

## DESCRIPTION

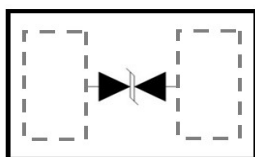
KPESD3V3S1BL a low-capacitance Transient Voltage Suppressor (TVS) designed to provide electrostatic discharge (ESD) protection for high-speed data interfaces. With typical capacitance of 0.5pF, KPESD3V3S1BL designed to protect parasitic-sensitive systems against over-voltage and over-current transient events. It complies with IEC 61000-4-2 (ESD), Level 4 ( $\pm 15\text{kV}$  air,  $\pm 8\text{kV}$  contact discharge), IEC 61000-4-4 (electrical fast transient - EFT) (40A, 5/50 ns), very fast charged device model (CDM) ESD and cable discharge event (CDE), etc.

Each KPESD3V3S1BL device can protect one high-speed data line. It offers system designers flexibility to protect single data line where space is a premium concern. The combined features of low capacitance, ultra-small size and high ESD robustness make KPESD3V3S1BL ideal for high-speed data port and high-frequency line applications, such as cellular phones and HD visual devices.

## ORDERING INFORMATION

- ✧ Package: DFN1006
- ✧ Marking: 3BL or 3BU
- ✧ Material: Halogen free
- ✧ Packing: Tape & Reel
- ✧ Quantity per reel: 10,000pcs

## PIN CONFIGURATION



## FEATURES

- ✧ Transient protection for high-speed data lines
  - IEC 61000-4-2 (ESD)  $\pm 15\text{kV}$  (Air)
  - $\pm 8\text{kV}$  (Contact)
  - IEC 61000-4-4 (EFT) 40A (5/50 ns)
  - Cable Discharge Event (CDE)
- ✧ Package optimized for high-speed lines
- ✧ Ultra-small package (1.0mm×0.6mm×0.5mm)
- ✧ Protects one data, control line
- ✧ Low capacitance: 0.5pF (Typical)
- ✧ Low leakage current
- ✧ Low clamping voltage

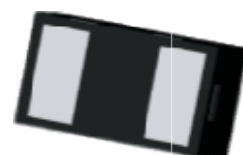
## MACHANICAL DATA

- ✧ DFN1006 package
- ✧ Packaging: Tape and Reel
- ✧ High temperature soldering guaranteed:
  - 260°C/10s
- ✧ Reel size: 7 inch

## APPLICATIONS

- ✧ Serial ATA
- ✧ Desktops, Servers and Notebooks
- ✧ Cellular Phones
- ✧ MDDI Ports
- ✧ USB Data Line Protection
- ✧ Display Ports
- ✧ Digital Visual Interfaces (DVI)

## PACKAGE OUTLINE



### ABSOLUTE MAXIMUM RATING

| Symbol    | Parameter                       | Value    | Units |
|-----------|---------------------------------|----------|-------|
| $V_{ESD}$ | ESD per IEC 61000-4-2 (Air)     | $\pm 20$ | kV    |
|           | ESD per IEC 61000-4-2 (Contact) | $\pm 20$ |       |
| $P_{PP}$  | Peak Pulse Power (8/20 $\mu$ s) | 100      | W     |
| $T_{OPT}$ | Operating Temperature           | -55~125  | °C    |
| $T_{STG}$ | Storage Temperature             | -55~150  | °C    |

### ELECTRICAL CHARACTERISTICS ( $T_{amb}=25^{\circ}C$ )

| Symbol    | Parameter                 | Test Condition                 | Min | Typ | Max | Units |
|-----------|---------------------------|--------------------------------|-----|-----|-----|-------|
| $V_{RWM}$ | Reverse Working Voltage   |                                |     |     | 3.3 | V     |
| $V_{BR}$  | Reverse Breakdown Voltage | $I_T = 1mA$                    | 4.2 |     |     | V     |
| $I_R$     | Reverse Leakage Current   | $V_{RWM} = 3.3V$               |     |     | 100 | nA    |
| $V_C$     | Clamping Voltage          | $I_{PP} = 1A, t_p = 8/20\mu s$ |     |     | 12  | V     |
|           |                           | $I_{PP} = 4A, t_p = 8/20\mu s$ |     |     | 25  | V     |
| $C_J$     | Junction Capacitance      | $V_R = 0V, f = 1MHz$           |     | 0.5 |     | pF    |

