



SSCE5V062N1

SSCE5V062N1

1-Line Bi-directional TVS Diode

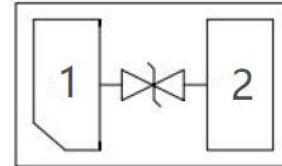
● Description

The SSCE5V062N1 is a bi-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 SSCE5V062N1 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 $1.0 \times 0.6 \times 0.5\text{mm}$ lead-free DFN package. The small size and high ESD surge protection make SSCE5V062N1 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

● Features

- ◇ Protects one I/O or Power Line
- ◇ Working voltage: 5V
- ◇ Low Leakage Current
- ◇ Small Body Outline Dimensions
- ◇ Response Time is Typically $< 1\text{ns}$
- ◇ Complies with following standards:
 - IEC61000-4-2(ESD) $\pm 30\text{KV}$ (contact), $\pm 30\text{kV}$ (air)
 - IEC61000-4-5(Lightning) 25A(8/20 μs)

● PIN configuration



DFN1006-2L

● Applications

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

● Mechanical Characteristics

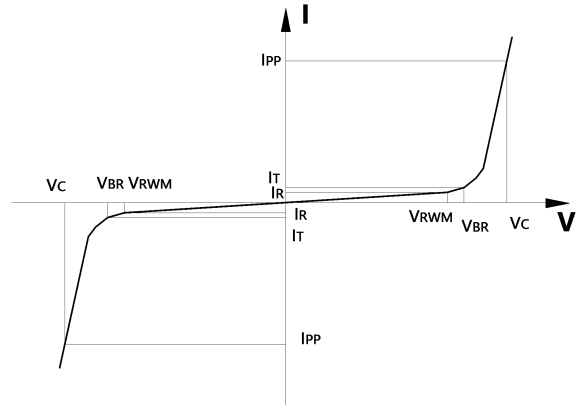
- ◇ Package: DFN1006-2L ($1.0 \times 0.6 \times 0.5\text{mm}$)
- ◇ Lead Finish: NiPdAu
- ◇ Case Material: "Green" Molding Compound.
- ◇ UL Flammability Classification Rating 94V-0
- ◇ RoHS Compliant



SSCE5V062N1

● 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_{PPP} | Peak Pulse Power |
| C | Junction Capacitance |



● Absolute maximum rating @ $T_A=25^\circ\text{C}$

| Symbol | Parameter | Value | Units |
|-----------|--------------------------------------------|----------------------|------------------|
| VESD | ESD Rating per IEC61000-4-2:Contact Air | ± 30 ± 30 | KV |
| P_{PPP} | Peak Pulse Power (8/20 μs) | 300 | W |
| I_{PP} | Peak Pulse Current (8/20 μs) | 25 | A |
| T_{STG} | Storage Temperature | -55/+150 | $^\circ\text{C}$ |
| T_j | Operating Temperature | -55/+125 | $^\circ\text{C}$ |

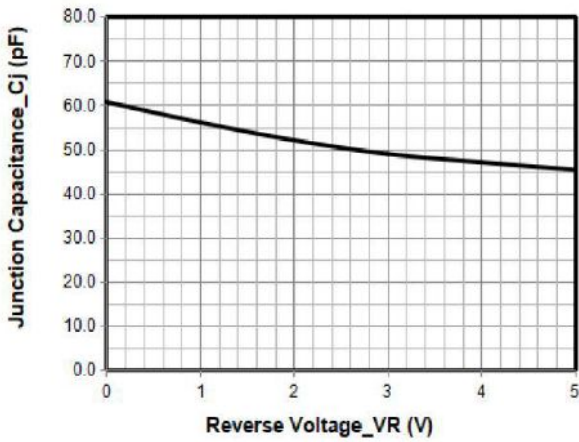
● Electrical Characteristics @ $T_A=25^\circ\text{C}$

| 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 | $V_{RWM} = 5\text{V}$, $T = 25^\circ\text{C}$ | | | 0.2 | μA |
| Clamping Voltage | V_C | $I_{PP} = 1\text{A}$, $t_P = 8/20\mu\text{s}$ | | | 7 | V |
| Clamping Voltage | V_C | $I_{PP} = 25\text{A}$, $t_P = 8/20\mu\text{s}$ | | | 13 | V |
| Junction Capacitance | C_j | $V_R = 0\text{V}$, $f = 1\text{MHz}$, | | 60 | | pF |

