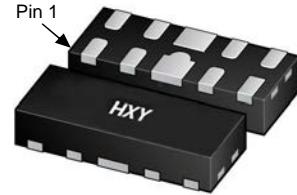




Description

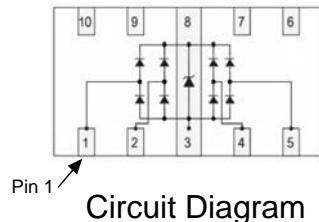
The HPUSB3F99X is a 4-channel ultra low capacitance rail clam ESD protection diodes array. Each channel consists of a pair of diodes that steer positive or negative ESD current to either the positive or negative rail. A zener diode is integrated in to the array between the positive and negative supply rails. In the typical applications, the negative rail pin (assigned as GND) is connected with system ground. The Positive ESD current is steered to the ground through an ESD diode and Zener diode and the positive ESD voltage is clamped to the zener voltage.



DFN-2510-10L
(DFN2510)

Features

- ★ 4 channels of ESD protection;
- ★ Provides ESD protection to IEC61000-4-2 level 4
 - ±15kV air discharge
 - ±10kV contact discharge;
- ★ Channel I/O to GND capacitance: 0.55pF (Max)
- ★ Channel I/O to I/O capacitance: 0.6pF (Max)
- ★ Low clamping voltage;
- ★ Low operating voltage;
- ★ Improved zener structure;
- ★ Optimized package for easy high speed data lines PCB layout;
- ★ RoHS compliant and Halogen Free.



Ordering information

| Product ID | Pack | Qty(PCS) |
|------------|-----------------------|----------|
| HPUSB3F99X | DFN-2510-10L(DFN2510) | 3000 |

Absolute Ratings ($T_{amb}=25^{\circ}C$)

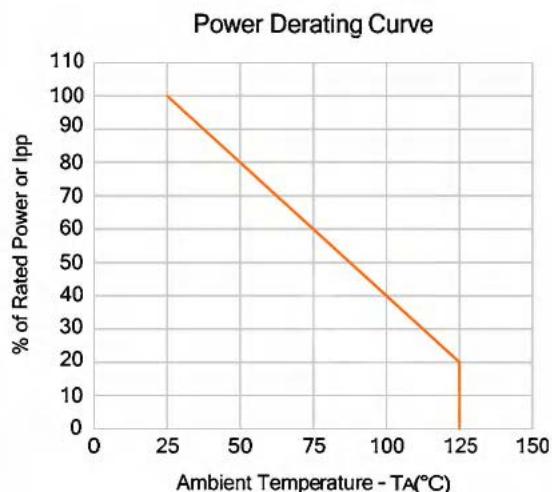
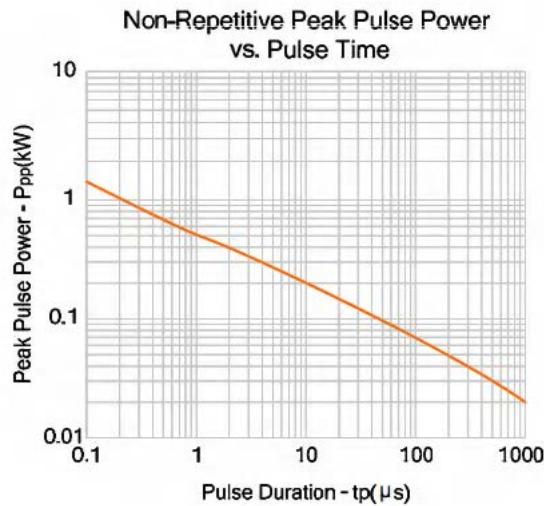
| Symbol | Parameter | Value | Units |
|-----------|---|------------------------------------|------------|
| P_{PP} | Peak Pulse Power ($t_p = 8/20\mu s$) | 70 | W |
| I_{PP} | Peak Pulse Current(8/20us) | 4 | A |
| T_L | Maximum lead temperature for soldering during 10s | 260 | °C |
| T_{stg} | Storage Temperature Range | -55 to +150 | °C |
| T_{op} | Operating Temperature Range | -40 to +125 | °C |
| T_j | Maximum junction temperature | 150 | °C |
| | IEC61000-4-2 (ESD) | air discharge contact discharge | ±15 ±10 |
| | | | KV |

