

Product Summary

The GESDBS5V0D31 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 equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

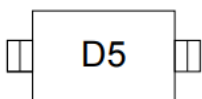
Feature

- Low reverse stand-off voltage: 5.0V
- 2000 Watts peak pulse power per line($t_p=8/20$ us)
- Low leakage current
- Fast response time
- 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:



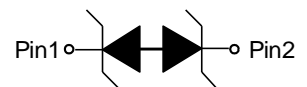
Front Side

D5=Device Code

SOD-323



Schematic diagram



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

| Parameter | Symbol | Value | Unit |
|--|-----------------------|-----------|--------------------|
| IEC 61000-4-2 ESD Voltage | $V_{\text{ESD}}^{1)}$ | ± 30 | kV |
| IEC 61000-4-2 ESD Voltage | | ± 30 | |
| Peak Pulse Power | $P_{\text{pp}}^{2)}$ | 2000 | W |
| Peak Pulse Current | $I_{\text{pp}}^{2)}$ | 135 | A |
| Lead Solder Temperature – Maximum (10 Second Duration) | T_L | 260 | $^{\circ}\text{C}$ |
| Junction Temperature | T_j | -55~ +125 | $^{\circ}\text{C}$ |
| Storage Temperature | T_{stg} | -55~ +150 | $^{\circ}\text{C}$ |

- 1) Device stressed with ten non-repetitive ESD pulses.
- 2) Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

ESD standards compliance

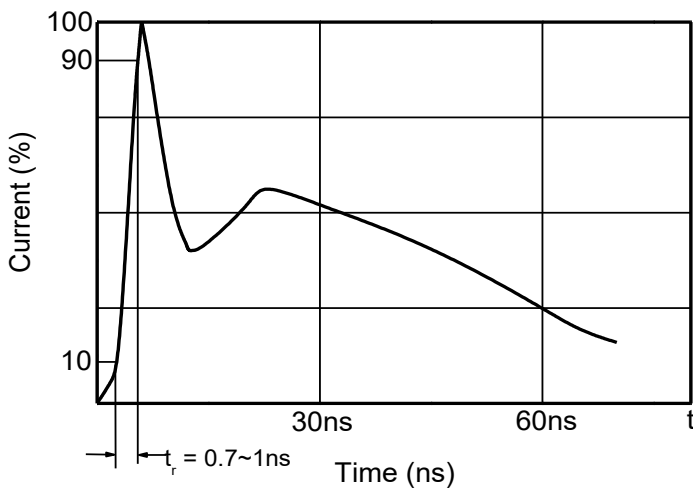
IEC61000-4-2 Standard

| 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 |

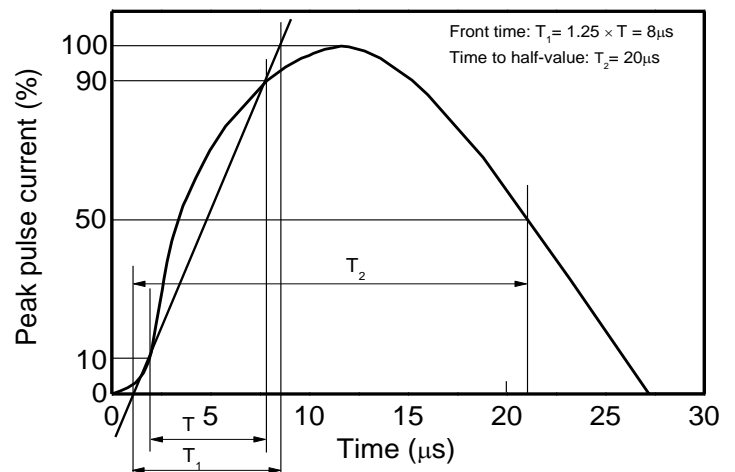
JESD22-A114-B Standard

| 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

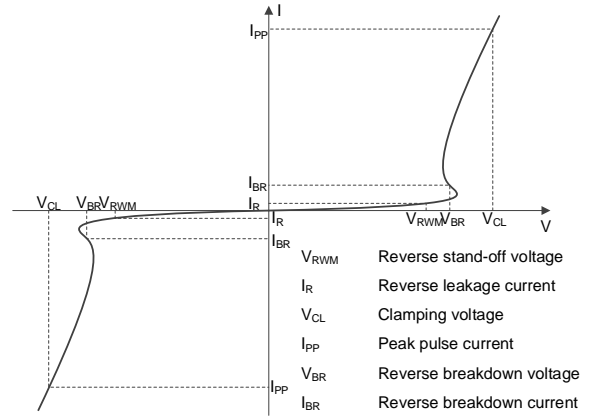


8/20 μs waveform per IEC61000-4-5



Electrical Parameter

| Symbol | Parameter |
|------------------|--|
| V _C | Clamping Voltage @ I _{PP} |
| I _{PP} | Peak Pulse Current |
| V _{BR} | Breakdown Voltage @ I _{BR} |
| I _{BR} | Test Current |
| I _R | Reverse Leakage Current @ V _{RWM} |
| V _{RWM} | Reverse Standoff Voltage |



