

### Features

- 4 Uni-directional Channels ESD protection
- Typically Used at High Speed Ports
- Low operating voltage: 3.3V
- Low Channel Input Capacitance of 0.35pF  
Typical for I/Os (Typ)
- -IEC 61000-4-2 (ESD) immunity test  
Air discharge:  $\pm 15\text{kV}$   
Contact discharge:  $\pm 8\text{kV}$
- -IEC61000-4-4 (EFT) 40A (5/50ns)
- Totally Lead-Free & Fully RoHS Compliant
- Halogen and Antimony Free. "Green" Device

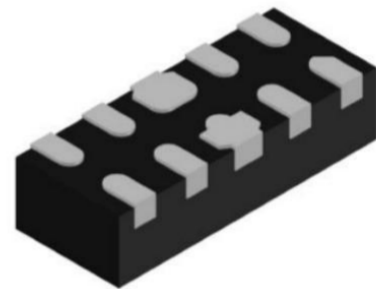
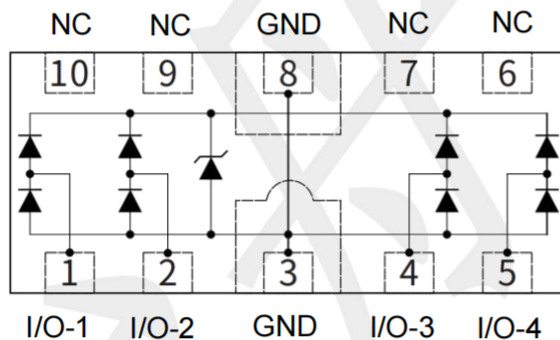
### Mechanical Characteristics

- Package: DFN2510-10L
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound
- Terminal Connections: See Diagram Below
- -IEC 61000-4-2 (ESD) immunity test

### Applications

- USB 3.1 & 3.2 and MDDI ports
- PCI express and Serial SATA
- Ports Notebook Computers
- Tablets

### Dimensions and Pin Configuration



**DFN2510-10L**

# PUSB3F99X-TP

## 4-Lines Uni-directional Channels ESD protection

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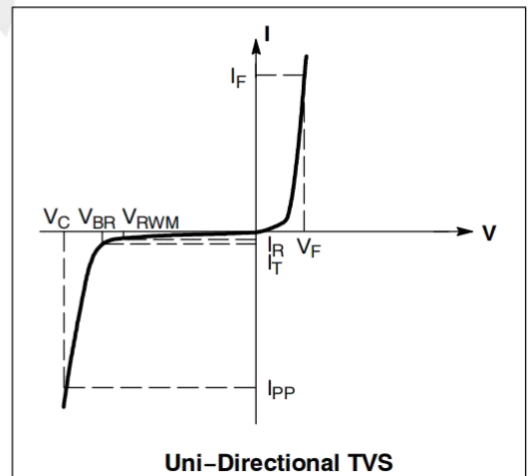
### Absolute Maximum Ratings (Tamb=25°C unless otherwise specified)

| Parameter                                                      | Symbol | Value       | Unit |
|----------------------------------------------------------------|--------|-------------|------|
| Peak Pulse Power (8/20μs)                                      | Ppp    | 60          | W    |
| IEC 61000-4-2 Spec Current at 60 ns (A)                        | Ipp    | 6           | A    |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | VESD   | ±15<br>±8   | KV   |
| Operating Temperature Range                                    | TJ     | -55 to +125 | °C   |
| Storage Temperature Range                                      | Tstg   | -55 to +150 | °C   |

