

Features

- For surface mounted applications in order to optimize board space.
- Low profile package.
- Excellent clamping capability.
- IEC61000-4-2 ESD 30kV Air, 30kV contact compliance
- Protects one I/O line
- Lead-free parts meet RoHS requirements.
- Compliant to Halogen-free

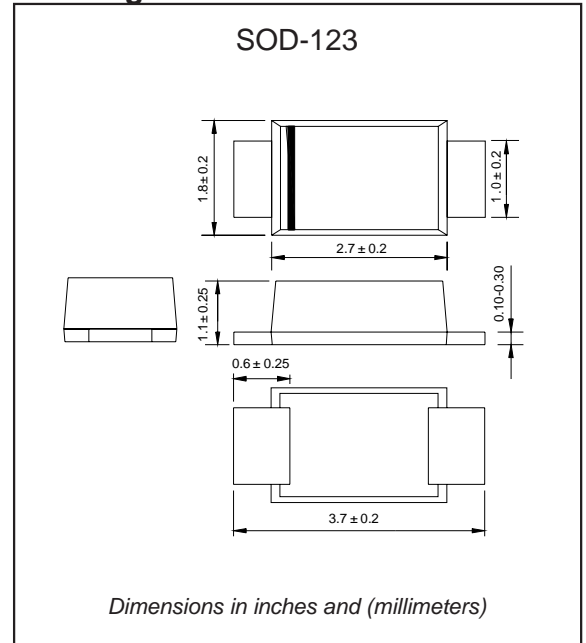
Applications

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

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-123
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any

Package outline



Maximum ratings and Electrical Characteristics (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER | CONDITIONS | Symbol | Value | UNIT |
|--------------------------------------|--|-----------|-------------|------------------|
| Peak Power Dissipation | Peak Pulse Power Dissipation at $T_A=25^\circ\text{C}$ by $10 \times 1000\mu\text{s}$ (Note 1) | P_{PPM} | 200 | W |
| Operating junction temperature range | | T_J | -55 to +150 | $^\circ\text{C}$ |
| Storage temperature range | | T_{STG} | -55 to +150 | $^\circ\text{C}$ |

Note: 1. Non-repetitive current pulse, per Fig. 2 and derated above $T_A=25^\circ\text{C}$ per Fig. 1

