



SSCT7V031D2

1-line Uni-directional Micro Packaged TVS Diode

● Description

The SSCT7V031D2 is an uni-directional high power TVS diode, 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 data and power line. It complies with the IEC 61000-4-2 (ESD) with $\pm 30\text{kV}$ air and $\pm 30\text{kV}$ contact discharge. It is assembled into an ultra-small lead-free SOD-323 package.

The small size and high ESD surge protection make SSCT7V031D2 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

● Feature

- ✧ 1900W peak pulse power ($t_P = 8/20\mu\text{s}$)
- ✧ SOD-323 Package
- ✧ Working voltage: 7V
- ✧ Low clamping voltage
- ✧ Low capacitance
- ✧ Low leakage current
- ✧ Response Time is $< 1\text{ ns}$
- ✧ RoHS compliant
- ✧ Complies with following standards:
 - IEC 61000-4-2 (ESD) immunity test
Air discharge: $\pm 30\text{kV}$
Contact discharge: $\pm 30\text{kV}$
 - IEC61000-4-5 (Surge) 100A (8/20 μs)

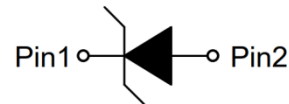
● Applications

- ✧ Power Line
- ✧ Serial and Parallel Ports
- ✧ Notebooks, Desktops, Servers
- ✧ Projection TV
- ✧ Cellular handsets and accessories
- ✧ Portable instrumentation
- ✧ Peripherals

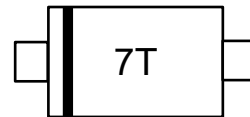
● PIN configuration



SOD-323



Circuit Diagram



Marking (Top View)

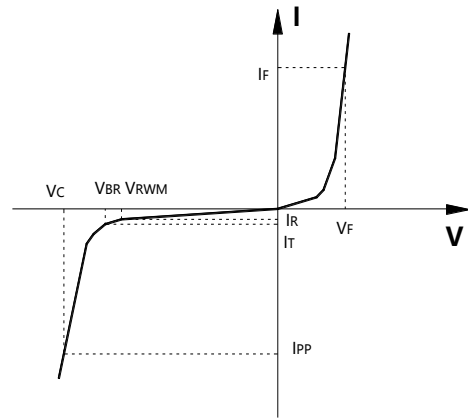
● Mechanical data

- ✧ Lead finish: 100% matte Sn (Tin)
- ✧ Mounting position: Any
- ✧ Qualified max reflow temperature: 260°C
- ✧ Device meets MSL 3 requirements
- ✧ Pure tin plating: 7 ~ 17 μm
- ✧ Pin flatness: $\leq 3\text{mil}$



● Electronic Parameter

| Symbol | Parameter |
|-----------|-------------------------------------|
| V_{RWM} | Peak Reverse Working Voltage |
| I_R | Reverse Leakage Current @ V_{RWM} |
| V_{BR} | Breakdown Voltage @ I_T |
| I_T | Test Current |
| I_{PP} | Maximum Reverse Peak Pulse Current |
| V_C | Clamping Voltage @ I_{PP} |
| P_{PP} | Peak Pulse Power |
| C_J | Junction Capacitance |



● Absolute maximum rating ($T_A=25^\circ\text{C}$ unless otherwise noted)

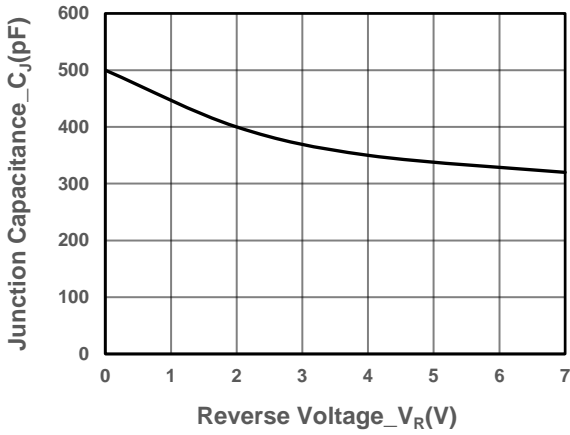
| Parameter | Symbol | Value | Unit |
|------------------------------|-----------|----------|------------------|
| Peak Pulse Power (8/20us) | P_{PP} | 1900 | W |
| Peak Pulse Current (8/20us) | I_{PP} | 100 | A |
| ESD Rating per IEC61000-4-2: | Contact | 30 | kV |
| | Air | 30 | |
| Storage Temperature | T_{STG} | -55/+150 | $^\circ\text{C}$ |
| Operating Temperature | T_J | -55/+125 | $^\circ\text{C}$ |

