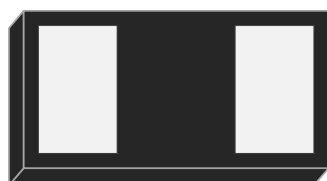


## 1-Line, Bi-directional, Ultra-low Capacitance Transient Voltage Suppressor



DFN0603-2L

### Features

- Stand-off voltage: 3.3V Max
- Transient protection for each line according to  
IEC61000-4-2(ESD):  $\pm 30\text{kV}$  (contact)  
IEC61000-4-5(surge): 10A (8/20 $\mu\text{s}$ )
- Ultra-low leakage current
- Ultra low clamping voltage
- Low clamping voltage:  
 $V_{CL} = 5.0\text{V typ. @ IPP} = 16\text{A (TLP)}$
- Compliant

### Applications

- Cellular Handsets and Accessories
- Display Ports
- MDDI Ports
- USB Ports
- Digital Visual Interface (DVI)
- PCI Express and Serial SATA Ports

#### Caution:

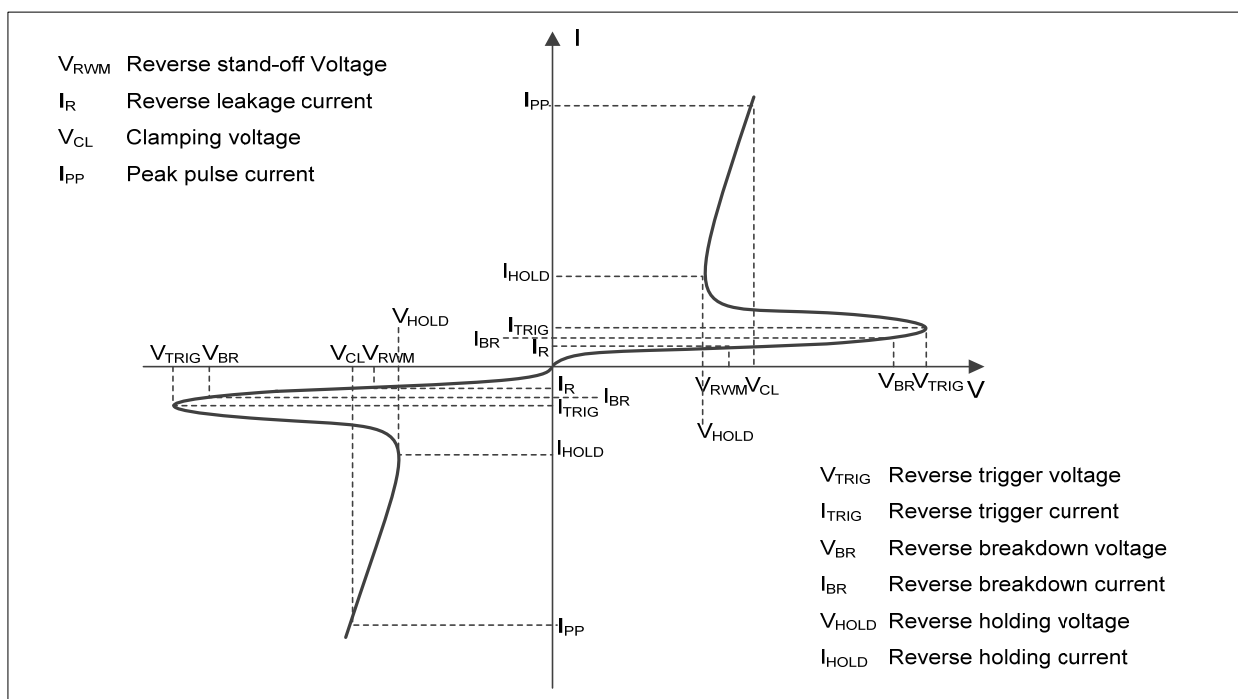
*This Device is designed for signal line protection only.  
Not intended to be used under bias, not for application  
with a power line.*

### Mechanical Data

- Package: DFN0603-2L
- Case Material: "Green" Molding Compound
- Marking Information: See Below

3Z

### ■Definitions of electrical characteristics



## Maximum Ratings

| PARAMETER                                       | SYMBOL    | LIMITS   | UNIT        |
|-------------------------------------------------|-----------|----------|-------------|
| Peak pulse power ( $t_p = 8/20\mu s$ )          | $P_{pk}$  | 50       | W           |
| Peak pulse current ( $t_p = 8/20\mu s$ )        | $I_{PP}$  | 10       | A           |
| ESD according to IEC61000-4-2 air discharge     | $V_{ESD}$ | $\pm 30$ | kV          |
| ESD according to IEC61000-4-2 contact discharge |           | $\pm 30$ |             |
| Junction temperature                            | $T_J$     | 125      | $^{\circ}C$ |
| Storage temperature                             | $T_{STG}$ | -55~150  | $^{\circ}C$ |

