

SMF5.0(C)A THRU SMF170(C)A

200W Surface Mount Unidirectional and Bidirectional Transient Voltage Suppressors Diodes- 5.0V- 170V

Features

- For surface mounted applications in order to optimize board space.
- Low profile package.
- Excellent clamping capability.
- IEC61000-4-2 ESD 15kV Air, 8kV contact compliance
- Protects one I/O line
- Lead-free parts meet RoHS requirements.
- Compliant to Halogen-free

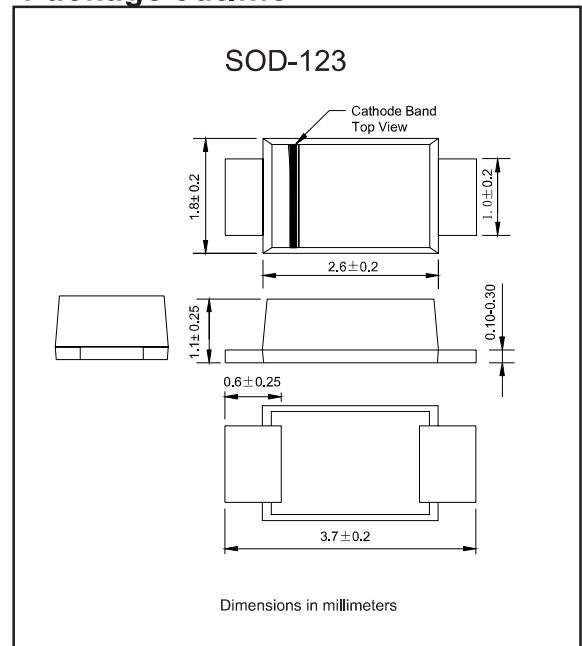
Applications

- 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
- Weight : Approximated 0.02 gram

