

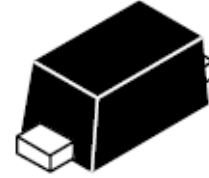
ESD9D5U

**1-Line, Uni-directional, Ultra-low Capacitance
Transient Voltage Suppressor**

<http://www.sh-willsemi.com>

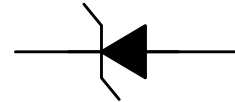
Descriptions

The ESD9D5U is transient voltage suppressors (TVS) which provide a very high level protection for sensitive electronic components that may be subjected to electrostatic discharge (ESD). It is designed to replace multilayer varistors (MLV) in consumer equipment applications such as mobile phone, notebook, PAD, STB, LCD TV etc.



SOD-923

The ESD9D5U may be used to provide ESD protection up to $\pm 8\text{KV}$ (contact) according to IEC61000-4-2 and withstand peak pulse current up to 3A for 8/20 μs pulse according to IEC61000-4-5.



Circuit diagram

The ESD9D5U is available in SOD-923 package. Standard products are Pb-free and Halogen-free.

Features

- Working voltage : 5V
- Peak power (tp=8/20 μs) : 42W
- ESD protection(IEC61000-4-2) : $\pm 8\text{KV}$ contact
- ESD protection(IEC61000-4-2) : $\pm 15\text{KV}$ air
- Low clamping voltage
- Low leakage current
- Small package SOD-923



SOD-923

X = Device code

Marking (Top View)

