

## Product Summary

The GESDBL4V5Y1 is designed to protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD.

The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications such as HDMI, Display Port TM, and MDDI interfaces. It is designed to replace multiplayer varistors (MLV) in consumer

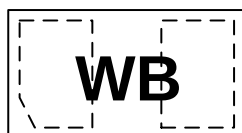
## Feature

- Low reverse stand-off voltage: 4.5V
- Low reverse clamping voltage
- Low leakage current
- Excellent package: 1.0mm×0.6mm×0.47mm
- Fast response time
- JESD22-A114-B ESD Rating of class 3B per human body model
- IEC 61000-4-2 Level 4 ESD protection

## Application

- Computers and peripherals
- Portable electronics
- Power lines
- Audio and video equipment
- Cellular handsets and accessories
- Other electronic equipment communication systems

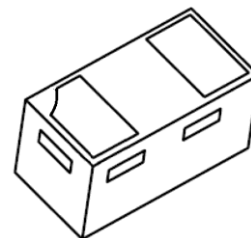
## Marking:



Front Side

WB=Device Code

**DFN1006-2L**



Schematic diagram



## Absolute Maximum Ratings ( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter                                              | Symbol                | Value     | Unit               |
|--------------------------------------------------------|-----------------------|-----------|--------------------|
| IEC 61000-4-2 ESD Voltage Air Model                    | $V_{\text{ESD}}^{1)}$ | $\pm 25$  | kV                 |
| IEC 61000-4-2 ESD Voltage Contact Model                |                       | $\pm 25$  |                    |
| JESD22-A114-B ESD Voltage Per Human Body Model         |                       | $\pm 16$  |                    |
| ESD Voltage Machine Model                              |                       | $\pm 0.4$ |                    |
| Peak Pulse Power                                       | $P_{\text{PP}}^{2)}$  | 525       | W                  |
| Peak Pulse Current                                     | $I_{\text{PP}}^{2)}$  | 35        | A                  |
| Lead Solder Temperature – Maximum (10 Second Duration) | $T_L$                 | 260       | $^{\circ}\text{C}$ |
| Junction Temperature                                   | $T_j$                 | 150       | $^{\circ}\text{C}$ |
| Storage Temperature                                    | $T_{\text{stg}}$      | -55~ +150 | $^{\circ}\text{C}$ |

1) Device stressed with ten non-repetitive ESD pulses.

2) Non-repetitive current pulse 8/20 $\mu\text{s}$  exponential decay waveform according to IEC61000-4-5.

## ESD standards compliance

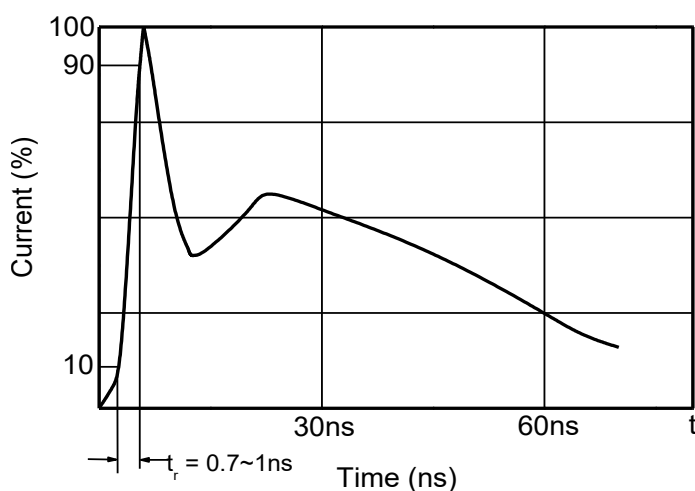
### IEC61000-4-2 Standard

| Contact Discharge |                 | Air Discharge |                 |
|-------------------|-----------------|---------------|-----------------|
| Level             | Test Voltage kV | Level         | Test Voltage kV |
| 1                 | 2               | 1             | 2               |
| 2                 | 4               | 2             | 4               |
| 3                 | 6               | 3             | 8               |
| 4                 | 8               | 4             | 15              |

