

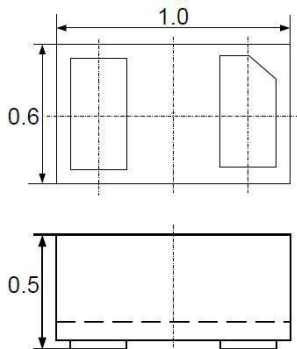
## Description

The SEN1211P1 is a 1 line 12V 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 small size and high ESD surge protection make SEN1211P1 an ideal choice to protect cell phone, digital cameras, audio players and many other portable applications.

## Features

- Junction capacitance( typical value: 55pF)
- Working voltage: 12V
- Low clamping voltage
- 2-pins leadless package
- RoHS Compliant

## Dimensions & Symbol (Unit: mm Max)



Dimensions

Pin and Circuit Schematic

## Mechanical Characteristics

- Package: DFN1006-2L (1.0X0.6X0.5mm)
- Lead Finish: Matte Tin
- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 3 per J-STD-020

## Applications

- Cellular Handsets and Accessories
- Personal Digital Assistants
- Notebooks and Handhelds
- Portable Instrumentation
- Digital Cameras
- Peripherals, Audio Players

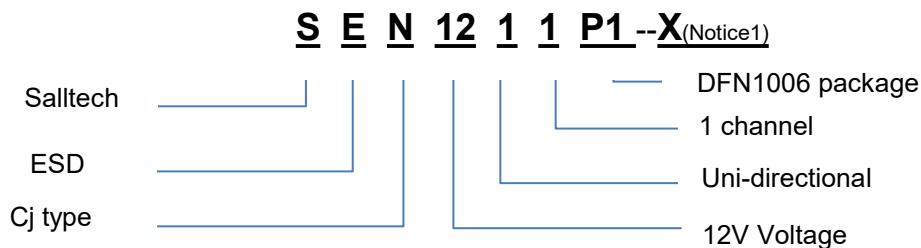
## Marking & Ordering information



\* Remark : 12S or 12T is normal marking, if need special marking please contact with local Salltech sales.

| Part Number | Packaging         | Reel Size |
|-------------|-------------------|-----------|
| SEN1211P1   | 10000/Tape & Reel | 7 inch    |

## Part Number Information



Notice1: X is Customer special code, if there any questions, please contact with local sales

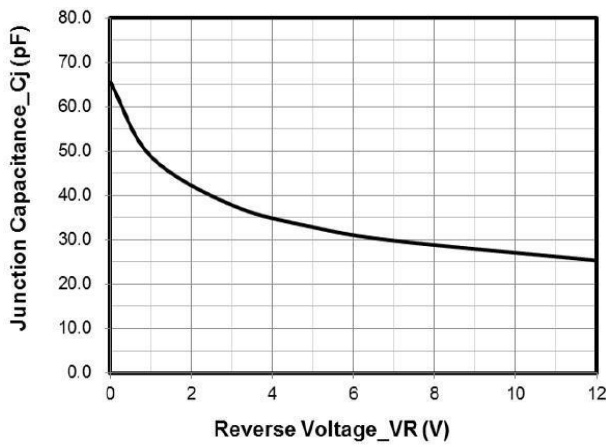
Absolute maximum ratings ( $T_A=25^{\circ}\text{C}$ , RH=45%-75%, unless otherwise noted)

| Parameter                                          | Symbol    | Value       | Unit               |
|----------------------------------------------------|-----------|-------------|--------------------|
| Peak Pulse Power ( $t_p=8/20\mu\text{s}$ waveform) | $P_{pp}$  | 300         | W                  |
| Peak Pulse Current (8/20 $\mu\text{s}$ )           | $I_{pp}$  | 13          | A                  |
| ESD per IEC 61000-4-2 (Air)                        | $V_{ESD}$ | $\pm 30$    | kV                 |
| ESD per IEC 61000-4-2 (Contact)                    |           | $\pm 30$    |                    |
| Operating Temperature Range                        | $T_J$     | -55 to +125 | $^{\circ}\text{C}$ |
| Storage Temperature Range                          | $T_{stg}$ | -55 to +150 | $^{\circ}\text{C}$ |