Applications

- Cell phone
- PMP
- MID
- PDA
- Digital camera
- Other electronics equipment

Order information

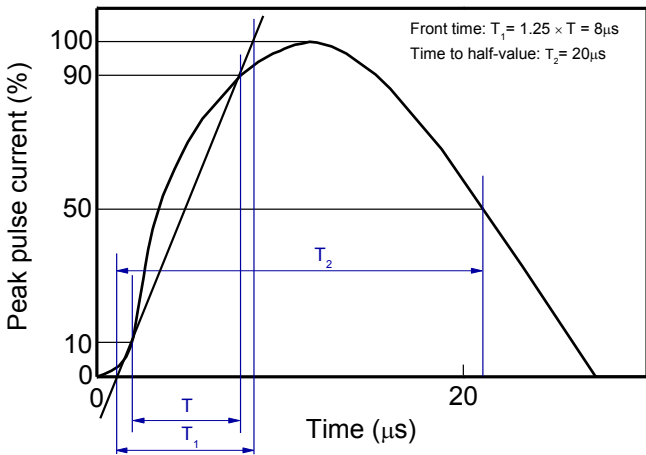
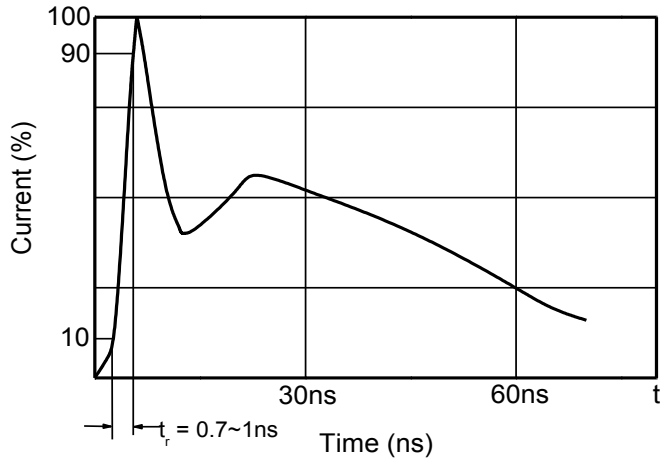
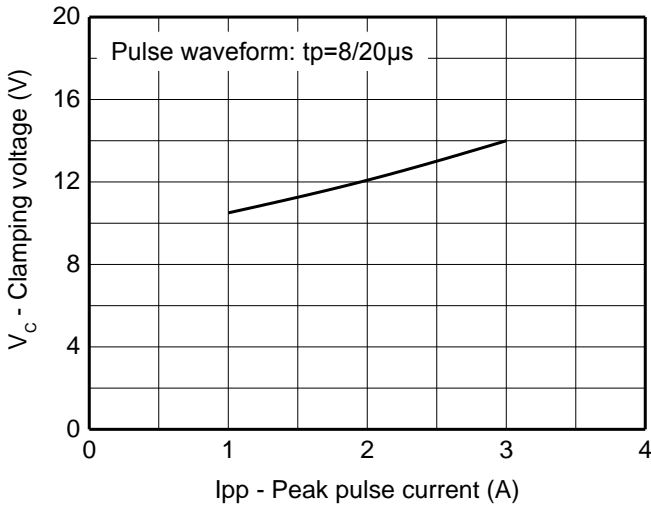
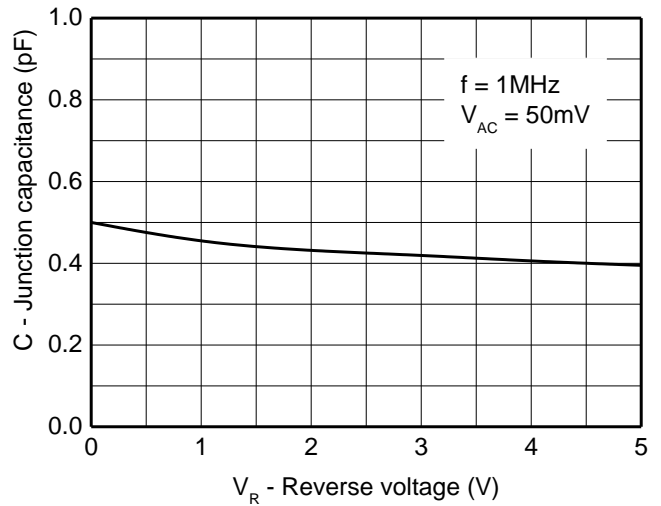
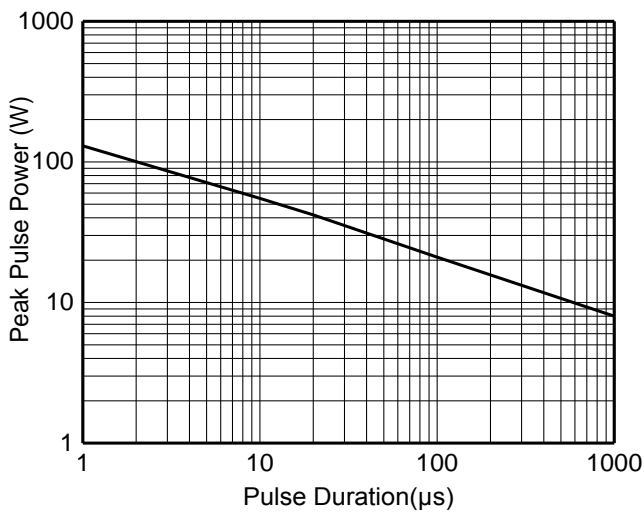
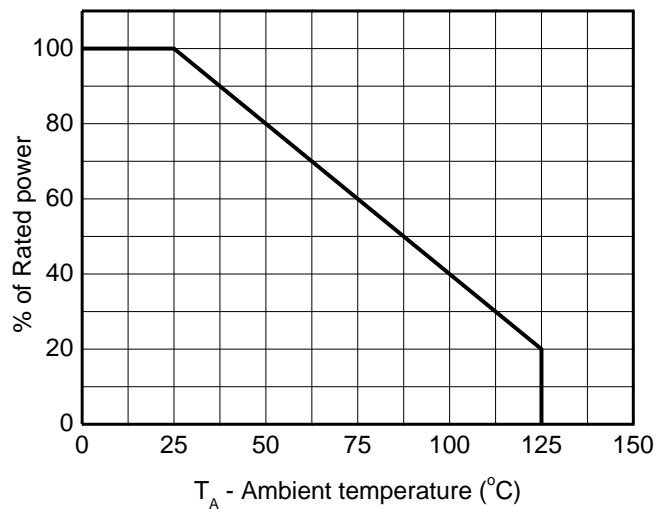
| Device | Package | Shipping |
|--------------|---------|-----------------|
| ESD9D5U-2/TR | SOD-923 | 10000/Tape&Reel |

