

DESCRIPTION

Designed to protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, and fast response time provide best in class protection on designs that are exposed to ESD.

The combination of small size, and high level of ESD protection makes them a flexible solution for applications such as HDMI, Display Port TM, and MDDI interfaces. It is designed to replace multilayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.



FEATURES

- Uni-directional ESD protection of one line
- Reverse stand-off voltage: 7V
- Low reverse clamping voltage
- Low leakage current
- Excellent package: 1.70mm × 1.30mm × 1.00mm
- Fast response time

APPLICATIONS

- Computers and peripherals
- Digital Cameras
- Audio and video equipment
- Cellular handsets and accessories
- Portable electronics
- Power supply protection
- Other electronics equipments communication systems

MAXIMUM RATINGS (T_a=25°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 | |
| Peak Pulse Power | P _{PP} ⁽²⁾ | 1040 | W |
| Peak Pulse Current | I _{PP} ⁽²⁾ | î î | A |
| Lead Solder Temperature – Maximum (10 Second Duration) | T _L | 260 | °C |
| Operation Junction and Storage Temperature Range | T _J , T _{stg} | -55 ~ +150 | °C |

(1).Device stressed with ten non-repetitive ESD pulses.

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

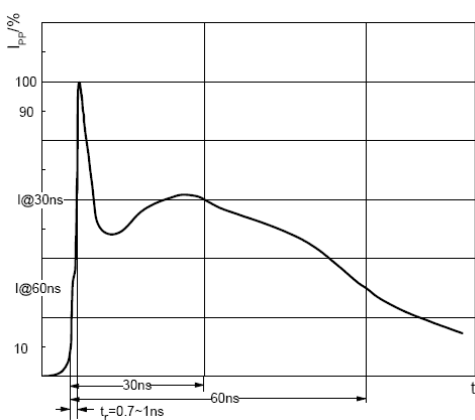
ESD standards compliance

IEC61000-4-2 Standard

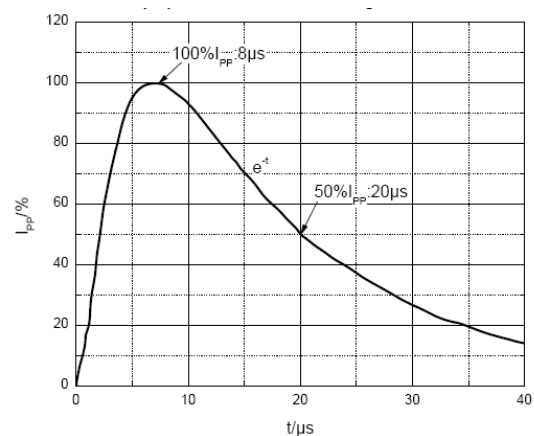
| Contact Discharge | | Air Discharge | |
|-------------------|-----------------|---------------|-----------------|
| Level | Test Voltage kV | Level | Test Voltage kV |
| 1 | 2 | 1 | 2 |
| 2 | 4 | 2 | 4 |
| 3 | 6 | 3 | 8 |
| 4 | 8 | 4 | 15 |

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 |



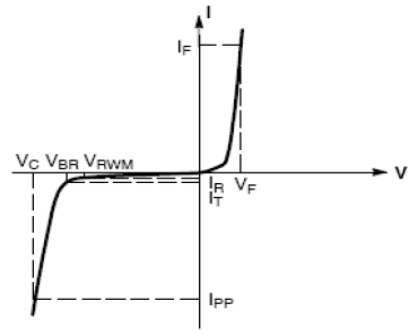
ESD pulse waveform according to IEC61000-4-2



8/20µs 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($T_a=25^{\circ}C$ unless otherwise specified)

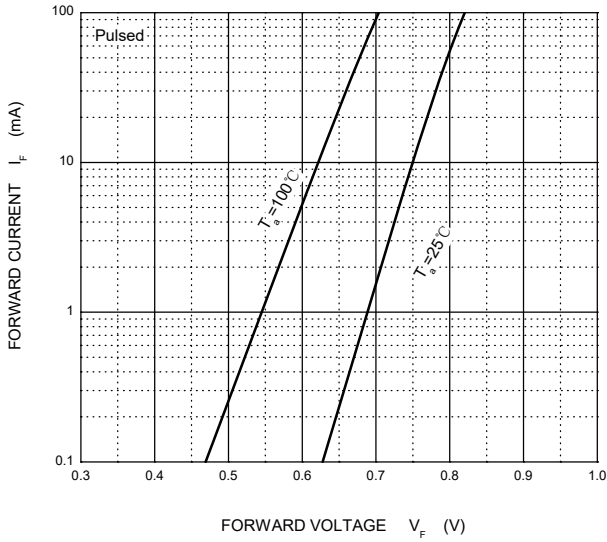
| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|---------------------------|-----------------|------------------|------|-----|------|---------|
| Reverse stand off voltage | $V_{RWM}^{(1)}$ | | | | 7 | V |
| Reverse leakage current | I_R | $V_{RWM}=7V$ | | | 1 | μA |
| Breakdown voltage | $V_{(BR)}$ | $I_T=1mA$ | 7.7 | | 10.0 | V |
| Clamping voltage | $V_C^{(2)}$ | $I_{PP}=65A$ | | | 16 | V |
| Forward voltage | V_F | $I_F=20mA$ | 0.45 | | 1.25 | V |
| Junction capacitance | C_J | $V_R=0V, f=1MHz$ | | | 500 | pF |

