



JLE05URT2-6A

4-Line Low Capacitance TVS Diode Arrays

Jialan-Microelectronics

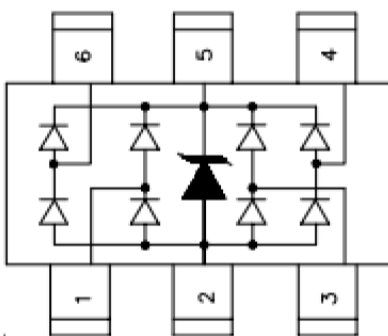
Description

The JLE05URT2-6A is a low capacitance TVS arrays, 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 high-speed data lines. The JLE05URT2-6A complies with the IEC 61000-4-2 (ESD) with $\pm 30\text{kV}$ air and $\pm 25\text{kV}$ contact discharge. It is assembled into a 6-lead SOT23-6L leadfree package. The leads are finished with lead-free matte tin. Each device will protect up to four high-speed lines. The combination of small size, low capacitance, and high surge capability makes them ideal for use in applications such as Ethernet, USB 2.0, and video interfaces.

Features

- * Low capacitance: 0.8pF typical (I/O to I/O)
- * Low leakage: nA level
- * Operating voltage: 5V
- * Low clamping voltage
- * Up to four lines and one power line protects
- * Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
 - Air discharge: $\pm 30\text{kV}$
 - Contact discharge: $\pm 25\text{kV}$
 - IEC 61000-4-5 (Lightning) 8A (8/20 μs)
- * RoHS Compliant
- * Package: SOT23-6L

Circuit Diagram

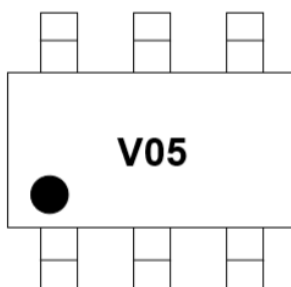


Circuit and Pin Schematic

Applications

- * USB 2.0 power and data line
- * Monitors and flat panel displays
- * Set-top box and digital TV
- * Digital visual interface (DVI)
- * Notebook Computers
- * SIM Ports
- * Gigabit Ethernet

Marking Diagram



V05 = Device Marking Code
Dot denotes Pin1

Ordering Information

| Part Number | Packaging | Reel Size |
|--------------|------------------|-----------|
| JLE05URT2-6A | 3000/Tape & Reel | 7 inch |



JLE05URT2-6A

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

| Parameter | Symbol | Value | Unit |
|--|--------|-------------|------------------|
| Peak Pulse Power (8/20 μs) | Ppk | 160 | W |
| Peak Pulse Current (8/20 μs) | IPP | 8 | A |
| ESD per IEC 61000-4-2 (Air) | VESD | ± 30 | kV |
| ESD per IEC 61000-4-2 (Contact) | | ± 25 | |
| Operating Temperature Range | TJ | -55 to +125 | $^\circ\text{C}$ |
| Storage Temperature Range | Tstg | -55 to +150 | $^\circ\text{C}$ |

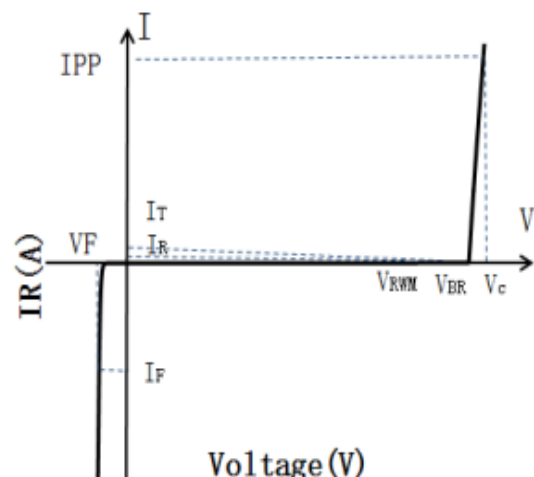
Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|----------------|-----|-----|-----|---------------|--|
| Reverse Working Voltage | VRWM | | | 5 | V | Pin 5 to Pin 2 |
| Breakdown Voltage | VBR | 6 | | | V | $I_T = 1\text{mA}$, Pin 5 to Pin 2 |
| Reverse Leakage Current | I_R | | | 0.2 | μA | VRWM = 5V, Pin 5 to Pin 2 |
| Forward Voltage | V _F | | | 1.2 | V | $I_F = 15\text{mA}$ |
| Clamping Voltage | V _C | | | 12 | V | $I_{PP} = 1\text{A}$ (8 x 20 μs pulse), any I/O pin to ground |
| Clamping Voltage | V _C | | | 20 | V | $I_{PP} = 8\text{A}$ (8 x 20 μs pulse), any I/O pin to ground |
| Junction Capacitance | C _J | | | 0.8 | pF | VR = 0V, f = 1MHz, between I/O pins |
| Junction Capacitance | C _J | | | 1.5 | pF | VR = 0V, f = 1MHz, any I/O pin to ground |

