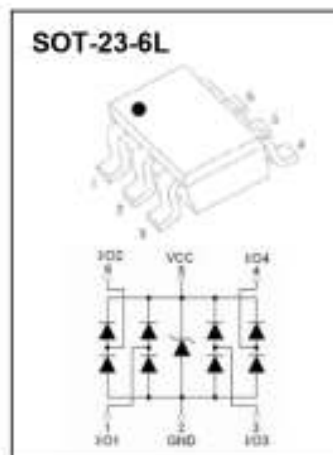


DESCRIPTION

Designed to protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD. The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications such as HDMI, Display Port™, and MDDI interfaces. It is designed to replace multi-layer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.



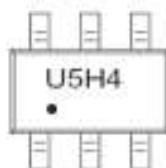
FEATURES

- Uni-directional ESD protection of four lines
- Low capacitance: 0.8pF(max)
- Low reverse stand-off voltage: 5V
- Low reverse clamping voltage
- Low leakage current
- Excellent package: 2.92mm × 1.60mm × 1.10mm
- Fast response time
- JESD22-A114-B ESD Rating of class 3B per human body model
- IEC 61000-4-2 Level 4 ESD protection

APPLICATIONS

- Computers and peripherals
- Audio and video equipment
- High speed data lines
- Cell phone
- PMP
- MID
- PDA
- High Definition Multi-Media Interface (HDMI)
- Digital Visual Interface (DVI)
- Other electronics equipments communication systems

MARKING



U5H4 = Device code
Solid dot=Pin1 indicator

MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

| Parameter | Symbol | Limit | Unit |
|--|------------------------|------------|--------------------|
| IEC 61000-4-2 ESD Voltage | Air Model | ± 25 | kV |
| | Contact Model | ± 25 | |
| | Per Human Body Model | ± 16 | |
| | Machine Model | ± 0.4 | |
| JESD22-A114-B ESD Voltage | $V_{\text{ESD}}^{(1)}$ | | |
| ESD Voltage | | | |
| Peak Pulse Power | $P_{\text{PP}}^{(2)}$ | 50 | W |
| Peak Pulse Current | $I_{\text{PP}}^{(2)}$ | 2.5 | A |
| Lead Solder Temperature - Maximum (10 Second Duration) | T_L | 260 | $^{\circ}\text{C}$ |
| Junction Temperature | T_j | 150 | $^{\circ}\text{C}$ |
| Storage Temperature Range | T_{stg} | -55 ~ +150 | $^{\circ}\text{C}$ |

(1).Device stressed with ten non-repetitive ESD pulses, Per channel(I/O to GND).

(2).Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5.

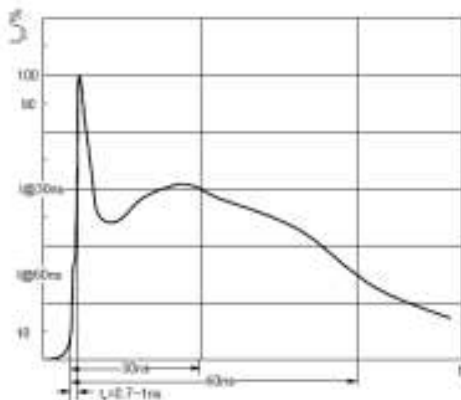
ESD standards compliance

IEC61000-4-2 Standard

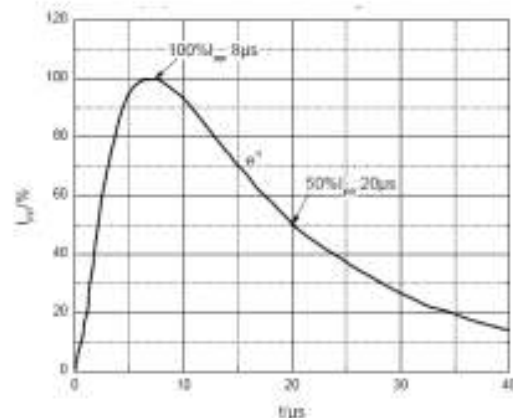
| Contact Discharge | | Air Discharge | |
|-------------------|-----------------|---------------|-----------------|
| Level | Test Voltage kV | Level | Test Voltage kV |
| 1 | 2 | 1 | 2 |
| 2 | 4 | 2 | 4 |
| 3 | 6 | 3 | 8 |
| 4 | 8 | 4 | 15 |

