



SSCT4V511L3

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1-Line Uni-directional TVS Diode

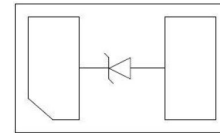
● Description

The SSCT4V511L3 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 SSCT4V511L3 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 1.6x1.0x0.5mm lead-free DFN package. The small size and high ESD surge protection make SSCT4V511L3 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

● Features

- ✧ Ultra small package:1.6x1.0x0.5mm
- ✧ Protects one data or power line
- ✧ Working voltage:4.5V
- ✧ 2-pin leadless package
- ✧ Complies with following standards:
 - IEC61000-4-2(ESD) $\pm 30\text{Kv}$ (contact), $\pm 30\text{kV}$ (air)
 - IEC61000-4-5(Lightning) 135A(8/20 μs)
- ✧ RoHS Compliant

● PIN configuration



Top view



Marking

● Applications

- ✧ Mobile Phones
- ✧ Battery Protection
- ✧ Power Line Protection
- ✧ Vbat pin for Mobile Devices
- ✧ Hand Held Portable Applications

● Mechanical Characteristics

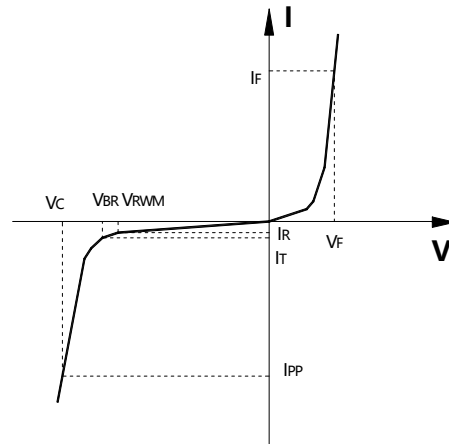
- ✧ Package:DFN1610-2L(1.6x1.0x0.5mm)
- ✧ Case Material: "Green" Molding Compound.
- ✧ UL Flammability Classification Rating 94V-0
- ✧ Moisture Sensitivity: Level 3 per J-STD-020
- ✧ Terminal Connections: See Diagram Below
- ✧ Marking Information: See Below



SSCT4V511L3

● 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°C

| Symbol | Parameter | Value | Units |
|------------------|--|------------|-------|
| VESD | ESD Rating per IEC61000-4-2:Contact Air | ±30 ±30 | KV |
| P _{PPP} | Peak Pulse Power (8/20μs) | 2500 | W |
| I _{PP} | Peak Pulse Current (8/20 μ s) | 135 | A |
| T _{STG} | Storage Temperature | -55/+150 | °C |
| T _J | Operating Temperature | -55/+125 | °C |

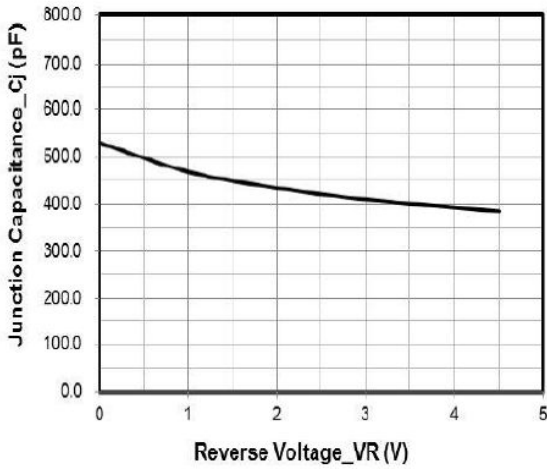
● Electrical Characteristics @T_A=25°C

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Units |
|------------------------------|-----------|---|------|------|------|-------|
| Peak Reverse Working Voltage | V_{RWM} | Any I/O to Ground | | | 4.5 | V |
| Breakdown Voltage | V_{BR} | $I_T = 1\text{mA}$ | 4.8 | | | V |
| Reverse Leakage Current | I_R | $V_{RWM} = 4.5\text{V}, T = 25^\circ\text{C}$ | | | 0.2 | μA |
| Clamping Voltage | V_{C1} | $I_{PP} = 10\text{A}, t_P = 8/20\mu\text{s}$ | | | 7 | V |
| Clamping Voltage | V_{C2} | $I_{PP} = 135\text{A}, t_P = 8/20\mu\text{s}$ | | | 18 | V |
| Junction Capacitance | C_J | $V_R = 0\text{V}, f = 1\text{MHz}$, | | | 750 | pF |

