

ESD54371SN

1-Line, Bi-directional, Transient Voltage Suppressors

www.omnivision-group.com

Descriptions

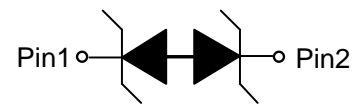
The ESD54371SN is a bi-directional TVS (Transient Voltage Suppressor). It is specifically designed to protect sensitive electronic components which are connected to low speed data lines and control lines from over-stress caused by ESD (Electrostatic Discharge), EFT (Electrical Fast Transients) and Lightning.

The ESD54371SN may be used to provide ESD protection up to $\pm 30\text{kV}$ (contact and air discharge) according to IEC61000-4-2, and withstand peak pulse current up to 8A (8/20 μs) according to IEC61000-4-5.

The ESD54371SN is available in DSN1006-2L package. Standard products are Pb-free and Halogen-free.



DSN1006-2L (Bottom View)



Circuit diagram

Features

- Reverse stand-off voltage: $\pm 5\text{V}$ Max.
- Transient protection for each line according to IEC61000-4-2 (ESD): $\pm 30\text{kV}$ (contact and air discharge) IEC61000-4-5 (surge): 8A (8/20 μs)
- Capacitance: $C_J = 12\text{pF}$ typ.
- Low leakage current: $I_R < 1\text{nA}$ typ.
- Low clamping voltage: $V_{CL} = 9\text{V}$ typ. @ $I_{PP} = 16\text{A}$ (TLP)
- Solid-state silicon technology

Applications

- Power port prohibited
- Cellular handsets
- Tablets
- Laptops
- Other portable devices
- Network communication devices



6 = Device code

* = Month code (A~Z)

Marking (Top View)