JESD22-A114-B Standard

| ESD Class | Human Body Discharge V |
|-----------|------------------------|
| 0 | 0 ~ 249 |
| 1A | 250 ~ 499 |
| 1B | 500 ~ 999 |
| 1C | 1000 ~ 1999 |
| 2 | 2000 ~ 3999 |
| 3A | 4000 ~ 7999 |
| 3B | 8000 ~ 15999 |



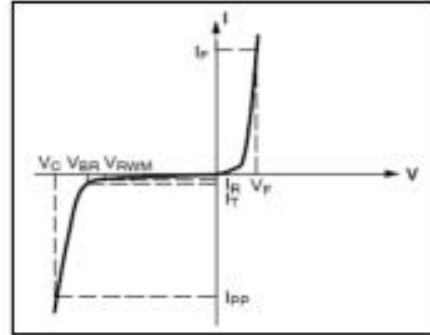
ESD pulse waveform according to IEC61000-4-2



8/20 μs pulse waveform according to IEC 61000-4-5

ELECTRICAL PARAMETER

| Symbol | Parameter |
|-----------|-------------------------------------|
| V_C | Clamping Voltage @ I_{PP} |
| I_{PP} | Peak Pulse Current |
| V_{BR} | Breakdown Voltage @ I_T |
| I_T | Test Current |
| I_R | Reverse Leakage Current @ V_{RWM} |
| V_{RWM} | Reverse Standoff Voltage |
| V_F | Forward Voltage @ I_F |
| I_F | Forward Current |



