



SSCT15V11L3

SSCT15V11L3

1-Line Uni-directional TVS Diode

● Description

The SSCT15V11L3 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 SSCT15V11L3 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 SSCT15V11L3 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:15V
- ✧ 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) 60A(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

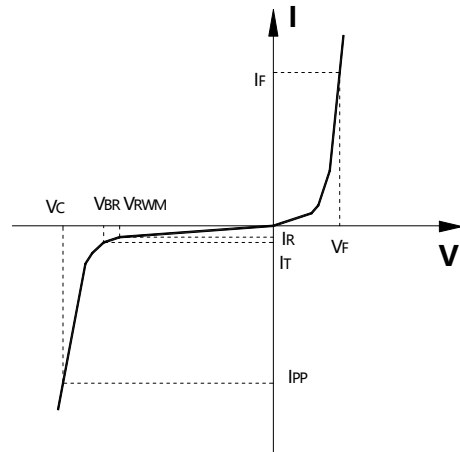
- ✧ Package:DFN1610-2L(1.6x1.0x0.5mm)
- ✧ Case Material: “Green” Molding Compound.
- ✧ UL Flammability Classification Rating 94V-0
- ✧ Moisture Sensitivity: Level 3 per J-STD-020
- ✧ Terminal Connections: See Diagram Below
- ✧ Marking Information: See Below



SSCT15V11L3

● 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 @ $T_A=25^{\circ}C$

| Symbol | Parameter | Value | Units |
|-----------|--|----------------------|-------------|
| V_{ESD} | ESD Rating per IEC61000-4-2:Contact Air | ± 30 ± 30 | KV |
| P_{PPP} | Peak Pulse Power (8/20 μ s) | 2000 | W |
| I_{PP} | Peak Pulse Current (8/20 μ s) | 60 | A |
| T_{STG} | Storage Temperature | -55/+150 | $^{\circ}C$ |
| T_J | Operating Temperature | -55/+125 | $^{\circ}C$ |

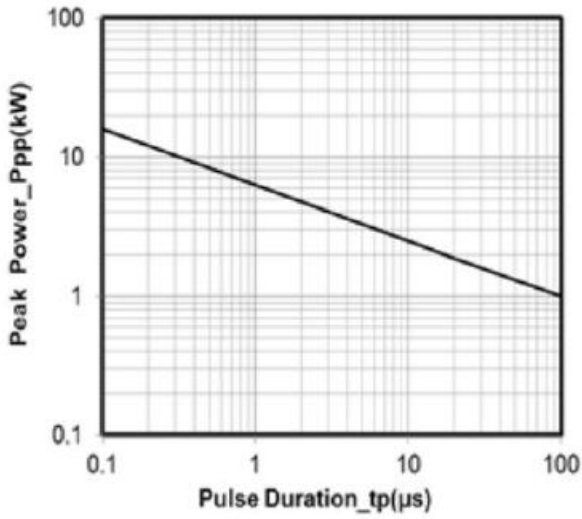
● Electrical Characteristics @ $T_A=25^{\circ}C$

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Units |
|------------------------------|-----------|----------------------------------|------|------|------|---------|
| Peak Reverse Working Voltage | V_{RWM} | Any I/O to Ground | | | 15 | V |
| Breakdown Voltage | V_{BR} | $I_T = 1mA$ Any I/O to Ground | 16.5 | | | V |
| Reverse Leakage Current | I_R | $V_{RWM} = 15V, T = 25^{\circ}C$ | | | 0.1 | μA |
| Forward Voltage | V_F | $I_F = 10mA$ | | 1.0 | 1.2 | V |
| Clamping Voltage | V_{C1} | $I_{PP} = 10A, t_P = 8/20\mu s$ | | | 22 | V |
| Clamping Voltage | V_{C2} | $I_{PP} = 60A, t_P = 8/20\mu s$ | | | 32 | V |
| Junction Capacitance | C_J | $V_R = 0V, f = 1MHz,$ | | | 450 | pF |

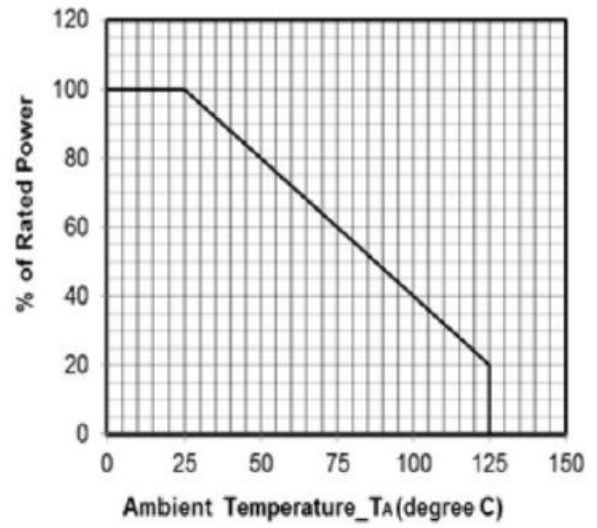


SSCT15V11L3

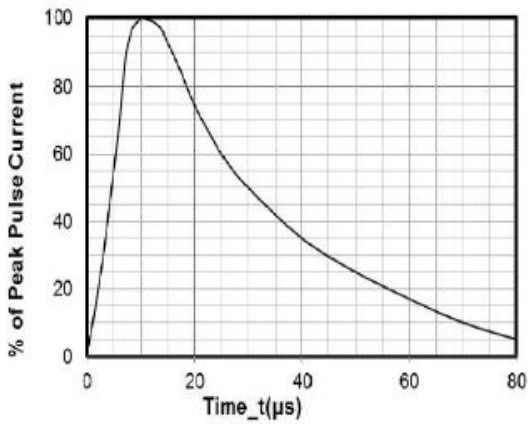
- Typical Performance Characteristics(TA=25°C unless otherwise Specified)