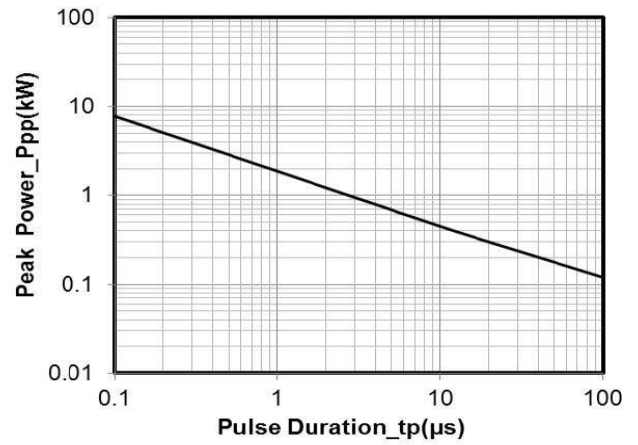
Electrical characteristics ( $T_A=25^{\circ}\text{C}$ )

| Parameter               | Symbol    | Min  | Typ | Max | Unit          | Test Condition                                     |
|-------------------------|-----------|------|-----|-----|---------------|----------------------------------------------------|
| Reverse Working Voltage | $V_{RWM}$ |      |     | 12  | V             |                                                    |
| Breakdown Voltage       | $V_{BR}$  | 13.3 |     |     | V             | $I_T = 1\text{mA}$                                 |
| Reverse Leakage Current | $I_R$     |      |     | 0.2 | $\mu\text{A}$ | $V_{RWM} = 12\text{ V}$                            |
| Forward Voltage         |           |      |     | 1.2 | V             | $I_F = 10\text{mA}$                                |
| Clamping Voltage        | $V_C$     |      |     | 16  | V             | $I_{PP} = 1\text{A}$ (8 x 20 $\mu\text{s}$ pulse)  |
| Clamping Voltage        | $V_C$     |      |     | 24  | V             | $I_{PP} = 13\text{A}$ (8 x 20 $\mu\text{s}$ pulse) |
| Junction Capacitance    | $C_J$     |      | 55  |     | pF            | $V_R = 0\text{V}$ , $f = 1\text{MHz}$              |

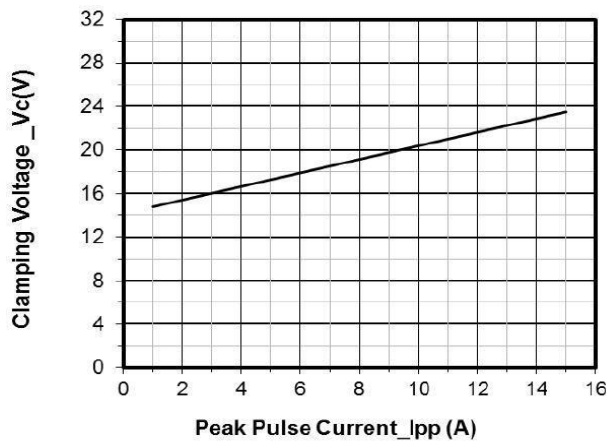
Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise Specified)



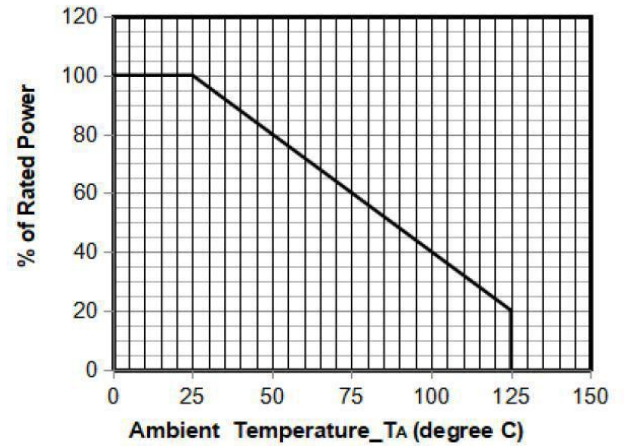
Junction Capacitance vs. Reverse Voltage