**ELECTRICAL CHARACTERISTICS CURVE**

Fig 1 Power Derating Curve

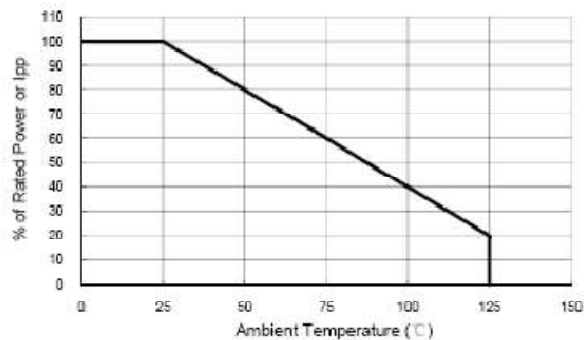


Fig 2 Clamping Voltage vs Peak Pulse Current

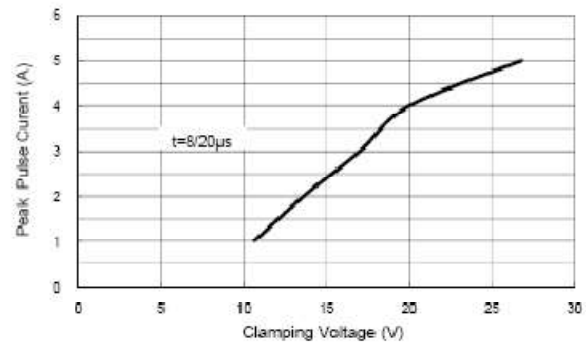


Fig 3 Voltage Sweeping

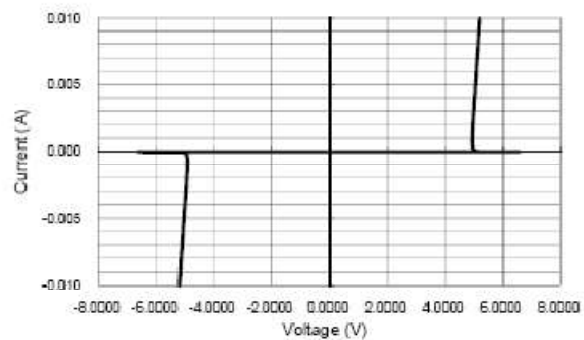


Fig 4 Voltage vs Capacitance

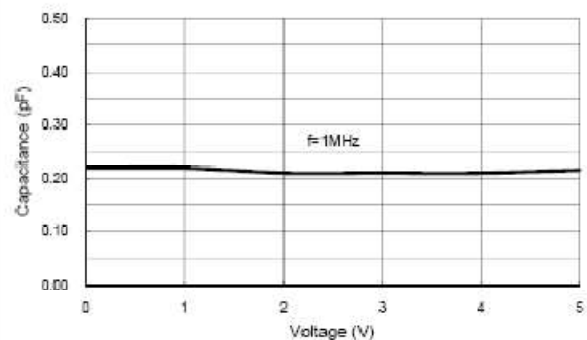


Fig 5 ESD Clamping  
(+8kV Contact per IEC 61000-4-2)

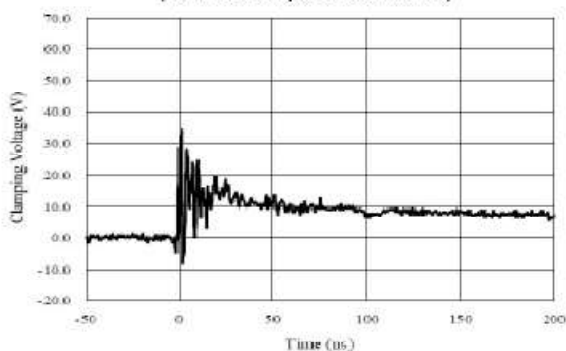
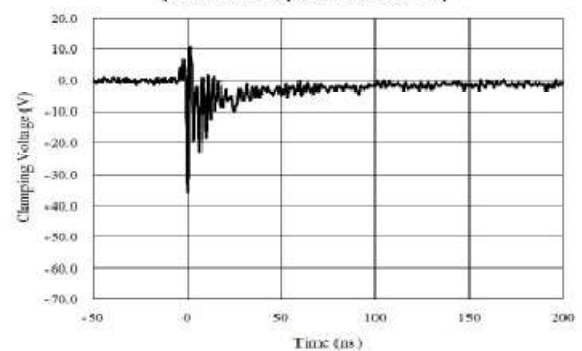
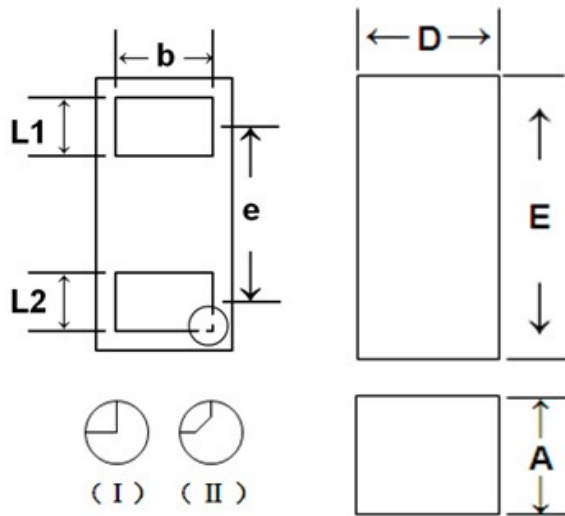


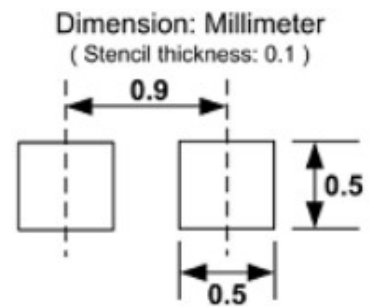
Fig 6 ESD Clamping  
(-8kV Contact per IEC 61000-4-2)



**DFN1006 PACKAGE OUTLINE DIMENSIONS**


**NOTE: ALL DIMENSIONS IN MM**

|           | MIN         | NOM            | MAX         |
|-----------|-------------|----------------|-------------|
| <b>D</b>  | <b>0.55</b> | <b>0.60</b>    | <b>0.65</b> |
| <b>E</b>  | <b>0.95</b> | <b>1.00</b>    | <b>1.05</b> |
| <b>L1</b> | <b>0.20</b> | <b>0.25</b>    | <b>0.30</b> |
| <b>L2</b> | <b>0.20</b> | <b>0.25</b>    | <b>0.30</b> |
| <b>A</b>  | <b>0.45</b> | <b>0.50</b>    | <b>0.55</b> |
| <b>b</b>  | <b>0.45</b> | <b>0.50</b>    | <b>0.55</b> |
| <b>e</b>  |             | <b>0.64BSC</b> |             |



**Soldering Footprint**