

# JS18U1GD50-3

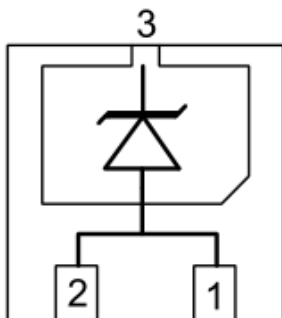
## 1-Line Uni-directional High Power TVS Diode



### Description

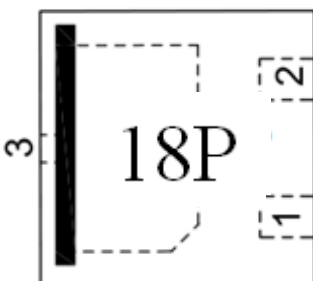
The JS18U1GD50-3 is a high power TVS, utilizing leading monolithic silicon technology to provide fast response time and low ESD clamping voltage, making this device an ideal solution for protecting voltage sensitive lines.. It is assembled into a 3-pin DFN2020-3 lead-free package. The leads are finished with NiPdAu. Each device will protect one line. The combination of small size, and high surge capability makes them ideal for use in applications such as cellular phones, LCD displays, USB, and multi media card interfaces.

### Circuit Diagram



Transparent bottom view

### Marking Diagram



Transparent top view

18P:Device Marking Code

Bar denotes cathode

### Features

- \* 6500W peak pulse power (8/20 $\mu$ s)
- \* Low leakage: nA level
- \* Operating voltage: 18V
- \* Ultra low clamping voltage
- \* One power line protects
- \* Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
  - Air discharge:  $\pm 30$ kV
  - Contact discharge:  $\pm 30$ kV
  - IEC61000-4-5 (Lightning) 180A (8/20 $\mu$ s)
- \* RoHS Compliant
- \* Package: DFN2020-3
- \* Lead Finish: NiPdAu

### Applications

- \* Power Management
- \* Industrial Application
- \* Power Supply Protection
- \* Many other portable devices

### Ordering Information

| Part Number  | Packaging        | Reel Size |
|--------------|------------------|-----------|
| JS18U1GD50-3 | 3000/Tape & Reel | 7 inch    |

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

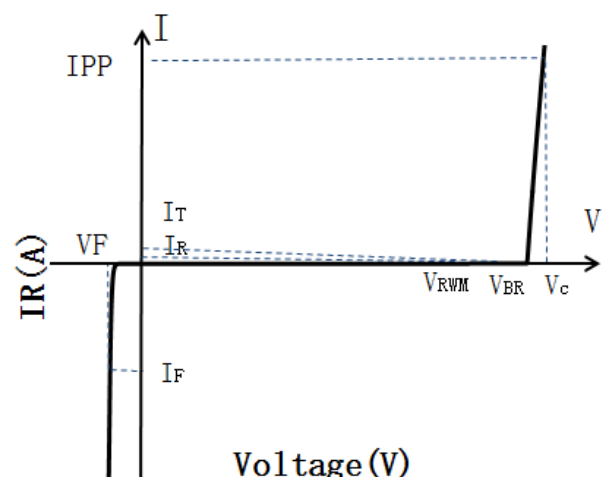
| Parameter                                | Symbol | Value       | Unit             |
|------------------------------------------|--------|-------------|------------------|
| Peak Pulse Power (8/20 $\mu\text{s}$ )   | Ppk    | 6500        | W                |
| Peak Pulse Current (8/20 $\mu\text{s}$ ) | IPP    | 180         | A                |
| ESD per IEC 61000-4-2 (Air)              | VESD   | $\pm 30$    | kV               |
| ESD per IEC 61000-4-2 (Contact)          |        | $\pm 30$    |                  |
| Operating Temperature Range              | TJ     | -55 to +125 | $^\circ\text{C}$ |
| Storage Temperature Range                | Tstg   | -55 to +150 | $^\circ\text{C}$ |