V-I characteristics for a uni-directional TVS

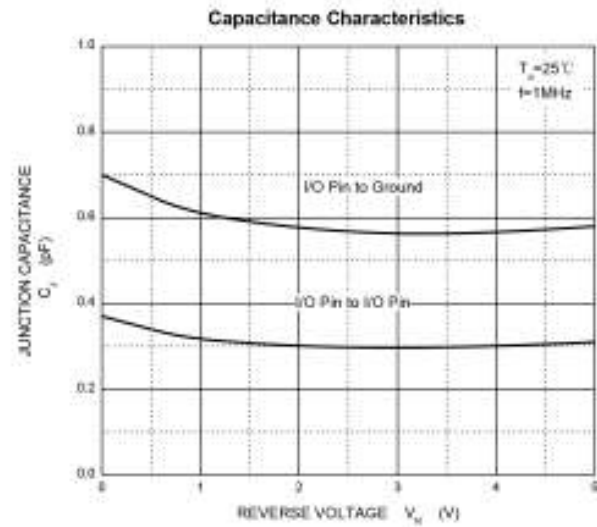
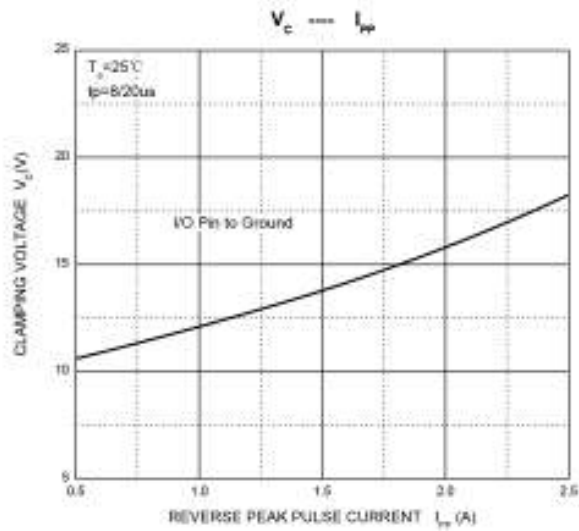
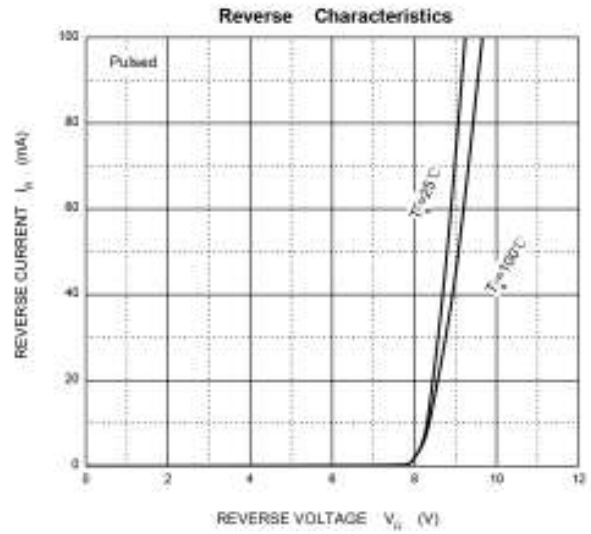
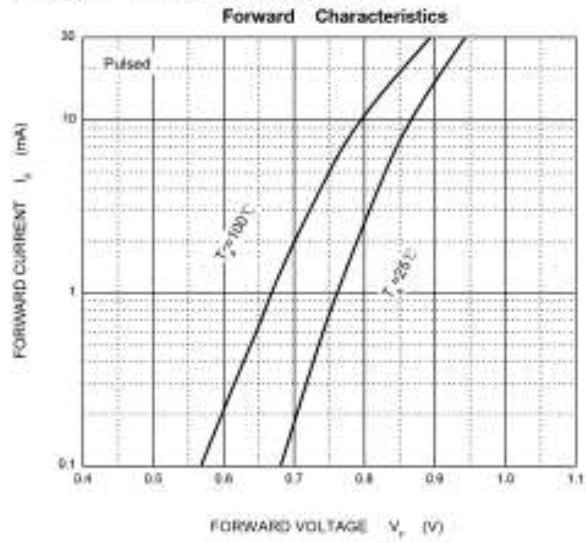
ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|--|-----------------|---|-----|------|-----|---------------|
| Per channel(I/O to GND unless otherwise specified) | | | | | | |
| Reverse stand off voltage | $V_{RWM}^{(1)}$ | | | | 5 | V |
| Breakdown voltage | $V_{(BR)}$ | $I_T=1\text{mA}$ | 6.5 | | 8.8 | V |
| | | $I_T=1\text{mA}$ V_{CC} to GND | 5.8 | | 8.1 | V |
| Reverse leakage current | I_R | $V_{RWM}=5\text{V}$ | | | 1 | μA |
| Forward voltage | V_F | $I_F=10\text{mA}$ | 0.5 | | 1.0 | V |
| Clamping voltage | $V_C^{(2)}$ | $I_{PP}=1\text{A}$ | | | 15 | V |
| | | $I_{PP}=2.5\text{A}$ | | | 20 | V |
| Junction capacitance | C_J | $V_R=0\text{V}, f=1\text{MHz}$ | | | 0.8 | pF |
| | | $V_R=0\text{V}, f=1\text{MHz}$, I/O to I/O | | 0.35 | 0.4 | pF |

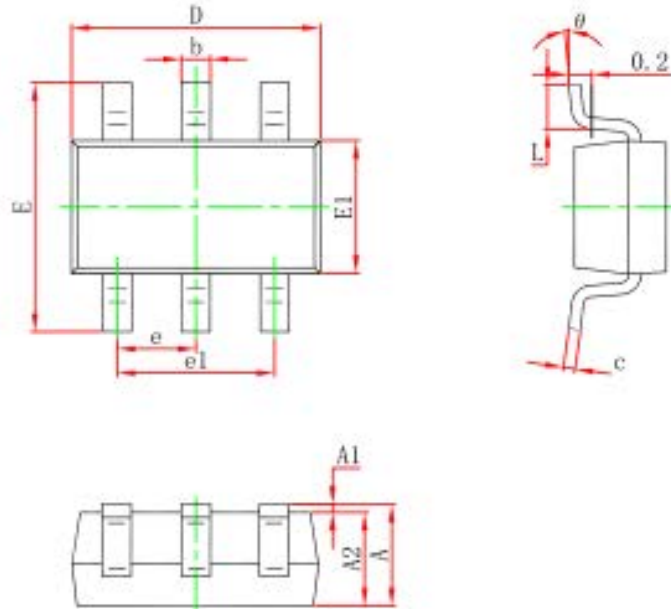
(1). Other voltages available upon request.

(2). Non-repetitive current pulse 8/20 μs exponential decay waveform according to IEC61000-4-5

TYPICAL CHARACTERISTICS



SOT-23-6L Package Outline Dimensions



| 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° |