TECH PUBLIC
台舟电子

# SJD12 Series

## 200W Surface Mount Transient Voltage Suppressors

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## Features

- Peak power disspation
  200W@10 x 1000 us Pluse
- Low incremental surge resistance
- Excellent clamping capability
- Fast response time
- Low leakage current
- Halogen free and RoHS compliant
- IEC-61000-4-2 ESD
  30kV(Air), 30kV (Contact)

## Applications

- Personal digital assistants (PDA)
- Cellular handsets & Accessories
- Handhelds and notebooks
- Portable instrumentation

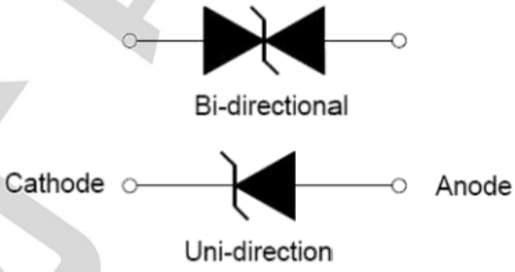
## Mechanical Characteristics

- SOD-123FL surface mount package

## Dimensions and Pin Configuration



SOD-123FL




Pin Configuration

## Maximum Ratings& Thermal Characteristics

**(Tamb=25°C unless otherwise specified)**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak pulse power (tp=10/1000μs waveform) | $P_{PPM}$ | 200 | W |
| Peak pulse power (tp=8/20μs waveform) | $P_{PP}$ | 1000 | W |
| ESD voltage (Contact discharge) | $V_{ESD}$ | ±30 | KV |
| ESD voltage (Air discharge) | $V_{ESD}$ | ±30 | KV |
| Typical thermal resistance junction to ambient | $R_{\theta JA}$ | 220 | ℃/W |
| Storage & operating temperature range | $T_{STG}$ ,$T_J$ | -55~+150 | ℃ |

