

SMF5.0(C)A~SMF440(C)A 200W Surface Mount Transient Voltage Suppressors

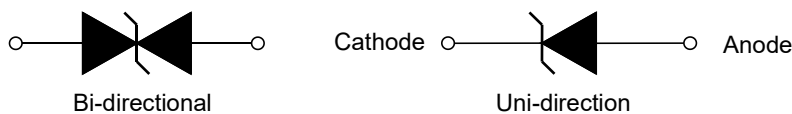
Features

- Glass passivated chip
- 200 W peak pulse power capability with a 10/1000 us waveform, repetitive rate (duty cycle):0.01 %
- Excellent clamping capability
- Low reverse leakage
- Very fast response time
- Lead and body according with RoHS standard

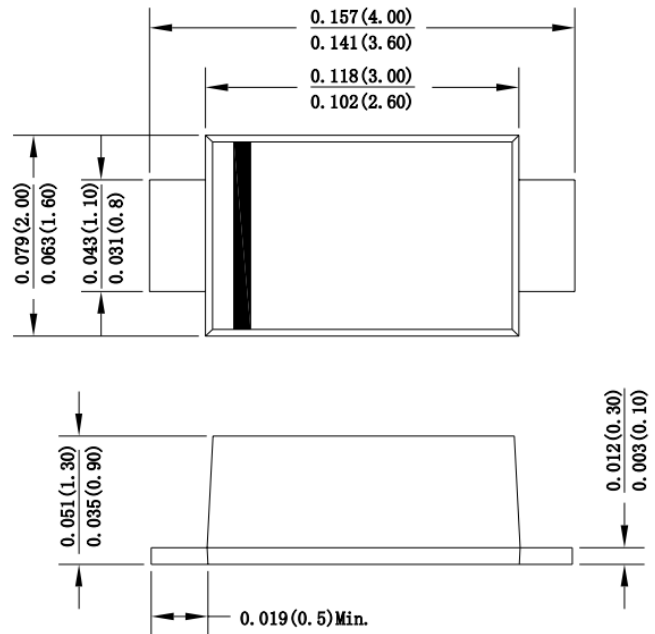
Mechanical Data

- Case: SOD123FL Molded plastic
- Lead: Solderable per MIL-STD-750, method 2026
- Epoxy: UL 94V-0 rate flame retardant
- Polarity: Color band denotes cathode end except Bipolar
- Mounting position: Any

Functional Diagram



SOD123FL



Maximum Ratings And Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

| Parameter | Symbols | Value | Unit |
|--|----------------|----------------|------|
| Peak power dissipation with a 10/1000 us waveform ⁽¹⁾ | P_{PP} | 200 | W |
| Peak pulse current with a 10/1000 us waveform ⁽¹⁾ | I_{PP} | See Next Table | A |
| Power dissipation on infinite heatsink at $T_L = 75\text{ }^\circ\text{C}$ | P_D | 1.0 | W |
| Peak forward surge current, 8.3 ms single half sinewave unidirectional only ⁽²⁾ | I_{FSM} | 30 | A |
| Maximum instantaneous forward voltage at 10 A for unidirectional only ⁽³⁾ | V_F | 3.5/6.5 | V |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +150 | °C |

Note:

- 1) Non-repetitive current pulse per Fig.5 and derated above $T_A = 25\text{ }^\circ\text{C}$ per Fig.1 ;
- 2) Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum ;
- 3) $V_F < 3.5\text{V}$ for devices of $V_{BR} < 200\text{V}$ and $V_F < 6.5\text{V}$ for devices of $V_{BR} > 201\text{V}$.