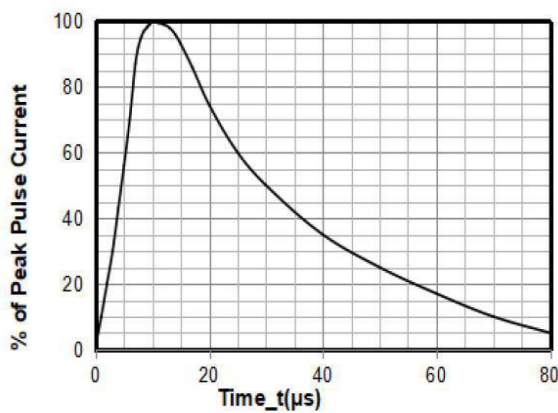
Peak Pulse Power vs. Pulse Time



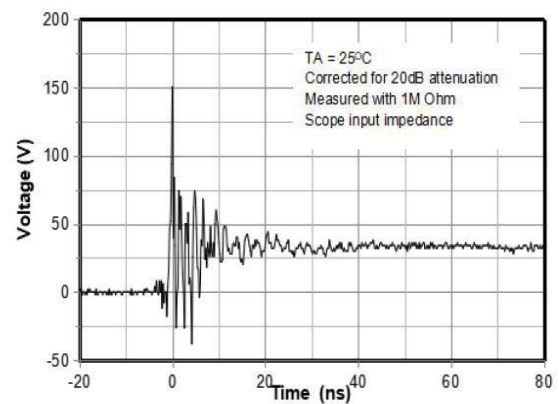
Clamping Voltage vs. Peak Pulse Current



Power Derating Curve



8 X 20  $\mu\text{s}$  Pulse Waveform

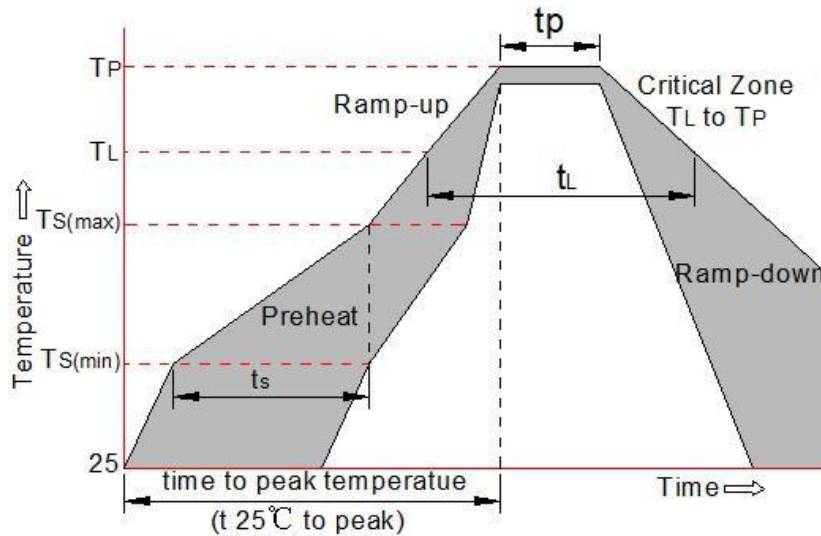


ESD Clamping Voltage

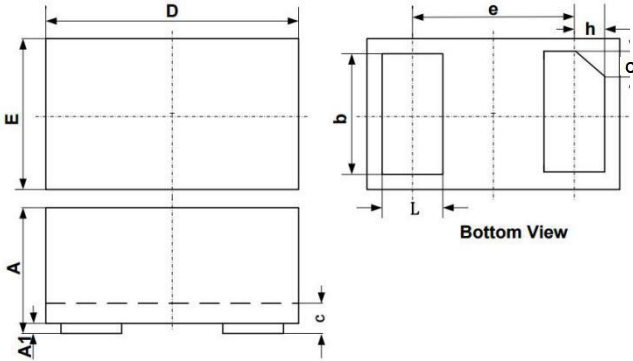
8 kV Contact per IEC61000-4-2

## Soldering Parameter

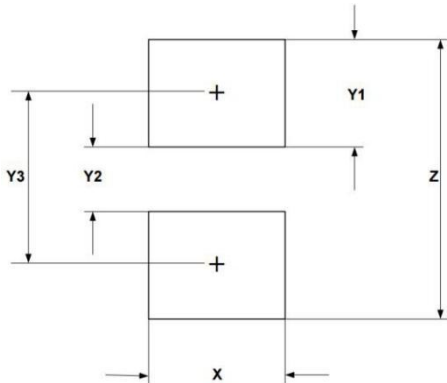
| Reflow Condition                                        |                                   | Pb-Free assembly<br>(see as bellow) |
|---------------------------------------------------------|-----------------------------------|-------------------------------------|
| Pre Heat                                                | -Temperature Min ( $T_{s(min)}$ ) | +150°C                              |
|                                                         | -Temperature Max( $T_{s(max)}$ )  | +200°C                              |
|                                                         | -Time (Min to Max) ( $t_s$ )      | 60-180 secs.                        |
| Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak) |                                   | 3°C/sec. Max                        |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                    |                                   | 3°C/sec. Max                        |
| Reflow                                                  | -Temperature( $T_L$ ) (Liquid us) | +217°C                              |
|                                                         | -Temperature( $t_L$ )             | 60-150 secs.                        |
