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PRODUCT DATASHEET

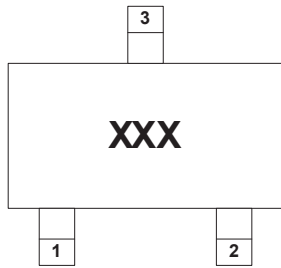
Electro-Static Discharge

JET23-5V-2 ESD

### Features

- Package: SOT-23
- 320W peak pulse power (8/20 $\mu$ s)
- Protects one two uni-directional line(s)
- Ultra low leakage: nA level
- Operating voltage: 5V
- Low clamping voltage
- Complies with following standards:
  - IEC 61000-4-2 (ESD) immunity test
    - Air discharge:  $\pm$ 30kV
    - Contact discharge:  $\pm$ 30kV
  - IEC61000-4-5 (Lightning) 23A (8/20 $\mu$ s)
- RoHS compliant

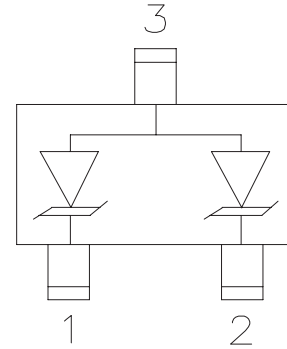
### Pin Description



### Applications

- Peripherals
- Industrial Equipment
- Notebook Computers
- Portable Instrumentation
- Microprocessor Based Equipment
- Cell Phone Handsets and Accessories
- Personal Digital Assistants (PDAs) and Pagers

### Schematic Diagram



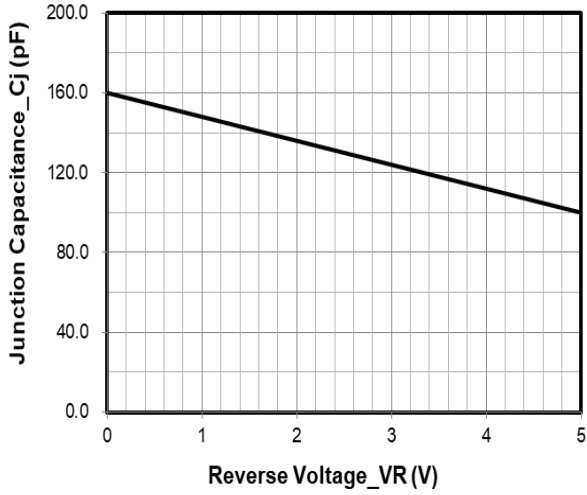
### Limiting Values( $T_A = 25\text{ }^\circ\text{C}$ , unless otherwise specified)

| Symbol           | Parameter                       | Conditions                      | Value       | Unit             |
|------------------|---------------------------------|---------------------------------|-------------|------------------|
| V <sub>ESD</sub> | Electrostatic Discharge Voltage | IEC 61000-4-2;Contact Discharge | $\pm$ 30    | kV               |
|                  |                                 | IEC 61000-4-2;Air Discharge     | $\pm$ 30    | kV               |
| P <sub>pk</sub>  | Peak Pulse Power                | t <sub>p</sub> =8/20 $\mu$ s    | 320         | W                |
| I <sub>pp</sub>  | Peak Pulse Current              | t <sub>p</sub> =8/20 $\mu$ s    | 23          | A                |
| T <sub>J</sub>   | Operating Temperature Range     | -                               | -55 to +125 | $^\circ\text{C}$ |
| T <sub>stg</sub> | Storage Temperature Range       | -                               | -55 to +150 | $^\circ\text{C}$ |

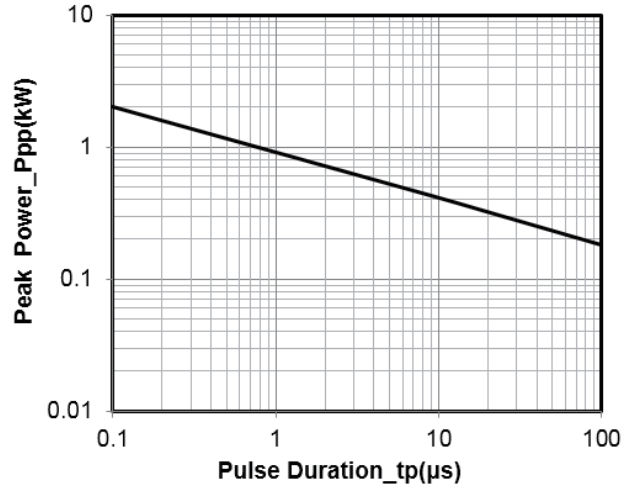
### Electrical Characteristics( $T_A = 25\text{ }^\circ\text{C}$ , unless otherwise specified)

