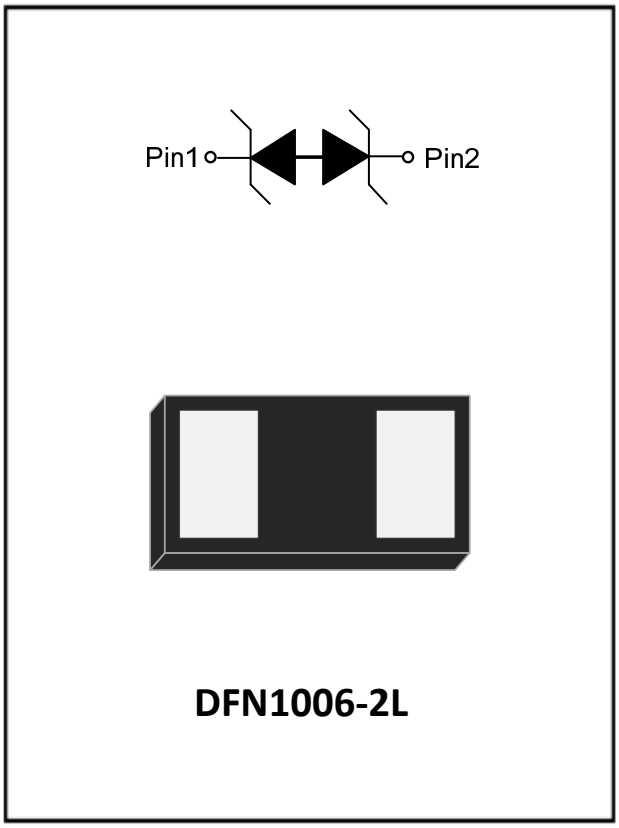
# 1-Line, Bi-directional, Ultra-low Capacitance Transient Voltage Suppressor




## Features

- Stand-off voltage: 12V Max
- Transient protection for each line according to
  IEC61000-4-2(ESD): ±30kV (contact)
  IEC61000-4-5(surge): 9A (8/20μs)
- Ultra-low leakage current
- Ultra low clamping voltage
- Low clamping voltage:

$V_{CL}$ = 16.5V typ. @ IPP = 16A (TLP)

- RoHS Compliant

## Applications

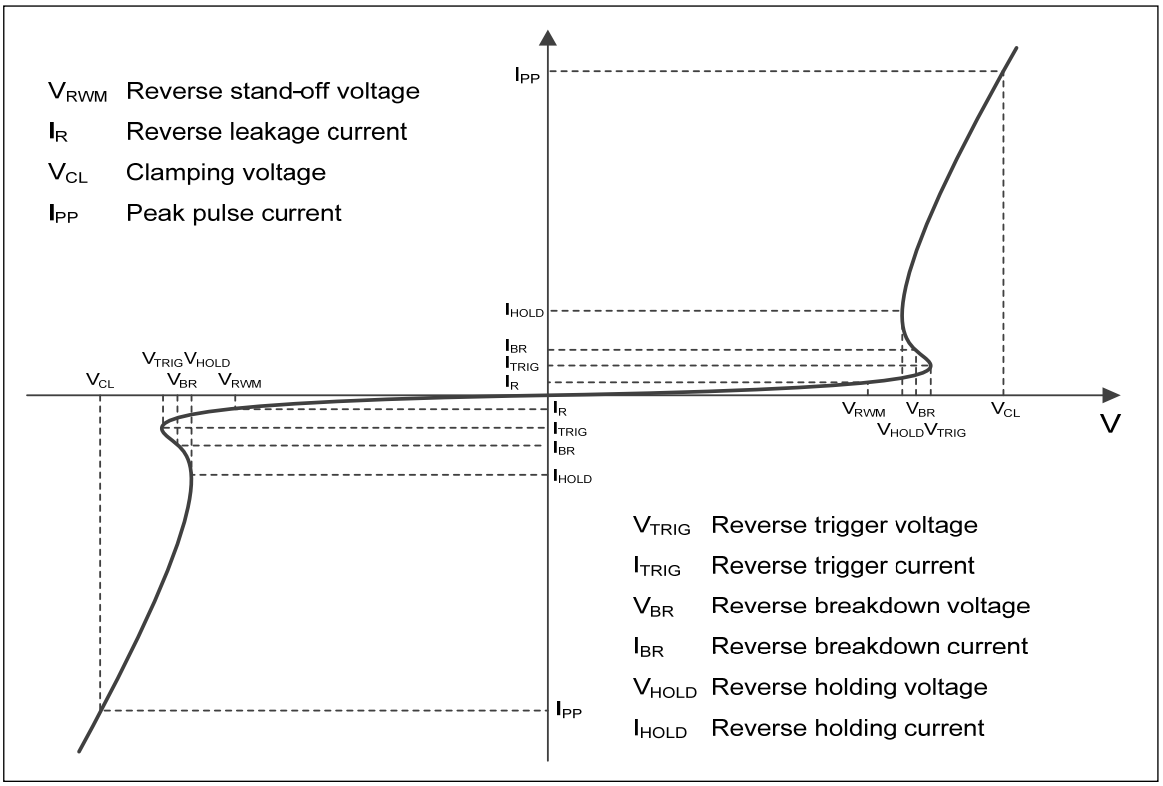
- USB 2.0 and USB 3.0
- HDMI 1.3, HDMI 1.4 and HDMI 2.0
- SATA and eSATA interface
- DVI
- IEEE 1394
- Portable Electronics and Notebooks