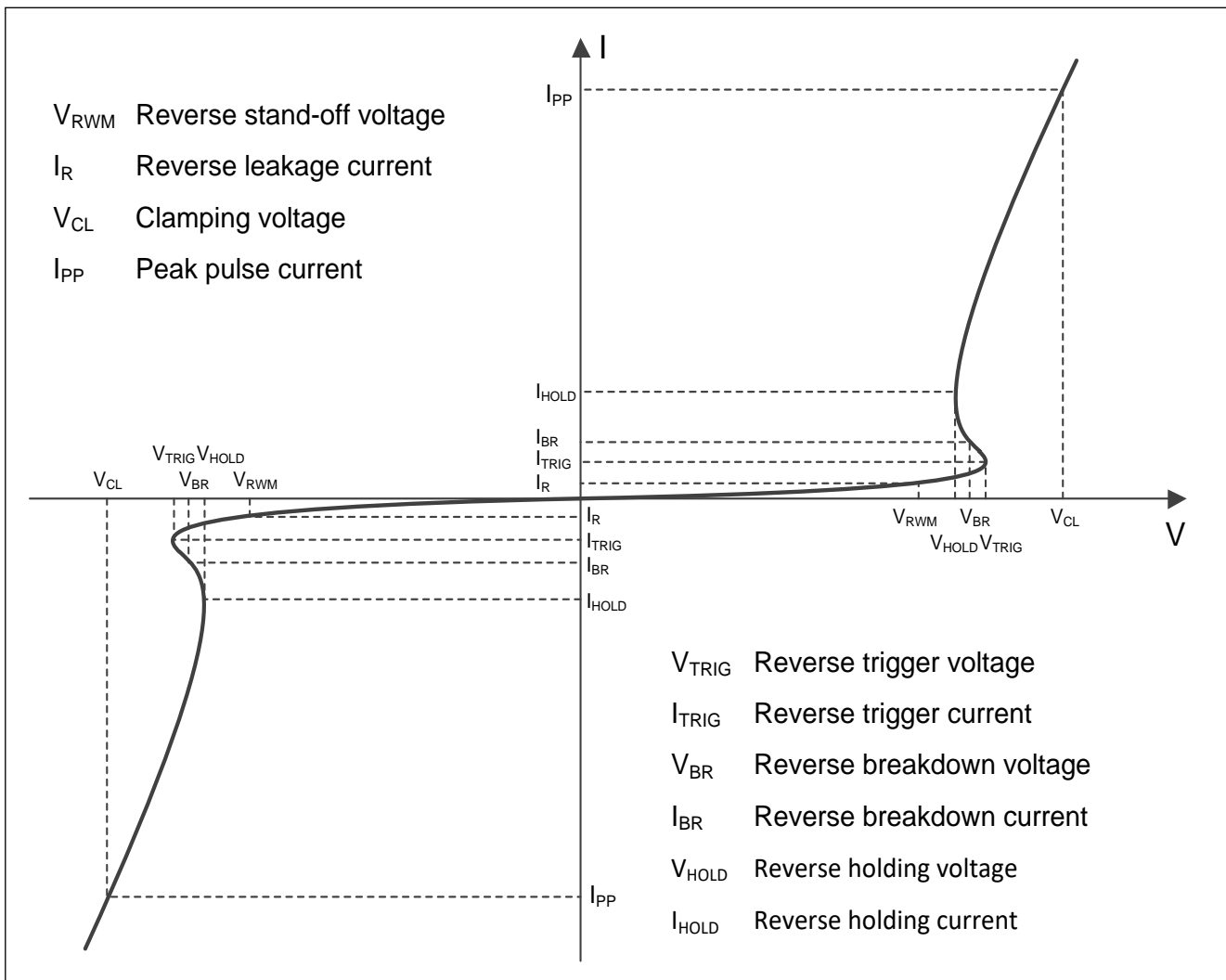
Order information

| Device | Package | Shipping |
|-----------------|------------|-----------------|
| ESD54371SN-2/TR | DSN1006-2L | 10000/Tape&Reel |

Absolute maximum ratings

| Parameter | Symbol | Rating | Unit |
|---|-----------|----------|-------------|
| Peak pulse power ($t_p = 8/20\mu s$) | P_{pk} | 80 | W |
| Peak pulse current ($t_p = 8/20\mu s$) | I_{PP} | 8 | A |
| ESD according to IEC61000-4-2 air discharge | V_{ESD} | ± 30 | kV |
| ESD according to IEC61000-4-2 contact discharge | | ± 30 | |
| Junction temperature | T_J | 125 | $^{\circ}C$ |
| Operation junction temperature | T_{OP} | -40~85 | $^{\circ}C$ |
| Lead temperature | T_L | 260 | $^{\circ}C$ |
| Storage temperature | T_{STG} | -55~150 | $^{\circ}C$ |

Electrical characteristics ($T_A=25^{\circ}C$, unless otherwise noted)



Definitions of electrical characteristics

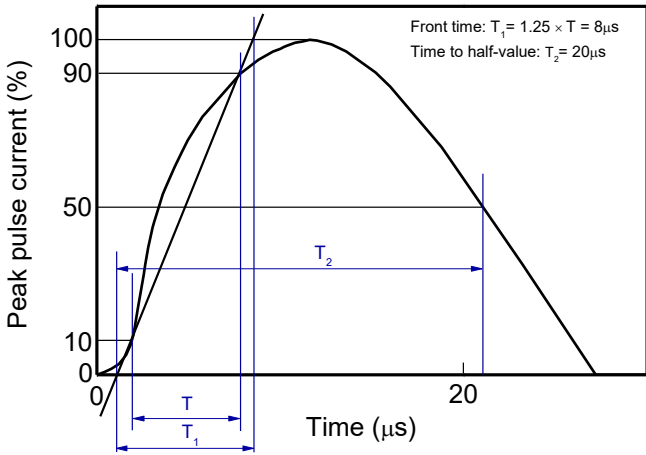
Electrical characteristics (T_A=25 °C, unless otherwise noted)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|----------------------------------|------------------|---|------|------|------|------|
| Reverse stand-off voltage | V _{RWM} | | | | ±5 | V |
| Reverse leakage current | I _R | V _{RWM} = 5V | | <1 | 100 | nA |
| Reverse breakdown voltage | V _{BR} | I _{BR} = 1mA | 5.6 | | 8.4 | V |
| Clamping voltage ¹⁾ | V _{CL} | I _{PP} = 16A, t _p = 100ns | | 9 | | V |
| Clamping voltage ²⁾ | V _{CL} | V _{ESD} = 8kV | | 9 | | V |
| Clamping voltage ³⁾ | V _{CL} | I _{PP} = 8A, t _p = 8/20μs | | | 10 | V |
| Dynamic resistance ¹⁾ | R _{DYN} | | | 0.20 | | Ω |
| Junction capacitance | C _J | V _R = 0V, f = 1MHz | | 12 | 15 | pF |