| Symbol           | Parameter               | Conditions   | Min | Typ. | Max | Unit          |
|------------------|-------------------------|--|-----|------|-----|---------------|
| V <sub>RWM</sub> | Reverse Working Voltage | T <sub>A</sub> =25 $^\circ\text{C}$                            | -   | -    | 5   | V             |
| V <sub>BR</sub>  | Breakdown Voltage       | I <sub>T</sub> =1mA  | 6   | -    | -   | V             |
| I <sub>R</sub>   | Reverse Leakage Current | V <sub>RWM</sub> =5V;any I/O pin to ground                     | -   | -    | 0.5 | $\mu\text{A}$ |
| V <sub>C</sub>   | Clamping Voltage        | I <sub>pp</sub> =1A(8x20 $\mu$ s pulse);any I/O pin to ground  | -   | -    | 8   | V             |
| V <sub>C</sub>   | Clamping Voltage        | I <sub>pp</sub> =23A(8x20 $\mu$ s pulse);any I/O pin to ground | -   | -    | 14  | V             |
| C <sub>J</sub>   | Junction Capacitance    | V <sub>R</sub> =0V,f=1 MHz;any I/O pin to ground               | -   | 160  | -   | pF            |

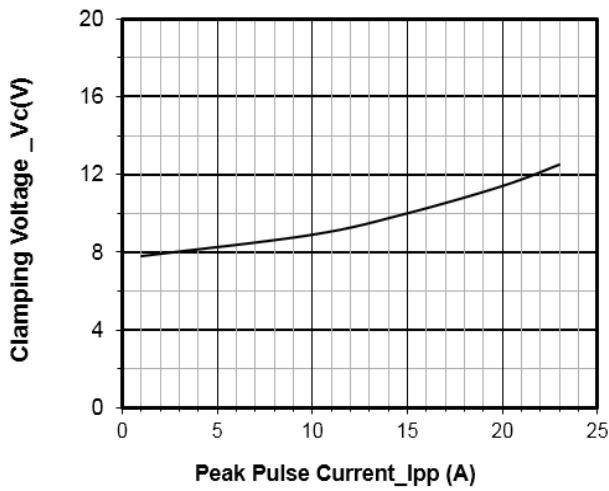
**Typical Characteristics**



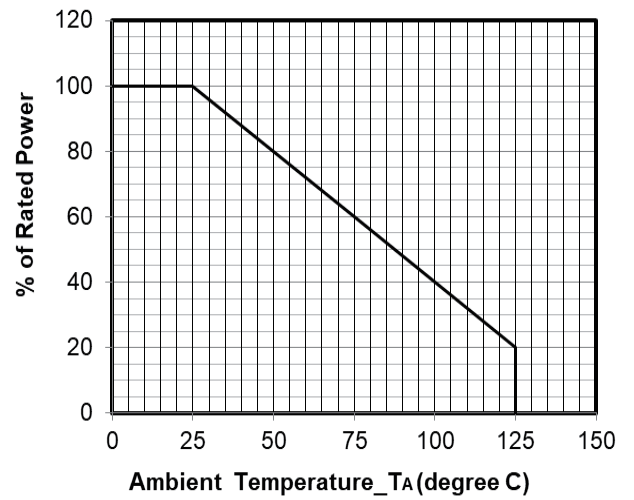
Junction Capacitance vs. Reverse Voltage