## Mechanical Data

- Package: DFN1006-2L
- Case Material: “Green” Molding Compound
- Marking Information: See Below




## ■Definitions of electrical characteristics



## ■Maximum Ratings

| PARAMETER | SYMBOL | LIMITS | UNIT |
|---|---|---|---|
| Peak pulse power ($t_p$ = 8/20μs) | $P_{pk}$ | 170 | W |
| Peak pulse current ($t_p$ = 8/20μs) | $I_{PP}$ | 9 | A |
| ESD according to IEC61000-4-2 air discharge | $V_{ESD}$ | ±30 | kV |
| ESD according to IEC61000-4-2 contact discharge | | ±30 | |
| Junction temperature | $T_J$ | 125 | ºC |
| Storage temperature | $T_{STG}$ | -55~150 | ºC |

## ■Electrical Characteristics（$T_a$=25℃ Unless otherwise specified）

| PARAMETER | Symbol | UNIT | Conditions | Min | Typ | Max |
|---|---|---|---|---|---|---|
| Reverse maximum working voltage | $V_{RWM}$ | V | | | | 12 |
| Reverse leakage current | $I_R$ | nA | $V_{RWM}$ = 12V | | | 50 |
| Reverse breakdown voltage | $V_{BR}$ | V | $I_{BR}$ = 1mA | 13 | | 18 |
| Clamping voltage 1) | $V_{CL}$ | V | $I_{PP}$ = 16A, $t_p$ = 100ns | | 16.5 | |
| Dynamic resistance 1) | $R_{DYN}$ | Ω | | | 0.24 | |
| Clamping voltage 2) | $V_{CL}$ | V | $V_{ESD}$ = 8kV | | 17 | |
| Clamping voltage 3) | $V_{CL}$ | V | $I_{PP}$ = 1A, $t_p$ = 8/20μs | | 14 | 15 |
| | | V | $I_{PP}$ = 9A, $t_p$ = 8/20μs | | 17 | 19 |
| Junction capacitance | $C_J$ | pF | $V_R$ = 0V, f = 1MHz | | 1.0 | 1.3 |

Notes:
(1). TLP parameter: $Z_0$ = 50Ω, $t_p$ = 100ns, $t_r$ = 2ns, averaging window from 60ns to 80ns. $R_{DYN}$ is calculated from 4A to 16A.
(2). Contact discharge mode, according to IEC61000-4-2.
(3). Non-repetitive current pulse, according to IEC61000-4-5.