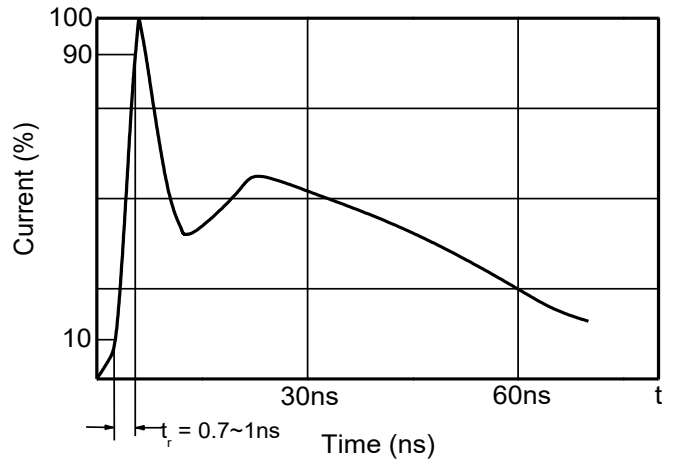
Notes:

- 1) TLP parameter: Z₀ = 50Ω, t_p = 100ns, t_r = 2ns, averaging window from 60ns to 80ns. R_{DYN} is calculated from 4A to 16A.
- 2) Contact discharge mode, according to IEC61000-4-2.
- 3) Non-repetitive current pulse, according to IEC61000-4-5.
- 4) Do not use it in power port.

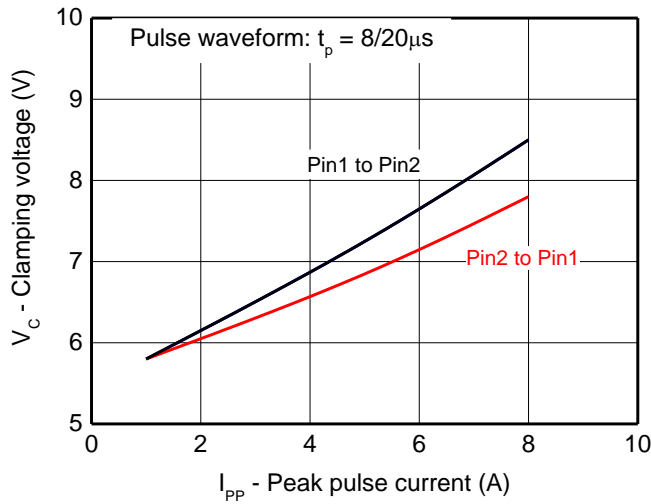
Typical characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)