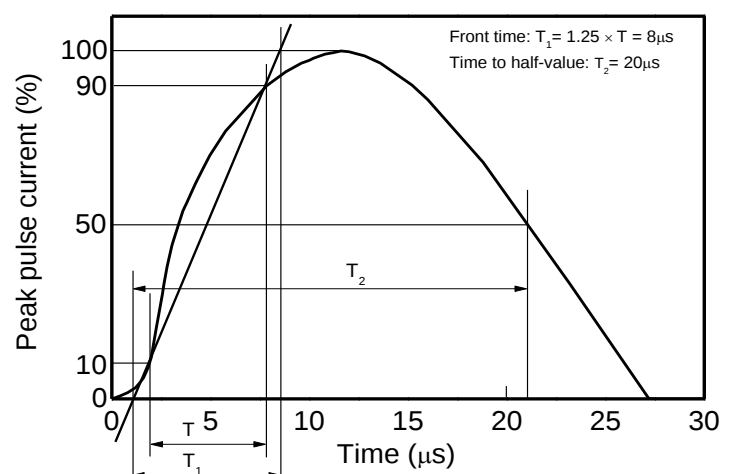
### JESD22-A114-B Standard

| ESD Class | Human Body Discharge V |
|-----------|------------------------|
| 0         | 0~249                  |
| 1A        | 250~499                |
| 1B        | 500~999                |
| 1C        | 1000~1999              |
| 2         | 2000~3999              |
| 3A        | 4000~7999              |
| 3B        | 8000~15999             |

### Contact discharge current waveform per IEC61000-4-2

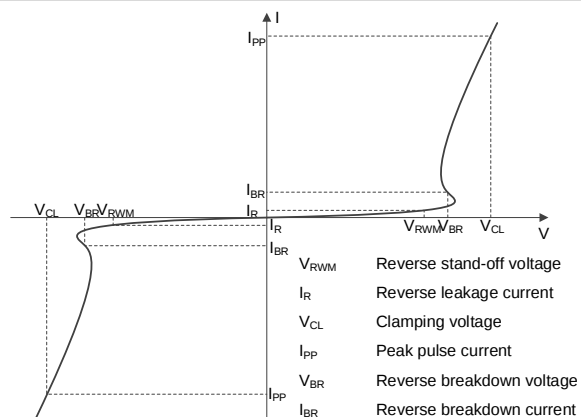


### 8/20 $\mu\text{s}$ waveform per IEC61000-4-5



## Electrical Parameter

| Symbol           | Parameter                                  |
|------------------|--------------------------------------------|
| V <sub>C</sub>   | Clamping Voltage @ I <sub>PP</sub>         |
| I <sub>PP</sub>  | Peak Pulse Current                         |
| V <sub>BR</sub>  | Breakdown Voltage @ I <sub>BR</sub>        |
| I <sub>BR</sub>  | Test Current                               |
| I <sub>R</sub>   | Reverse Leakage Current @ V <sub>RWM</sub> |
| V <sub>RWM</sub> | Reverse Standoff Voltage                   |