| Peak Temp ( $T_p$ )                                     |                                   | +260(+0/-5)°C                       |
| Time within 5°C of actual Peak Temp ( $t_p$ )           |                                   | 30 secs. Max                        |
| Ramp-down Rate                                          |                                   | 6°C/sec. Max                        |
| Time 25°C to Peak Temp ( $T_P$ )                        |                                   | 8 min. Max                          |
| Do not exceed                                           |                                   | +260°C                              |



## Package Mechanical Data



Suggested Land pattern of PCB design

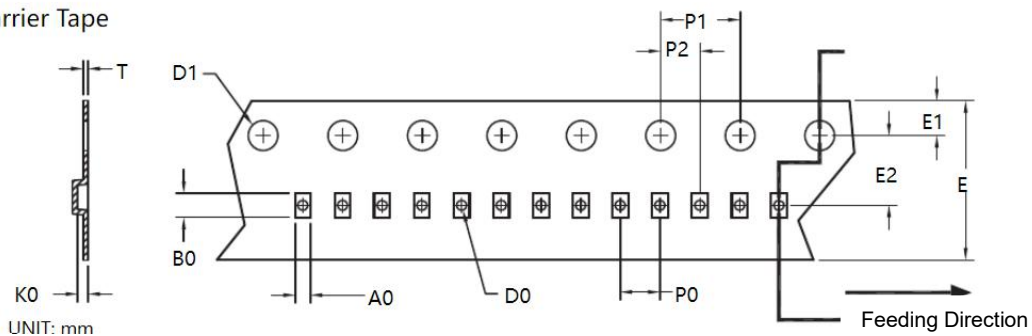


| SYM | DIMENSIONS  |      |      |           |       |       |
|-----|-------------|------|------|-----------|-------|-------|
|     | MILLIMETERS |      |      | INCHES    |       |       |
|     | MIN         | NOM  | MAX  | MIN       | NOM   | MAX   |
| A   | 0.45        | 0.50 | 0.55 | 0.018     | 0.020 | 0.022 |
| A1  | 0.00        | 0.02 | 0.05 | 0.000     | 0.001 | 0.002 |
| b   | 0.45        | 0.50 | 0.55 | 0.018     | 0.020 | 0.022 |
| c   | 0.12        | 0.15 | 0.18 | 0.005     | 0.006 | 0.007 |
| D   | 0.95        | 1.00 | 1.05 | 0.037     | 0.039 | 0.041 |
| e   | 0.65 BSC    |      |      | 0.026 BSC |       |       |
| E   | 0.55        | 0.60 | 0.65 | 0.022     | 0.024 | 0.026 |
| L   | 0.20        | 0.25 | 0.30 | 0.008     | 0.010 | 0.012 |
| h   | 0.07        | 0.12 | 0.17 | 0.003     | 0.005 | 0.007 |