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

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Electrical characteristics (at T = 25°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 (μ A) | 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 | TE | KE |
| SMF6.0(C)A | 6.0 | 6.67 | 7.37 | 10 | 800 | 10.3 | 19.4 | TG | KG |
| SMF6.5(C)A | 6.5 | 7.22 | 7.98 | 10 | 500 | 11.2 | 17.9 | TK | KK |
| SMF7.0(C)A | 7.0 | 7.78 | 8.60 | 10 | 200 | 12.0 | 16.7 | TM | KM |
| SMF7.5(C)A | 7.5 | 8.33 | 9.21 | 1.0 | 100 | 12.9 | 15.5 | TP | KP |
| SMF8.0(C)A | 8.0 | 8.89 | 9.83 | 1.0 | 50 | 13.6 | 14.7 | TR | KR |
| SMF8.5(C)A | 8.5 | 9.44 | 10.4 | 1.0 | 10 | 14.4 | 13.9 | TT | KT |
| SMF9.0(C)A | 9.0 | 10.0 | 11.1 | 1.0 | 5.0 | 15.4 | 13.0 | TV | KV |
| SMF10(C)A | 10 | 11.1 | 12.3 | 1.0 | 5.0 | 17.0 | 11.8 | TX | KX |
| SMF11(C)A | 11 | 12.2 | 13.5 | 1.0 | 5.0 | 18.2 | 11.0 | TZ | KZ |
| SMF12(C)A | 12 | 13.3 | 14.7 | 1.0 | 5.0 | 19.9 | 10.1 | UE | LE |
| SMF13(C)A | 13 | 14.4 | 15.9 | 1.0 | 5.0 | 21.5 | 9.3 | UG | LG |
| SMF14(C)A | 14 | 15.6 | 17.2 | 1.0 | 5.0 | 23.2 | 8.6 | UK | LK |
| SMF15(C)A | 15 | 16.7 | 18.5 | 1.0 | 5.0 | 24.4 | 8.2 | UM | LM |
| SMF16(C)A | 16 | 17.8 | 19.7 | 1.0 | 5.0 | 26.0 | 7.7 | UP | LP |
| SMF17(C)A | 17 | 18.9 | 20.9 | 1.0 | 5.0 | 27.6 | 7.2 | UR | LR |
| SMF18(C)A | 18 | 20.0 | 22.1 | 1.0 | 5.0 | 29.2 | 6.8 | UT | LT |
| SMF20(C)A | 20 | 22.2 | 24.5 | 1.0 | 5.0 | 32.4 | 6.2 | UV | LV |
| SMF22(C)A | 22 | 24.4 | 26.9 | 1.0 | 5.0 | 35.5 | 5.6 | UX | LX |
| SMF24(C)A | 24 | 26.7 | 29.5 | 1.0 | 5.0 | 38.9 | 5.1 | UZ | LZ |
| SMF26(C)A | 26 | 28.9 | 31.9 | 1.0 | 5.0 | 42.1 | 4.8 | VE | ME |
| SMF28(C)A | 28 | 31.1 | 34.4 | 1.0 | 5.0 | 45.4 | 4.4 | VG | MG |
| SMF30(C)A | 30 | 33.3 | 36.8 | 1.0 | 5.0 | 48.4 | 4.2 | VK | MK |
| SMF33(C)A | 33 | 36.7 | 40.6 | 1.0 | 5.0 | 53.3 | 3.8 | VM | MM |
| SMF36(C)A | 36 | 40.0 | 44.2 | 1.0 | 5.0 | 58.1 | 3.5 | VP | MP |
| SMF40(C)A | 40 | 44.4 | 49.1 | 1.0 | 5.0 | 64.5 | 3.1 | VR | MR |
| SMF43(C)A | 43 | 47.8 | 52.8 | 1.0 | 5.0 | 69.4 | 2.9 | VT | MT |
| SMF45(C)A | 45 | 50.0 | 55.3 | 1.0 | 5.0 | 72.7 | 2.8 | VV | MV |
| SMF48(C)A | 48 | 53.3 | 58.9 | 1.0 | 5.0 | 77.4 | 2.6 | VX | MX |
| SMF51(C)A | 51 | 56.7 | 62.7 | 1.0 | 5.0 | 82.4 | 2.5 | VZ | MZ |
| SMF54(C)A | 54 | 60.0 | 66.3 | 1.0 | 5.0 | 87.1 | 2.3 | WE | NE |
| SMF58(C)A | 58 | 64.4 | 71.2 | 1.0 | 5.0 | 93.6 | 2.3 | WG | NG |
| SMF60(C)A | 60 | 66.7 | 73.7 | 1.0 | 5.0 | 96.8 | 2.1 | WK | NK |
| SMF64(C)A | 64 | 71.1 | 78.6 | 1.0 | 5.0 | 103 | 2.0 | WM | NM |
| SMF70(C)A | 70 | 77.8 | 86.0 | 1.0 | 5.0 | 113 | 1.8 | WP | NP |
| SMF75(C)A | 75 | 83.3 | 92.1 | 1.0 | 5.0 | 121 | 1.7 | WR | NR |
| SMF78(C)A | 78 | 86.7 | 95.8 | 1.0 | 5.0 | 126 | 1.6 | WT | NT |
| SMF85(C)A | 85 | 94.4 | 104 | 1.0 | 5.0 | 137 | 1.5 | WV | NV |
| SMF90(C)A | 90 | 100 | 111 | 1.0 | 5.0 | 146 | 1.4 | WX | NX |
| SMF100(C)A | 100 | 111 | 123 | 1.0 | 5.0 | 162 | 1.3 | WZ | NZ |
| SMF110(C)A | 110 | 122 | 135 | 1.0 | 5.0 | 177 | 1.2 | XE | PE |
| SMF120(C)A | 120 | 133 | 147 | 1.0 | 5.0 | 193 | 1.1 | XG | PG |
| SMF130(C)A | 130 | 144 | 159 | 1.0 | 5.0 | 209 | 1.0 | XK | PK |
| SMF150(C)A | 150 | 167 | 185 | 1.0 | 5.0 | 243 | 0.8 | XM | PM |
| SMF160(C)A | 160 | 178 | 197 | 1.0 | 5.0 | 259 | 0.8 | XP | PP |
| SMF170(C)A | 170 | 189 | 209 | 1.0 | 5.0 | 275 | 0.8 | XR | PR |

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



Rating and characteristic curves (SMF SERIES)