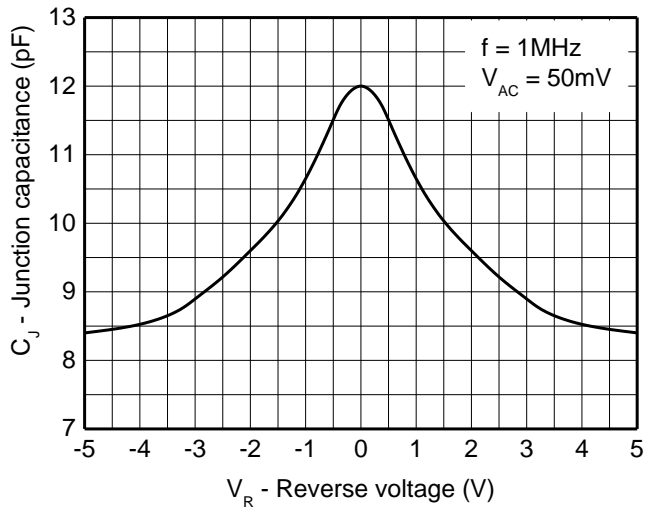
8/20 μs waveform per IEC61000-4-5



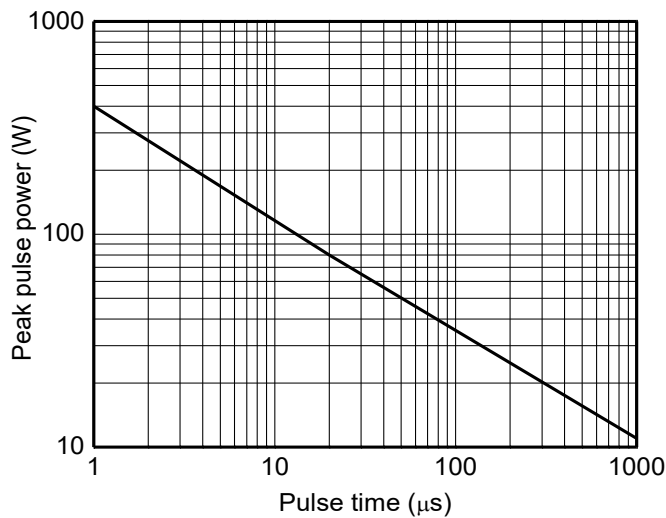
Contact discharge current waveform per IEC61000-4-2



