



JLS05BGD6-2

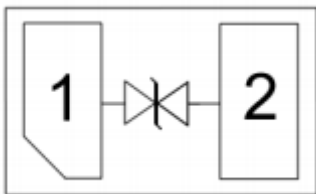
1-Line Bi-directional High Power TVS Diode

Jialan-Microelectronics

Description

The JLS05BGD6-2 is a Bi-directional TVS diode, 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 data and power line. The JLS05BGD6-2 complies with the IEC 61000-4-2 (ESD) standard with $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. It is assembled into an ultra small 1.6x1.0x0.5mm lead -free DFN pack-age. The small size and high ESD surge protection make JLS05BGD6 -2 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

Circuit Diagram



Circuit and Pin Schematic

Features

- * 1800W peak pulse power (8/20 μs)
- * Low leakage: nA
- * Operating voltage: 5V
- * Ultra low clamping voltage
- * One power line protects
- * Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 30\text{kV}$
 - IEC61000-4-5 (Lightning) 130A (8/20 μs)
- * RoHS Compliant
- * Package: DFN1610-2

Applications

- * Fast-charge battery chargers
- * Power management system
- * Cellular Handsets and Accessories
- * Personal Digital Assistants
- * Notebooks and Handhelds
- * Portable Instrumentation
- * Digital Cameras

Marking Diagram



Transparent top view

58P:Device Marking Code

Ordering Information

| Part Number | Packaging | Reel Size |
|-------------|------------------|-----------|
| JLS05BGD6-2 | 3000/Tape & Reel | 7 inch |



JLS05BGD6-2

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

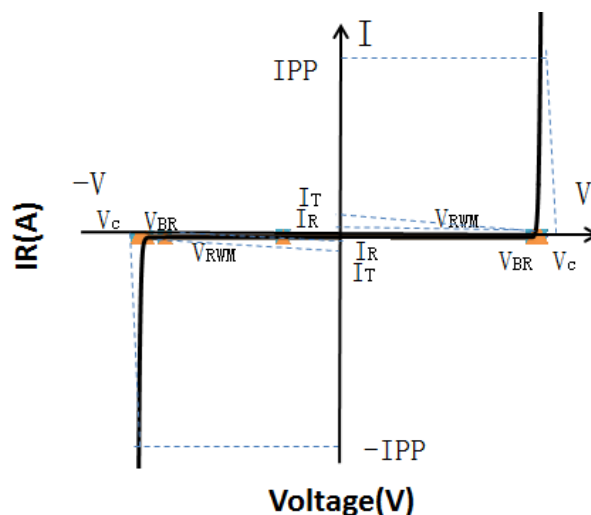
| Parameter | Symbol | Value | Unit |
|--|--------|-------------|--------------------|
| Peak Pulse Power (8/20 μs) | Ppk | 1800 | W |
| Peak Pulse Current (8/20 μs) | IPP | 130 | A |
| ESD per IEC 61000-4-2 (Air) | VESD | ± 30 | kV |
| ESD per IEC 61000-4-2 (Contact) | | ± 30 | |
| Operating Temperature 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_{RWM} | | | | 5 | V |
| Breakdown Voltage | V_{BR} | $I_{\text{T}} = 1\text{mA}$ | 5.2 | 5.5 | 6.5 | V |
| Reverse Leakage Current | I_{R} | $V_{\text{RWM}} = 5\text{V}$ | | | 0.5 | μA |
| Clamping Voltage | V_{C} | $I_{\text{PP}} = 1\text{A}$ (8 x 20 μs pulse) | | | 5.5 | V |
| Clamping Voltage | V_{C} | $I_{\text{PP}} = 130\text{A}$ (8 x 20 μs pulse) | | | 14 | V |
| Junction Capacitance | C_{J} | $V_{\text{R}} = 0\text{V}$, $f = 1\text{MHz}$ | | 280 | 330 | pF |