V-I characteristics for a Bi-directional TVS

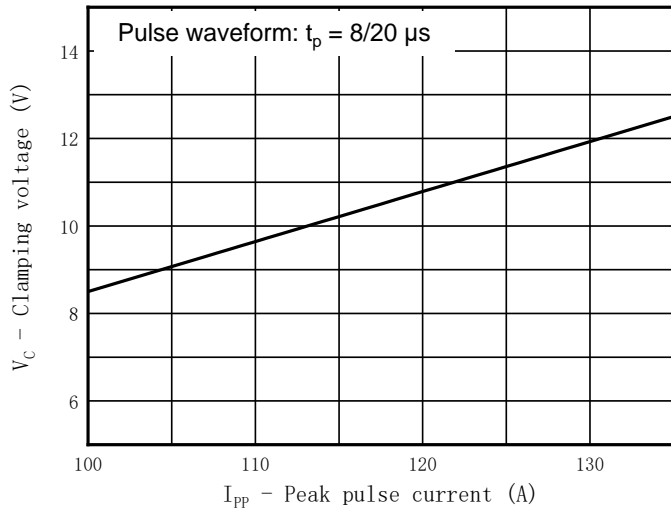
Electrical Characteristics (T_A=25°C unless otherwise specified)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|---------------------------|--------------------------------|----------------------------|-----|------|-----|------|
| Reverse Stand-off Voltage | V _{RWM} ¹⁾ | | | | 5 | V |
| Reverse Leakage Current | I _R | V _{RWM} =5V | | | 0.1 | uA |
| Breakdown Voltage | V _{BR} | I _T =1mA | 5.3 | 6.3 | 8.0 | V |
| Clamping Voltage | V _C ²⁾ | I _{PP} =135A | | 12.5 | 16 | V |
| Junction Capacitance | C _J | V _R =0V, f=1MHz | | 400 | 450 | pF |

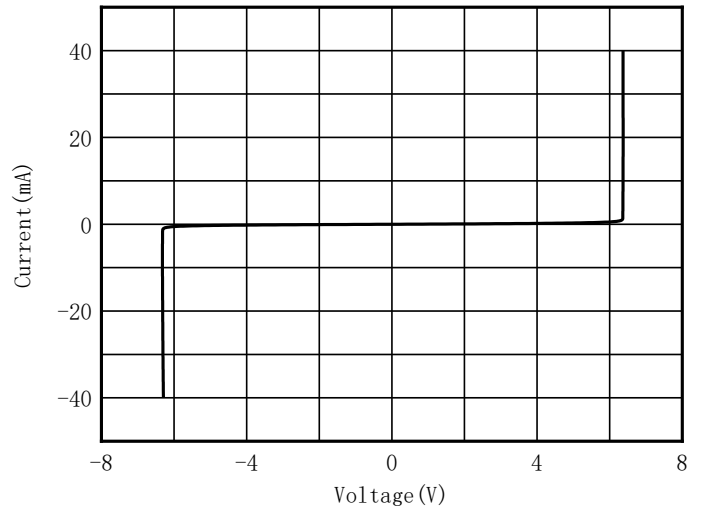
- 1) Other voltages available upon request.
- 2) Non-repetitive current pulse 8/20μs exponential decay waveform according to IEC61000-4-5