### Electrical Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise specified)

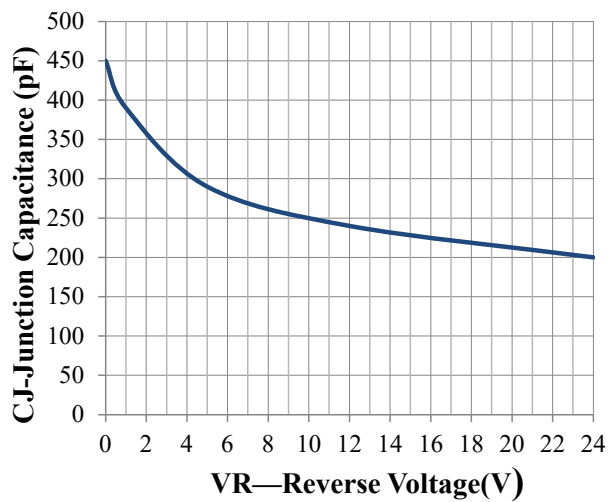
| Parameter               | Symbol           | Test Condition                                             | Min  | Typ | Max  | Unit          |
|-------------------------|------------------|------------------------------------------------------------|------|-----|------|---------------|
| Reverse Working Voltage | $V_{\text{RWM}}$ |                                                            |      |     | 18   | V             |
| Breakdown Voltage       | $V_{\text{BR}}$  | $I_{\text{T}} = 1\text{mA}$                                | 19.0 |     | 22.0 | V             |
| Reverse Leakage Current | $I_{\text{R}}$   | $V_{\text{RWM}} = 18\text{V}$                              |      |     | 1.0  | $\mu\text{A}$ |
| Clamping Voltage        | $V_{\text{C}}$   | $I_{\text{PP}} = 100\text{A}$ (8 x 20 $\mu\text{s}$ pulse) |      |     | 34.0 | V             |
| Clamping Voltage        | $V_{\text{C}}$   | $I_{\text{PP}} = 180\text{A}$ (8 x 20 $\mu\text{s}$ pulse) |      |     | 43.0 | V             |
| Junction Capacitance    | $C_{\text{J}}$   | $V_{\text{R}} = 0\text{V}$ , $f = 1\text{MHz}$             |      | 450 |      | pF            |

### Portion Electronics Parameter

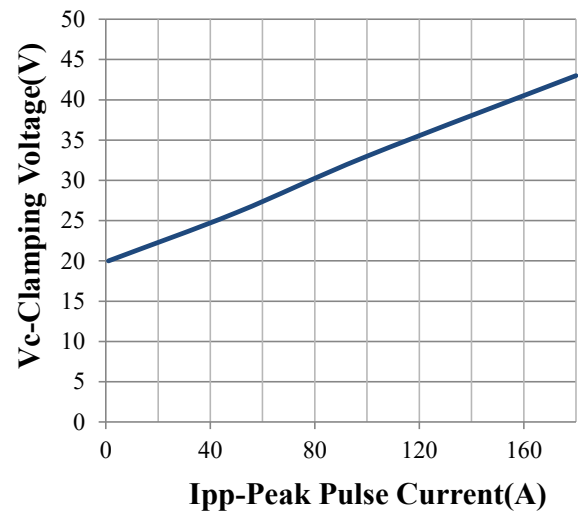
| Symbol          | Parameter                          |
|-----------------|------------------------------------|
| $I_{\text{T}}$  | Test Current                       |
| $I_{\text{PP}}$ | Maximum Reverse Peak Pulse Current |
| $V_{\text{C}}$  | Clamping Voltage @ $I_{\text{C}}$  |
| $I_{\text{F}}$  | Forward Current                    |
| $V_{\text{F}}$  | Forward Voltage @ $I_{\text{F}}$   |



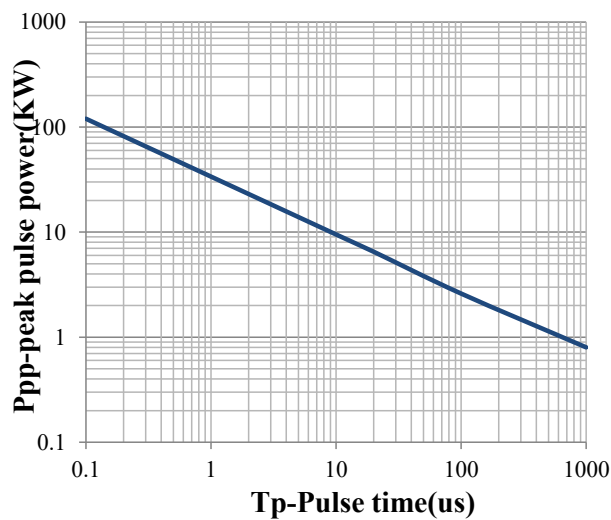
## Typical Performance Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise Specified)



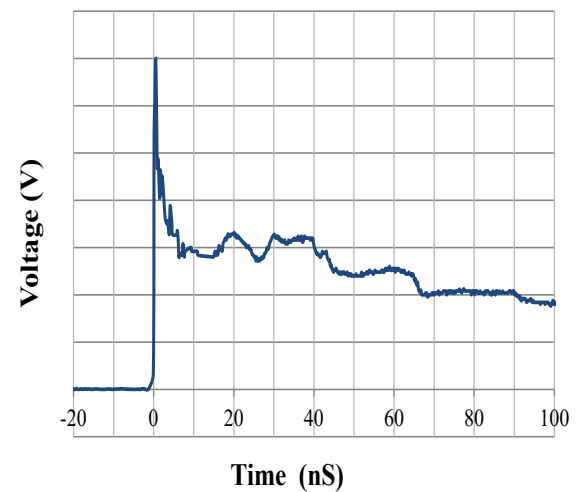
Junction Capacitance vs. Reverse Voltage