## Electrical Characteristics ( $T_a = 25^{\circ}C$ Unless otherwise specified)

| PARAMETER                        | Symbol     | UNIT     | Conditions                         | Min | Typ  | Max |
|----------------------------------|------------|----------|------------------------------------|-----|------|-----|
| Reverse maximum working voltage  | $V_{RWM}$  | V        |                                    |     |      | 3.3 |
| Reverse leakage current          | $I_R$      | nA       | $V_{RWM} = 3.3V$                   |     |      | 200 |
| Reverse breakdown voltage        | $V_{BR}$   | V        | $I_T = 2\mu A$                     | 3.5 |      |     |
| Reverse holding voltage          | $V_{HOLD}$ | V        | $I_{HOLD} = 50mA$ ,                | 0.8 |      |     |
| Clamping voltage <sup>1)</sup>   | $V_{CL}$   | V        | $I_{PP} = 16A$ , $t_p = 100ns$     |     | 5    |     |
| Dynamic resistance <sup>1)</sup> | $R_{DYN}$  | $\Omega$ |                                    |     | 0.25 |     |
| Clamping voltage <sup>2)</sup>   | $V_{CL}$   | V        | $V_{ESD} = 8kV$                    |     | 6    |     |
| Clamping voltage <sup>3)</sup>   | $V_{CL}$   | V        | $I_{PP} = 1A$ , $t_p = 8/20\mu s$  |     | 4    |     |
|                                  |            | V        | $I_{PP} = 10A$ , $t_p = 8/20\mu s$ |     | 5    |     |
| Junction capacitance             | $C_J$      | pF       | $V_R = 0V$ , $f = 1MHz$            |     | 0.6  |     |

Notes:

(1). TLP parameter:  $Z_0 = 50\Omega$ ,  $t_p = 100ns$ ,  $t_r = 2ns$ , 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)

| PREFERRED P/N | PACKING CODE | UNIT WEIGHT(mg)  | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|------------------|----------------------|-------------------------|----------------------------|---------------|
| ESDSL3V3LZBA1 | F1           | Approximate 0.18 | 10000                | 100000                  | 400000                     | 7" reel       |

