

DESCRIPTION

Designed to protect voltage sensitive electronic components from ESD and other transients. Excellent clamping capability, low leakage, low capacitance, and fast response time provide best in class protection on designs that are exposed to ESD.

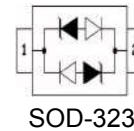
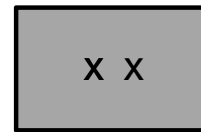
The combination of small size, low capacitance, and high level of ESD protection makes them a flexible solution for applications such as HDMI, Display Port TM, and MDDI interfaces. It is designed to replace multiplayer varistors (MLV) in consumer equipments applications such as mobile phone, notebook, PAD, STB, LCD TV etc.

FEATURES

Bi-directional ESD protection of one line
 Low capacitance: 1pF
 Low reverse stand-off voltage: 3.3V, 5V, 8V, 12V, 15V, 24V
 Low reverse clamping voltage
 Low leakage current
 Excellent package: 1.7mm × 1.3mm × 1.0mm
 Fast response time
 JESD22-A114-B ESD Rating of class 3B per human body model
 IEC 61000-4-2 Level 4 ESD protection

APPLICATIONS

Cellular phones
 Audio and video equipment
 Handheld-Wireless Systems
 PDAs
 Ethernet – 10/100/1000 Base
 Portable electronics
 USB Interface
 Other electronics equipments communication systems



Absolute Maximum Rating

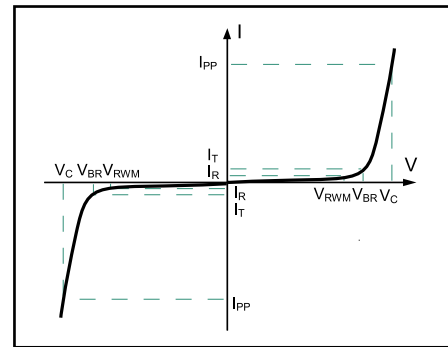
| Symbol | Parameter | Value | Units |
|-----------|---------------------------------|----------|-------|
| V_{ESD} | ESD per IEC 61000-4-2 (Air) | ±20 | kV |
| | ESD per IEC 61000-4-2 (Contact) | ±20 | |
| P_{PP} | Peak Pulse Power (8/20μs) | 350 | W |
| T_{OPT} | Operating Temperature | -55/+150 | °C |
| T_{STG} | Storage Temperature | -55/+150 | °C |
| T_L | Lead Soldering Temperature | 260 | °C |

Electrical Characteristics

| PART | DEVICE MARKING | V_{RWM} | V_B | I_T | $V_C@1A$ | V_C | | I_R | C |
|-------|----------------|---------------|---------------|-------|---------------|---------------|------|-----------------------|----------------|
| | | (V) (max.) | (V) (min.) | (mA) | (V) (max.) | (V) (max.) | (@A) | (μA) (max.) | (pF) (typ.) |
| BV03C | CC | 3.3 | 4.0 | 1 | 7.0 | 15 | 20 | 1 | 1 |
| BV05C | C05 | 5.0 | 6.0 | 1 | 9.8 | 20 | 20 | 1 | 1 |
| BV08C | BC | 8.0 | 8.5 | 1 | 13.4 | 25 | 15 | 1 | 1 |
| BV12C | DC | 12.0 | 13.3 | 1 | 19.0 | 30 | 12 | 1 | 1 |
| BV15C | EC | 15.0 | 16.7 | 1 | 24.0 | 40 | 10 | 1 | 1 |
| BV24C | HC | 24.0 | 26.7 | 1 | 43.0 | 60 | 6 | 1 | 1 |

Electrical Parameters (TA = 25°C unless otherwise noted)

| Symbol | Parameter |
|-----------|-------------------------------------|
| V_C | Clamping Voltage @ I_{PP} |
| I_{PP} | Peak Pulse Current |
| V_{BR} | Breakdown Voltage @ I_T |
| I_T | Test Current |
| I_R | Reverse Leakage Current @ V_{RWM} |
| V_{RWM} | Reverse Standoff Voltage |