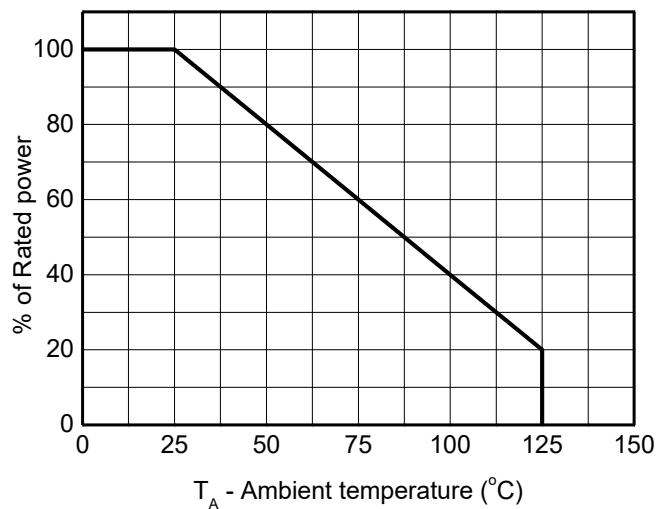
Clamping voltage vs. Peak pulse current



Capacitance vs. Reverse voltage

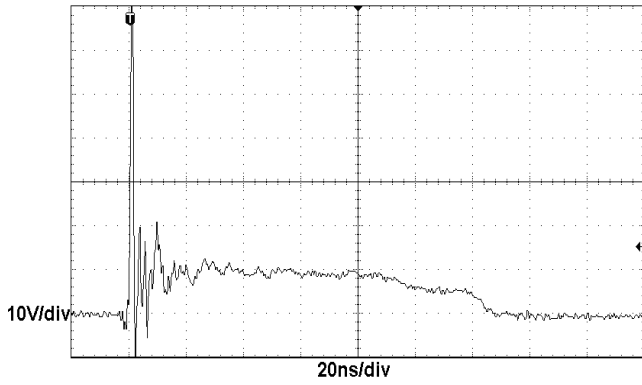


Non-repetitive peak pulse power vs. Pulse time

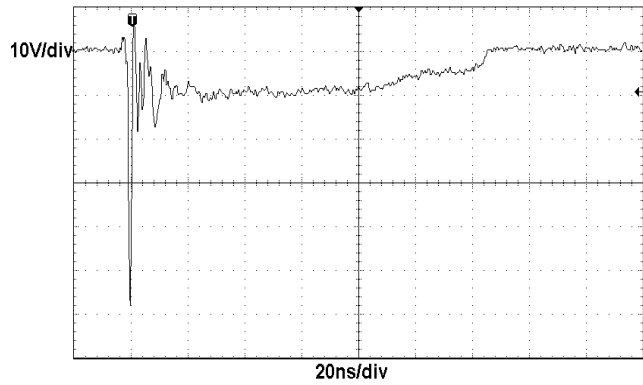


Power derating vs. Ambient temperature

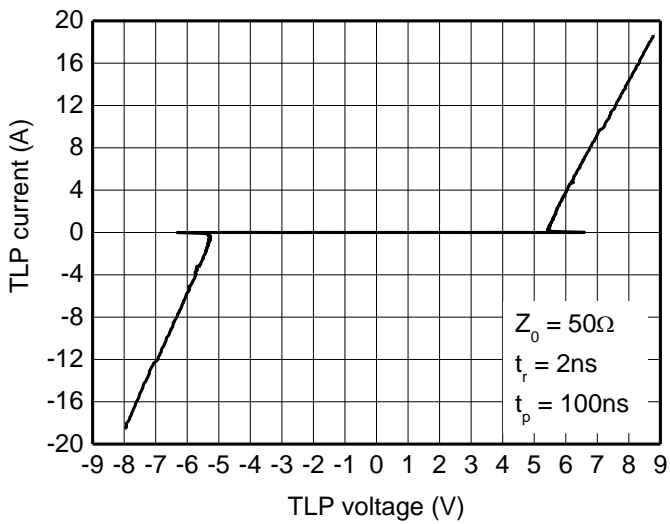
Typical characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)



ESD clamping
(+8kV contact discharge per IEC61000-4-2)



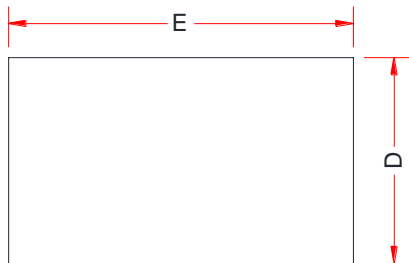
ESD clamping
(-8kV contact discharge per IEC61000-4-2)



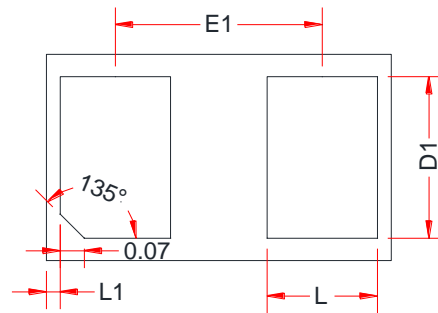
TLP Measurement

PACKAGE OUTLINE DIMENSIONS

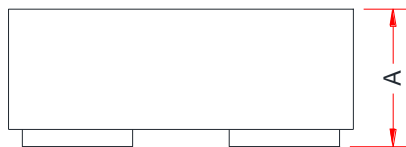
DSN1006-2L



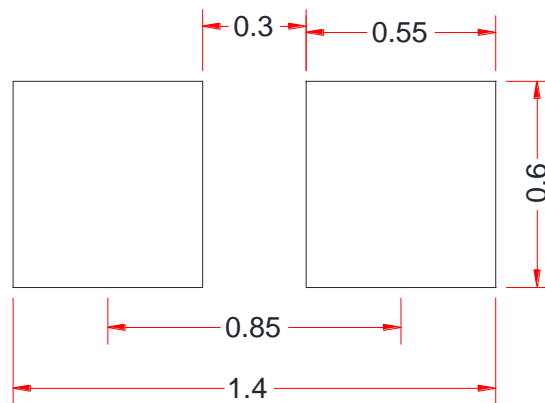
TOP VIEW



BOTTOM VIEW



SIDE VIEW

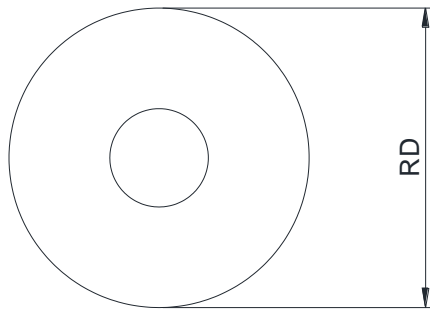


RECOMMENDED LAND PATTERN (Unit:mm)