## ■ Characteristics (Typical)

Fig.1 8/20 $\mu$ s waveform per IEC61000-4-5

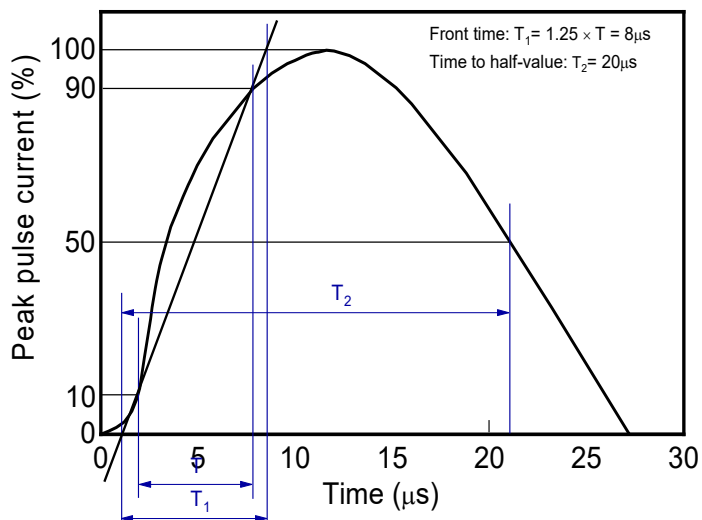


Fig.2 Contact discharge current waveform per IEC61000-4-2

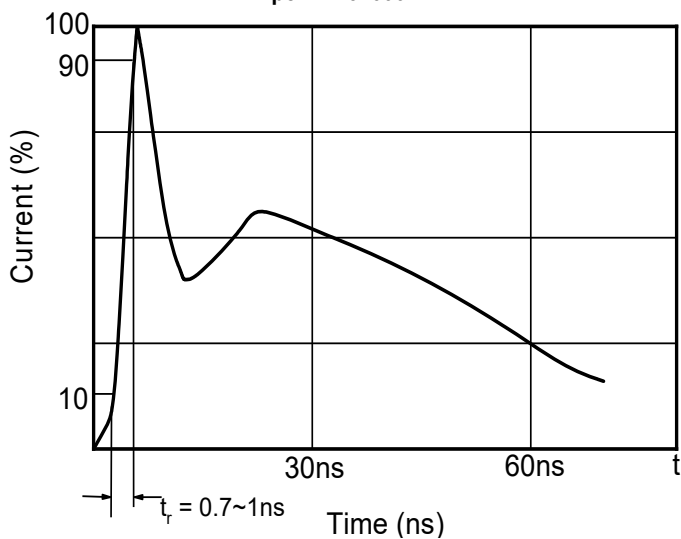


Fig.3 Clamping voltage vs. Peak pulse current

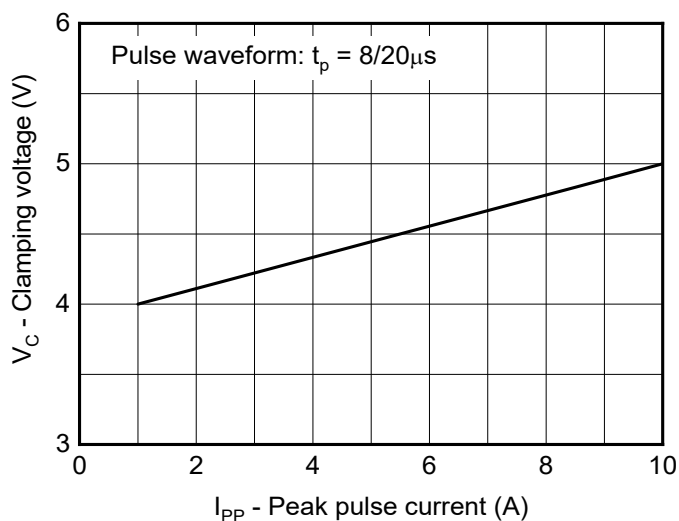


Fig.4 Capacitance vs. Reverse voltage

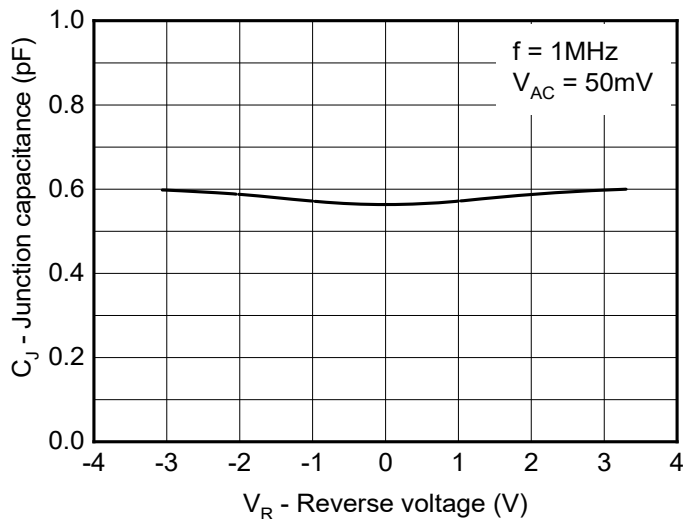


Fig.5 Non-repetitive peak pulse power vs. Pulse time

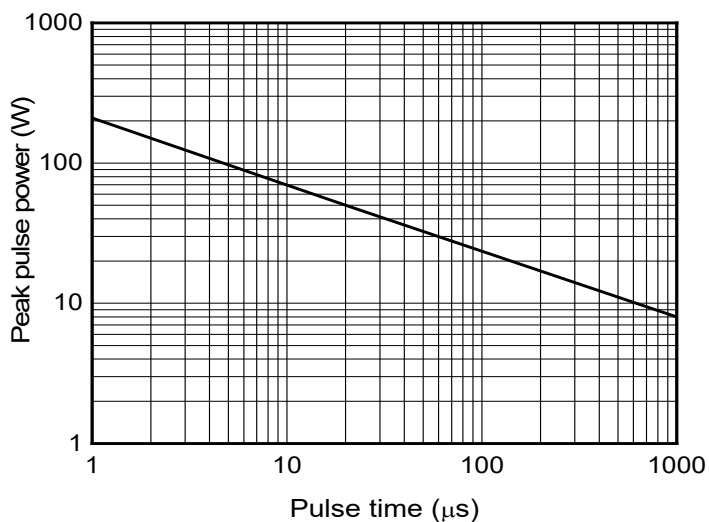


Fig.6 Power derating vs. Ambient temperature

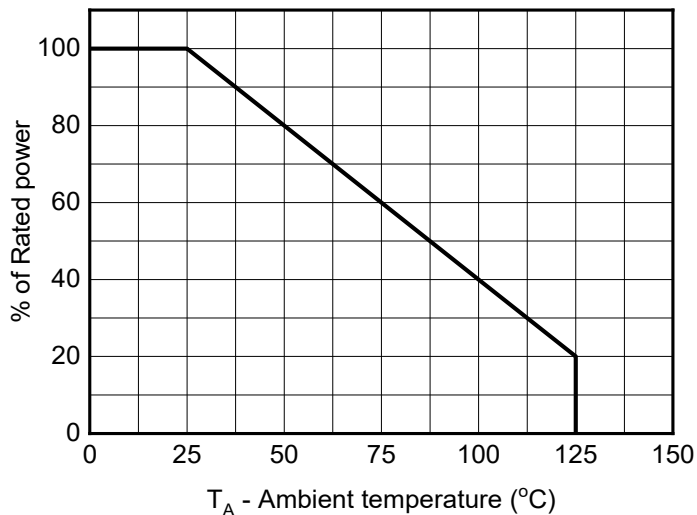