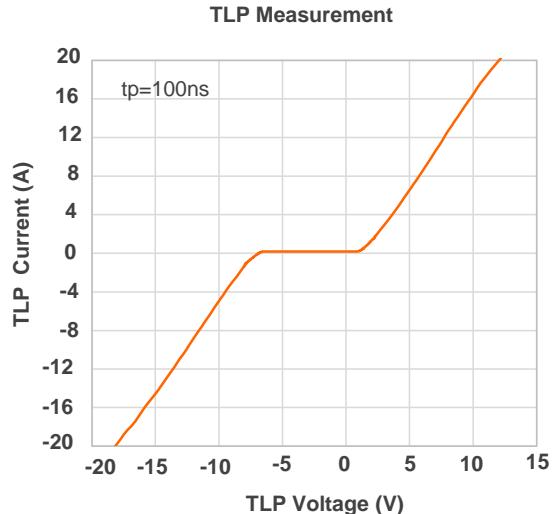
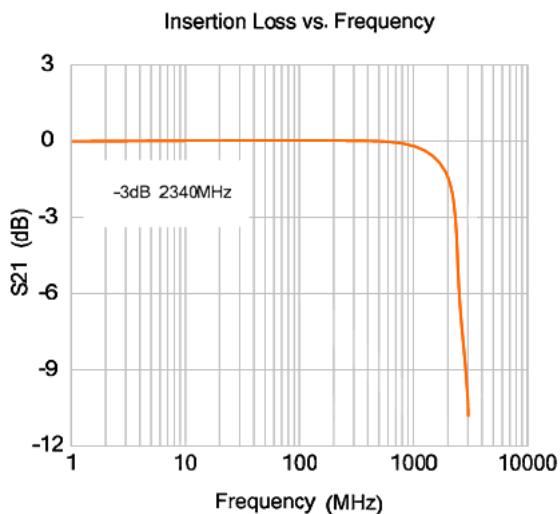
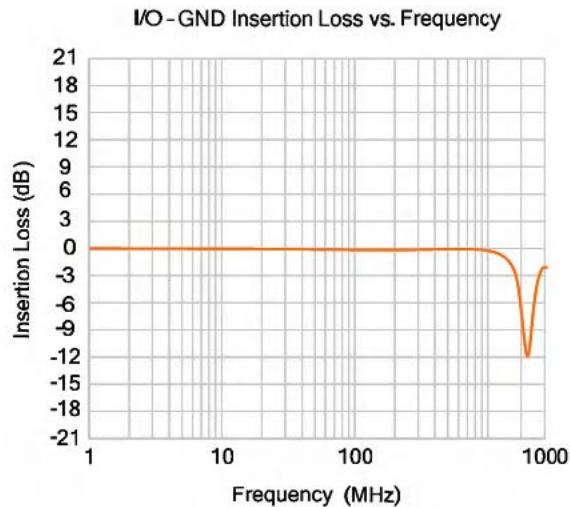
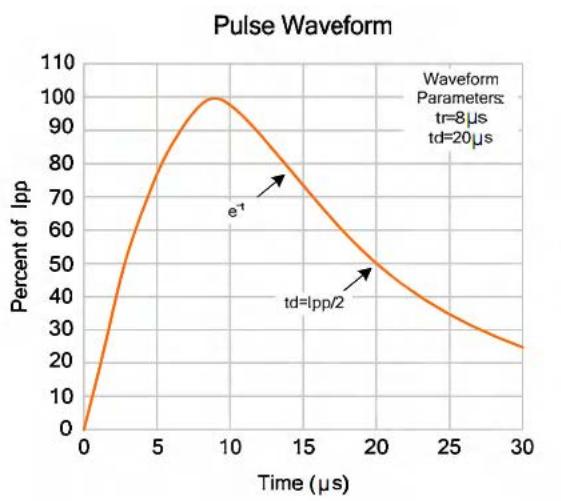