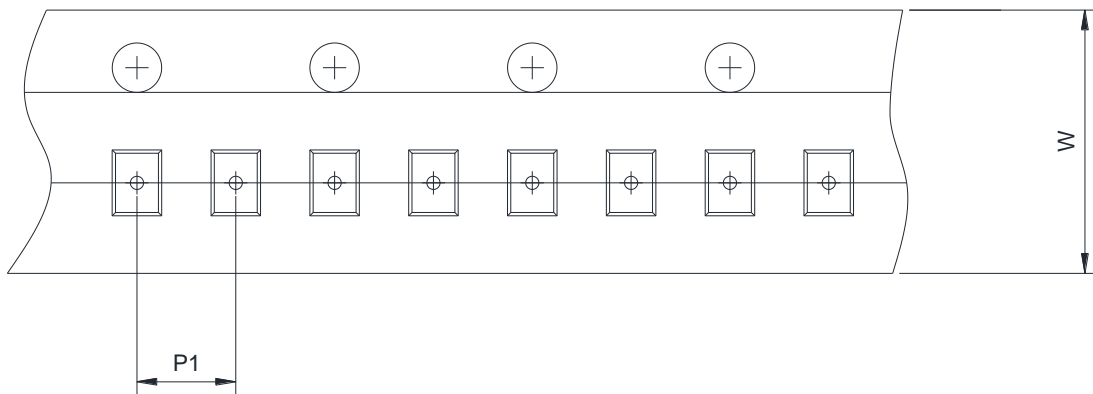
| Symbol | Dimensions in Millimeters | | |
|--------|---------------------------|------|------|
| | Min. | Typ. | Max. |
| A | 0.35 | 0.40 | 0.45 |
| D | 0.55 | 0.60 | 0.65 |
| E | 0.95 | 1.00 | 1.05 |
| D1 | 0.42 | 0.47 | 0.52 |
| E1 | 0.55 | 0.60 | 0.65 |
| L | 0.27 | 0.32 | 0.37 |
| L1 | 0.00 | - | 0.10 |

TAPE AND REEL INFORMATION

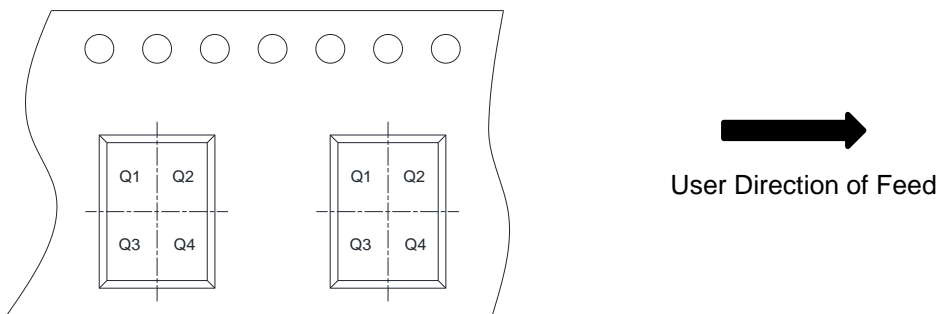
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



| | | | |
|------|---|---|--|
| RD | Reel Dimension | <input checked="" type="checkbox"/> 7inch | <input type="checkbox"/> 13inch |
| W | Overall width of the carrier tape | <input checked="" type="checkbox"/> 8mm | <input type="checkbox"/> 12mm <input type="checkbox"/> 16mm |
| P1 | Pitch between successive cavity centers | <input checked="" type="checkbox"/> 2mm | <input type="checkbox"/> 4mm <input type="checkbox"/> 8mm |
| Pin1 | Pin1 Quadrant | <input checked="" type="checkbox"/> Q1 | <input checked="" type="checkbox"/> Q2 <input type="checkbox"/> Q3 <input type="checkbox"/> Q4 |