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

| Part Number Add C For Bi-Directional (Note 4) | Reverse Standoff Voltage V_{RWM} (V) | Breakdown Voltage V_{BR} @ I_T (Note 5) | | Test Current I_T (mA) | Max. Reverse Leakage @ V_{RWM} (Note 6) I_R (μA) | Max. Clamping Voltage @ I_{PP} V_C (V) | Max. Peak Pulse Current I_{PP} (A) | Marking Code | |
|--|---|---|---------|-------------------------------|--|--|---|--------------|------|
| | | Min (V) | Max (V) | | | | | BI- | UNI- |
| SMF5.0(C)A | 5.0 | 6.40 | 7.25 | 10 | 800 | 9.2 | 21.7 | CAE | AE |
| SMF6.0(C)A | 6.0 | 6.67 | 7.37 | 10 | 800 | 10.3 | 19.4 | CAG | AG |
| SMF6.5(C)A | 6.5 | 7.22 | 7.98 | 10 | 500 | 11.2 | 17.9 | CAK | AK |
| SMF7.0(C)A | 7.0 | 7.78 | 8.60 | 10 | 200 | 12.0 | 16.7 | CAM | AM |
| SMF7.5(C)A | 7.5 | 8.33 | 9.21 | 1.0 | 100 | 12.9 | 15.5 | CAP | AP |
| SMF8.0(C)A | 8.0 | 8.89 | 9.83 | 1.0 | 50 | 13.6 | 14.7 | CAR | AR |
| SMF8.5(C)A | 8.5 | 9.44 | 10.4 | 1.0 | 10 | 14.4 | 13.9 | CAT | AT |
| SMF9.0(C)A | 9.0 | 10.0 | 11.1 | 1.0 | 5.0 | 15.4 | 13.0 | CAV | AV |
| SMF10(C)A | 10 | 11.1 | 12.3 | 1.0 | 5.0 | 17.0 | 11.8 | CAX | AX |
| SMF11(C)A | 11 | 12.2 | 13.5 | 1.0 | 5.0 | 18.2 | 11.0 | CAZ | AZ |
| SMF12(C)A | 12 | 13.3 | 14.7 | 1.0 | 5.0 | 19.9 | 10.1 | CBE | BE |
| SMF13(C)A | 13 | 14.4 | 15.9 | 1.0 | 5.0 | 21.5 | 9.3 | CBG | BG |
| SMF14(C)A | 14 | 15.6 | 17.2 | 1.0 | 5.0 | 23.2 | 8.6 | CBK | BK |
| SMF15(C)A | 15 | 16.7 | 18.5 | 1.0 | 5.0 | 24.4 | 8.2 | CBM | BM |
| SMF16(C)A | 16 | 17.8 | 19.7 | 1.0 | 5.0 | 26.0 | 7.7 | CBP | BP |
| SMF17(C)A | 17 | 18.9 | 20.9 | 1.0 | 5.0 | 27.6 | 7.2 | CBR | BR |
| SMF18(C)A | 18 | 20.0 | 22.1 | 1.0 | 5.0 | 29.2 | 6.8 | CBT | BT |
| SMF20(C)A | 20 | 22.2 | 24.5 | 1.0 | 5.0 | 32.4 | 6.2 | CBV | BV |
| SMF22(C)A | 22 | 24.4 | 26.9 | 1.0 | 5.0 | 35.5 | 5.6 | CBX | BX |
| SMF24(C)A | 24 | 26.7 | 29.5 | 1.0 | 5.0 | 38.9 | 5.1 | CBZ | BZ |
| SMF26(C)A | 26 | 28.9 | 31.9 | 1.0 | 5.0 | 42.1 | 4.8 | CCE | CE |
| SMF28(C)A | 28 | 31.1 | 34.4 | 1.0 | 5.0 | 45.4 | 4.4 | CCG | CG |
| SMF30(C)A | 30 | 33.3 | 36.8 | 1.0 | 5.0 | 48.4 | 4.2 | CCK | CK |
| SMF33(C)A | 33 | 36.7 | 40.6 | 1.0 | 5.0 | 53.3 | 3.8 | CCM | CM |
| SMF36(C)A | 36 | 40.0 | 44.2 | 1.0 | 5.0 | 58.1 | 3.5 | CCP | CP |
| SMF40(C)A | 40 | 44.4 | 49.1 | 1.0 | 5.0 | 64.5 | 3.1 | CCR | CR |
| SMF43(C)A | 43 | 47.8 | 52.8 | 1.0 | 5.0 | 69.4 | 2.9 | CCT | CT |
| SMF45(C)A | 45 | 50.0 | 55.3 | 1.0 | 5.0 | 72.7 | 2.8 | CCV | CV |
| SMF48(C)A | 48 | 53.3 | 58.9 | 1.0 | 5.0 | 77.4 | 2.6 | CCX | CX |
| SMF51(C)A | 51 | 56.7 | 62.7 | 1.0 | 5.0 | 82.4 | 2.5 | CCZ | CZ |
| SMF54(C)A | 54 | 60.0 | 66.3 | 1.0 | 5.0 | 87.1 | 2.3 | CDE | DE |
| SMF58(C)A | 58 | 64.4 | 71.2 | 1.0 | 5.0 | 93.6 | 2.3 | CDG | DG |
| SMF60(C)A | 60 | 66.7 | 73.7 | 1.0 | 5.0 | 96.8 | 2.1 | CDK | DK |
| SMF64(C)A | 64 | 71.1 | 78.6 | 1.0 | 5.0 | 103 | 2.0 | CDM | DM |
| SMF70(C)A | 70 | 77.8 | 86.0 | 1.0 | 5.0 | 113 | 1.8 | CDP | DP |
| SMF75(C)A | 75 | 83.3 | 92.1 | 1.0 | 5.0 | 121 | 1.7 | CDR | DR |
| SMF78(C)A | 78 | 86.7 | 95.8 | 1.0 | 5.0 | 126 | 1.6 | CDT | DT |
| SMF85(C)A | 85 | 94.4 | 104 | 1.0 | 5.0 | 137 | 1.5 | CDV | DV |
| SMF90(C)A | 90 | 100 | 111 | 1.0 | 5.0 | 146 | 1.4 | CDX | DX |
| SMF100(C)A | 100 | 111 | 123 | 1.0 | 5.0 | 162 | 1.3 | CDZ | DZ |
| SMF110(C)A | 110 | 122 | 135 | 1.0 | 5.0 | 177 | 1.2 | CEE | EE |
| SMF120(C)A | 120 | 133 | 147 | 1.0 | 5.0 | 193 | 1.1 | CEG | EG |
| SMF130(C)A | 130 | 144 | 159 | 1.0 | 5.0 | 209 | 1.0 | CEK | EK |
| SMF150(C)A | 150 | 167 | 185 | 1.0 | 5.0 | 243 | 0.8 | CEM | EM |
| SMF160(C)A | 160 | 178 | 197 | 1.0 | 5.0 | 259 | 0.8 | CEP | EP |
| SMF170(C)A | 170 | 189 | 209 | 1.0 | 5.0 | 275 | 0.8 | CER | ER |

- Notes: 4. Suffix C denotes Bi-directional device.
5. V_{BR} measured with I_T current pulse = 300 μs
6. For Bi-Directional devices having V_{RWM} of 10V and under, the I_R is doubled.