## Electrical Characteristics (TA=25°C unless otherwise specified)

| Type | | Marking | | $V_{RMW}$ | Breakdown Voltage | | Test Current | Reverse Leakage | Max. Clamp Voltage | Peak Pulse Current |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $V_{BR}$ @ $I_T$ | | $I_T$ | $I_R$ @ $V_{RWM}$ | $V_C$ @ $I_{PP}$ | $I_{PP}$ |
| | | | | | Min | Max | | | | |
| Uni | Bi | Uni | Bi | V | V | V | mA | μA | V | A |
| SJD12A05L01 | SJD12C05L01 | AE | CAE | 5 | 6.4 | 7 | 10 | 400 | 9.2 | 21.7 |
| SJD12A06L01 | SJD12C06L01 | AG | CAG | 6 | 6.67 | 7.37 | 10 | 400 | 10.3 | 19.4 |
| SJD12A6.5L01 | SJD12C6.5L01 | AK | CAK | 6.5 | 7.22 | 7.98 | 10 | 250 | 11.2 | 17.9 |
| SJD12A07L01 | SJD12C07L01 | AM | CAM | 7 | 7.78 | 8.6 | 10 | 100 | 12 | 16.7 |
| SJD12A7.5L01 | SJD12C7.5L01 | AP | CAP | 7.5 | 8.33 | 9.21 | 1 | 50 | 12.9 | 15.5 |
| SJD12A08L01 | SJD12C08L01 | AR | CAR | 8 | 8.89 | 9.83 | 1 | 25 | 13.6 | 14.7 |
| SJD12A8.5L01 | SJD12C8.5L01 | AT | CAT | 8.5 | 9.44 | 10.4 | 1 | 10 | 14.4 | 13.9 |
| SJD12A09L01 | SJD12C09L01 | AV | CAV | 9 | 10 | 11.1 | 1 | 5 | 15.4 | 13 |
| SJD12A10L01 | SJD12C10L01 | AX | CAX | 10 | 11.1 | 12.3 | 1 | 2.5 | 17 | 11.8 |
| SJD12A11L01 | SJD12C11L01 | AZ | CAZ | 11 | 12.2 | 13.5 | 1 | 2.5 | 18.2 | 11 |
| SJD12A12L01 | SJD12C12L01 | BE | CBE | 12 | 13.3 | 14.7 | 1 | 2.5 | 19.9 | 10.1 |
| SJD12A13L01 | SJD12C13L01 | BG | CBG | 13 | 14.4 | 15.9 | 1 | 1 | 21.5 | 9.3 |
| SJD12A14L01 | SJD12C14L01 | BK | CBK | 14 | 15.6 | 17.2 | 1 | 1 | 23.2 | 8.6 |
| SJD12A15L01 | SJD12C15L01 | BM | CBM | 15 | 16.7 | 18.5 | 1 | 1 | 24.4 | 8.2 |
| SJD12A16L01 | SJD12C16L01 | BP | CBP | 16 | 17.8 | 19.7 | 1 | 1 | 26 | 7.7 |
| SJD12A17L01 | SJD12C17L01 | BR | CBR | 17 | 18.9 | 20.9 | 1 | 1 | 27.6 | 7.2 |
| SJD12A18L01 | SJD12C18L01 | BT | CBT | 18 | 20 | 22.1 | 1 | 1 | 29.2 | 6.8 |
| SJD12A20L01 | SJD12C20L01 | BV | CBV | 20 | 22.2 | 24.5 | 1 | 1 | 32.4 | 6.2 |
| SJD12A22L01 | SJD12C22L01 | BX | CBX | 22 | 24.4 | 26.9 | 1 | 1 | 35.5 | 5.6 |
| SJD12A24L01 | SJD12C24L01 | BZ | CBZ | 24 | 26.7 | 29.5 | 1 | 1 | 38.9 | 5.1 |
| SJD12A26L01 | SJD12C26L01 | CE | CCE | 26 | 28.9 | 31.9 | 1 | 1 | 42.1 | 4.8 |
| SJD12A28L01 | SJD12C28L01 | CG | CCG | 28 | 31.1 | 34.4 | 1 | 1 | 45.4 | 4.4 |
| SJD12A30L01 | SJD12C30L01 | CK | CCK | 30 | 33.3 | 36.8 | 1 | 1 | 48.4 | 4.1 |
| SJD12A33L01 | SJD12C33L01 | CM | CCM | 33 | 36.7 | 40.6 | 1 | 1 | 53.3 | 3.8 |
| SJD12A36L01 | SJD12C36L01 | CP | CCP | 36 | 40 | 44.2 | 1 | 1 | 58.1 | 3.4 |
| SJD12A40L01 | SJD12C40L01 | CR | CCR | 40 | 44.4 | 49.1 | 1 | 1 | 64.5 | 3.1 |
| SJD12A43L01 | SJD12C43L01 | CT | CCT | 43 | 47.8 | 52.8 | 1 | 1 | 69.4 | 2.9 |
| SJD12A45L01 | SJD12C45L01 | CV | CCV | 45 | 50 | 55.3 | 1 | 1 | 72.7 | 2.8 |