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

| Part Number | | Device Marking Code | | Reverse Stand-off Voltage | Breakdown Voltage $V_{BR} @ I_T$ | | Test Current | Max. Clamping Voltage @ I_{PP} | Max. Peak Pulse Current | Max. Reverse Leakage @ V_{RWM} |
|-------------|----------|---------------------|----|---------------------------|----------------------------------|---------|--------------|----------------------------------|-------------------------|----------------------------------|
| UNI-POLAR | BI-POLAR | UNI | BI | $V_{RWM}(V)$ | Min.(V) | Max.(V) | $I_T(mA)$ | $V_{C MAX.}(V)$ | $I_{PP}(A)$ | $I_R(\mu A)$ |
| SMF5.0A | SMF5.0CA | KE | AE | 5.0 | 6.40 | 7.00 | 10 | 9.2 | 21.7 | 800 |
| SMF6.0A | SMF6.0CA | KG | AG | 6.0 | 6.67 | 7.37 | 10 | 10.3 | 19.4 | 800 |
| SMF6.5A | SMF6.5CA | KK | AK | 6.5 | 7.22 | 7.98 | 10 | 11.2 | 17.8 | 500 |
| SMF7.0A | SMF7.0CA | KM | AM | 7.0 | 7.78 | 8.60 | 10 | 12.0 | 16.6 | 200 |
| SMF7.5A | SMF7.5CA | KP | AP | 7.5 | 8.33 | 9.21 | 1 | 12.9 | 15.5 | 100 |
| SMF8.0A | SMF8.0CA | KR | AR | 8.0 | 8.89 | 9.83 | 1 | 13.6 | 14.7 | 50 |
| SMF8.5A | SMF8.5CA | KT | AT | 8.5 | 9.44 | 10.40 | 1 | 14.4 | 13.9 | 20 |
| SMF9.0A | SMF9.0CA | KV | AV | 9.0 | 10.00 | 11.10 | 1 | 15.4 | 13.0 | 10 |
| SMF10A | SMF10CA | KX | AX | 10.0 | 11.10 | 12.30 | 1 | 17.0 | 11.7 | 5 |
| SMF11A | SMF11CA | KZ | AZ | 11.0 | 12.20 | 13.50 | 1 | 18.2 | 11.0 | 1 |
| SMF12A | SMF12CA | LE | BE | 12.0 | 13.30 | 14.70 | 1 | 19.9 | 10.0 | 1 |
| SMF13A | SMF13CA | LG | BG | 13.0 | 14.40 | 15.90 | 1 | 21.5 | 9.3 | 1 |
| SMF14A | SMF14CA | LK | BK | 14.0 | 15.60 | 17.20 | 1 | 23.2 | 8.6 | 1 |
| SMF15A | SMF15CA | LM | BM | 15.0 | 16.70 | 18.50 | 1 | 24.4 | 8.2 | 1 |
| SMF16A | SMF16CA | LP | BP | 16.0 | 17.80 | 19.70 | 1 | 26.0 | 7.7 | 1 |
| SMF17A | SMF17CA | LR | BR | 17.0 | 18.90 | 20.90 | 1 | 27.6 | 7.2 | 1 |
| SMF18A | SMF18CA | LT | BT | 18.0 | 20.00 | 22.10 | 1 | 29.2 | 6.8 | 1 |
| SMF20A | SMF20CA | LV | BV | 20.0 | 22.20 | 24.50 | 1 | 32.4 | 6.1 | 1 |
| SMF22A | SMF22CA | LX | BX | 22.0 | 24.40 | 26.90 | 1 | 35.5 | 5.6 | 1 |
| SMF24A | SMF24CA | LZ | BZ | 24.0 | 26.70 | 29.50 | 1 | 38.9 | 5.1 | 1 |
| SMF26A | SMF26CA | ME | CE | 26.0 | 28.90 | 31.90 | 1 | 42.1 | 4.7 | 1 |
| SMF28A | SMF28CA | MG | CG | 28.0 | 31.10 | 34.40 | 1 | 45.4 | 4.4 | 1 |
| SMF30A | SMF30CA | MK | CK | 30.0 | 33.50 | 36.80 | 1 | 48.4 | 4.1 | 1 |
| SMF33A | SMF33CA | MM | CM | 33.0 | 36.70 | 40.60 | 1 | 53.3 | 3.7 | 1 |