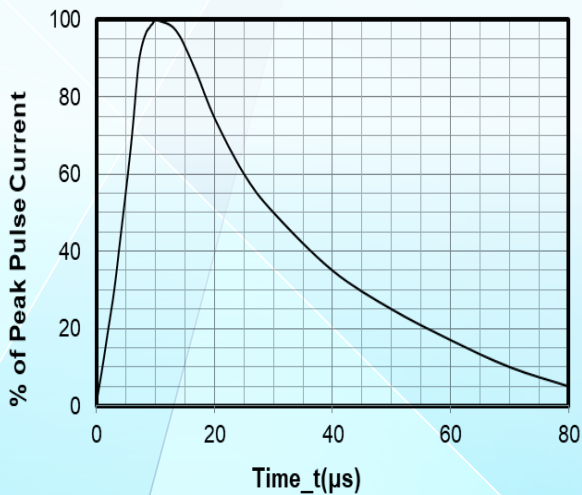
Peak Pulse Power vs. Pulse Time



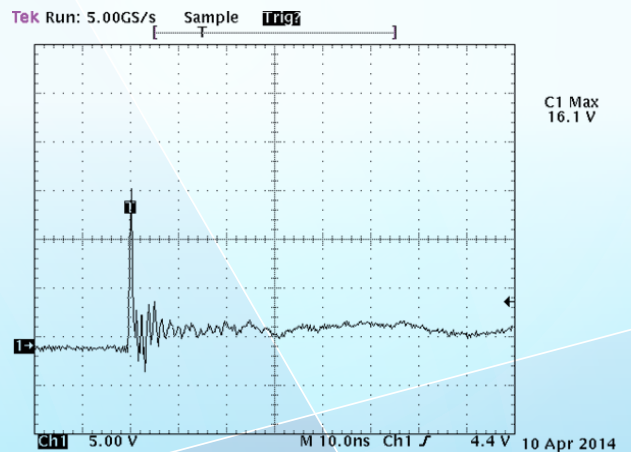
Clamping Voltage vs. Peak Pulse Current (tp = 8/20 μs)