V-I characteristics for a Bi-directional TVS

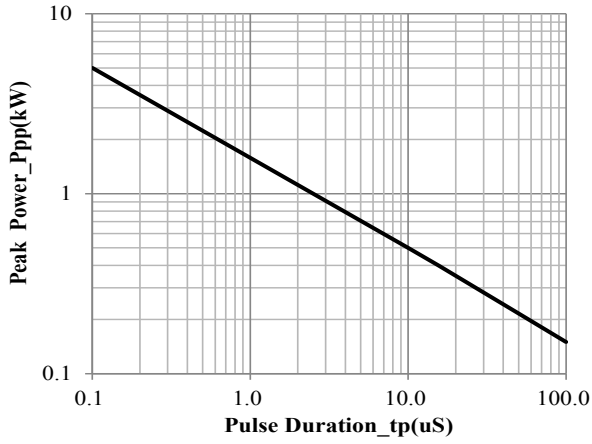
ESD standards compliance IEC61000-4-2 Standard

| Contact Discharge | | Air Discharge | |
|-------------------|-----------------|---------------|-----------------|
| Level | Test Voltage kV | Level | Test Voltage kV |
| 1 | 2 | 1 | 2 |
| 2 | 4 | 2 | 4 |
| 3 | 6 | 3 | 8 |
| 4 | 8 | 4 | 15 |

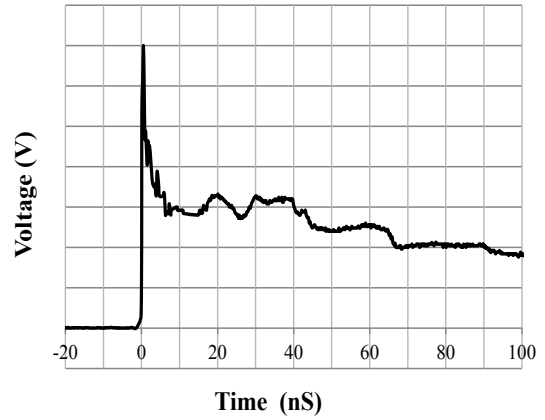
JESD22-A114-B Standard

| ESD Class | Human Body Discharge V |
|-----------|------------------------|
| 0 | 0~249 |
| 1A | 250~499 |
| 1B | 500~999 |
| 1C | 1000~1999 |
| 2 | 2000~3999 |
| 3A | 4000~7999 |
| 3B | 8000~15999 |

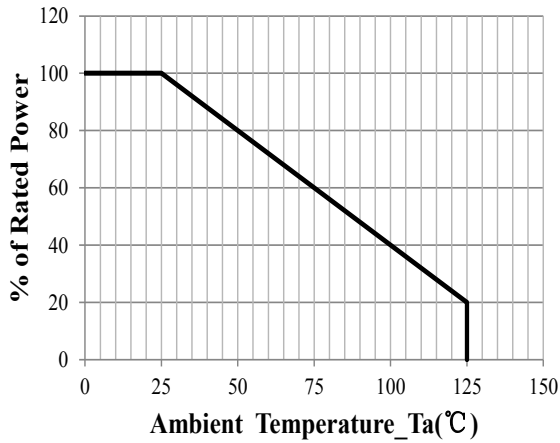
RATING AND CHARACTERISTIC CURVES



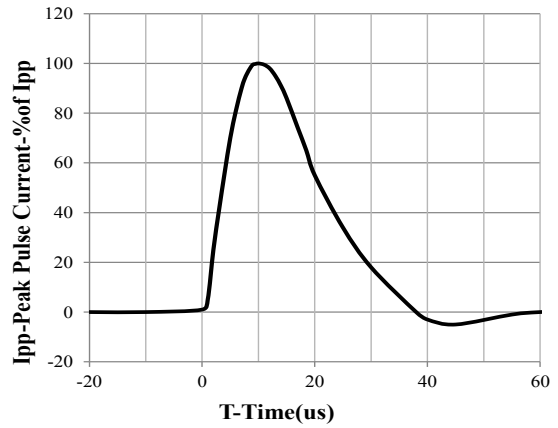
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform



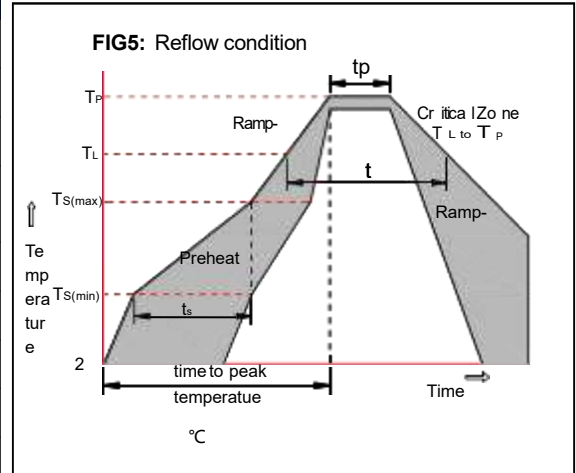
Power Derating Curve



8 X 20us Pulse Waveform

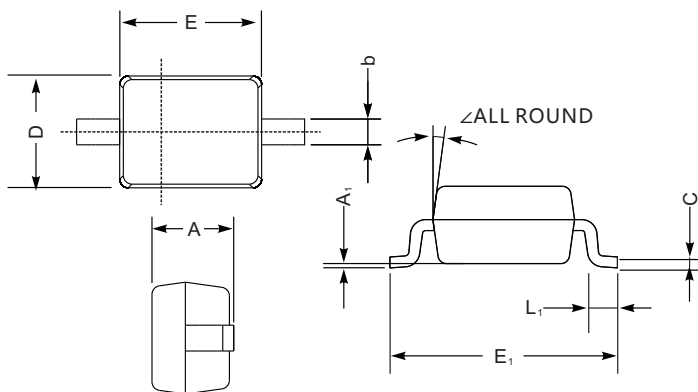
Soldering parameters

| Reflow Condition | | Pb-Free assembly (see as below) |
|---|-----------------------------------|------------------------------------|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150°C |
| | -Temperature Max($T_{s(max)}$) | +200°C |
| | -Time (Min to Max) (ts) | 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 |



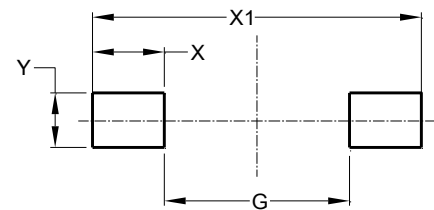
Package Dimensions & Suggested Pad Layout

SOD323



SOD-323 mechanical data

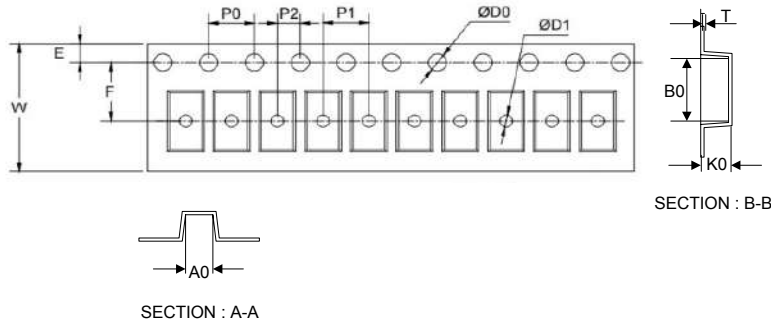
| UNIT | | A | C | D | E | E ₁ | b | L ₁ | A ₁ | ∠ |
|------|-----|-----|------|-----|-----|----------------|------|----------------|----------------|----|
| mm | max | 1.1 | 0.15 | 1.4 | 1.8 | 2.75 | 0.4 | 0.45 | 0.2 | 9° |
| | min | 0.8 | 0.08 | 1.2 | 1.4 | 2.55 | 0.25 | 0.2 | — | |
| mil | max | 43 | 5.9 | 55 | 70 | 108 | 16 | 16 | 8 | |
| | min | 32 | 3.1 | 47 | 63 | 100 | 9.8 | 7.9 | — | |



| Dimensions | Value (in mm) |
|------------|---------------|
| G | 1.40 |
| X | 1.20 |
| X1 | 3.80 |
| Y | 1.00 |

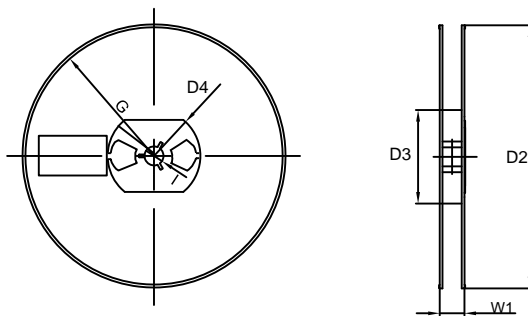
Tape & reel specification

Tape



| Symbol | Dimension (mm) |
|--------|----------------|
| P0 | 4.00±0.20 |
| P1 | 4.00±0.20 |
| P2 | 2.00±0.20 |
| D0 | 1.55±0.20 |
| D1 | 1.00±0.20 |
| E | 1.55±0.25 |
| F | 3.60±0.20 |
| W | 8.00±0.20 |
| A0 | 2.00±0.20 |
| B0 | 3.25±0.20 |
| K0 | 1.35±0.20 |
| T | 0.23±0.10 |

7" Reel



| | |
|----|-----------|
| D2 | 177.0±5.0 |
| D3 | 55Min. |
| D4 | R24.6±2.0 |
| G | R82.0±2.0 |
| I | 13.0±2.0 |
| W1 | 10.20±3.0 |

Quantity: 3000PCS