Rating and characteristic curves

FIG.1 - PULSE DERATING CURVE

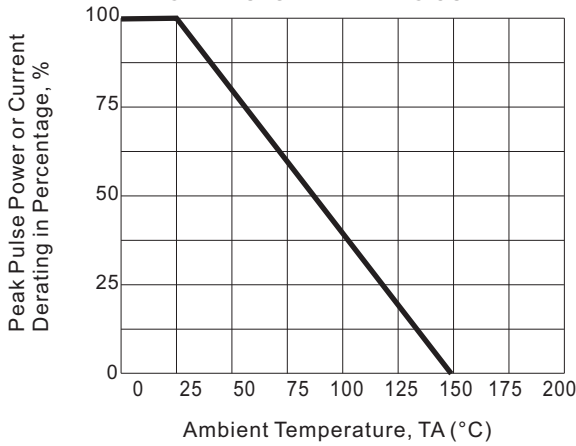


FIG.2 - 10X1000us PULSE WAVEFORM

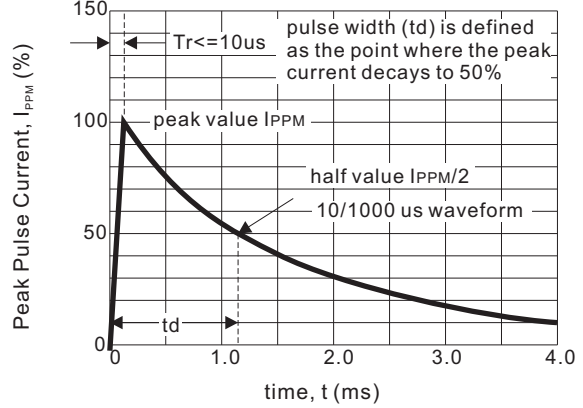


FIG.3 - 8X20us PULSE WAVEFORM

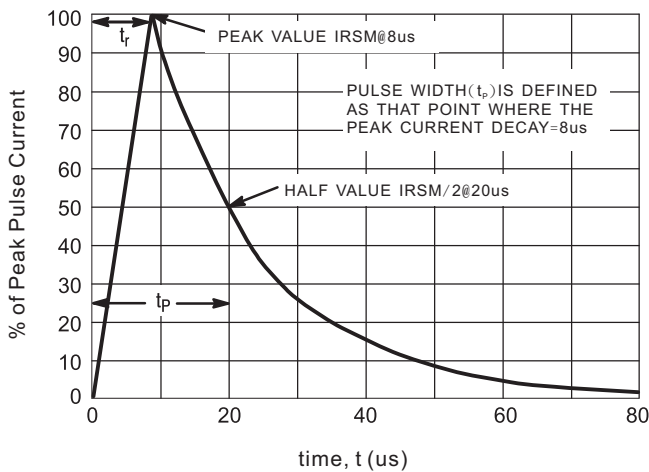


FIG.4 - PEALK PULSE POWER RATING CURVE

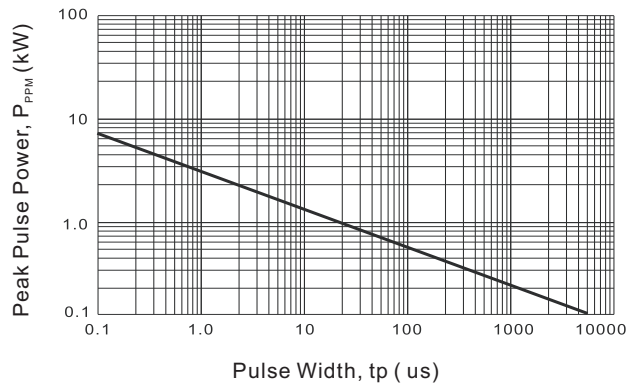
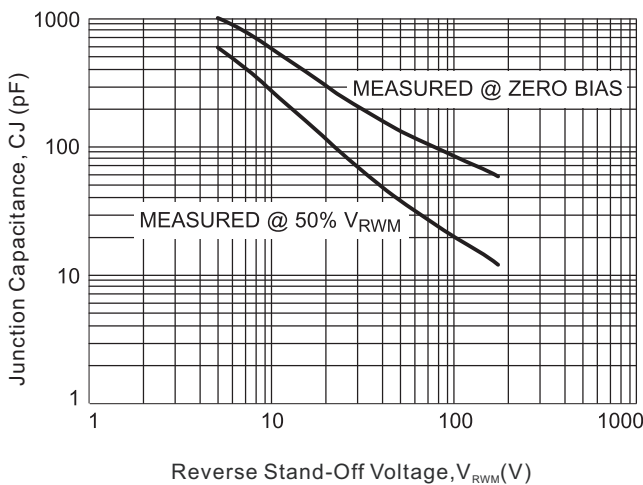






