

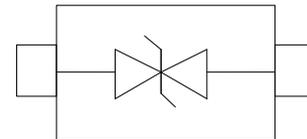
SSCTXXX1XDA Series

Small Surface Mount TVS Diode for ESD Protection

● . Feature

- ✧ 400W peak pulse power (TP = 8/20μs)
- ✧ SMA Package
- ✧ Working voltage: 5V-440V
- ✧ Low clamping voltage
- ✧ Low capacitance
- ✧ RoHS compliant transient protection for high speed data lines to IEC61000-4-2(ESD)±15kV(air),±8kV(contact)
- ✧ For surface mounted applications
- ✧ Reliable low cost construction utilizing molded plastic technique
- ✧ Response Time is Typically < 1 ns
- ✧ Uni-direction, less than 5.0ns for Bi-direction, from 0 Volts to BV min
- ✧ ESD Rating of above 16 kV per Human Body Model
- ✧ ESD Rating of above 30 kV (Contact Discharge) per IEC61000-4-2
- ✧ EFT (Electrical Fast Transients) Rating of 40 A per IEC61000-4-4
- ✧ Plastic material has UL flammability classification 94V-0
- ✧ Typical IR less than 1uA above 10V
- ✧ Meets MSL 1 Requirements
- ✧ Solid-state silicon avalanche technology
- ✧ ROHS compliant

● PIN configuration



Topview

● Applications

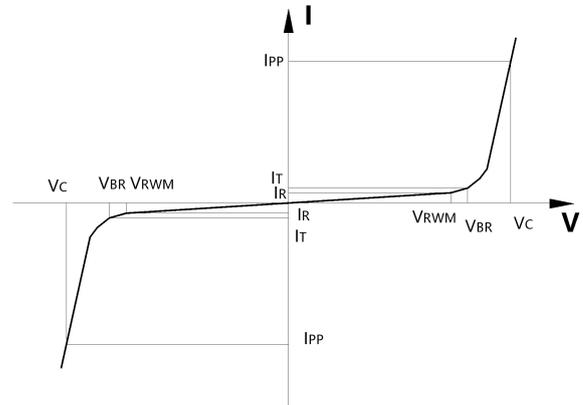
- ✧ USB 2.0 Power & Data Line Protection
- ✧ DVI & HDMI Port Protection
- ✧ Serial ATA Port Protection
- ✧ Mobile Handsets
- ✧ Digital Cameras and camcorders
- ✧ PDA & MP3 Players
- ✧ Digital TV and Set-top Boxes

● Mechanical data

- ✧ Lead finish:100% matte Sn(Tin)
- ✧ Mounting position: Any
- ✧ Qualified max reflow temperature:260°C
- ✧ Device meets MSL 1 requirements
- ✧ Pure tin plating: 7 ~ 17 um

● 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 | Junction Capacitance |



● Absolute maximum rating @TA=25°C

| Symbol | Parameter | Value | Units |
|-----------|---------------------------------|----------|-------|
| P_{PP} | Peak Pulse Power (8/20 μ S) | 400 | W |
| T_{STG} | Storage Temperature | -55/+150 | °C |
| T_J | Operating Temperature | -55/+150 | °C |

