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Micro Commercial Components



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

**200WATTS TRANSIENT
VOLTAGE SUPPRESSOR
5.0 TO 170 VOLTS**

Features

- Halogen free available upon request by adding suffix "-HF"
- Stand-off Voltage 5-170 Volts
- Uni and bi-directional type available (suffix "C" means bi-directional)
- Surface Mount
- Low Clamping Voltage
- 200 Watt Peak Power Dissipation
- Small, High Thermal Efficiency
- Marking Code: See Electrical Characteristics Table
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Lead Free Finish/RoHS Compliant (NOTE 1) ("P" Suffix designates RoHS Compliant. See ordering information)

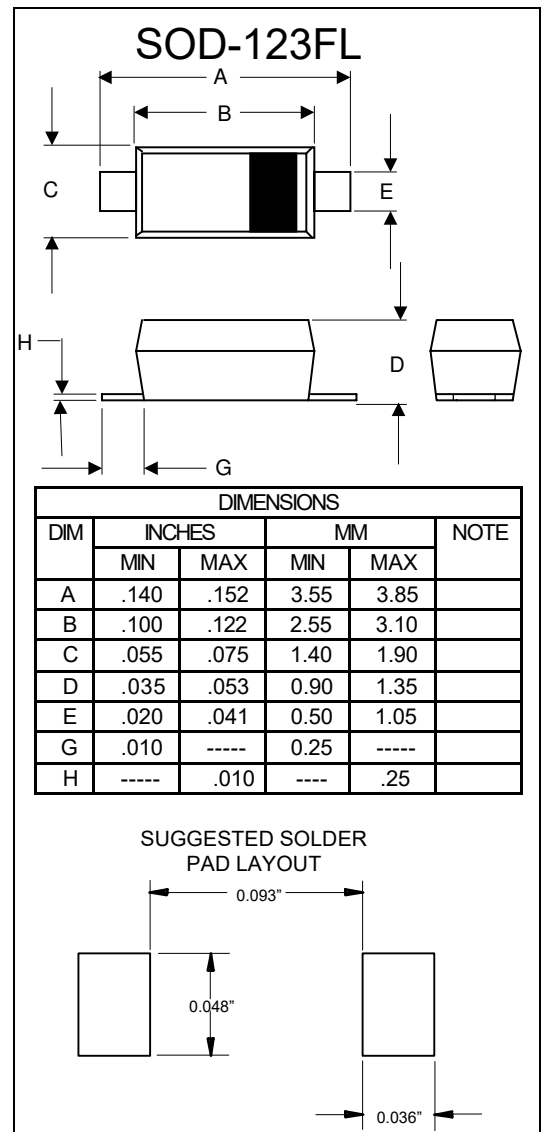
Maximum Ratings

- Operating Temperature: -65°C to +175°C
- Storage Temperature: -65°C to +175°C

Electrical Characteristics @ 25°C Unless Otherwise Specified

| | | | |
|------------------------------------------|-----------------|----------|-----------------------|
| Peak Pulse Power (10/1000us Waveform) | P_{PP} | 200W | |
| ESD Voltage(HBM) | V_{ESD} | >16KV | |
| Typical Thermal Resistance | $R_{\theta JL}$ | 26 °C/W | |
| | $R_{\theta JA}$ | 300 °C/W | |
| Peak Forward Surge Current | I_{FSM} | 30A | 8.3ms, half sine wave |

Note: 1. High Temperature Solder Exemption Applied, see EU Directive Annex Notes 7