### Electrical Characteristics (TA=25°C unless otherwise specified)

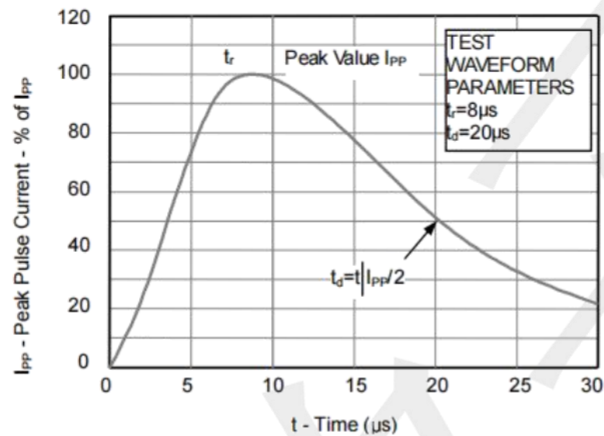
| Parameter               | Symbol | Min | Typ  | Max  | Unit | Test Condition                            |
|-------------------------|--------|-----|------|------|------|-------------------------------------------|
| Reverse Working Voltage | VRWM   | --  | --   | 3.3  | V    |                                           |
| Breakdown Voltage       | VBR    | 3.8 | --   | --   | V    | IT= 1mA                                   |
| Reverse Leakage Current | IR     | --  | --   | 1    | uA   | VRWM=3.3V                                 |
| Clamping Voltage        | VC     | --  | 5.8  | 7.5  | V    | Ipp=1A(8x 20us pulse)                     |
| Clamping Voltage        | VC     | --  | 7.0  | 10   | V    | Ipp=6A(8x 20us pulse)                     |
| Junction Capacitance    | CJ     | --  | 0.2  | 0.35 | pF   | VR = 0V, f = 1MHz,<br>Any I/O pin to GND  |
| Junction Capacitance    | CJ     | --  | 0.15 | 0.2  | pF   | VR = 0V, f = 1MHz,<br>Between any I/O pin |

| Symbol | Parameter                              |
|--------|----------------------------------------|
| Ipp    | Maximum Reverse Peak Pulse Current     |
| VC     | Clamping Voltage @ Ipp                 |
| VRWM   | Working Peak Reverse Voltage           |
| IR     | Maximum Reverse Leakage Current @ VRWM |
| VBR    | Breakdown Voltage @ IT                 |
| IT     | Test Current                           |
| IF     | Forward Current                        |
| VF     | Forward Voltage @ IF                   |
| Ppk    | Peak Power Dissipation                 |
| C      | Capacitance @ VR = 0 and f = 1.0 MHz   |