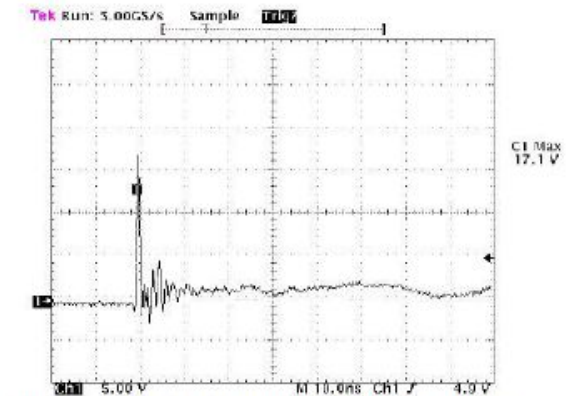
Junction Capacitance vs. Reverse Voltage



Power Derating Curve



8 X 20μs Pulse Waveform



Note: Data is taken with a 10x attenuator

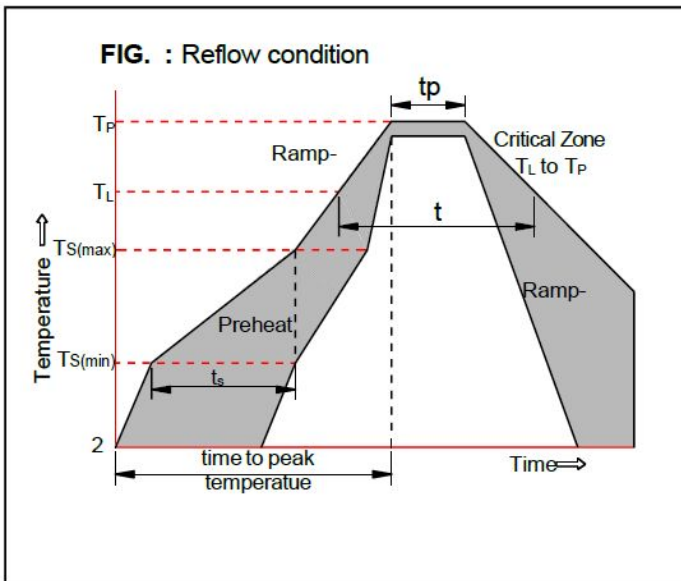
ESD Clamping Voltage

+8 kV Contact per IEC61000-4-2



- Soldering Parameters**

| Reflow Condition | | Pb-Free assembly (see as below) |
|--|-----------------------------|------------------------------------|
| 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 |





SSCT15V11L3

● Package Information

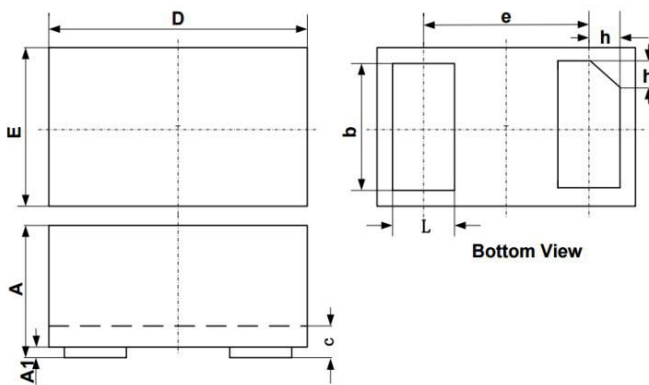
Ordering Information

| Device | Package | Qty per Reel | Reel Size |
|-------------|------------|--------------|-----------|
| SSCT15V11L3 | DFN1610-2L | 3000 | 7 Inch |

Mechanical Data

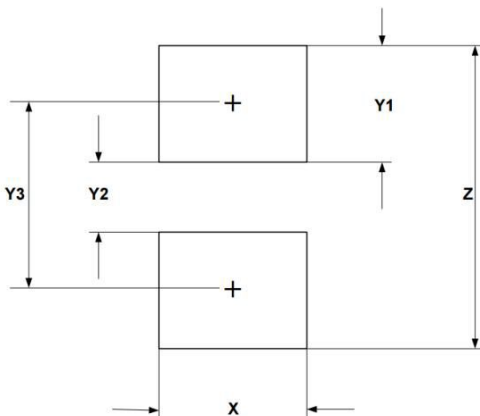
Case: DFN1610-2L

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 |



SSCT15V11L3

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.