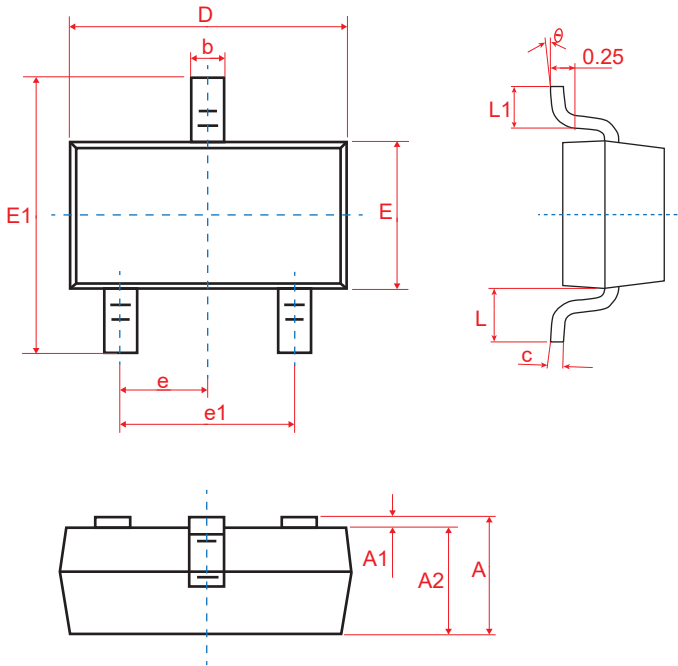
Power Derating Curve



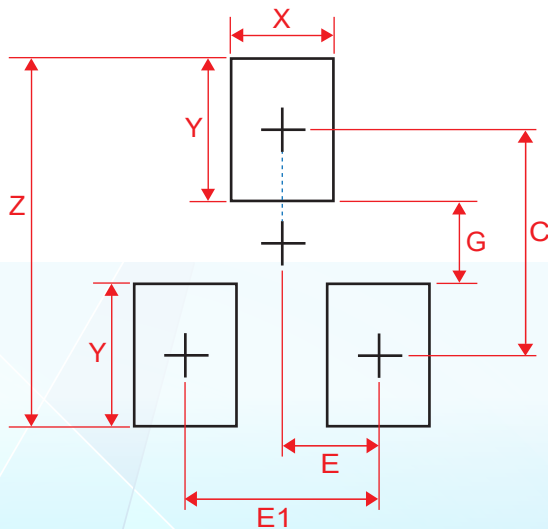
8 X 20 μs Pulse Waveform



ESD Clamping Voltage  
8 kV Contact per IEC61000-4-2

**Physical Dimensions(mm.)**


| Symbol | Dimensions In Millimeters |      | Dimensions In Inches |       |
|--------|---------------------------|------|----------------------|-------|
|        | Min                       | Max  | Min                  | Max   |
| A      | 0.90                      | 1.15 | 0.035                | 0.045 |
| A1     | 0.00                      | 0.10 | 0.000                | 0.004 |
| A2     | 0.90                      | 1.05 | 0.035                | 0.041 |
| b      | 0.30                      | 0.50 | 0.012                | 0.020 |
| c      | 0.08                      | 0.15 | 0.003                | 0.006 |
| D      | 2.80                      | 3.00 | 0.110                | 0.118 |
| E      | 1.20                      | 1.40 | 0.047                | 0.055 |
| E1     | 2.25                      | 2.55 | 0.089                | 0.100 |
| e      | 0.95 TYP                  |      | 0.037 TYP            |       |
| e1     | 1.80                      | 2.00 | 0.071                | 0.079 |
| L      | 0.55 REF                  |      | 0.022 REF            |       |
| L1     | 0.30                      | 0.50 | 0.012                | 0.020 |
| e      | 0°                        | 8°   | 0°                   | 8°    |

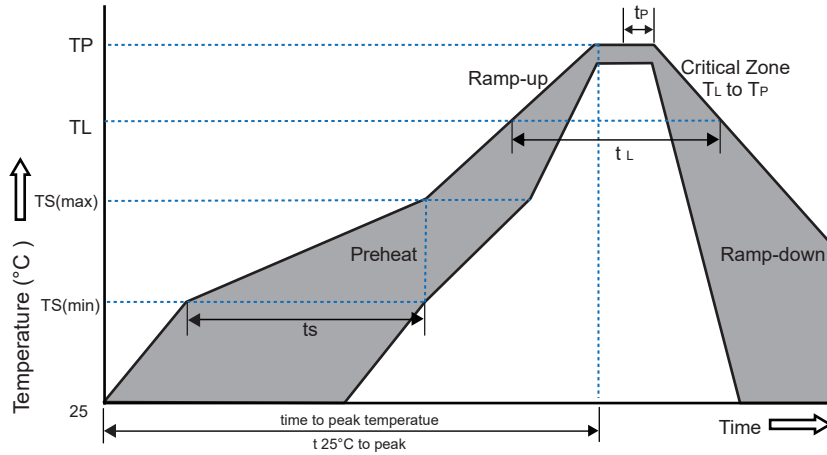
**Suggested Land Pattern**


| Symbol | Dimensions |             |
|--------|------------|-------------|
|        | Inches     | Millimeters |
| C      | 0.087      | 2.20        |
| E      | 0.037      | 0.95        |
| E1     | 0.075      | 1.90        |
| G      | 0.031      | 0.80        |
| X      | 0.039      | 1.00        |
| Y      | 0.055      | 1.40        |
| Z      | 0.141      | 3.60        |

**Packaging Quantity**

| Part Number | Delivery Form | Delivery Quantity |
|-------------|---------------|-------------------|
| JET23-5V-2  | 7"T&R         | 3,000             |

### Soldering Parameters



| Reflow Condition                                       |                                  | Pb-Free Assembly |
|--|----------------------------------|------------------|
| Pre-heat   | -Temperature Min( $T_{s(min)}$ ) | +150°C           |
|  | -Temperature Max( $T_{s(max)}$ ) | +200°C           |
|  | -Time(Min to Max)( $t_s$ )       | 60~180 secs.     |
| Average ramp up rate (Liquid us Temp( $T_L$ ) to peak) |                                  | 3°C/sec. Max     |
| Ts(max) to $T_L$ - Ramp-up Rate                        |                                  | 3°C/sec. Max     |
| Reflow   | -Temperature( $T_L$ )(Liquid us) | +217°C           |
|  | -Temperature ( $t_L$ )           | 60~150 secs.     |
| Peak Temp ( $T_P$ )                                    |                                  | +260(+0/-5)°C    |
| Time within 5°C of actual Peak Temp ( $t_p$ )          |                                  | 30 secs. Max     |
| Ramp-down Rate   |                                  | 6°C/sec. Max     |
| xTime 25°C to Peak Temp (TP)                           |                                  | 8 min. Max       |
| Do not exceed  |                                  | +260°C           |

### Part Number System

**JE T23 - 5V - 2**