| SMF36A | SMF36CA | MP | CP | 36.0 | 40.00 | 44.20 | 1 | 58.1 | 3.4 | 1 |
| SMF40A | SMF40CA | MR | CR | 40.0 | 44.40 | 49.10 | 1 | 64.5 | 3.1 | 1 |
| SMF43A | SMF43CA | MT | CT | 43.0 | 47.80 | 52.80 | 1 | 69.4 | 2.9 | 1 |
| SMF45A | SMF45CA | MV | CV | 45.0 | 50.00 | 55.30 | 1 | 72.7 | 2.7 | 1 |
| SMF48A | SMF48CA | MX | CX | 48.0 | 53.30 | 58.90 | 1 | 77.4 | 2.6 | 1 |
| SMF51A | SMF51CA | MZ | CZ | 51.0 | 56.70 | 62.70 | 1 | 82.4 | 2.4 | 1 |
| SMF54A | SMF54CA | NE | DE | 54.0 | 60.00 | 66.30 | 1 | 87.1 | 2.3 | 1 |
| SMF58A | SMF58CA | NG | DG | 58.0 | 64.40 | 71.20 | 1 | 93.6 | 2.1 | 1 |
| SMF60A | SMF60CA | NK | DK | 60.0 | 66.70 | 73.70 | 1 | 96.8 | 2.0 | 1 |
| SMF64A | SMF64CA | NM | DM | 64.0 | 71.10 | 78.60 | 1 | 103.0 | 1.9 | 1 |
| SMF70A | SMF70CA | NP | DP | 70.0 | 77.80 | 86.00 | 1 | 113.0 | 1.7 | 1 |
| SMF75A | SMF75CA | NR | DR | 75.0 | 83.30 | 92.10 | 1 | 121.0 | 1.6 | 1 |
| SMF78A | SMF78CA | NT | DT | 78.0 | 86.70 | 95.80 | 1 | 126.0 | 1.5 | 1 |
| SMF85A | SMF85CA | NV | DV | 85.0 | 94.4 | 104.0 | 1 | 137.0 | 1.4 | 1 |
| SMF90A | SMF90CA | NX | DX | 90.0 | 100.0 | 111.0 | 1 | 146.0 | 1.3 | 1 |
| SMF100A | SMF100CA | NZ | DZ | 100.0 | 111.0 | 123.0 | 1 | 162.0 | 1.2 | 1 |
| SMF110A | SMF110CA | PE | EE | 110.0 | 122.0 | 135.0 | 1 | 177.0 | 1.1 | 1 |
| SMF120A | SMF120CA | PG | EG | 120.0 | 133.0 | 147.0 | 1 | 193.0 | 1.0 | 1 |
| SMF130A | SMF130CA | PK | EK | 130.0 | 144.0 | 159.0 | 1 | 209.0 | 0.9 | 1 |
| SMF150A | SMF150CA | PM | EM | 150.0 | 167.0 | 185.0 | 1 | 243.0 | 0.8 | 1 |
| SMF160A | SMF160CA | PP | EP | 160.0 | 178.0 | 197.0 | 1 | 259.0 | 0.7 | 1 |
| SMF170A | SMF170CA | PR | ER | 170.0 | 189.0 | 209.0 | 1 | 275.0 | 0.7 | 1 |
| SMF180A | SMF180CA | PT | ET | 180.0 | 201.0 | 222.0 | 1 | 292.0 | 0.7 | 1 |
| SMF190A | SMF190CA | PV | EV | 190.0 | 209.0 | 243.0 | 1 | 308.0 | 0.6 | 1 |
| SMF200A | SMF200CA | PX | EX | 200.0 | 224.0 | 247.0 | 1 | 324.0 | 0.6 | 1 |
| SMF210A | SMF210CA | PZ | EZ | 210.0 | 231.0 | 268.0 | 1 | 340.0 | 0.6 | 1 |
| SMF220A | SMF220CA | QE | FE | 220.0 | 246.0 | 272.0 | 1 | 356.0 | 0.5 | 1 |
| SMF250A | | QG | | 250.0 | 279.0 | 309.0 | 1 | 405.0 | 0.5 | 1 |
| SMF300A | | QK | | 300.0 | 335.0 | 371.0 | 1 | 486.0 | 0.4 | 1 |
| SMF350A | | QM | | 350.0 | 391.0 | 432.0 | 1 | 567.0 | 0.3 | 1 |
| SMF400A | | QP | | 400.0 | 447.0 | 494.0 | 1 | 648.0 | 0.3 | 1 |
| SMF440A | | QR | | 440.0 | 492.0 | 543.0 | 1 | 713.0 | 0.3 | 1 |