FIG.1 - PULSE DERATING CURVE

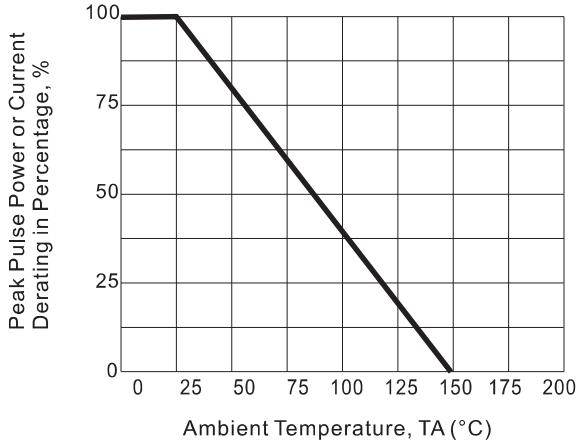


FIG.2 - 10X1000us PULSE WAVEFORM

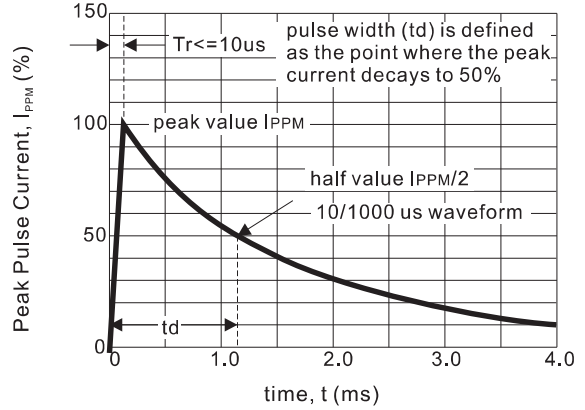


FIG.3 - 8X20us PULSE WAVEFORM

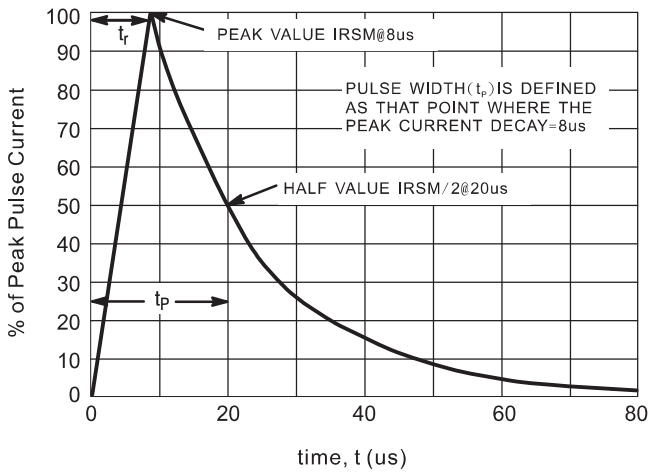


FIG.4 - PEAK PULSE POWER RATING CURVE

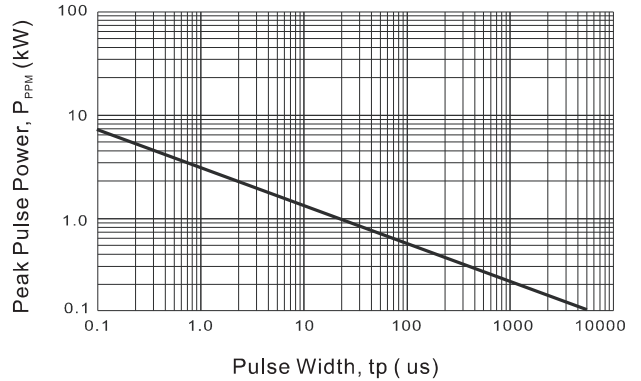
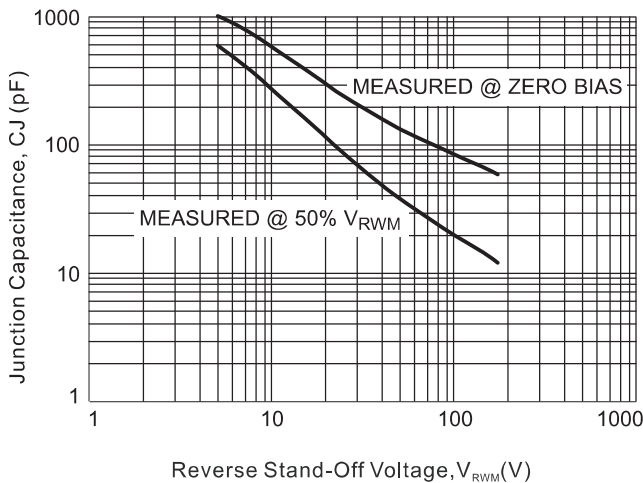





FIG.5 - TYPICAL JUNCTION CAPACITANCE

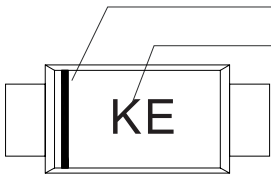



SMF5.0(C)A THRU SMF170(C)A

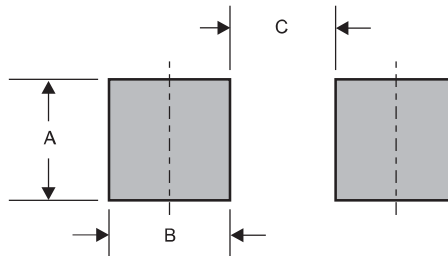
Pinning information

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

Marking

| Type number | Example |
|-----------------|--|
| Uni-Directional |  <p>Cathode band</p> <p>Marking code (see page 3)</p> |
| Bi-Directional |  <p>Marking code (see page 3)</p> |

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) |

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