Note 1: I/O pins are Pin 1, 3, 4 and 6

Portion Electronics Parameter

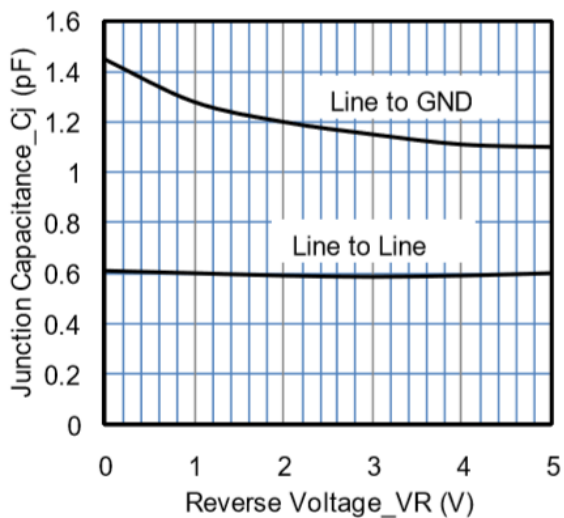
| Symbol | Parameter |
|----------------|------------------------------------|
| I_T | Test Current |
| I_{PP} | Maximum Reverse Peak Pulse Current |
| V _C | Clamping Voltage @I _C |



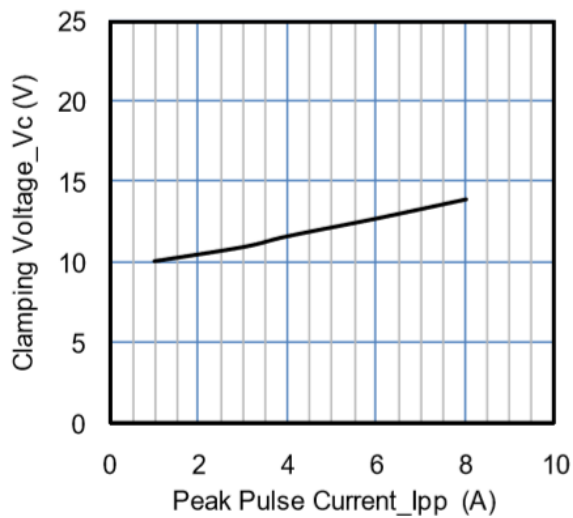


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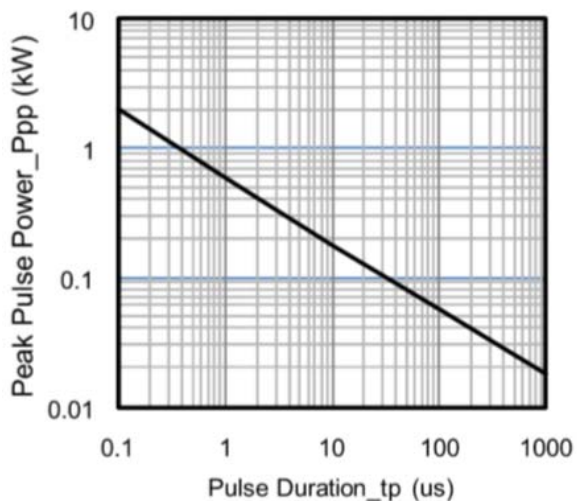
Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)