## ■Ordering Information (Example)

| PREFERED P/N | PACKING CODE | UNIT WEIGHT(mg) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---|---|---|---|---|---|---|
| ESDSLC12VLB | F1 | Approximate 0.9 | 10000 | 100000 | 400000 | 7” reel |

## ■ Characteristics (Typical)

**Fig.1 8/20μs waveform per IEC61000-4-5**

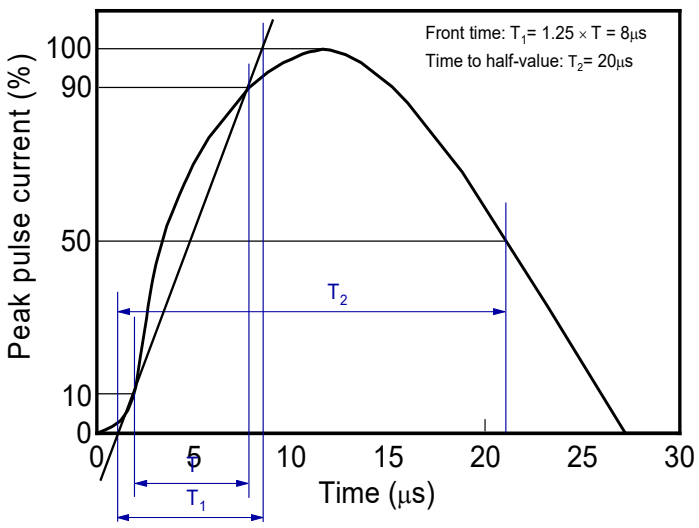



**Fig.2 Contact discharge current waveform per IEC61000-4-2**

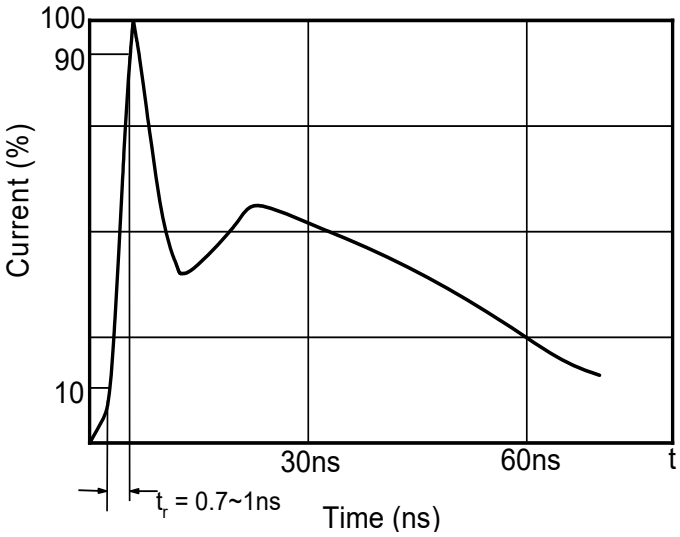



**Fig.3 Clamping voltage vs. Peak pulse current**

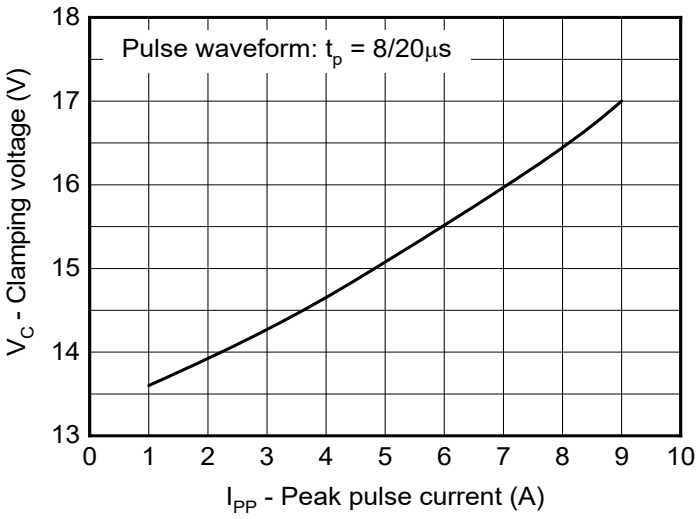