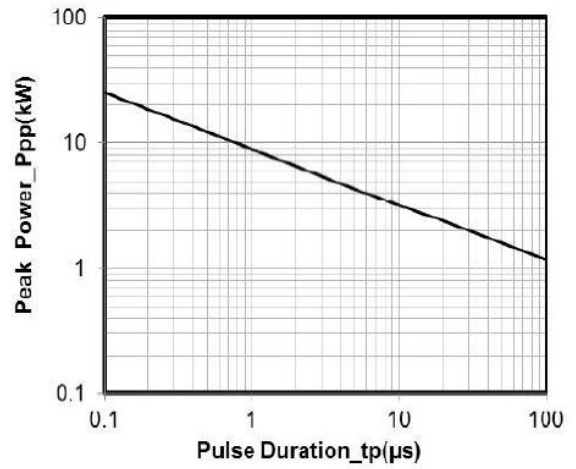


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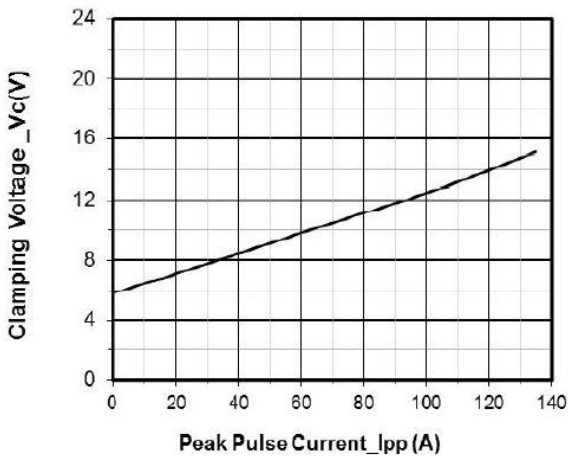
● **Typical Performance Characteristics**($T_A=25^\circ\text{C}$ unless otherwise Specified)



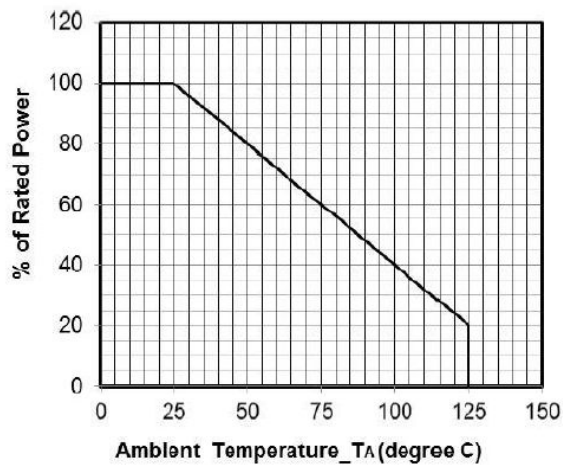
Junction Capacitance vs. Reverse Voltage



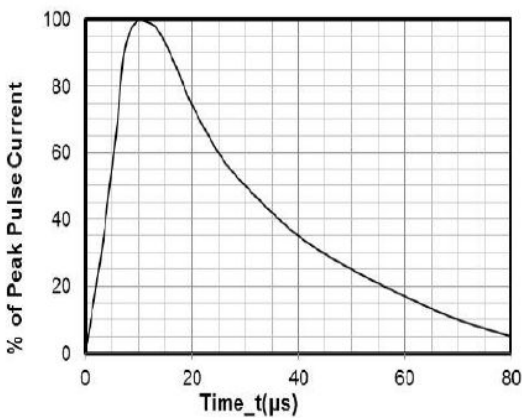
Peak Pulse Power vs. Pulse Time



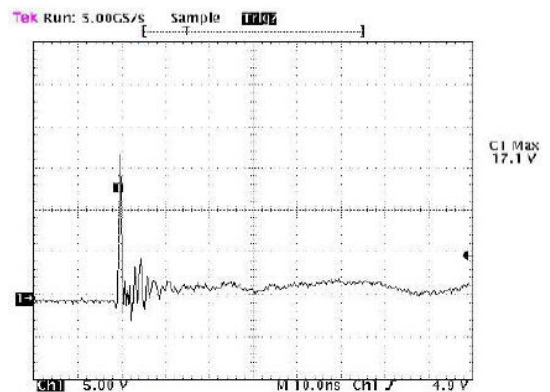
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20 μs Pulse Waveform



