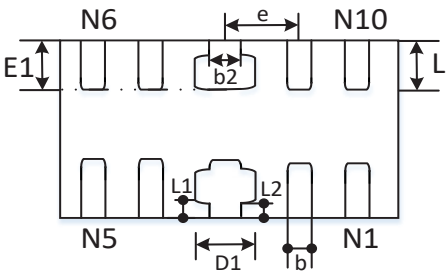

Fig.6. Reflow Condition

| | | |
|---|---|---|
| Reflow Condition | | Pb-Free assembly (See Fig.6) |
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150℃ |
| | -Temperature Max($T_{s(max)}$) | +200℃ |
| | -Time (Min to Max) (ts) | 60-180 secs. |
| Average ramp up rate (Liquidus Temp ($T_L$)to peak) | | 3℃/sec. Max |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate | | 3℃/sec. Max |
| Reflow | -Temperature($T_L$) (Liquidus) | +217℃ |
| | -Temperature($t_L$) | 60-150 secs. |
| Peak Temp ($T_p$) | | +260(+0/-5)℃ |
| Time within 5℃of actual Peak Temp ($t_p$) | | 30 secs. Max |
| Ramp-down Rate | | 6℃/sec. Max |
| Time 25℃ to Peak Temp ($T_P$) | | 8 min. Max |
| Do not exceed | | +260℃ |

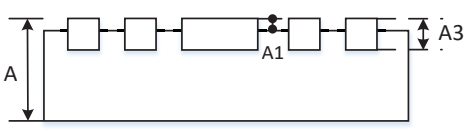
## Package Mechanical Data




Top View (unit in mm)



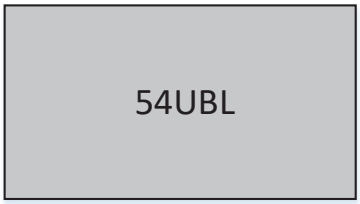

Bottom View (unit in mm)




Side View (unit in mm)

| Symbol | Millimeters | | Inches | |
|---|---|---|---|---|
| | min | max | min | max |
| A | 0.40 | 0.55 | 0.016 | 0.022 |
| A1 | 0.00 | 0.05 | 0.000 | 0.002 |
| A3 | 0.152 REF | | 0.006 BSC | |
| D | 2.45 | 2.55 | 0.096 | 0.100 |
| E | 0.95 | 1.05 | 0.037 | 0.041 |
| D1 | 0.35 | 0.45 | 0.014 | 0.018 |
| E1 | 0.35 | 0.45 | 0.014 | 0.018 |
| b | 0.15 | 0.25 | 0.006 | 0.010 |
| e | 0.05 BSC | | 0.019 BSC | |
| L1 | 0.075 REF | | 0.0029 REF | |
| L2 | 0.05 REF | | 0.0019 REF | |
| b2 | 0.20 | 0.30 | 0.0079 | 0.012 |
| L | 0.35 | 0.45 | 0.014 | 0.018 |

## Marking Information




## Ordering Information

| Device | Package | Quantity | Delivery Mode | Reel Size |
|---|---|---|---|---|
| YZPST-ESD5V0U4UBL | DFN2510 | 3000/Reel | Tape and Reel | 7 inch |

## Revision History

| Revision | Modification Description |
|---|---|
| Revision 2020/04/29 | Preliminary Release. |



Tel: +86-514-87782298, 87782296 FAX:+86-514-87782297, 87367519
E-mail: info@yzpst.com; yzpst@pst888.com
Web Site:www.Pst888.com www.yzpstcc.com www.yzpst.net www.yzpst.com