ELECTRICAL CHARACTERISTICS (Ta= 25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
|--|--------|------|------|------|------|--|
| Reverse Working Voltage | VRWM | — | — | 3.3 | V | Any I/O pin to GND |
| Reverse Breakdown Voltage | VBR | 5.6 | — | — | V | It =1mA; Any I/O pin to GND |
| Reverse Leakage Current | IR | — | — | 1 | μA | VRWM =3.3V, T=25°C; Any I/O pin to GND |
| Positive Clamping Voltage | VC1 | — | 8 | 20 | V | IPP=4A, tP=8/20μs; Positive pulse; Any I/O pin to GND |
| Negative Clamping Voltage | VC2 | — | 1.8 | — | V | IPP=1A, tP=8/20μs; Negative pulse; Any I/O pin to GND |
| Junction Capacitance Between Channel | CJ1 | — | 0.3 | 0.4 | pF | VR=0V, f=1MHz; Between I/O pins |
| Junction Capacitance Between I/O And GND | CJ2 | — | 0.5 | 0.6 | pF | VR=0V, f=1MHz; Any I/O pin to GND |

ELECTRICAL CHARACTERISTIC CURVES

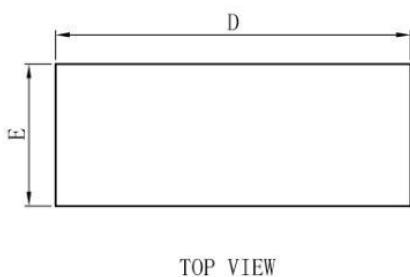




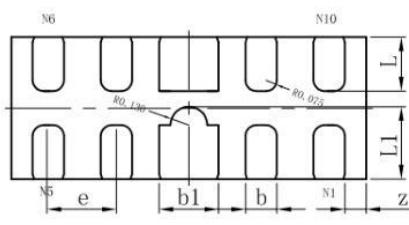


Package Outline Dimension

DFN-2510-10L(DFN2510)



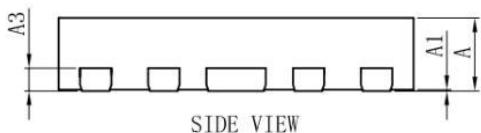
TOP VIEW



BOTTOM VIEW

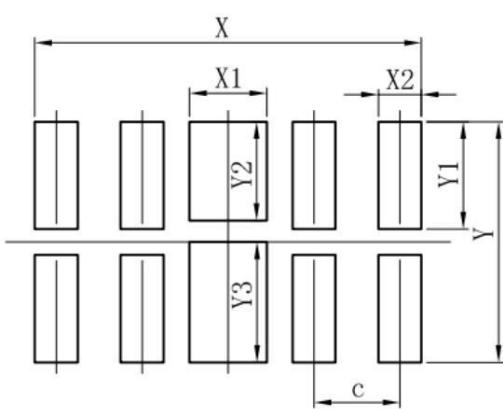
| DFN2510 | | | |
|---------|------|-------|------|
| Dim | Min | Typ | Max |
| A | 0.48 | 0.53 | 0.58 |
| A1 | 0 | 0.02 | 0.05 |
| A3 | - | 0.152 | - |
| b | 0.17 | 0.22 | 0.27 |
| b1 | 0.37 | 0.42 | 0.47 |
| D | 2.45 | 2.50 | 2.55 |
| e | 0.45 | 0.50 | 0.55 |
| E | 0.95 | 1.00 | 1.05 |
| L | 0.33 | 0.38 | 0.43 |
| L1 | 0.46 | 0.51 | 0.56 |
| z | 0.10 | 0.15 | 0.20 |

All Dimensions in mm



SIDE VIEW

Suggested Pad layout



| DFN2510 | mm |
|---------|-------|
| c | 0.5 |
| X | 2.25 |
| X1 | 0.45 |
| X2 | 0.25 |
| Y | 1.4 |
| Y1 | 0.625 |
| Y2 | 0.575 |
| Y3 | 0.7 |



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