## Electrical Characteristics (TA=25°C unless otherwise specified)

| Type | | Marking | | $V_{RMW}$ | Breakdown Voltage | | Test Current | Reverse Leakage | Max. Clamp Voltage | Peak Pulse Current |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $V_{BR}$ @ $I_T$ | | $I_T$ | $I_R$ @ $V_{RWM}$ | $V_C$ @ $I_{PP}$ | $I_{PP}$ |
| | | | | | Min | Max | | | | |
| Uni | Bi | Uni | Bi | V | V | V | mA | μA | V | A |
| SJD12A48L01 | SJD12C48L01 | CX | CCX | 48 | 53.3 | 58.9 | 1 | 1 | 77.4 | 2.6 |
| SJD12A51L01 | SJD12C51L01 | CZ | CCZ | 51 | 56.7 | 62.7 | 1 | 1 | 82.4 | 2.4 |
| SJD12A54L01 | SJD12C54L01 | DE | CDE | 54 | 60 | 66.3 | 1 | 1 | 87.1 | 2.3 |
| SJD12A58L01 | SJD12C58L01 | DG | CDG | 58 | 64.4 | 71.2 | 1 | 1 | 93.6 | 2.1 |
| SJD12A60L01 | SJD12C60L01 | DK | CDK | 60 | 66.7 | 73.7 | 1 | 1 | 96.8 | 1.8 |
| SJD12A64L01 | SJD12C64L01 | DM | CDM | 64 | 71.1 | 78.6 | 1 | 1 | 103 | 1.7 |
| SJD12A70L01 | SJD12C70L01 | DP | CDP | 70 | 77.8 | 86 | 1 | 1 | 113 | 1.5 |
| SJD12A75L01 | SJD12C75L01 | DR | CDR | 75 | 83.3 | 92.1 | 1 | 1 | 121 | 1.4 |
| SJD12A78L01 | SJD12C78L01 | DT | CDT | 78 | 86.7 | 95.8 | 1 | 1 | 126 | 1.4 |
| SJD12A85L01 | SJD12C85L01 | DV | CDV | 85 | 94.4 | 104 | 1 | 1 | 137 | 1.3 |
| SJD12A90L01 | SJD12C90L01 | DX | CDX | 90 | 100 | 111 | 1 | 1 | 146 | 1.2 |
| SJD12A100L01 | SJD12C100L01 | DZ | CDZ | 100 | 111 | 123 | 1 | 1 | 162 | 1.1 |
| SJD12A110L01 | SJD12C110L01 | EE | CEE | 110 | 122 | 135 | 1 | 1 | 177 | 1 |
| SJD12A120L01 | SJD12C120L01 | EG | CEG | 120 | 133 | 147 | 1 | 1 | 193 | 0.9 |
| SJD12A130L01 | SJD12C130L01 | EK | CEK | 130 | 144 | 159 | 1 | 1 | 209 | 0.8 |
| SJD12A150L01 | SJD12C150L01 | EM | CEM | 150 | 167 | 185 | 1 | 1 | 243 | 0.7 |
| SJD12A160L01 | SJD12C160L01 | EP | CEP | 160 | 178 | 197 | 1 | 1 | 259 | 0.7 |
| SJD12A170L01 | SJD12C170L01 | ER | CER | 170 | 189 | 209 | 1 | 1 | 275 | 0.6 |

For bi-directional type having Vrwm of 10 Volts and less, the IR limit is double.
For parts without A, the VBR is +10%.

