



SSCE5V031N1

1-Line Uni-directional low Capacitance TVS Diode

● Description

The SSCE5V031N1 is an uni-directional 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.

The SSCE5V031N1 complies with the IEC61000-4-2 (ESD) with $\pm 20\text{kV}$ air and $\pm 15\text{kV}$ contact discharge. It is assembled into an ultra-small 1.0X0.6mm lead-free DFN package. The small size and high ESD surge protection make an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

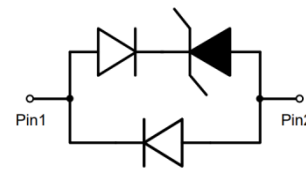
● Features

- ◇ 64W peak pulse power ($t_P = 8/20\mu\text{s}$)
- ◇ DFN1006-2L Package
- ◇ Working voltage:5V
- ◇ Low Leakage Current
- ◇ Low capacitance
- ◇ Low clamping voltage
- ◇ Response Time is Typically <1ns
- ◇ Complies with following standards:
 - IEC61000-4-2(ESD) $\pm 15\text{kV}$ (contact), $\pm 20\text{kV}$ (air)
 - IEC61000-4-4 (EFT) 40A (5/50ns)
 - IEC61000-4-5(Lightning) 4A(8/20 μs)

● PIN configuration



DFN1006-2L(Bottom View)



Circuit Diagram



Marking(Top View)

● Applications

- ◇ Cellular Handsets and Accessories
- ◇ Personal Digital Assistants
- ◇ Notebooks and Handhelds
- ◇ Portable Instrumentation
- ◇ Digital Cameras
- ◇ Peripherals
- ◇ Audio Players
- ◇ Keypads, Side Keys, LCD Displays

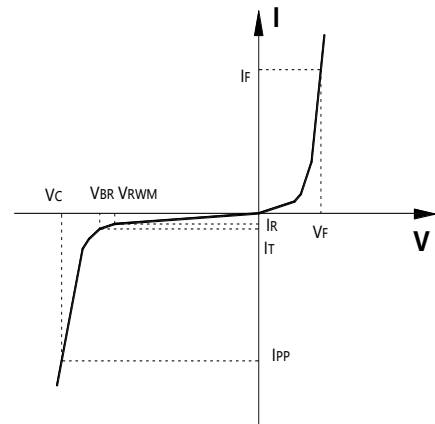
● Mechanical Characteristics

- ◇ Package:DFN1006-2L(1.0x0.6x0.5mm)
- ◇ Case Material: "Green" Molding Compound.
- ◇ UL Flammability Classification Rating 94V-0
- ◇ Moisture Sensitivity: Level 3 per J-STD-020



● 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 @ $T_A=25^\circ\text{C}$

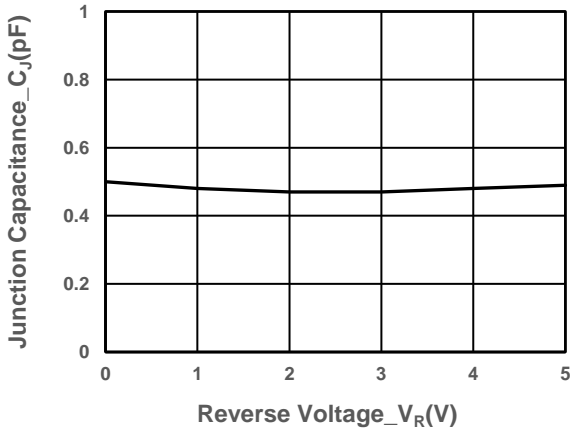
| Parameter | Symbol | Value | Units |
|--|-----------|----------|------------------|
| Peak Pulse Power (8/20 μs) | P_{PP} | 64 | W |
| Peak Pulse Current (8/20 μs) | I_{PP} | 4 | A |
| ESD Rating per IEC61000-4-2: | V_{ESD} | ± 15 | KV |
| Contact Air | | ± 20 | |
| Storage Temperature | T_{STG} | -55/+150 | $^\circ\text{C}$ |
| Operating Temperature | T_J | -55/+125 | $^\circ\text{C}$ |

● Electrical Characteristics @ $T_A=25^\circ\text{C}$

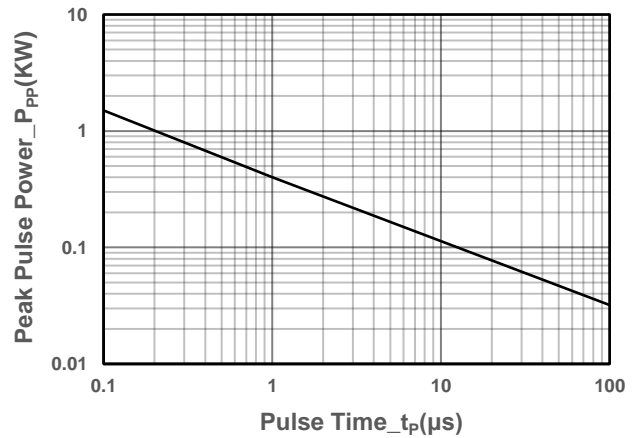
| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Units |
|------------------------------|-----------|--|------|------|------|---------------|
| Peak Reverse Working Voltage | V_{RWM} | | | | 5 | V |
| Breakdown Voltage | V_{BR} | $I_T = 1\text{mA}$ | 6 | | | V |
| Reverse Leakage Current | I_R | $V_{RWM} = 5\text{V}$ | | 0.03 | 0.2 | μA |
| Forward Voltage | V_F | $I_F = 15\text{mA}$ | | | 1.2 | V |
| Clamping Voltage | V_C | $I_{PP} = 1\text{A}$, $t_P = 8/20\mu\text{s}$ | | | 10 | V |
| Clamping Voltage | V_C | $I_{PP} = 4\text{A}$, $t_P = 8/20\mu\text{s}$ | | | 16 | V |
| Junction Capacitance | C_J | $V_R = 0\text{V}$, $f = 1\text{MHz}$, | | 0.4 | | pF |