Portion Electronics Parameter

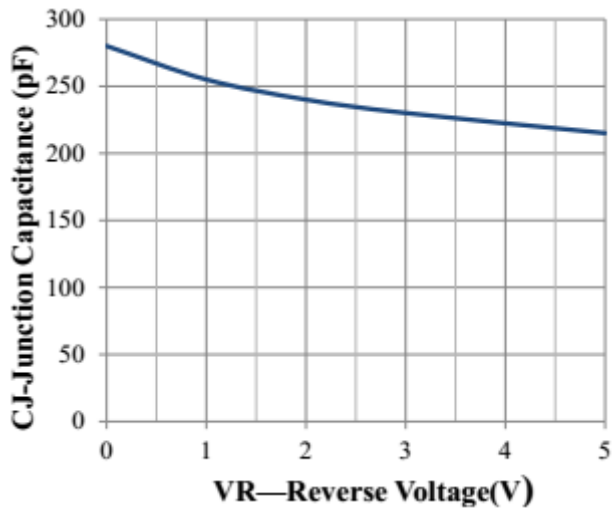
| Symbol | Parameter |
|-----------------|------------------------------------|
| I_{T} | Test Current |
| I_{PP} | Maximum Reverse Peak Pulse Current |
| V_{C} | Clamping Voltage @ I_{C} |



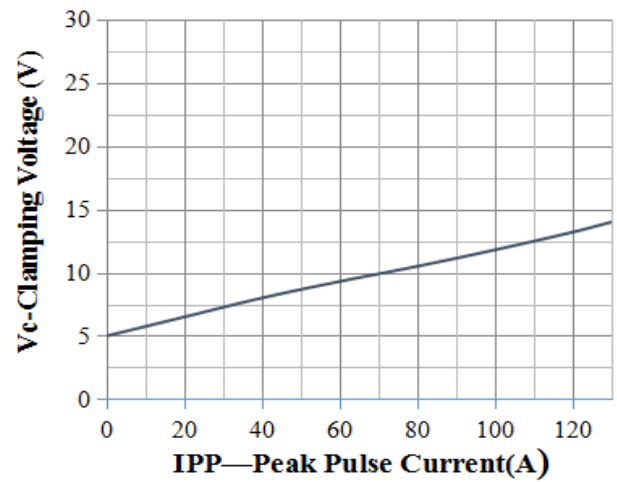


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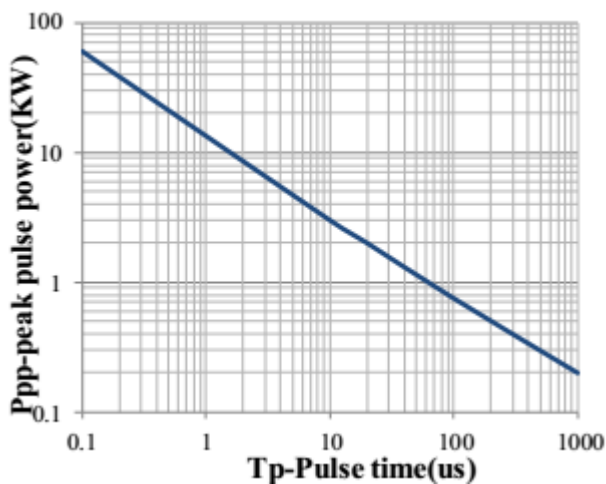
Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)



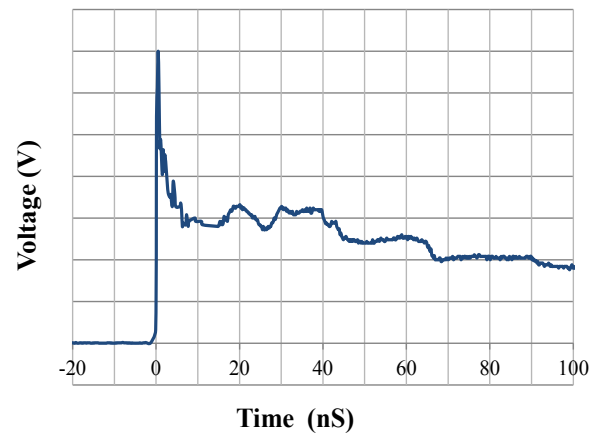
Junction Capacitance vs. Reverse Voltage