## Typical Characteristics Curves

Figure 1. Peak Pulse Power Rating Curve

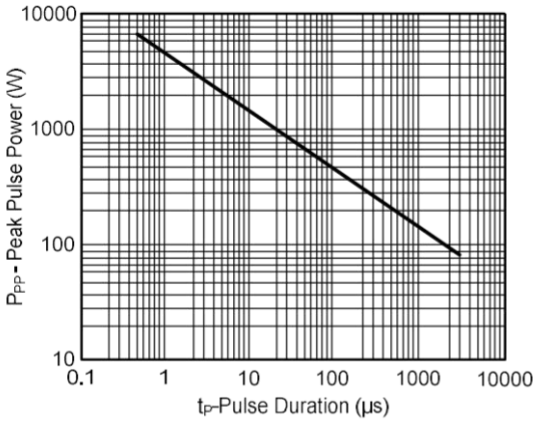



Figure 2. Pulse Derating Curve

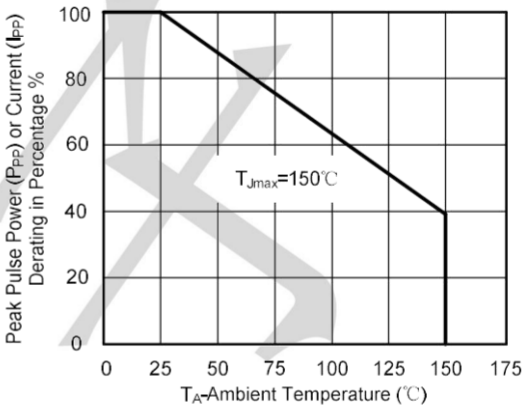



Figure 3. Pulse Waveform

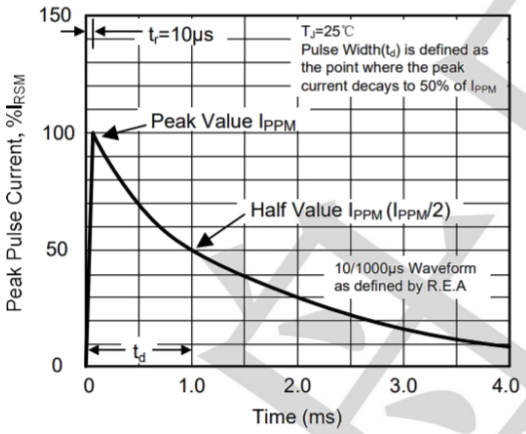



Figure 4. Typical Junction Capacitance

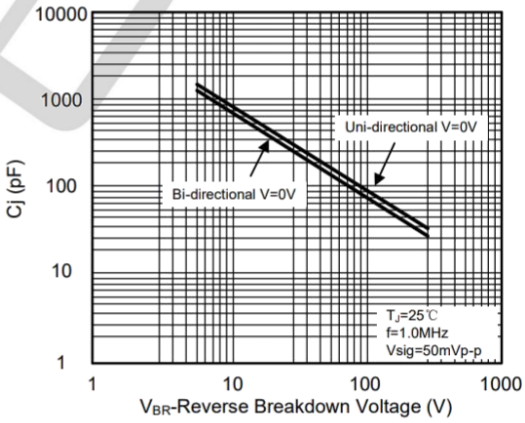



Figure 5. Steady State Power Dissipation Derating Curve

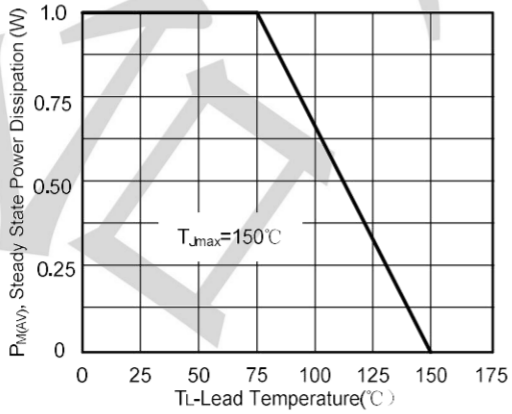
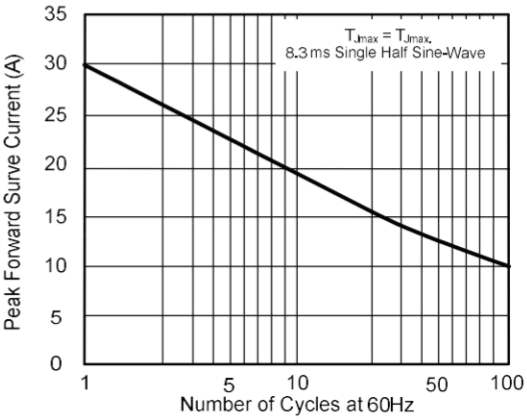
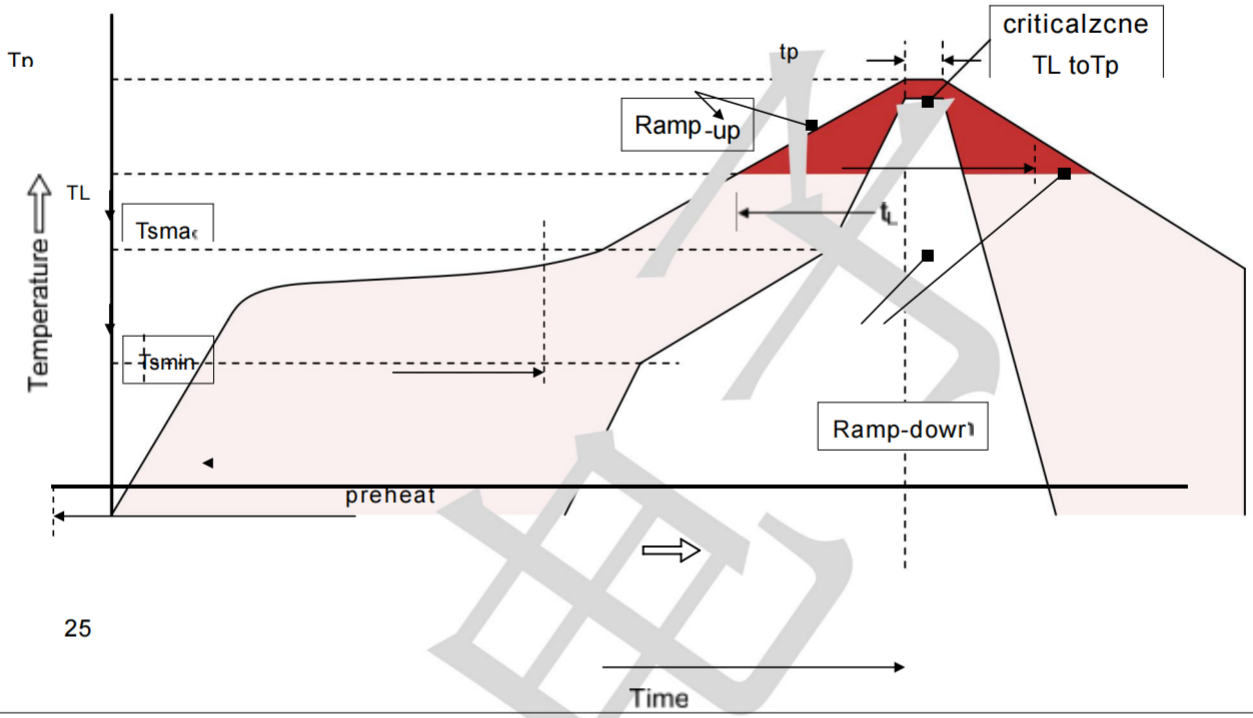



Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



## Recommended Soldering Conditions

Reflow Soldering

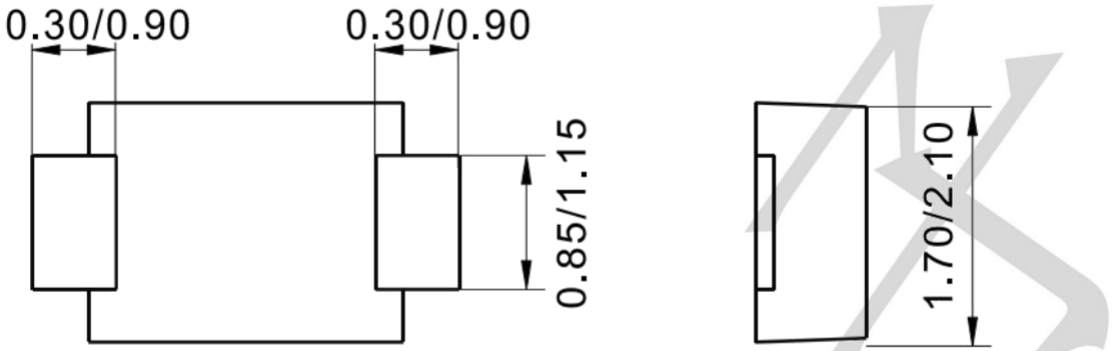


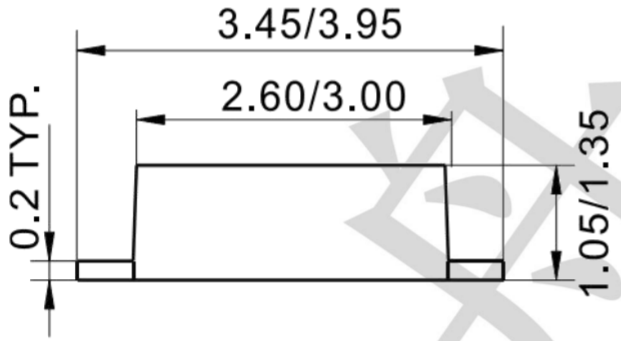

Recommended Conditions

| Profile Feature | Pb-Free Assembly |
|---|---|
| Average ramp-up rate ($T_L$ to $T_P$) | 3℃/second max. |
| Preheat<br>-Temperature Min ($T_{S\ min}$)<br>-Temperature Max ($T_{S\ max}$)<br>-Time (minto max) (ts) | <br>150℃<br>200℃<br>60-180 seconds |
| $T_{S\ max}$ to $T_L$<br>-Ramp-up Rate | <br>3℃/second max. |
| Time maintained above:<br>-Temperature ($T_L$)<br>-Time ($t_L$) | <br>217℃<br>60-150 seconds |
| Peak Temperature ($T_P$) | 260℃ |
| Time within 5℃ of actual Peak Temperature ($t_P$) | 20-40 seconds |
| Ramp-down Rate | 6℃/second max. |
| Time 25℃ to Peak Temperature | 8 minutes max. |

## Package Outline Dimensions (unit: mm)

**SOD-123FL**




## Mounting Pad Layout (unit: mm)