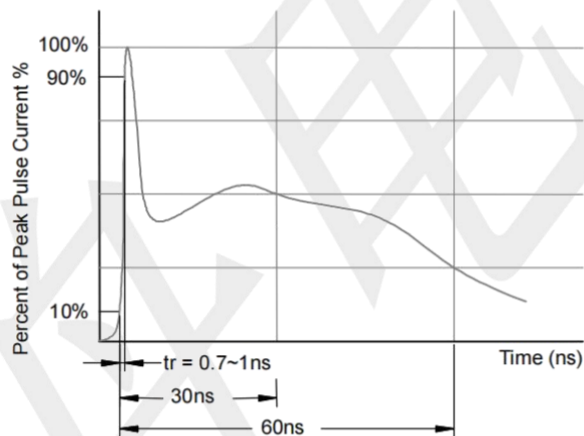


## Characteristic Curves

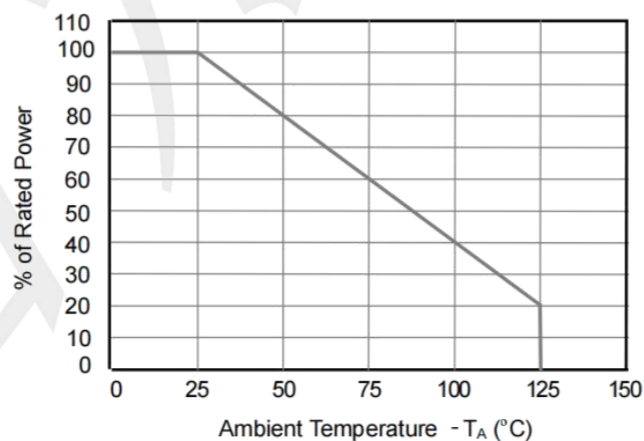
**Fig1. 8/20 $\mu$ s Pulse Waveform**



**Fig2. ESD Pulse Waveform (according to IEC 61000-4-2)**

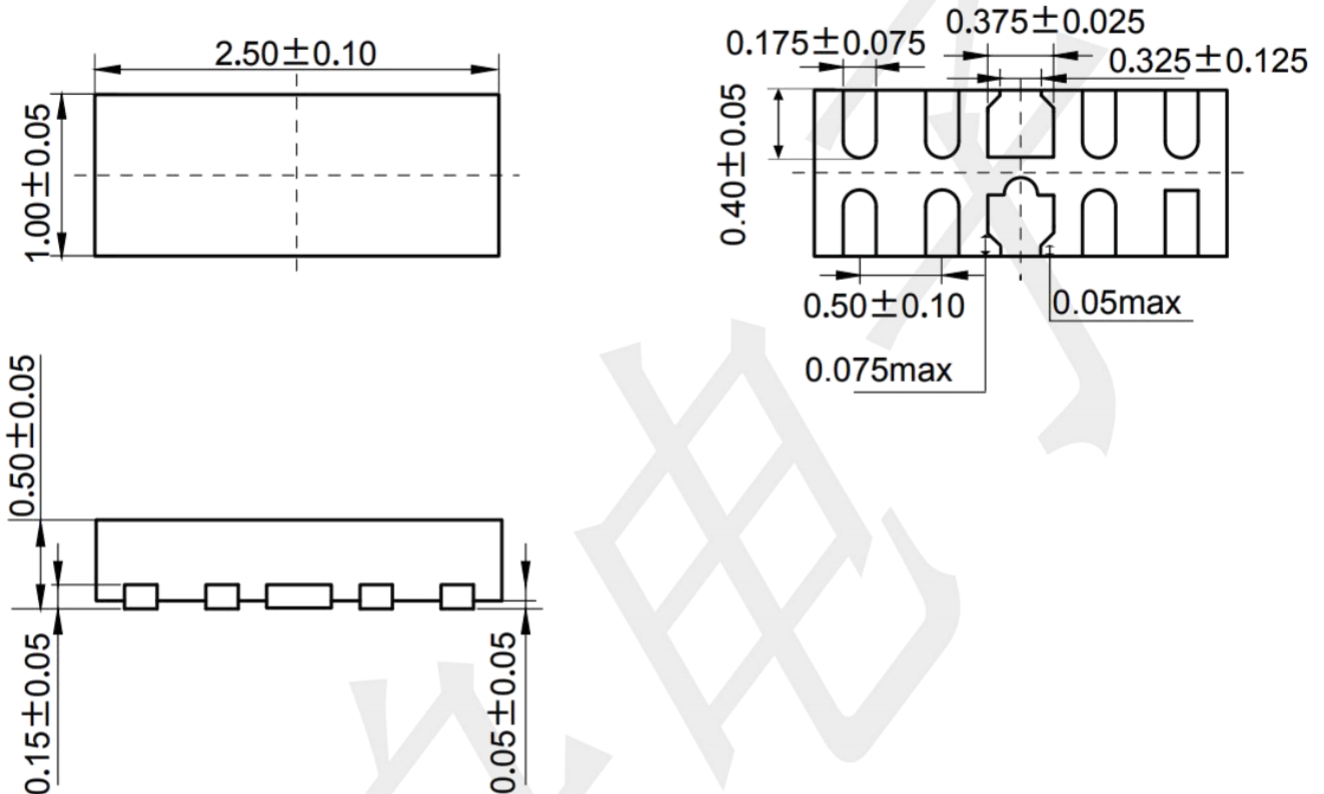


**Fig3. Power Derating Curve**



**Package Outline Dimensions (unit: mm)**

**DFN2510-10**



**Mounting Pad Layout (unit: mm)**