Absolute maximum ratings

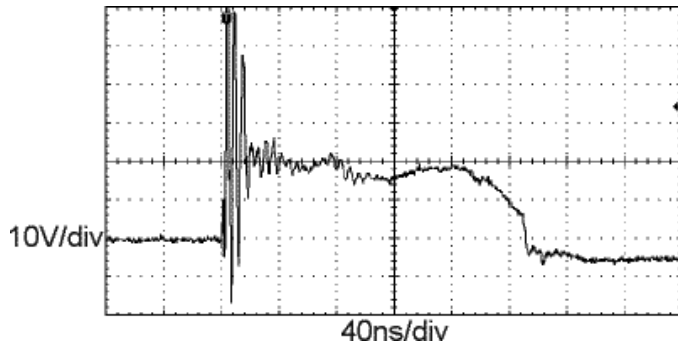
| Parameter | Symbol | Rating | Unit |
|---|------------------|---------|------|
| Peak pulse power (tp=8/20μs) | Ppk | 42 | W |
| Peak pulse current (tp=8/20μs) | Ipp | 3 | A |
| ESD according to IEC61000-4-2 air discharge | V _{ESD} | ±15 | KV |
| ESD according to IEC61000-4-2 contact discharge | | ±8 | KV |
| Junction temperature | T _J | 125 | °C |
| Operating temperature | T _{OP} | -40~85 | °C |
| Lead temperature | T _L | 260 | °C |
| Storage temperature | T _{STG} | -55~150 | °C |

Electronics characteristics (Ta=25°C, unless otherwise noted)

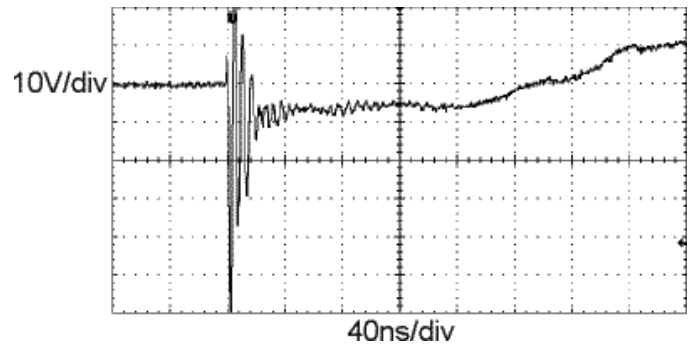
| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---------------------------|------------------|------------------------|------|------|------|------|
| Reverse stand-off voltage | V _{RWM} | | | | 5.0 | V |
| Reverse leakage current | I _R | V _{RWM} =5.0V | | | 1.0 | μA |
| Reverse breakdown voltage | V _{BR} | I _T =1mA | 6.5 | | | V |
| Forward voltage | V _F | I _F =10mA | 0.4 | | 1.4 | V |
| Clamping voltage | V _{CL} | Ipp=1A tp=8/20μs | | | 10.5 | V |
| | | Ipp=3A tp=8/20μs | | | 14.0 | V |
| Junction capacitance | C _J | VR = 0V, f = 1MHz | | 0.5 | 0.9 | pF |

Typical characteristics (Ta=25°C, unless otherwise noted)