Typical Characteristics

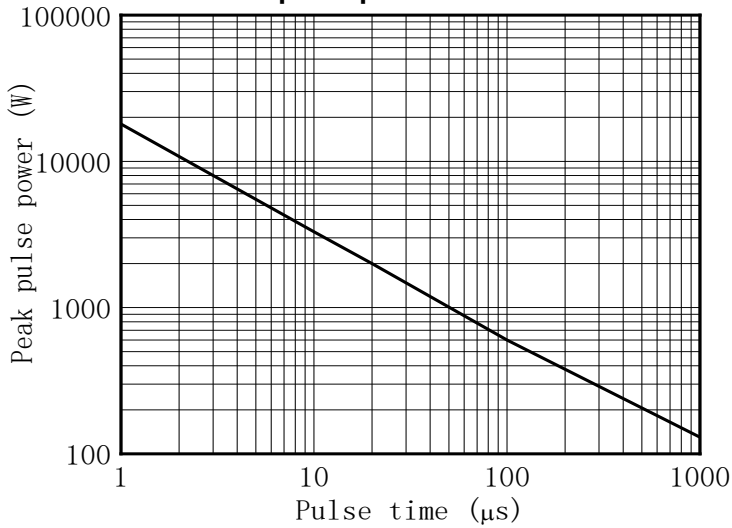
V_C vs. I_{PP}



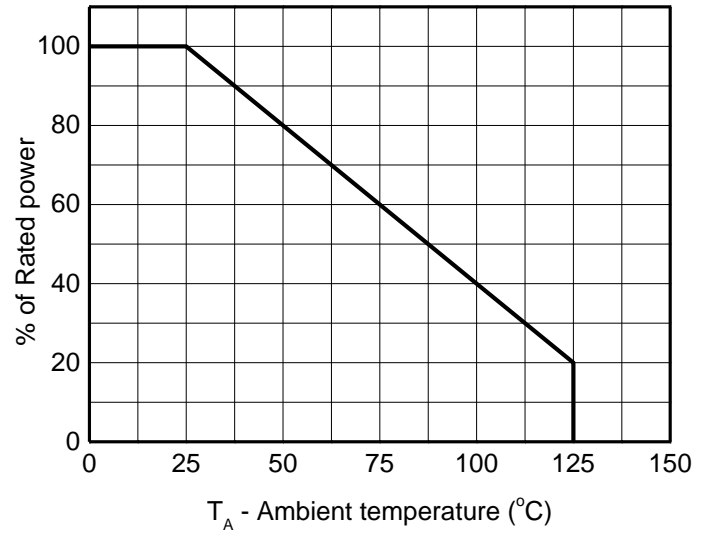
I-V Curve

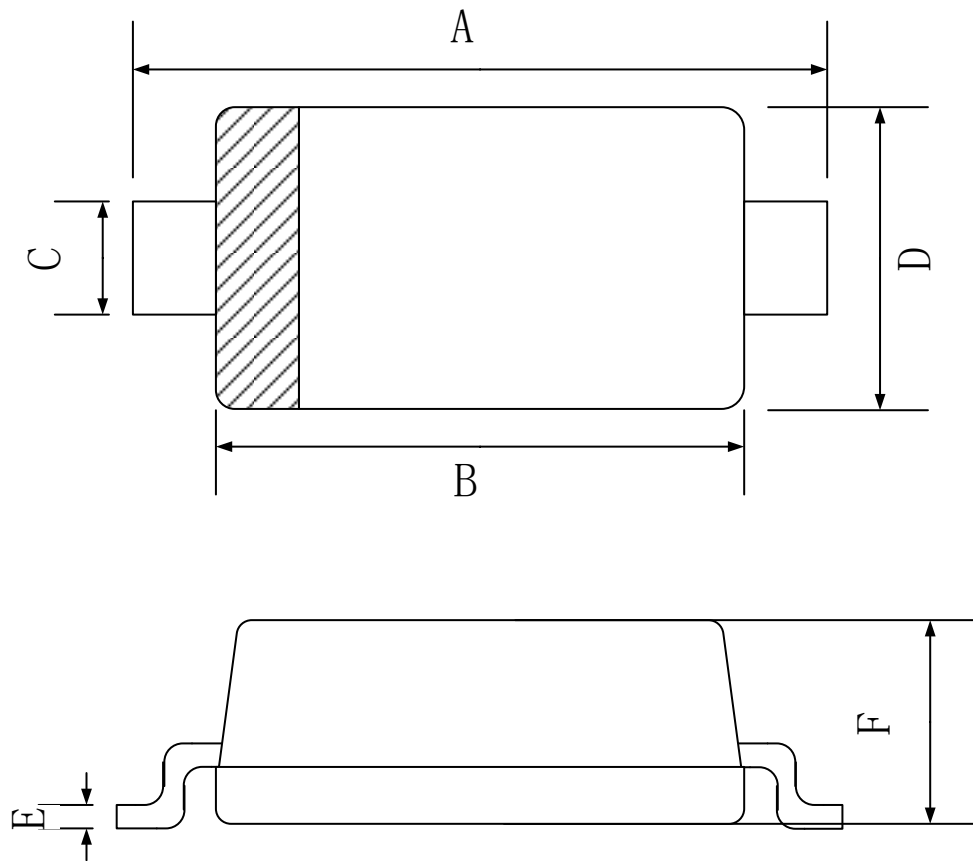


Peak pulse power vs. Pulse time



Power derating vs. Ambient temperature



SOD-323 Package Outline Dimensions


| Symbol | Dimensions In Millimeters | | |
|--------|---------------------------|-------|------|
| | Min. | Typ. | Max. |
| A | 2.30 | 2.50 | 2.75 |
| B | 1.60 | 1.70 | 1.80 |
| C | 0.25 | 0.325 | 0.40 |
| D | 1.15 | 1.25 | 1.40 |
| E | 0.08 | 0.095 | 0.15 |
| F | 0.80 | 0.90 | 1.00 |

Attention:

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
- GreenPower Electronics products belong to consumer electronics or other civilian electronic products.