● Electrical Characteristics @TA=25°C

| Electrical Characteristics ($T_{amb}=25^\circ\text{C}$ Unless Otherwise Specified) | | | | | | | | | | |
|---|-------------|--------------|----|-----------|----------------------|-------|-------|-------------------|-------------------|------------------------|
| SMAJ PART NUMBER | | MARKING CODE | | V_{RWM} | V_{BR} @ I_T (V) | | I_T | I_R @ V_{RWM} | $V_C(\text{Max})$ | $I_{PP}(\text{Max})$ ① |
| Uni-polar | Bi-polar | Uni | Bi | (V) | Min | Max | (mA) | (μ A) | (V) | (A) |
| SSCT5V011DA | SSCT5V012DA | HE | TE | 5.0 | 6.40 | 7.35 | 10 | 800 | 9.2 | 43.5 |
| SSCT6V011DA | SSCT6V012DA | HG | TG | 6.0 | 6.67 | 7.89 | 10 | 800 | 10.3 | 38.8 |
| SSCT6V511DA | SSCT6V512DA | HK | TK | 6.5 | 7.22 | 8.30 | 10 | 500 | 11.2 | 35.7 |
| SSCT7V011DA | SSCT7V012DA | HM | TM | 7.0 | 7.78 | 8.95 | 10 | 200 | 12.0 | 33.3 |
| SSCT7V511DA | SSCT7V512DA | HP | TP | 7.5 | 8.33 | 9.58 | 1 | 100 | 12.9 | 31.0 |
| SSCT8V011DA | SSCT8V012DA | HR | TR | 8.0 | 8.89 | 10.23 | 1 | 50 | 13.6 | 29.4 |
| SSCT8V511DA | SSCT8V512DA | HT | TT | 8.5 | 9.44 | 10.82 | 1 | 20 | 14.4 | 27.8 |
| SSCT9V011DA | SSCT9V012DA | HV | TV | 9.0 | 10.0 | 11.5 | 1 | 10 | 15.4 | 26.0 |
| SSCT10V11DA | SSCT10V12DA | HX | TX | 10 | 11.1 | 12.8 | 1 | 5 | 17.0 | 23.5 |
| SSCT11V11DA | SSCT11V12DA | HZ | TZ | 11 | 12.2 | 14.0 | 1 | 5 | 18.2 | 22.0 |
| SSCT12V11DA | SSCT12V12DA | IE | UE | 12 | 13.3 | 15.3 | 1 | 5 | 19.9 | 20.1 |
| SSCT13V11DA | SSCT13V12DA | IG | UG | 13 | 14.4 | 16.5 | 1 | 5 | 21.5 | 18.6 |