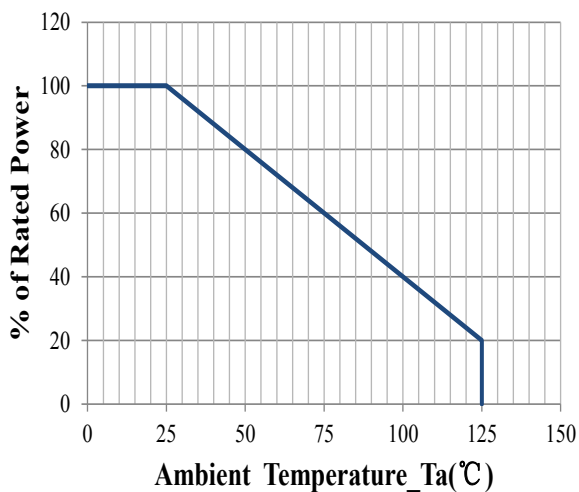
Clamping Voltage vs. Peak Pulse Current



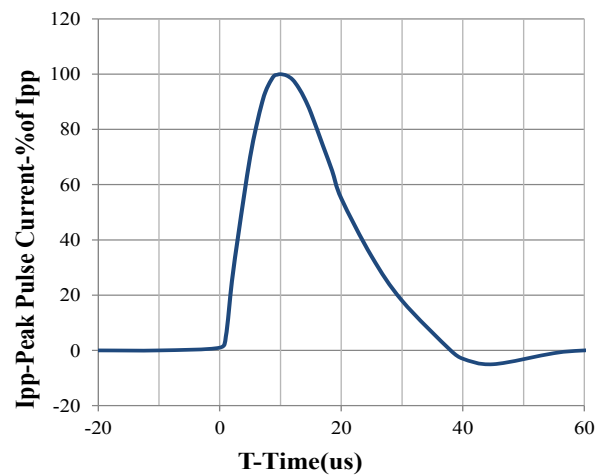
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform



Power Derating Curve

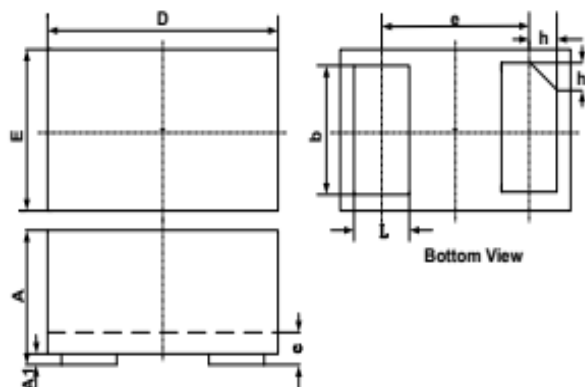


8 X 20us Pulse Waveform



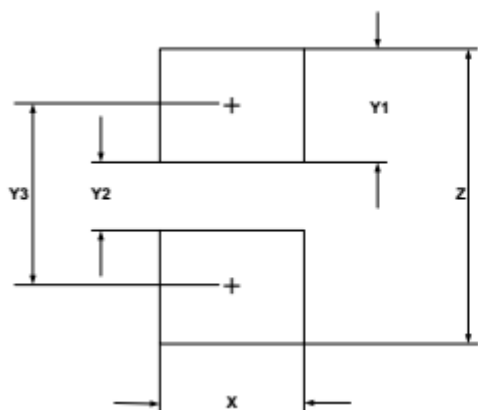
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DFN1610-2 Package Outline Drawing (Dimensions in millimeters)



| SYM | DIMENSIONS | | | | | |
|-----|-------------|------|------|-----------|-------|-------|
| | MILLIMETERS | | | INCHES | | |
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.45 | 0.50 | 0.55 | 0.018 | 0.020 | 0.022 |
| A1 | 0.00 | 0.02 | 0.05 | 0.000 | 0.001 | 0.002 |
| b | 0.75 | 0.80 | 0.85 | 0.030 | 0.032 | 0.034 |
| c | 0.10 | 0.15 | 0.20 | 0.004 | 0.006 | 0.008 |
| D | 1.55 | 1.60 | 1.65 | 0.062 | 0.064 | 0.066 |
| e | 1.10 BSC | | | 0.044 BSC | | |
| E | 0.95 | 1.00 | 1.05 | 0.038 | 0.040 | 0.042 |
| L | 0.35 | 0.40 | 0.45 | 0.014 | 0.016 | 0.018 |
| h | 0.15 | 0.20 | 0.25 | 0.006 | 0.008 | 0.010 |

Suggested Land Pattern



| SYM | DIMENSIONS | |
|-----|-------------|--------|
| | MILLIMETERS | INCHES |
| X | 1.00 | 0.040 |
| Y1 | 0.62 | 0.025 |
| Y2 | 0.60 | 0.024 |
| Y3 | 1.22 | 0.049 |
| Z | 1.85 | 0.074 |

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