8/20μs waveform per IEC61000-4-5

Contact discharge current waveform per IEC61000-4-2

Clamping voltage vs. Peak pulse current

Capacitance vs. Reverse voltage

Non-repetitive peak pulse power vs. Pulse time

Power derating vs. Ambient temperature

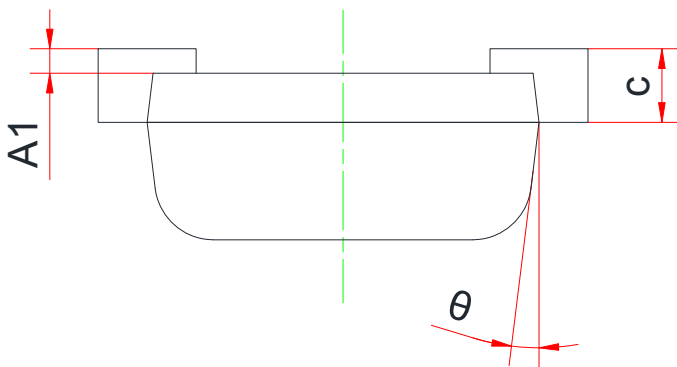
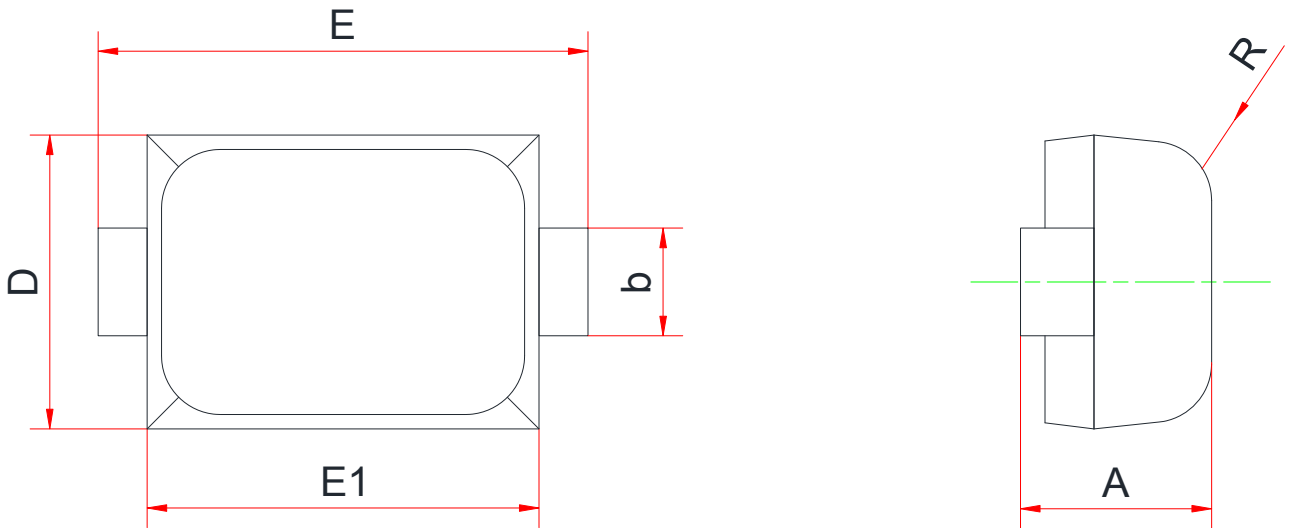
Typical characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)



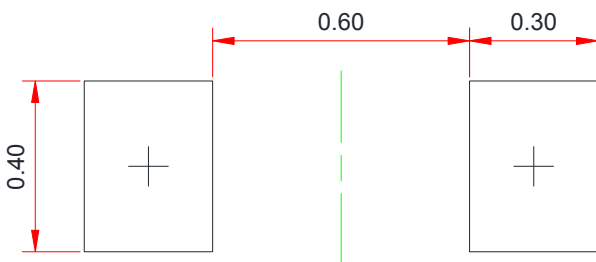
ESD clamping
(+8kV contact discharge per IEC61000-4-2)