SSCTXXX1XDA

| | | | | | | | | | | |
|--------------|--------------|----|----|-----|------|-------|---|---|------|------|
| SSCT14V11DA | SSCT14V12DA | IK | UK | 14 | 15.6 | 17.9 | 1 | 5 | 23.2 | 17.2 |
| SSCT15V11DA | SSCT15V12DA | IM | UM | 15 | 16.7 | 19.2 | 1 | 5 | 24.4 | 16.4 |
| SSCT16V11DA | SSCT16V12DA | IP | UP | 16 | 17.8 | 20.5 | 1 | 5 | 26.0 | 15.4 |
| SSCT17V11DA | SSCT17V12DA | IR | UR | 17 | 18.9 | 21.7 | 1 | 5 | 27.6 | 14.5 |
| SSCT18V11DA | SSCT18V12DA | IT | UT | 18 | 20.0 | 23.3 | 1 | 5 | 29.2 | 13.7 |
| SSCT20V11DA | SSCT20V12DA | IV | UV | 20 | 22.2 | 25.5 | 1 | 5 | 32.4 | 12.3 |
| SSCT22V11DA | SSCT22V12DA | IX | UX | 22 | 24.4 | 28.0 | 1 | 5 | 35.5 | 11.3 |
| SSCT24V11DA | SSCT24V12DA | IZ | UZ | 24 | 26.7 | 30.7 | 1 | 5 | 38.9 | 10.3 |
| SSCT26V11DA | SSCT26V12DA | JE | VE | 26 | 28.9 | 33.2 | 1 | 5 | 42.1 | 9.5 |
| SSCT28V11DA | SSCT28V12DA | JG | VG | 28 | 31.1 | 35.8 | 1 | 5 | 45.4 | 8.8 |
| SSCT30V11DA | SSCT30V12DA | JK | VK | 30 | 33.3 | 38.3 | 1 | 5 | 48.4 | 8.3 |
| SSCT33V11DA | SSCT33V12DA | JM | VM | 33 | 36.7 | 42.2 | 1 | 5 | 53.3 | 7.5 |
| SSCT36V11DA | SSCT36V12DA | JP | VP | 36 | 40.0 | 46.0 | 1 | 5 | 58.1 | 6.9 |
| SSCT40V11DA | SSCT40V12DA | JR | VR | 40 | 44.4 | 51.1 | 1 | 5 | 64.5 | 6.2 |
| SSCT43V11DA | SSCT43V12DA | JT | VT | 43 | 47.8 | 54.9 | 1 | 5 | 69.4 | 5.8 |
| SSCT45V11DA | SSCT45V12DA | RK | WK | 60 | 66.7 | 76.7 | 1 | 5 | 96.8 | 4.1 |
| SSCT48V11DA | SSCT48V12DA | RM | WM | 64 | 71.1 | 81.8 | 1 | 5 | 103 | 3.9 |
| SSCT51V11DA | SSCT51V12DA | RP | WP | 70 | 77.8 | 89.5 | 1 | 5 | 113 | 3.5 |
| SSCT54V11DA | SSCT54V12DA | RR | WR | 75 | 83.0 | 95.8 | 1 | 5 | 121 | 3.3 |
| SSCT58V11DA | SSCT58V12DA | RT | WT | 78 | 86.0 | 99.7 | 1 | 5 | 126 | 3.2 |
| SSCT60V11DA | SSCT60V12DA | RV | WV | 85 | 94.0 | 108.2 | 1 | 5 | 137 | 2.9 |
| SSCT64V11DA | SSCT64V12DA | RX | WX | 90 | 100 | 115.5 | 1 | 5 | 146 | 2.7 |
| SSCT70V11DA | SSCT70V12DA | RZ | WZ | 100 | 111 | 128.0 | 1 | 5 | 162 | 2.5 |
| SSCT75V11DA | SSCT75V12DA | SE | XE | 110 | 122 | 140.5 | 1 | 5 | 177 | 2.3 |
| SSCT78V11DA | SSCT78V12DA | SG | XG | 120 | 133 | 153.0 | 1 | 5 | 193 | 2.1 |
| SSCT85V11DA | SSCT85V12DA | SK | XK | 130 | 144 | 165.5 | 1 | 5 | 209 | 1.9 |
| SSCT90V11DA | SSCT90V12DA | SM | XM | 150 | 167 | 192.5 | 1 | 5 | 243 | 1.6 |
| SSCT100V11DA | SSCT100V12DA | SP | XP | 160 | 178 | 205.0 | 1 | 5 | 259 | 1.5 |
| SSCT110V11DA | SSCT110V12DA | SR | XR | 170 | 189 | 217.5 | 1 | 5 | 275 | 1.5 |
| SSCT120V11DA | SSCT120V12DA | ST | XT | 180 | 200 | 230.4 | 1 | 5 | 290 | 1.4 |
| SSCT130V11DA | SSCT130V12DA | SV | XV | 190 | 211 | 243.2 | 1 | 5 | 306 | 1.3 |
| SSCT150V11DA | SSCT150V12DA | SX | XX | 200 | 222 | 256.0 | 1 | 5 | 322 | 1.2 |
| SSCT160V11DA | SSCT160V12DA | SZ | XZ | 210 | 233 | 268.8 | 1 | 5 | 339 | 1.2 |
| SSCT170V11DA | SSCT170V12DA | ZE | YE | 220 | 244 | 281.6 | 1 | 5 | 355 | 1.1 |
| SSCT180V11DA | SSCT180V12DA | ZG | YG | 250 | 278 | 309.0 | 1 | 5 | 403 | 1.0 |
| SSCT190V11DA | SSCT190V12DA | ZK | YK | 300 | 333 | 371.0 | 1 | 5 | 484 | 0.8 |
| SSCT200V11DA | SSCT200V12DA | ZM | YM | 350 | 389 | 432.0 | 1 | 5 | 565 | 0.7 |
| SSCT210V11DA | SSCT210V12DA | ZP | YP | 400 | 444 | 494.0 | 1 | 5 | 645 | 0.6 |
| SSCT220V11DA | SSCT220V12DA | ZR | YR | 440 | 489 | 543.0 | 1 | 5 | 710 | 0.6 |