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

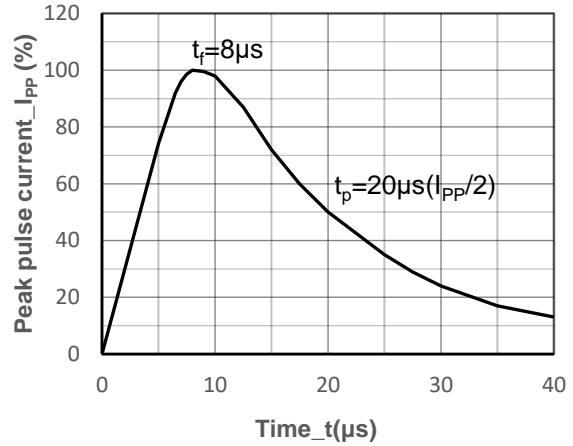
| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|------------------------------|-----------|--|------|------|------|---------------|
| Peak Reverse Working Voltage | V_{RWM} | | | | 7 | V |
| Breakdown Voltage | V_{BR} | $I_T = 1\text{mA}$ | 8 | | 10 | V |
| Reverse Leakage Current | I_R | $V_{RWM} = 7\text{V}$ | | | 0.1 | μA |
| Clamping Voltage | V_C | $I_{PP} = 20\text{A}$, $t_P = 8/20\mu\text{s}$ | | 11 | | V |
| Clamping Voltage | V_C | $I_{PP} = 100\text{A}$, $t_P = 8/20\mu\text{s}$ | | 17.5 | 19 | V |
| Junction Capacitance | C_J | $V_R = 0\text{V}$, $f = 1\text{MHz}$ | | 500 | | pF |



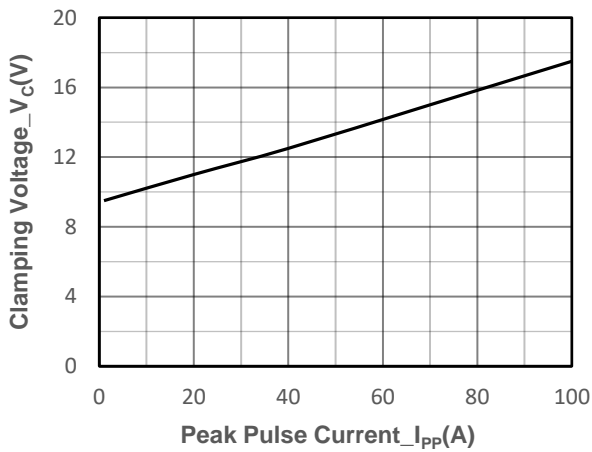
● Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)



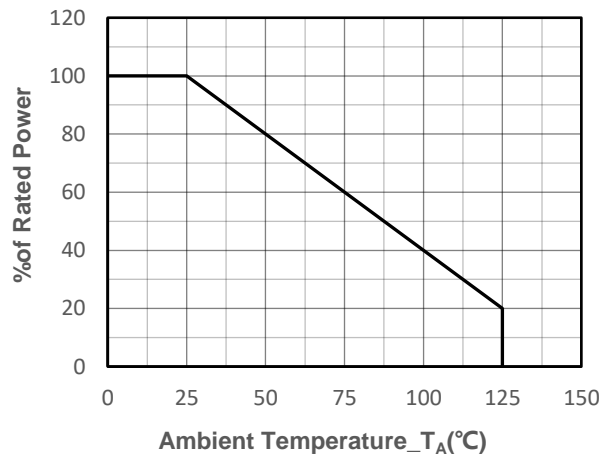
Junction Capacitance vs. Reverse Voltage



8/20 μs Pulse Waveform



Clamping Voltage vs. Peak Pulse Current



Power derating vs. Ambient temperature



● Package Information

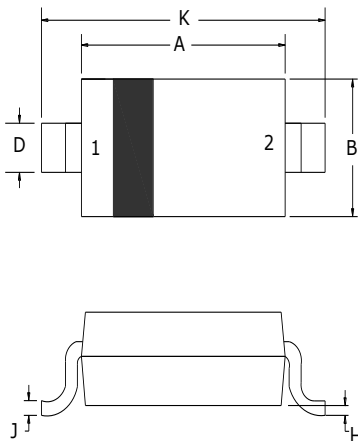
Ordering Information

| Device | Package | Qty per Reel | Reel Size |
|-------------|---------|--------------|-----------|
| SSCT7V031D2 | SOD-323 | 3000 | 7 Inch |

Mechanical Data

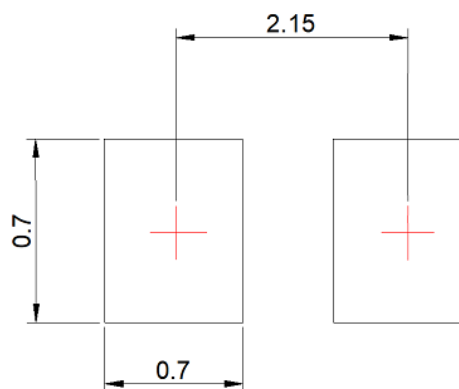
Case: SOD-323

Case Material: Molded Plastic. UL Flammability



| Dim | Millimeters | |
|-----|-------------|------|
| | Min | Max |
| A | 1.60 | 1.80 |
| B | 1.2 | 1.40 |
| C | 0.80 | 0.90 |
| D | 0.25 | 0.35 |
| E | 0.15REF | |
| H | 0 | 0.10 |
| J | 0.08 | 0.15 |
| K | 2.50 | 2.70 |

Recommended Pad outline (Unit: mm)





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