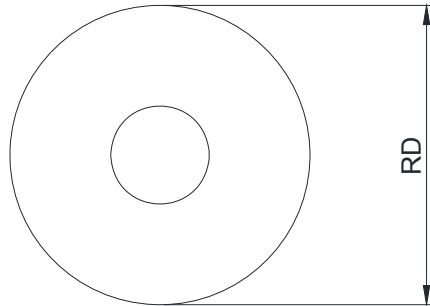
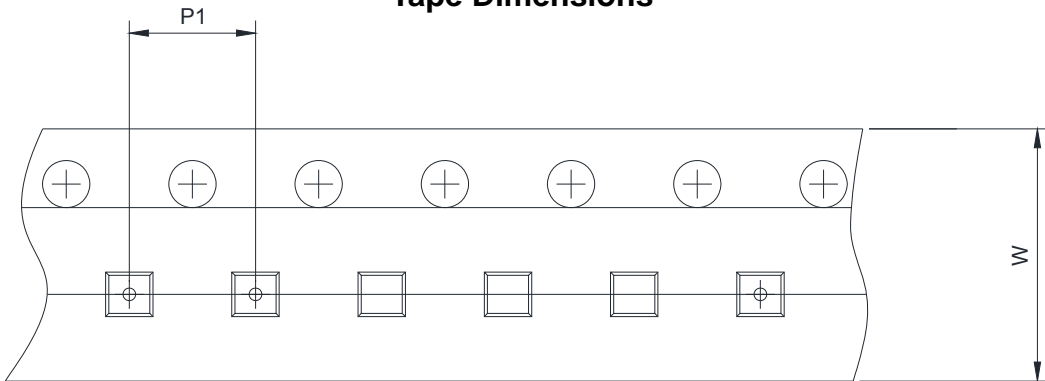
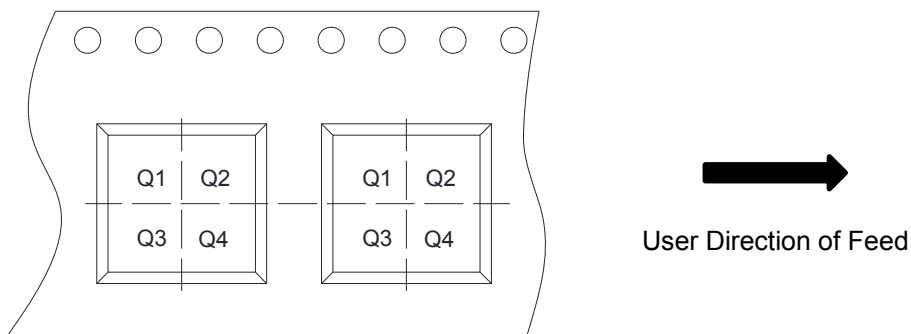
ESD clamping
(-8kV contact discharge per IEC61000-4-2)

Package outline dimensions
SOD-923


| Symbol | Dimensions in millimeter | | |
|----------|--------------------------|------|------|
| | Min. | Typ. | Max. |
| A | - | 0.42 | 0.45 |
| A1 | 0.00 | - | 0.05 |
| b | 0.15 | 0.20 | 0.25 |
| c | 0.07 | 0.12 | 0.17 |
| D | 0.55 | 0.60 | 0.65 |
| E | 0.95 | 1.00 | 1.05 |
| E1 | 0.75 | 0.80 | 0.85 |
| θ | 6° Ref. | | |
| R | - | - | 0.12 |

Recommend PCB Layout (Unit: mm)

Notes:

This recommended land pattern is for reference purposes only. Please consult your manufacturing group to ensure your PCB design guidelines are met.

TAPE AND REEL INFORMATION
Reel Dimensions

Tape Dimensions

Quadrant Assignments For PIN1 Orientation In Tape


| | | | |
|------|---|---|--|
| RD | Reel Dimension | <input checked="" type="checkbox"/> 7inch | <input type="checkbox"/> 13inch |
| W | Overall width of the carrier tape | <input checked="" type="checkbox"/> 8mm | <input type="checkbox"/> 12mm <input type="checkbox"/> 16mm |
| P1 | Pitch between successive cavity centers | <input checked="" type="checkbox"/> 2mm | <input type="checkbox"/> 4mm <input type="checkbox"/> 8mm |
| Pin1 | Pin1 Quadrant | <input checked="" type="checkbox"/> Q1 | <input checked="" type="checkbox"/> Q2 <input type="checkbox"/> Q3 <input type="checkbox"/> Q4 |