(1).Other voltages available upon request.

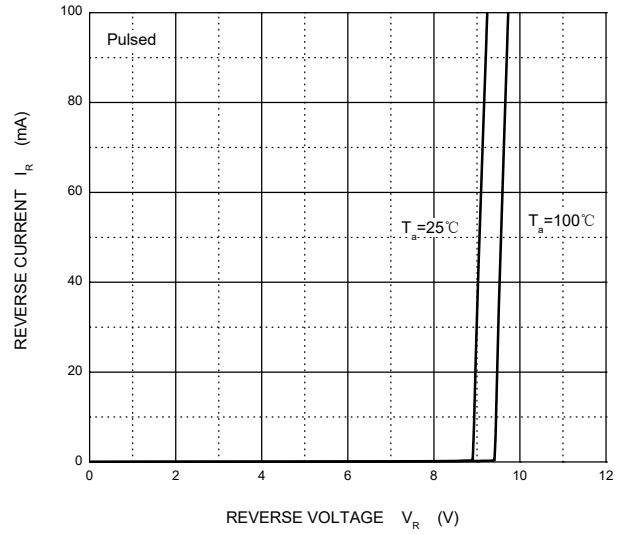
(2).Non-repetitive current pulse 8/20 μs exponential decay waveform

TYPICAL CHARACTERISTICS

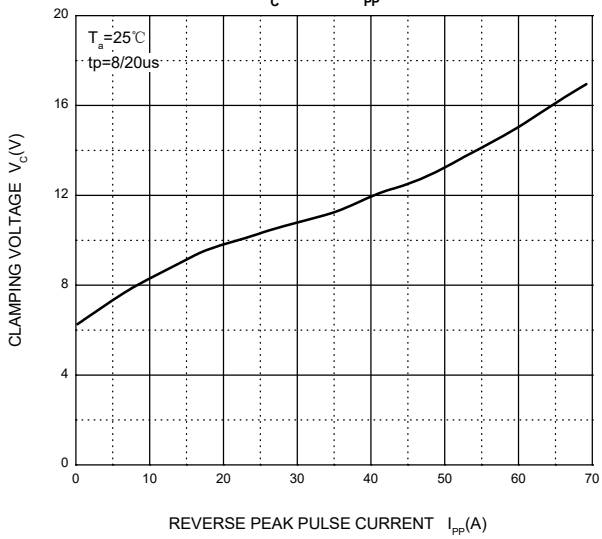
Forward Characteristics



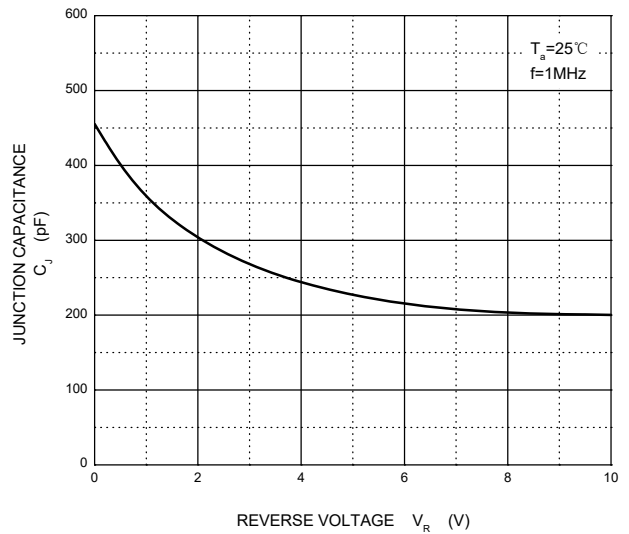
Reverse Characteristics



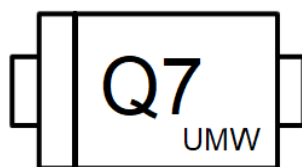
V_C — I_{PP}



Capacitance Characteristics



Marking



Ordering information

| Order code | Package | Base qty | Delivery mode |
|---------------|---------|----------|---------------|
| UMW ESDQ7V0D3 | SOD-323 | 3000 | Tape and reel |

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