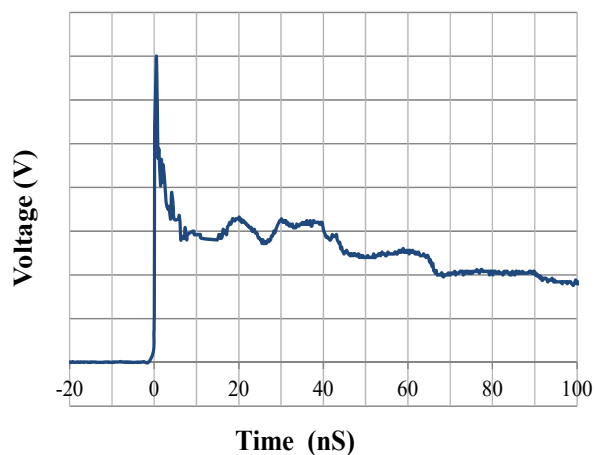
Junction Capacitance vs. Reverse Voltage



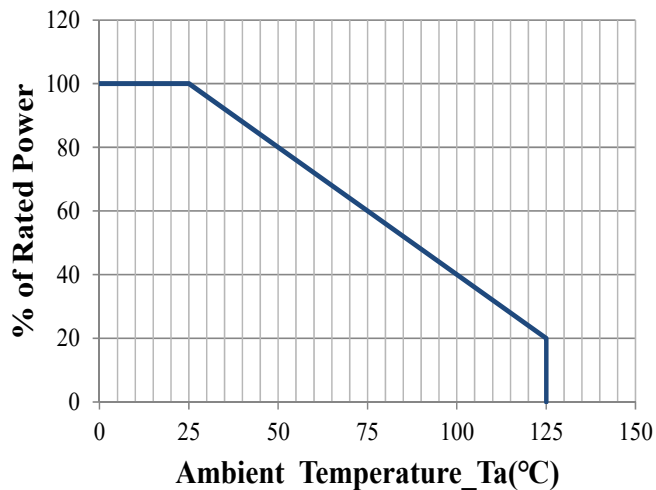
Clamping Voltage vs. Peak Pulse Current



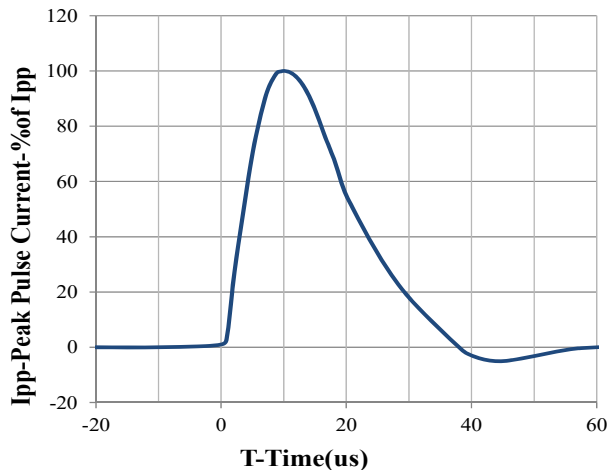
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform



Power Derating Curve

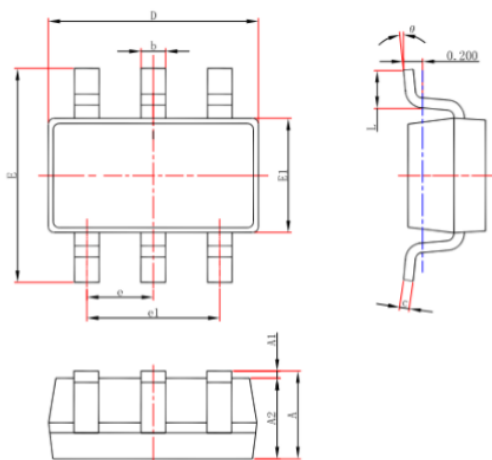


8 X 20us Pulse Waveform



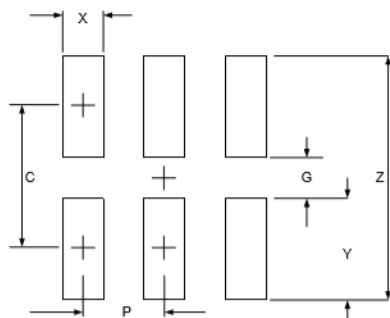
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SOT23-6L Package Outline Drawing



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E1 | 1.500 | 1.700 | 0.059 | 0.067 |
| E | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |

Suggested Land Pattern



| SYM | DIMENSIONS | |
|-----|-------------|--------|
| | MILLIMETERS | INCHES |
| C | 2.50 | 0.098 |
| G | 1.40 | 0.055 |
| P | 0.95 | 0.037 |
| X | 0.60 | 0.024 |
| Y | 1.10 | 0.043 |
| Z | 3.60 | 0.141 |

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