**Fig.4 Capacitance vs. Reverse voltage**

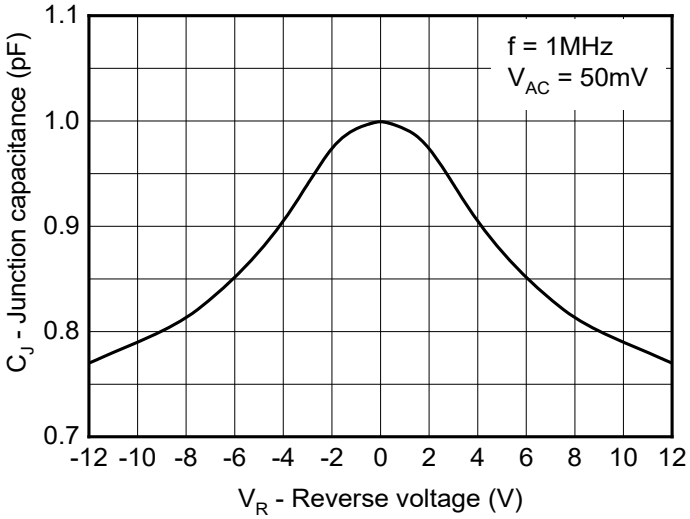



**Fig.5 Non-repetitive peak pulse power vs. Pulse time**

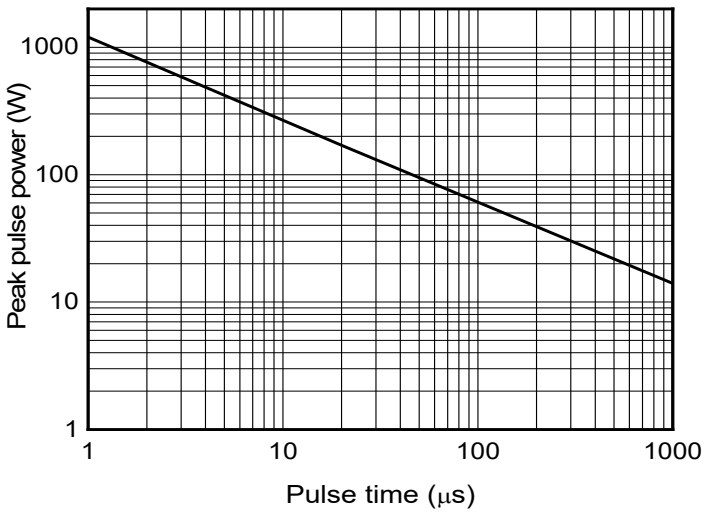



**Fig.6 Power derating vs. Ambient temperature**

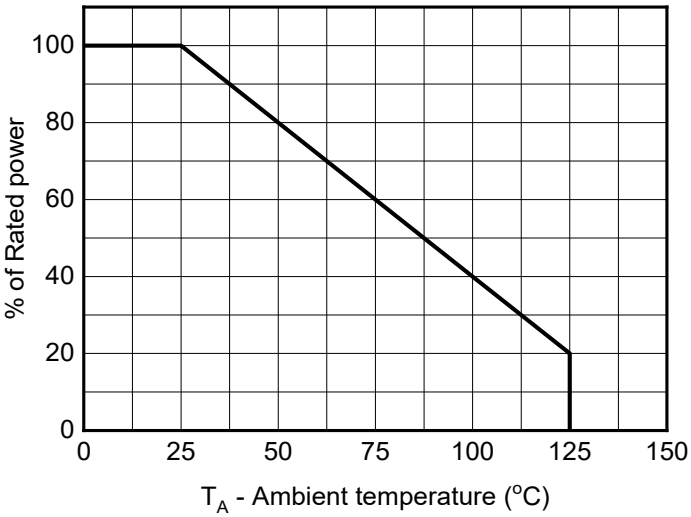


**Fig.7 ESD clamping**
**(+8kV contact discharge per IEC61000-4-2)**

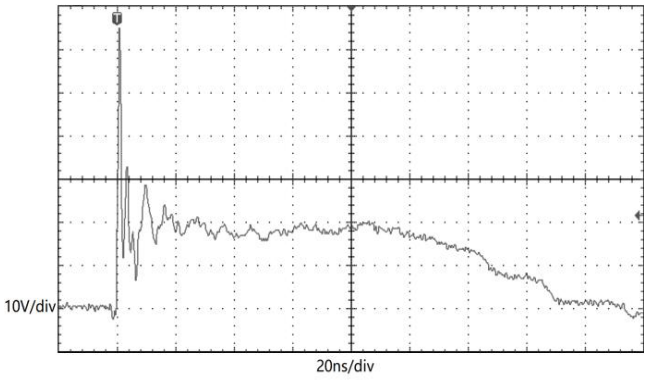



**Fig.8 ESD clamping**
**(-8kV contact discharge per IEC61000-4-2)**

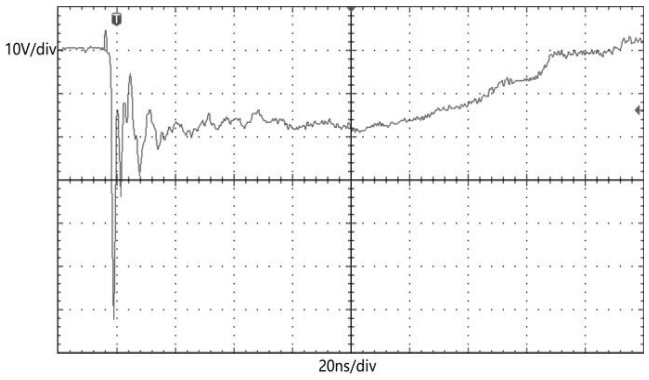
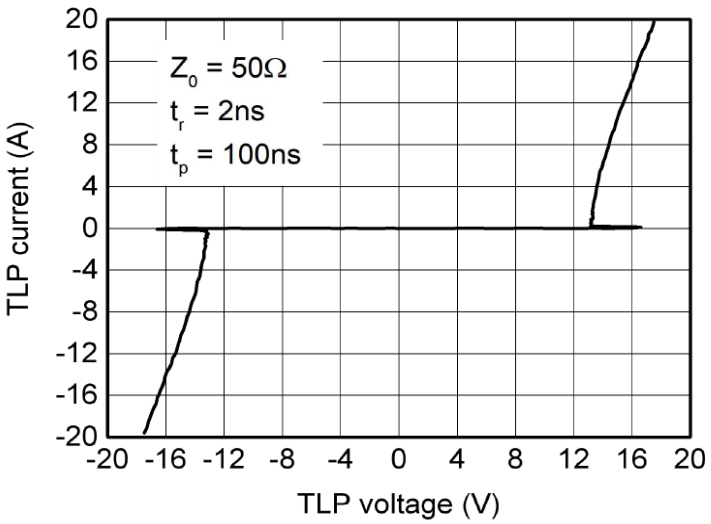
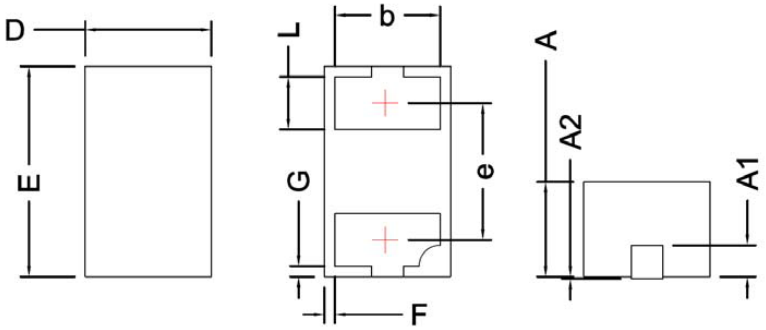



**Fig.9 TLP Measurment**

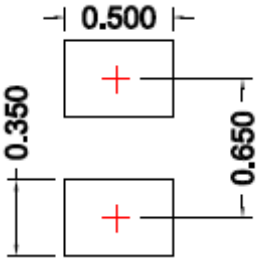


## ■ Outline Dimensions




| SYMBOL | MILLIMETER | | |
|---|---|---|---|
| | MIN | NOM | MAX |
| D | 0.50 | 0.60 | 0.70 |
| E | 0.90 | 1.00 | 1.10 |
| A | 0.35 | 0.45 | 0.55 |
| A1 | | 0.15 BSC | |
| A2 | | | 0.10 |
| F | 0.005 | | |
| G | 0.005 | | |
| L | 0.15 | 0.25 | 0.35 |
| b | 0.41 | 0.50 | 0.59 |
| e | | 0.65 BSC | |

## ■ Recommended PCB Layout




Unit:mm

Notes:
This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met

# Notice

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