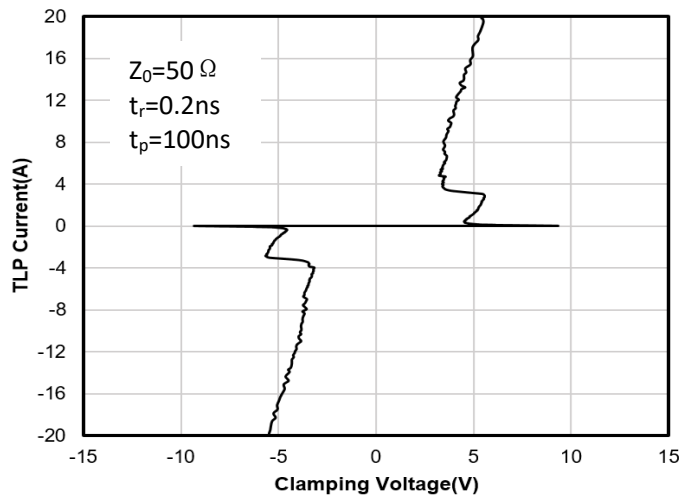
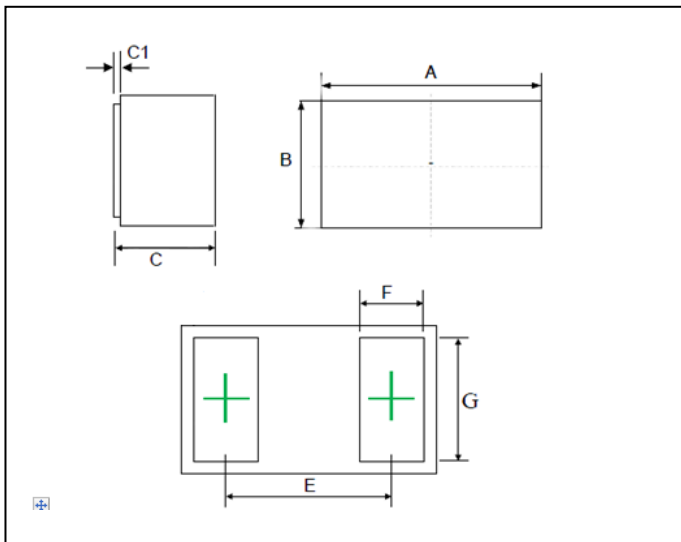


Fig.7 TLP Measurement

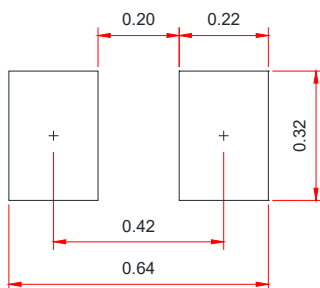


## ■ Outline Dimensions



| Symbol | min. (mm) | Max. (mm) |
|--------|-----------|-----------|
| A      | 0.55      | 0.67      |
| B      | 0.25      | 0.37      |
| C      | 0.23      | 0.34      |
| C1     |           | 0.05      |
| E      |           | 0.4       |
| F      | 0.115     | 0.195     |
| G      | 0.215     | 0.295     |

## ■ 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

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