V-I characteristics for a Bi-directional TVS

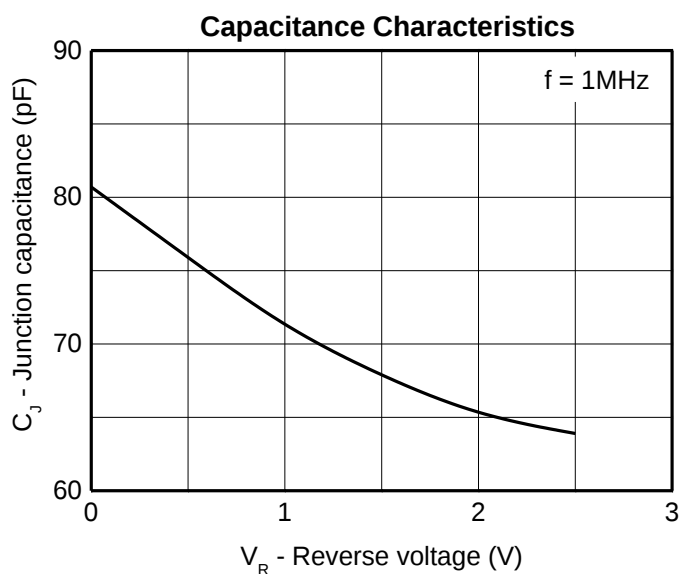
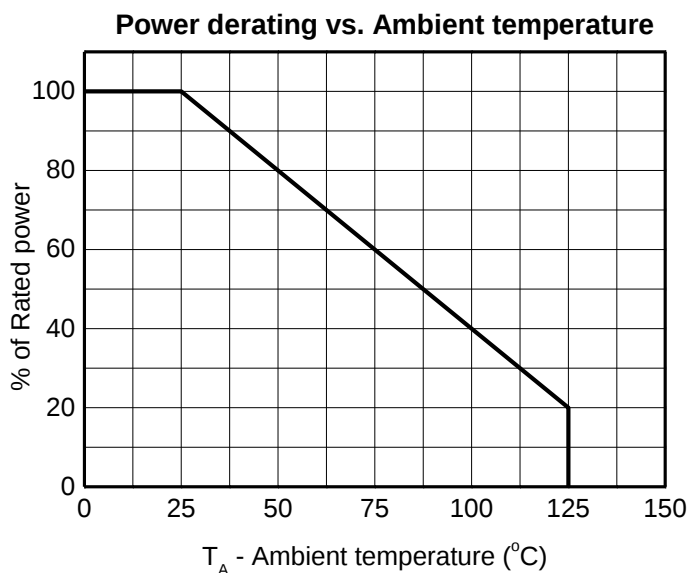
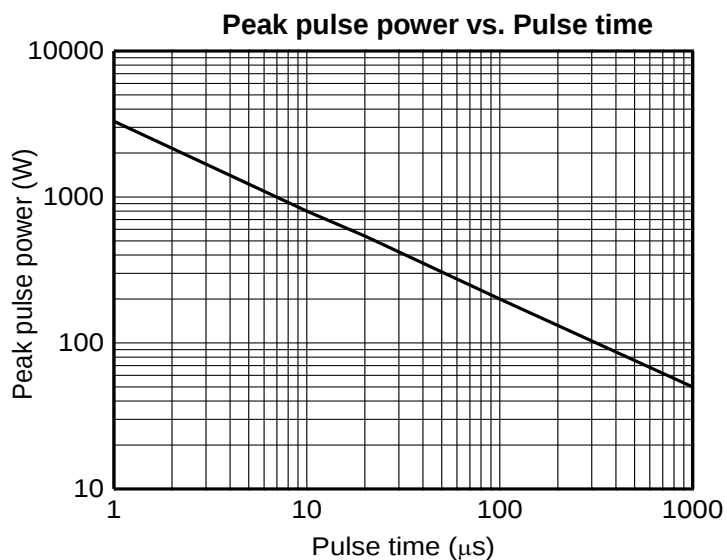
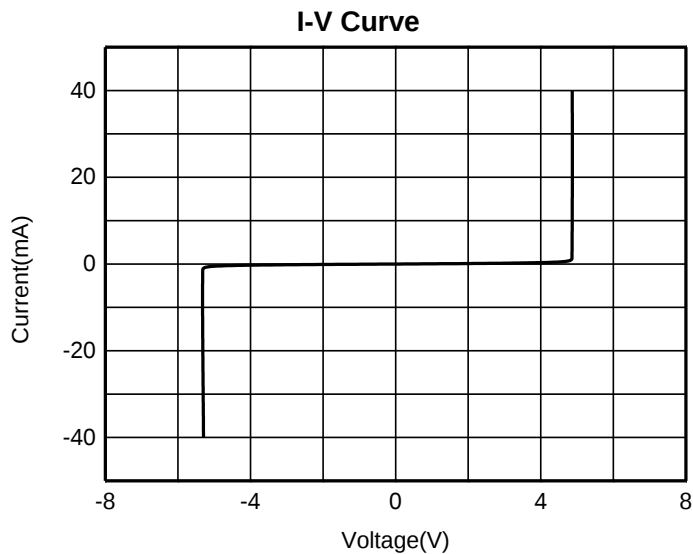
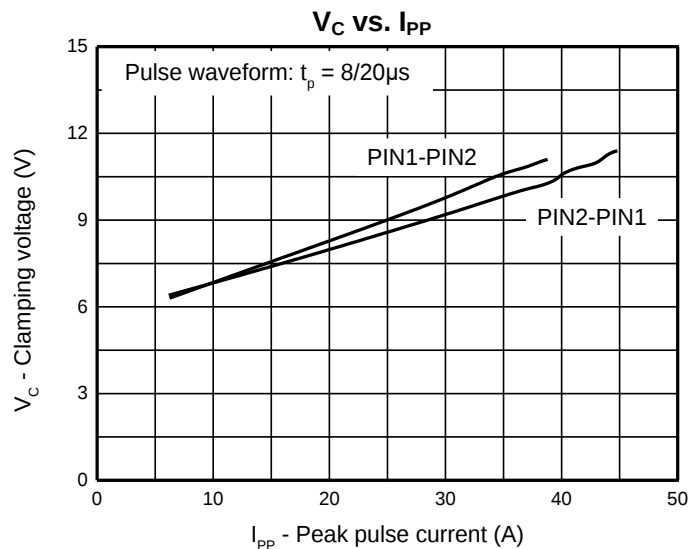
## Electrical Characteristics (Ta=25°C unless otherwise specified)