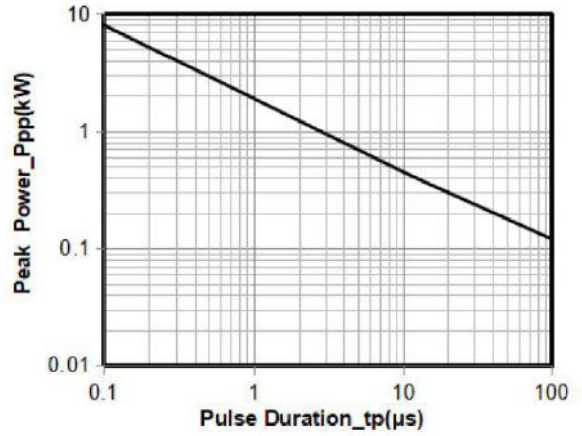


SSCE5V062N1

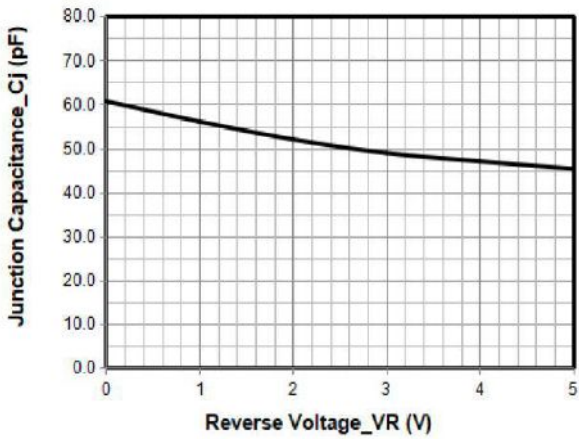
● **Typical Performance Characteristics**($T_A=25^\circ\text{C}$ unless otherwise Specified)



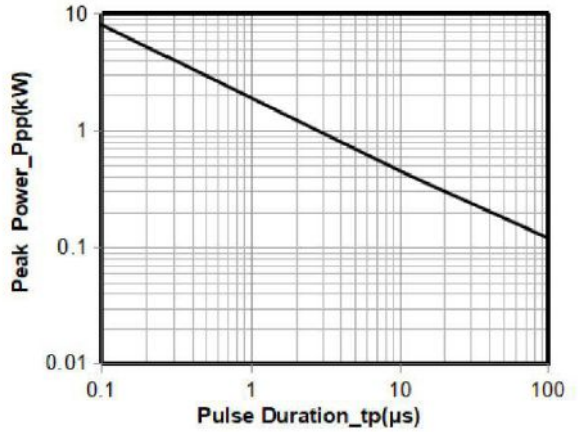
Junction Capacitance vs. Reverse Voltage



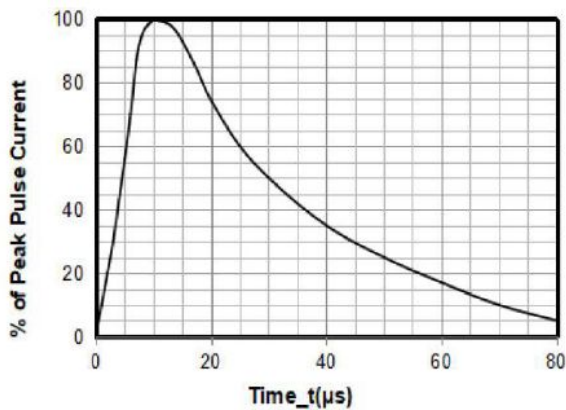
Peak Pulse Power vs. Pulse Time



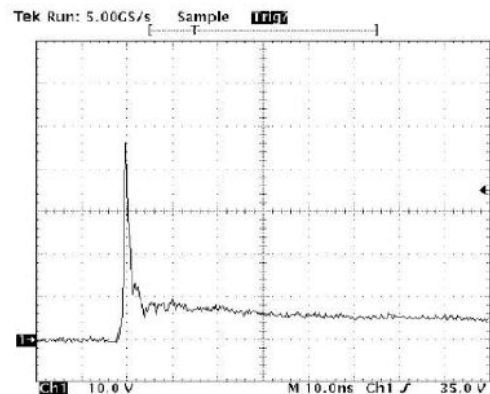
Junction Capacitance vs. Reverse Voltage