Ratings And Characteristic Curves

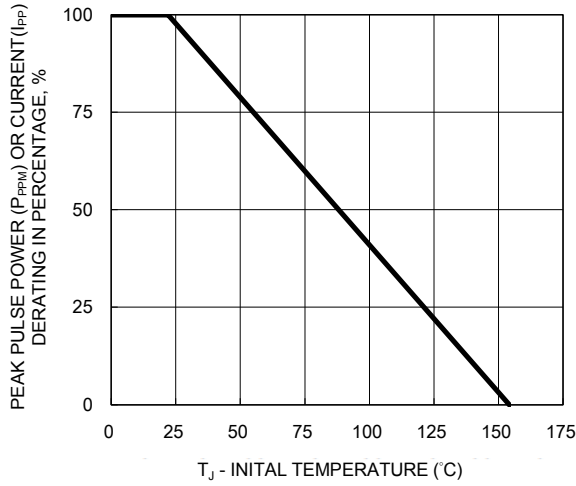


Fig. 1 - Pulse Derating Curve

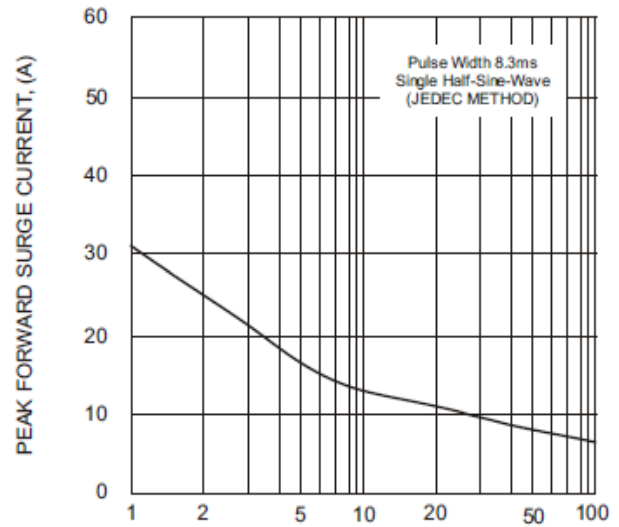


Fig. 2 - Maximum Non-Repetitive Surge Current

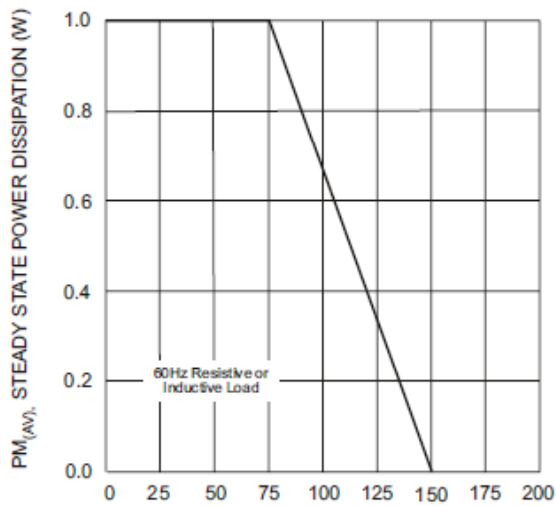


Fig. 3 - Steady State Power Derating Curve

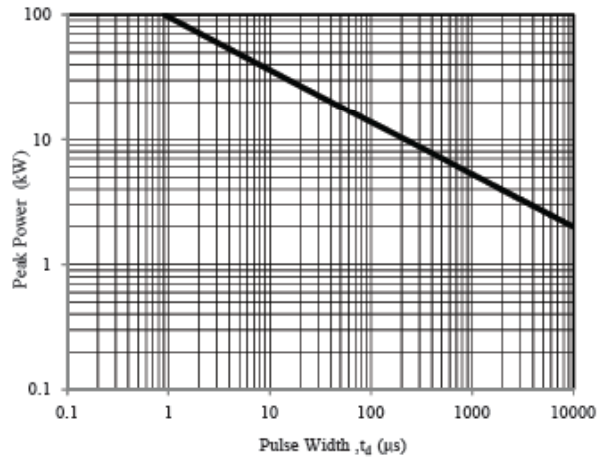


Fig. 4 - Peak Pulse Power Rating Curve

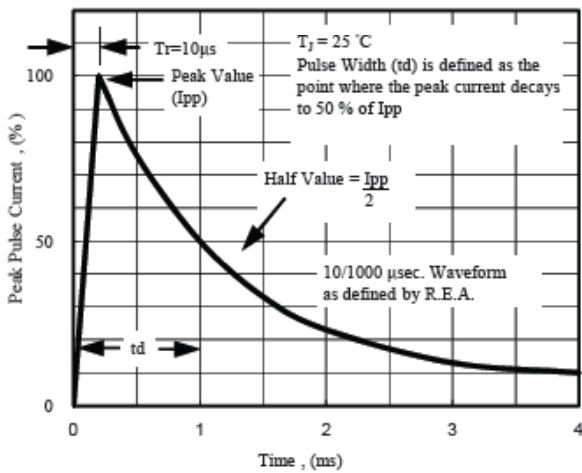


Fig. 5 - Pulse Waveform

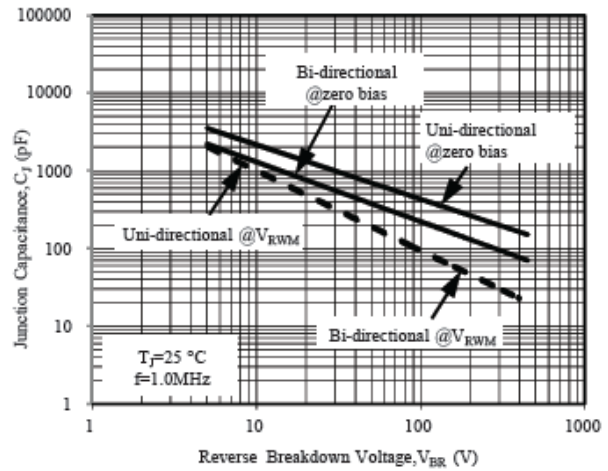


Fig. 6 - Typical Junction Capacitance