| SYM | DIMENSIONS  |        |
|-----|-------------|--------|
|     | MILLIMETERS | INCHES |
| X   | 0.60        | 0.024  |
| Y1  | 0.50        | 0.020  |
| Y2  | 0.30        | 0.012  |
| Y3  | 0.80        | 0.032  |
| Z   | 1.30        | 0.052  |

## Tape and Reel Information

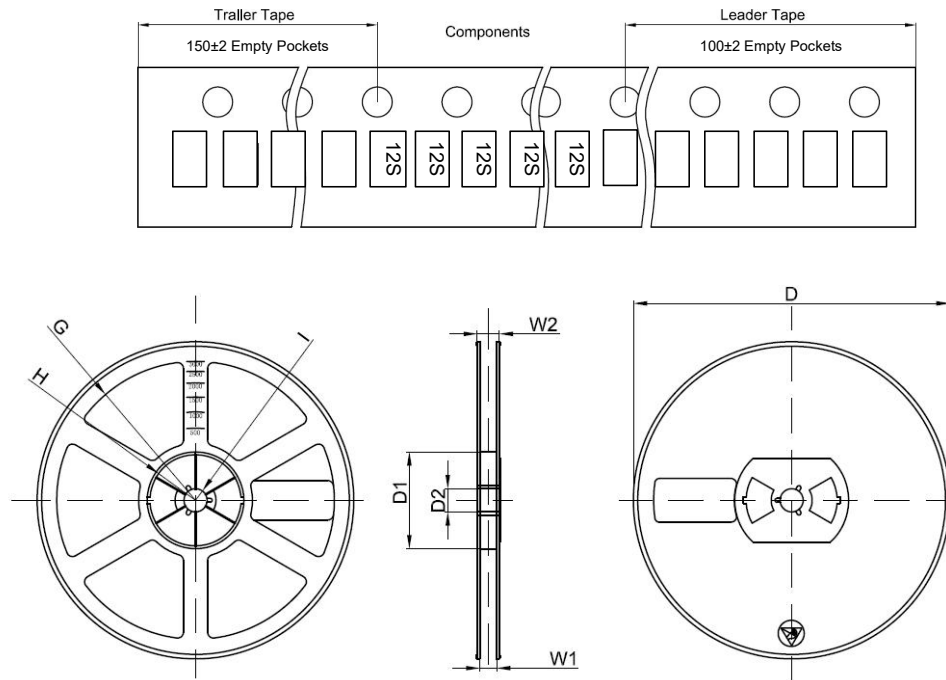
Carrier Tape



Dimensions are in millimeter

| Package type | A0  | B0  | D0  | P0  | P1  | P2  | P   | E   | E1   | E2   | D1  | K0   | T    | Q'ty  |
|--------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-----|------|------|-------|
| DFN1006-2/3L | 0.7 | 1.1 | 0.5 | 2.0 | 4.0 | 2.0 | 4.0 | 8.0 | 1.75 | 3.50 | 2.0 | 0.60 | 0.25 | 10000 |

## DFN1006 Traller, Leader and Reel



| Dimensions are in millimeter |     |       |       |    |       |      |       |       |
|------------------------------|-----|-------|-------|----|-------|------|-------|-------|
| Reel Option                  | D   | D1    | D2    | G  | H     | I    | W1    | W2    |
| 7"Dla                        | 178 | 54.40 | 13.00 | 78 | 25.60 | 6.50 | 14.40 | 12.30 |

## Contact Information

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## Revision History

| Release Date | Revision | Comments                                 |
|--------------|----------|------------------------------------------|
| 2017-8-17    | A        | New Release                              |
| 2021-11-13   | B        | Add Body Mark, Tape and Reel information |