- **Typical Performance Characteristics**

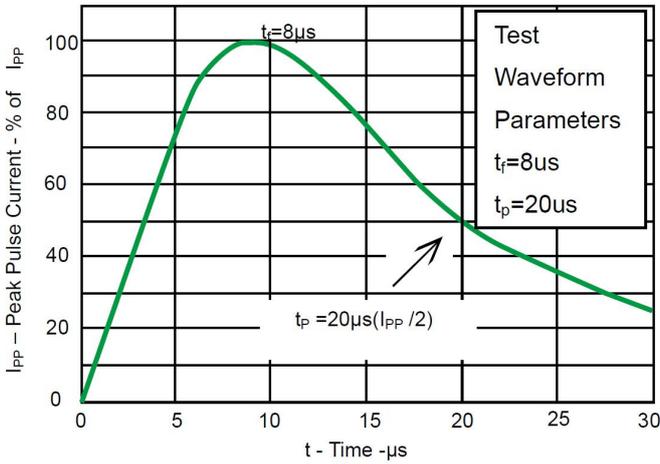


Fig 1. Pulse Waveform

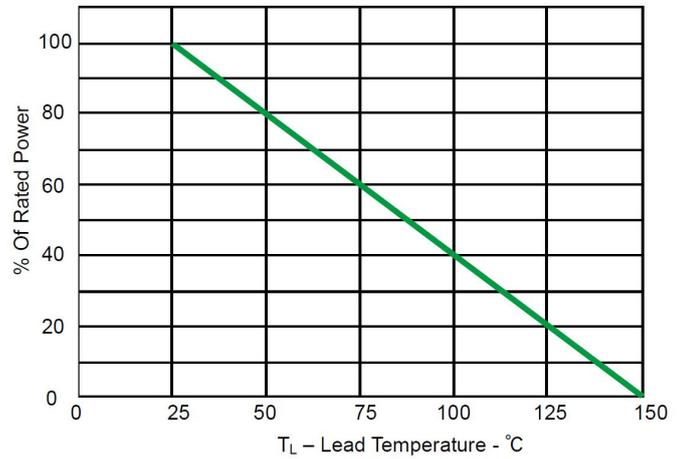
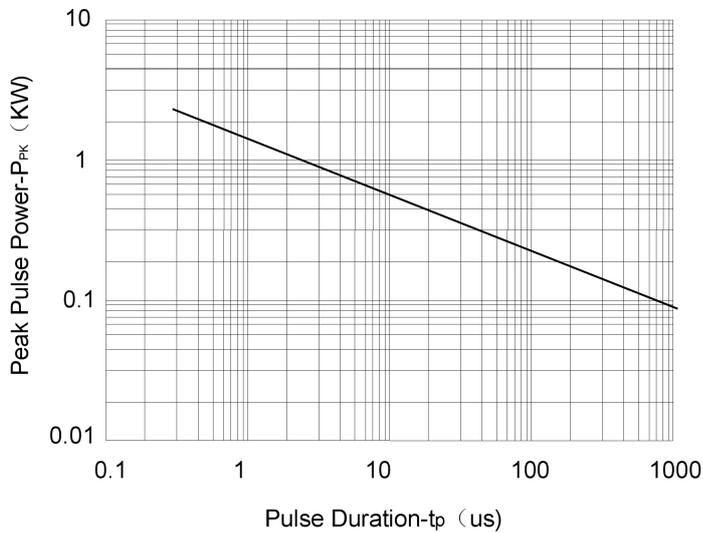