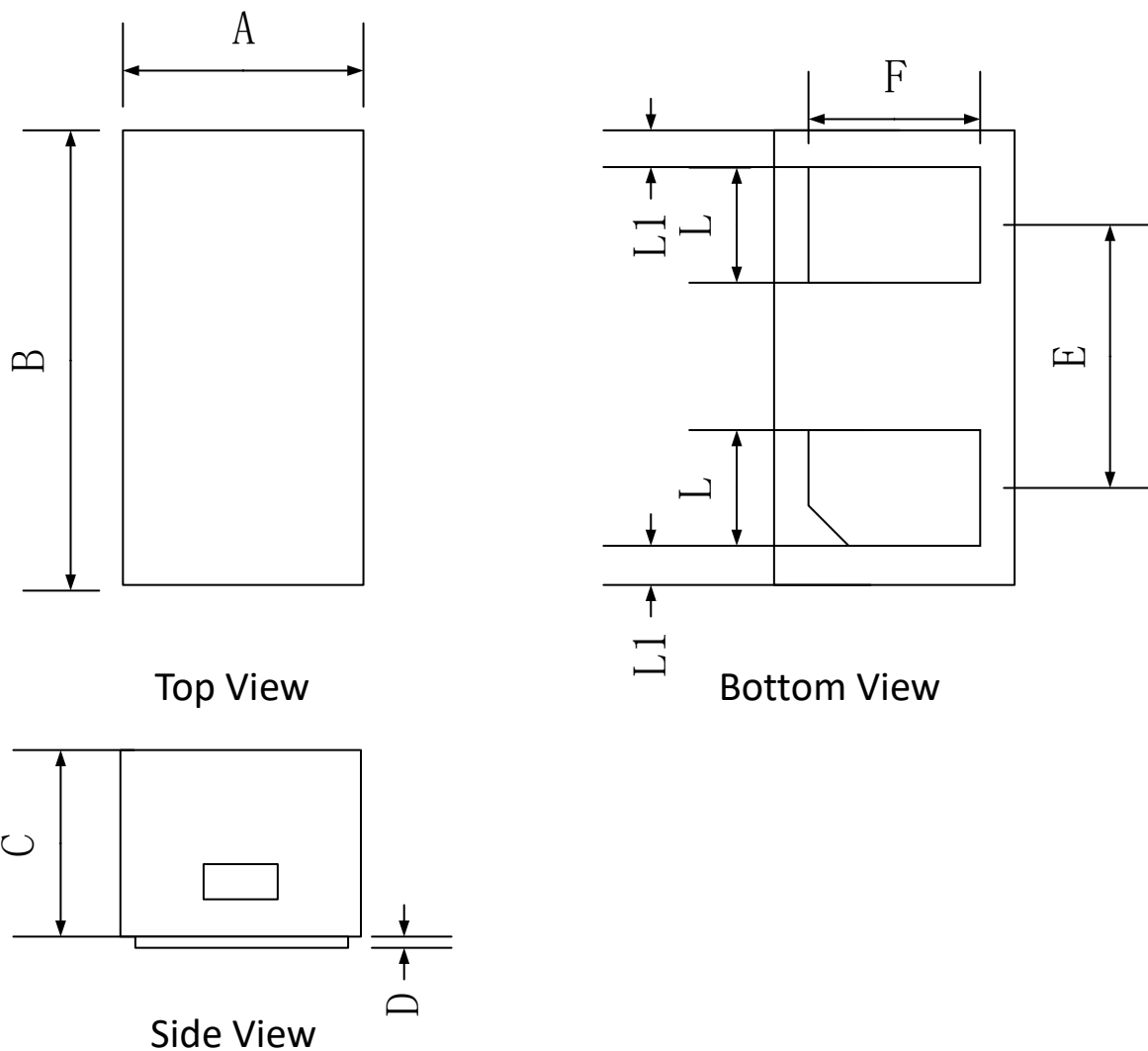
| Parameter                 | Symbol                         | Test conditions            | Min | Typ | Max | Unit |
|---------------------------|--------------------------------|----------------------------|-----|-----|-----|------|
| Reverse stand-off voltage | V <sub>RWM</sub> <sup>1)</sup> |                            |     |     | 4.5 | V    |
| Reverse leakage current   | I <sub>R</sub>                 | V <sub>RWM</sub> =5V       |     |     | 1   | uA   |
| Breakdown voltage         | V <sub>BR</sub>                | I <sub>T</sub> =1mA        | 4.7 | 5   | 6   | V    |
| Clamping voltage          | V <sub>C</sub> <sup>2)</sup>   | I <sub>PP</sub> =35A       |     | 12  | 15  | V    |
| Junction capacitance      | C <sub>J</sub>                 | V <sub>R</sub> =0V, f=1MHz |     | 80  |     | pF   |

1) Other voltages available upon request.

2) Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5

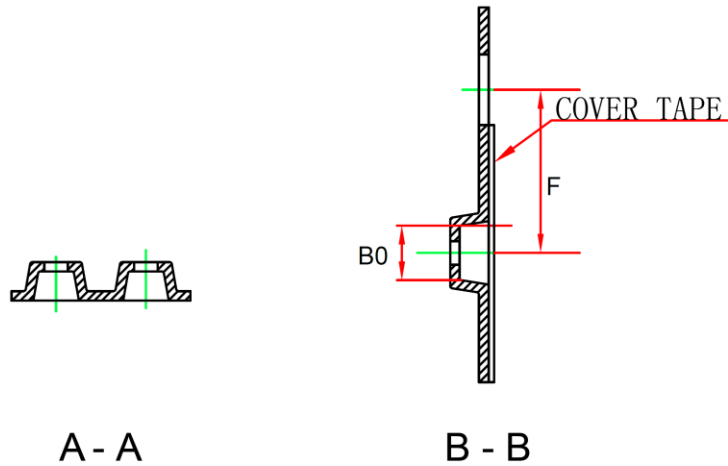
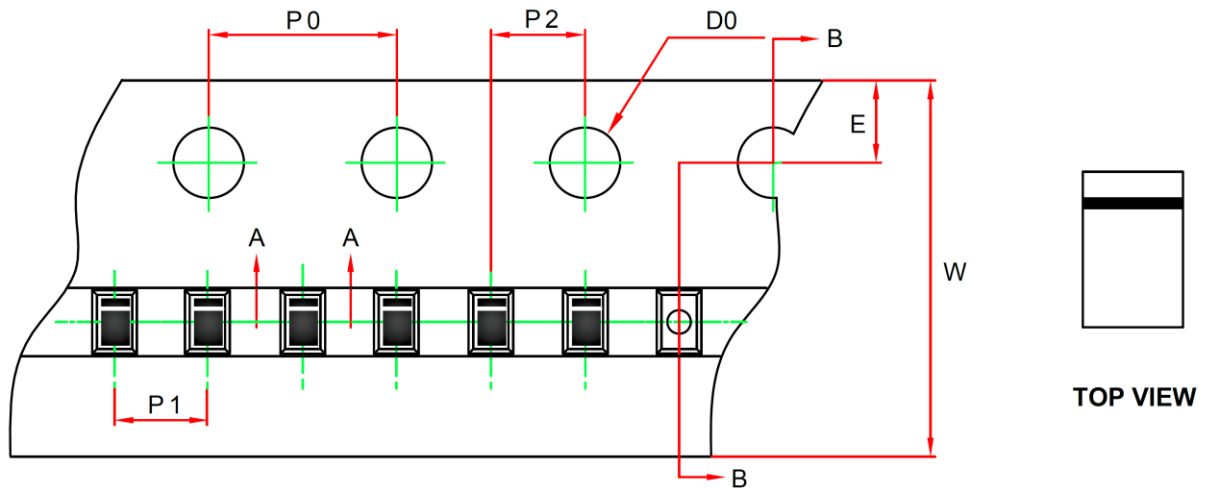
## Typical Characteristics



**DFN1006-2L Package Outline Dimensions**


|    | Dimensions In Millimeters |      |      |
|----|---------------------------|------|------|
|    | Min.                      | Typ. | Max. |
| A  | 0.55                      | 0.60 | 0.68 |
| B  | 0.95                      | 1.00 | 1.08 |
| C  | 0.44                      | 0.47 | 0.50 |
| D  | 0.00                      | 0.03 | 0.05 |
| E  | -                         | 0.65 | -    |
| F  | 0.40                      | 0.50 | 0.60 |
| L  | 0.20                      | 0.25 | 0.30 |
| L1 | 0.05REF                   |      |      |

## DFN1006-2L Tape and Reel



| Dimensions In Millimeters (mm) |         |        |        |        |        |        |        |         |
|--------------------------------|---------|--------|--------|--------|--------|--------|--------|---------|
| Pkg type                       | B0      | P0     | P1     | P2     | E      | F      | W      | D0      |
| DFN1.0×0.6-2L                  | 1.11    | 4.00   | 2.00   | 2.00   | 1.75   | 3.50   | 8.00   | 1.55    |
| Tolerance                      | +/-0.06 | +/-0.1 | +/-0.1 | +/-0.1 | +/-0.1 | +/-0.1 | +/-0.3 | +/-0.15 |