Note: Data is taken with a 10x attenuator

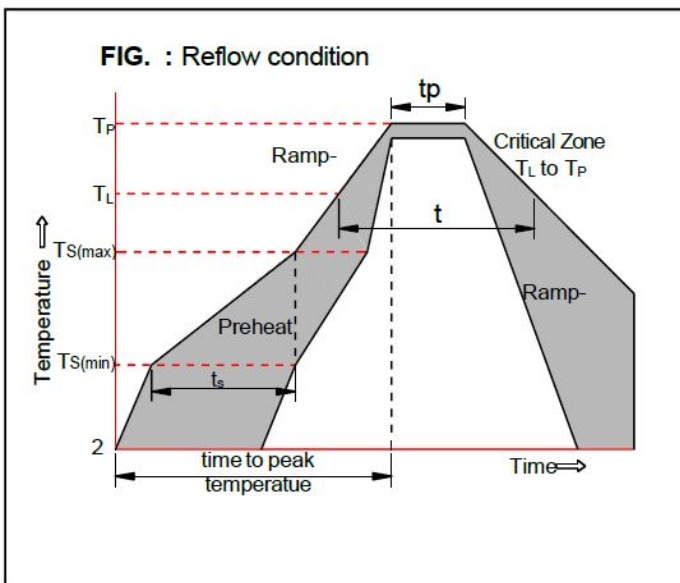
ESD Clamping Voltage

+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) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp (TL) to peak) | | 3°C/sec. Max |
| Ts(max) to TL - Ramp-up Rate | | 3°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) | | 30 secs. Max |
| Ramp-down Rate | | 6°C/sec. Max |
| Time 25°C to Peak Temp (TP) | | 8 min. Max |
| Do not exceed | | +260°C |





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● Package Information

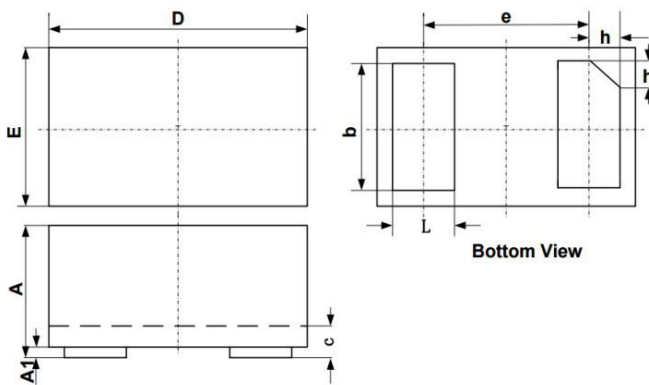
Ordering Information

| Device | Package | Qty per Reel | Reel Size |
|-------------|------------|--------------|-----------|
| SSCT4V511L3 | DFN1610-2L | 3000 | 7 Inch |

Mechanical Data

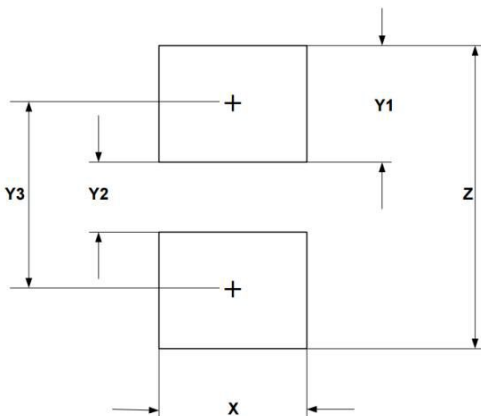
Case: DFN1610-2L

Case Material: Molded Plastic. UL Flammability



| SYM | DIMENSIONS | | | | | |
|-----|-------------|------|------|-----------|-------|-------|
| | MILLIMETERS | | | INCHES | | |
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.45 | 0.50 | 0.55 | 0.018 | 0.020 | 0.022 |
| A1 | 0.00 | 0.02 | 0.05 | 0.000 | 0.001 | 0.002 |
| b | 0.75 | 0.80 | 0.85 | 0.030 | 0.032 | 0.034 |
| c | 0.10 | 0.15 | 0.20 | 0.004 | 0.006 | 0.007 |
| D | 1.55 | 1.60 | 1.65 | 0.062 | 0.064 | 0.066 |
| e | 1.10 BSC | | | 0.044 BSC | | |
| E | 0.95 | 1.00 | 1.05 | 0.038 | 0.040 | 0.042 |
| L | 0.35 | 0.40 | 0.45 | 0.014 | 0.016 | 0.018 |
| h | 0.15 | 0.20 | 0.25 | 0.006 | 0.008 | 0.010 |

Suggested Land Pattern



| SYM | DIMENSIONS | |
|-----|-------------|--------|
| | MILLIMETERS | INCHES |
| X | 1.00 | 0.040 |
| Y1 | 0.62 | 0.025 |
| Y2 | 0.60 | 0.024 |
| Y3 | 1.22 | 0.049 |
| Z | 1.85 | 0.074 |



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