Peak Pulse Power vs. Pulse Time



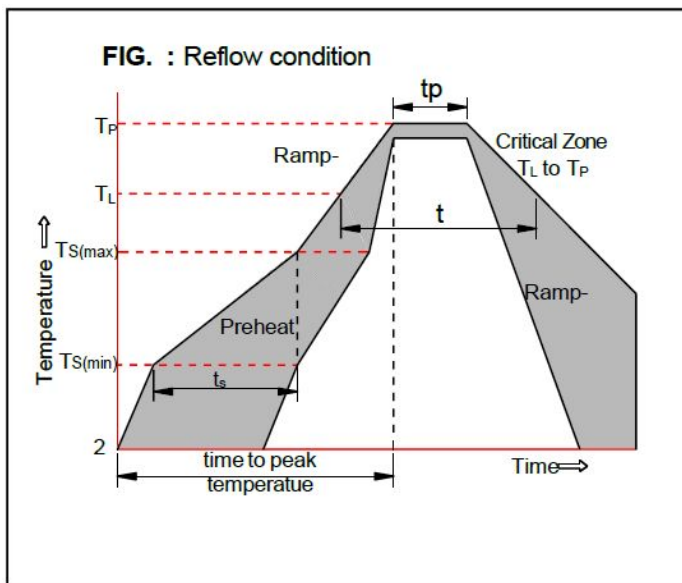
8 X 20μs Pulse Waveform



Note: Data is taken with a 10x attenuator
ESD Clamping Voltage
8 kV Contact per IEC61000-4-2

- Soldering Parameters

| Reflow Condition | | Pb-Free assembly (see as bellow) |
|----------------------------------------------------|-----------------------------|-------------------------------------|
| Pre Heat | -Temperature Min (Ts(min)) | +150°C |
| | -Temperature Max(Ts(max)) | +200°C |
| | -Time (Min to Max) (ts) | 60-190 secs. |
| Average ramp up rate (Liquid us Temp (TL) to peak) | | 5°C/sec. Max |
| Ts(max) to TL - Ramp-up Rate | | 5°C/sec. Max |
| Reflow | -Temperature(TL)(Liquid us) | +217°C |
| | -Temperature(TL) | 60-150 secs. |
| Peak Temp (Tp) | | +260(+0/-5)°C |
| Time within 5°C of actual Peak Temp (tp) | | 40 secs. Max |
| Ramp-down Rate | | 5°C/sec. Max |
| Time 25°C to Peak Temp (TP) | | 8 min. Max |
| Do not exceed | | +280°C |





SSCE5V062N1

- **Package Information**

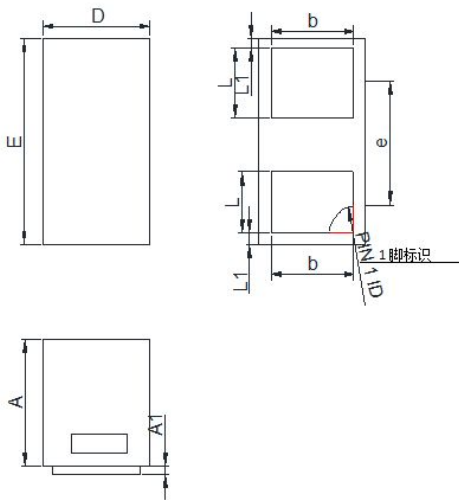
Ordering Information

| Device | Package | Qty per Reel | Reel Size |
|-------------|------------|--------------|-----------|
| SSCE5V062N1 | DFN1006-2L | 10000 | 7 Inch |

Mechanical Data

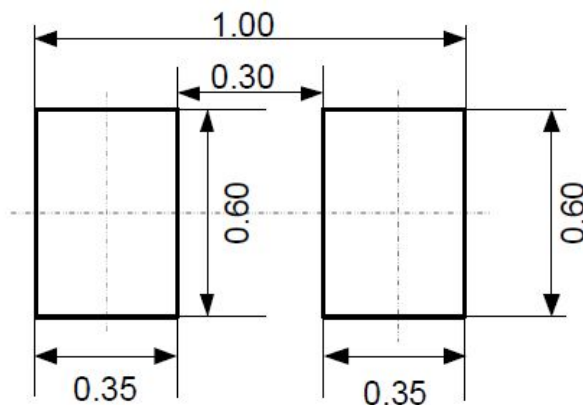
Case: DFN1006-2L

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





SSCE5V062N1

DISCLAIMER

AFSEMI RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. AF SEMI DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICIENCE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

THE GRAPHS PROVIDED IN THIS DOCUMENT ARE STATISTICAL SUMMARIES BASED ON A LIMITED NUMBER OF SAMPLES AND ARE PROVIDED FOR INFORMATIONAL PURPOSE ONLY. THE PERFORMANCE CHARACTERISTICS LISTED IN THEM ARE NOT TESTED OR GUARANTEED. IN SOME GRAPHS, THE DATA PRESENTED MAY BE OUTSIDE THE SPECIFIED OPERATING RANGE (E.G., OUTSIDE SPECIFIED POWER SUPPLY RANGE) AND THEREFORE OUTSIDE THE WARRANTED RANGE.