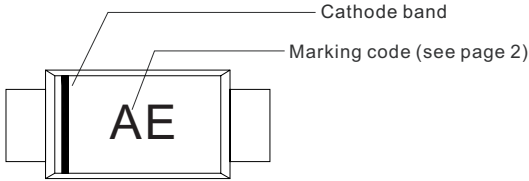
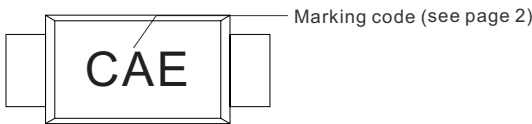
FIG.5 - TYPICAL JUNCTION CAPACITANCE



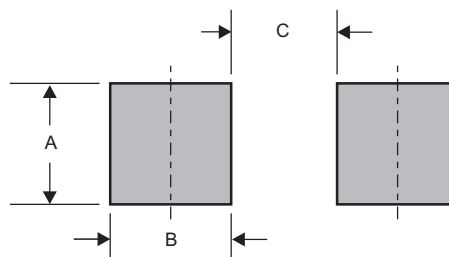
Pinning information

| Pin | Simplified outline | Symbol |
|---|--|---|
| Uni-Directional Pin1 cathode Pin2 anode |  |  |
| Bi-Directional |  |  |

Marking

| Type number | Example |
|-----------------|--|
| Uni-Directional |  Cathode band Marking code (see page 2) |
| Bi-Directional |  Marking code (see page 2) |

Suggested solder pad layout

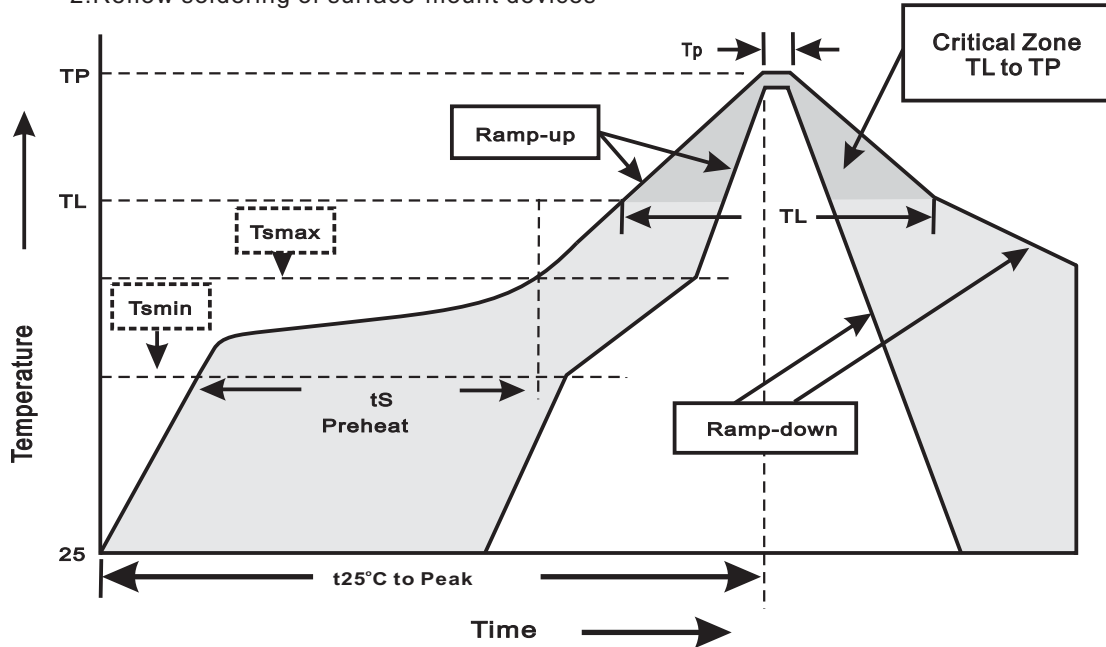


Dimensions in inches and (millimeters)

| PACKAGE | A | B | C |
|---------|--------------|--------------|--------------|
| SOD-123 | 0.044 (1.10) | 0.040 (1.00) | 0.079 (2.00) |

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

| Profile Feature | Soldering Condition |
|--|-----------------------------|
| Average ramp-up rate(TL to TP) | <3°C/sec |
| Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(ts) | 150°C 200°C 60~120sec |
| Tsmax to TL -Ramp-upRate | <3°C/sec |
| Time maintained above: -Temperature(TL) -Time(tL) | 217°C 60~260sec |
| Peak Temperature(TP) | 255°C-0/+5°C |
| Time within 5°C of actual Peak Temperature(tp) | 10~30sec |
| Ramp-down Rate | <6°C/sec |
| Time 25°C to Peak Temperature | <6minutes |

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