Fig 2. Power Derating Curve



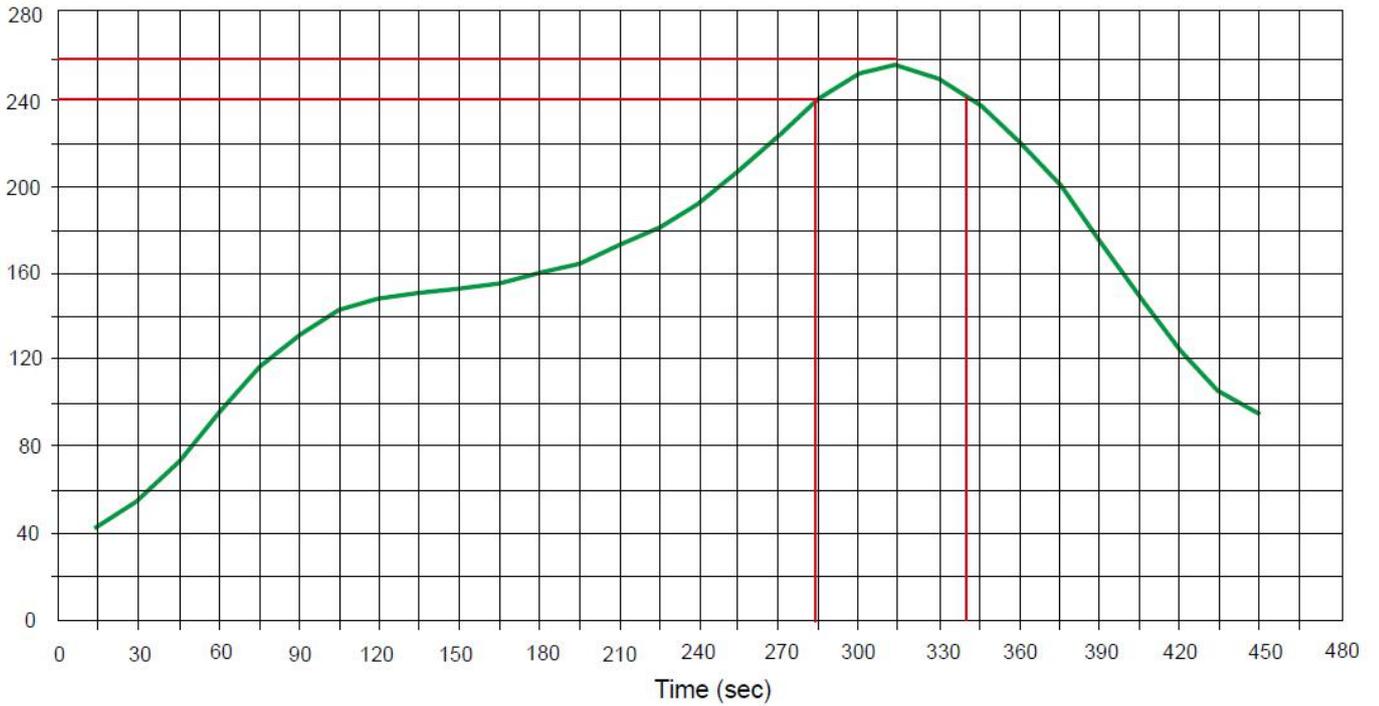
Non-Repetitive Peak Pulse Power vs. Pulse Time



SSCTXXX1XDA

- Solder Reflow Recommendation

Peak Temp=257°C, Ramp Rate=0.802deg. °C/sec





SSCTXXX1XDA

- **Package Information**

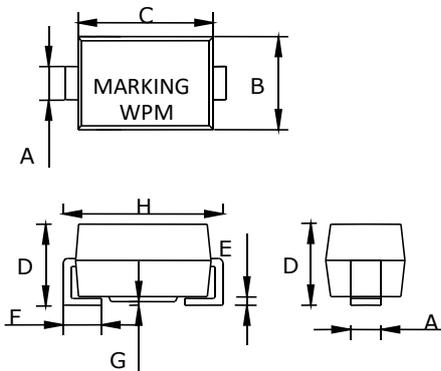
Ordering Information

| Device | Package | Qty per Reel | Reel Size |
|-------------|---------|--------------|-----------|
| SSCTXXX1XDA | SMA | 5000 | 13 Inch |

Mechanical Data

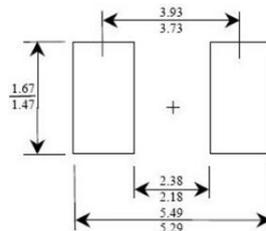
Case: SMA

Case Material: Molded Plastic. UL Flammability



| DIM | Millimeters | | |
|-----|-------------|-------|-------|
| | Min | Nom | Max |
| A | 1.35 | 1.50 | 1.80 |
| B | 2.50 | 2.67 | 2.90 |
| C | 3.90 | 4.40 | 5.10 |
| D | 1.90 | 2.25 | 2.45 |
| E | 0.05 | 0.200 | 0.203 |
| F | 0.76 | 1.14 | 1.52 |
| G | - | - | 0.203 |
| H | 4.80 | 5.0 | 5.30 |

Recommended Pad outline



DISCLAIMER

AFSEMI RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. AFSEMI 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.