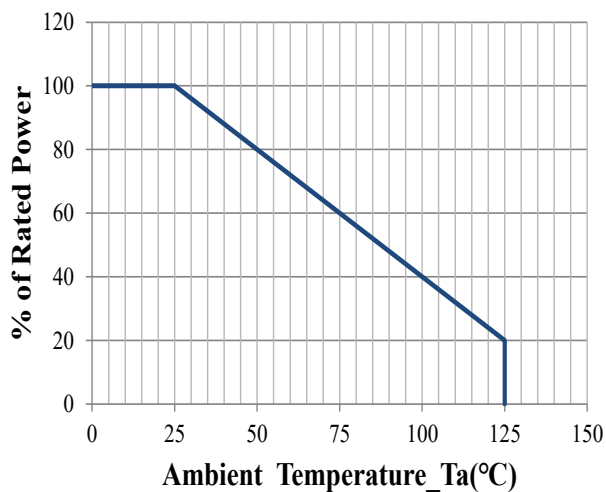
Clamping Voltage vs. Peak Pulse Current



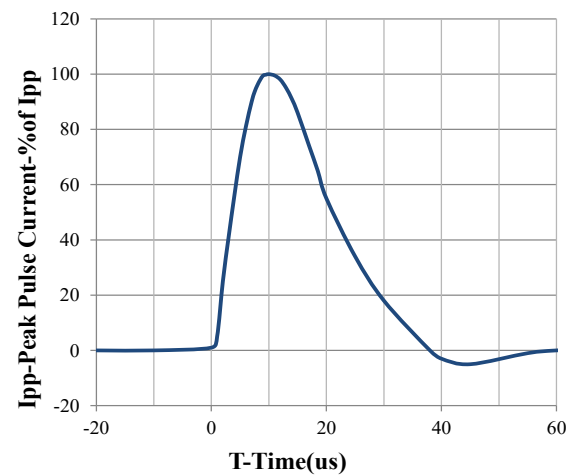
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform

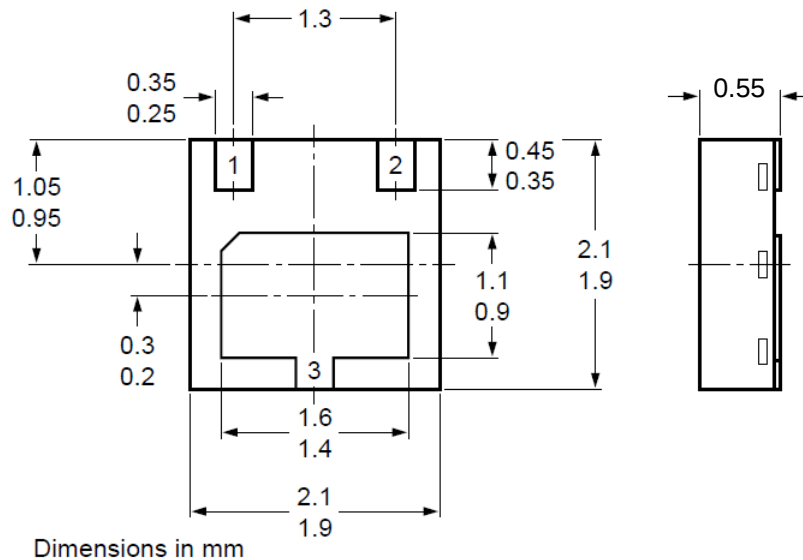


Power Derating Curve

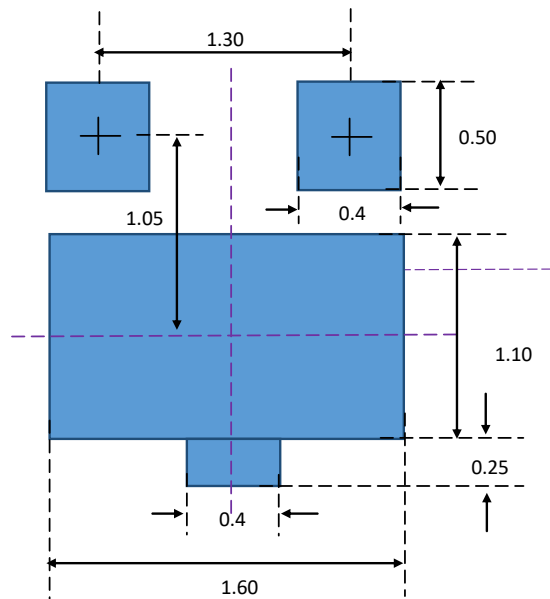


8 X 20us Pulse Waveform

## DFN2020-3 Package Outline Drawing



## Suggested Land Pattern



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