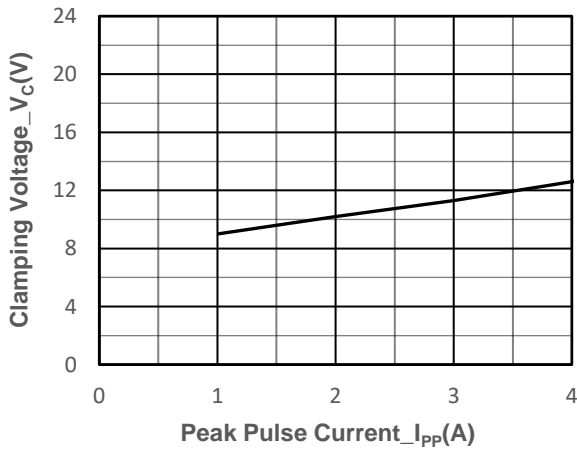
● Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise Specified)



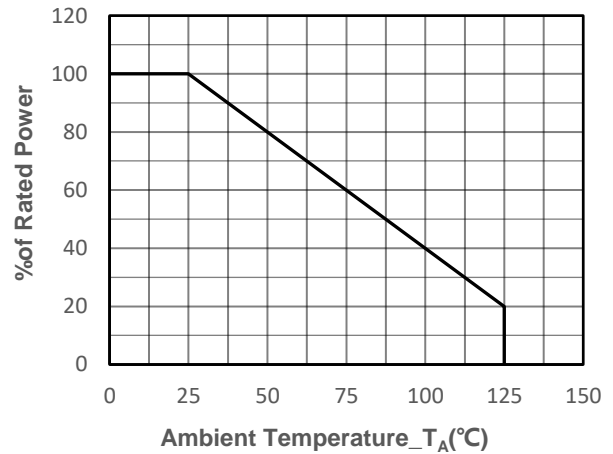
Junction Capacitance vs. Reverse Voltage



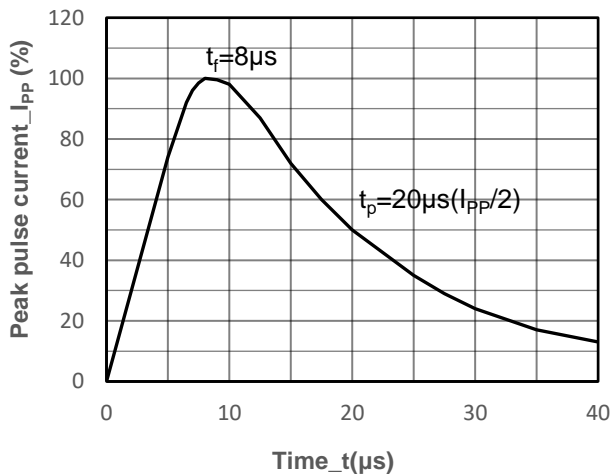
Peak Pulse Power vs. Pulse Time



Clamping Voltage vs. Peak Pulse Current



Power derating vs. Ambient temperature



8/20 μs Pulse Waveform



● Package Information

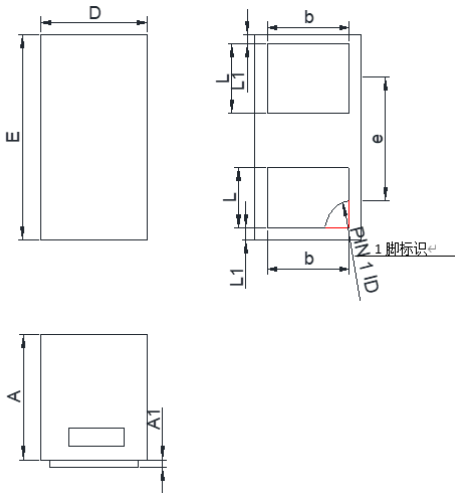
Ordering Information

| Device | Package | Qty per Reel | Reel Size |
|-------------|------------|--------------|-----------|
| SSCE5V031N1 | DFN1006-2L | 10000 | 7 Inch |

Mechanical Data

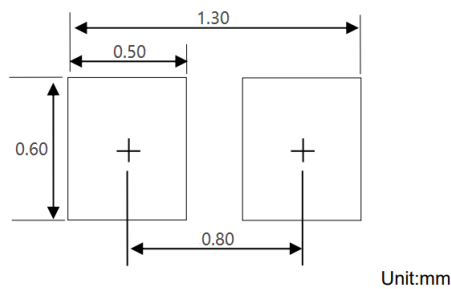
Case: DFN1006-2L

Case Material: Molded Plastic. UL Flammability



| DIM | Millimeters | |
|-----|-------------|------|
| | Min | Max |
| A | 0.45 | 0.55 |
| A1 | 0.00 | 0.05 |
| D | 0.55 | 0.65 |
| E | 0.95 | 1.05 |
| b | 0.45 | 0.60 |
| e | 0.65TYP | |
| L | 0.2 | 0.3 |
| L1 | 0.05REF | |

Suggested Land Pattern





- **History Version**

| | | |
|------|---|------------|
| V1.0 | First edition | 2021-09-07 |
| V1.1 | 1. Add Circuit Diagram 2. Adjustment Typical Performance Characteristics | 2022-09-17 |

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