SMF5.0A THRU SMF170A

ELECTRICAL CHARACTERISTICS @25°C

| MCC PART NUMBER Uni-Polar | Marking Code | Breakdown Voltage $V_{BR} @ I_T$ (Volt) | | TEST CURRENT I_T mADC | RATED STANDOFF VOLTAGE V_{WM} V | MAXIMUM REVERSE LEAKAGE $I_b @ V_{WM}$ (μ A) | MAXIMUM CLAMPING VOLTAGE $V_C @ I_{PP}$ V | MAXIMUM PEAK PULSE CURRENT I_{PP} A |
|---------------------------------|-----------------|--------------------------------------------------|------|----------------------------------|-----------------------------------------------|---------------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------|
| | | MIN | MAX | | | | | |
| SMF5.0A | 5.0A / KE | 6.4 | 7.0 | 10 | 5.0 | 400 | 9.2 | 21.7 |
| SMF6.0A | 6.0A / KG | 6.67 | 7.37 | 10 | 6.0 | 400 | 10.3 | 19.4 |
| SMF6.5A | 6.5A / KK | 7.22 | 7.98 | 10 | 6.5 | 250 | 11.2 | 17.9 |
| SMF7.0A | 7.0A / KM | 7.78 | 8.6 | 10 | 7.0 | 100 | 12 | 16.7 |
| SMF7.5A | 7.5A / KP | 8.33 | 9.21 | 1.0 | 7.5 | 50 | 12.9 | 15.5 |
| SMF8.0A | 8.0A / KR | 8.89 | 9.83 | 1.0 | 8.0 | 25 | 13.6 | 14.7 |
| SMF8.5A | 8.5A / KT | 9.44 | 10.4 | 1.0 | 8.5 | 10 | 14.4 | 13.9 |
| SMF9.0A | 9.0A / KV | 10 | 11.1 | 1.0 | 9.0 | 5.0 | 15.4 | 13 |
| SMF10A | 10A / KX | 11.1 | 12.3 | 1.0 | 10 | 2.5 | 17 | 11.8 |
| SMF11A | 11A / KZ | 12.2 | 13.5 | 1.0 | 11 | 2.5 | 18.2 | 11 |
| SMF12A | 12A / LE | 13.3 | 14.7 | 1.0 | 12 | 2.5 | 19.9 | 10.1 |
| SMF13A | 13A / LG | 14.4 | 15.9 | 1.0 | 13 | 1.0 | 21.5 | 9.3 |
| SMF14A | 14A / LK | 15.6 | 17.2 | 1.0 | 14 | 1.0 | 23.2 | 8.6 |
| SMF15A | 15A / LM | 16.7 | 18.5 | 1.0 | 15 | 1.0 | 24.4 | 8.2 |
| SMF16A | 16A / LP | 17.8 | 19.7 | 1.0 | 16 | 1.0 | 26 | 7.7 |
| SMF17A | 17A / LR | 18.9 | 20.9 | 1.0 | 17 | 1.0 | 27.6 | 7.2 |
| SMF18A | 18A / LT | 20 | 22.1 | 1.0 | 18 | 1.0 | 29.2 | 6.8 |
| SMF20A | 20A / LV | 22.2 | 24.5 | 1.0 | 20 | 1.0 | 32.4 | 6.2 |
| SMF22A | 22A / LX | 24.4 | 26.9 | 1.0 | 22 | 1.0 | 35.5 | 5.6 |
| SMF24A | 24A / LZ | 26.7 | 29.5 | 1.0 | 24 | 1.0 | 38.9 | 5.1 |
| SMF26A | 26A / ME | 28.9 | 31.9 | 1.0 | 26 | 1.0 | 42.1 | 4.8 |
| SMF28A | 28A / MG | 31.1 | 34.4 | 1.0 | 28 | 1.0 | 45.4 | 4.4 |
| SMF30A | 30A / MK | 33.3 | 36.8 | 1.0 | 30 | 1.0 | 48.4 | 4.1 |
| SMF33A | 33A / MM | 36.7 | 40.6 | 1.0 | 33 | 1.0 | 53.3 | 3.8 |
| SMF36A | 36A / MP | 40 | 44.2 | 1.0 | 36 | 1.0 | 58.1 | 3.4 |
| SMF40A | 40A / MR | 44.4 | 49.1 | 1.0 | 40 | 1.0 | 64.5 | 3.1 |
| SMF43A | 43A / MT | 47.8 | 52.8 | 1.0 | 43 | 1.0 | 69.4 | 2.9 |
| SMF45A | 45A / MV | 50 | 55.3 | 1.0 | 45 | 1.0 | 72.7 | 2.8 |
| SMF48A | 48A / MX | 53.3 | 58.9 | 1.0 | 48 | 1.0 | 77.4 | 2.6 |
| SMF51A | 51A / MZ | 56.7 | 62.7 | 1.0 | 51 | 1.0 | 82.4 | 2.4 |
| SMF54A | 54A / NE | 60 | 66.3 | 1.0 | 54 | 1.0 | 87.1 | 2.3 |
| SMF58A | 58A / NG | 64.4 | 71.2 | 1.0 | 58 | 1.0 | 93.6 | 2.1 |
| SMF60A | 60A / NK | 66.7 | 73.7 | 1.0 | 60 | 1.0 | 96.8 | 1.8 |
| SMF64A | 64A / NM | 71.1 | 78.6 | 1.0 | 64 | 1.0 | 103 | 1.7 |
| SMF70A | 70A / NP | 77.8 | 86 | 1.0 | 70 | 1.0 | 113 | 1.5 |
| SMF75A | 75A / NR | 83.3 | 92.1 | 1.0 | 75 | 1.0 | 121 | 1.4 |
| SMF78A | 78A / NT | 86.7 | 95.8 | 1.0 | 78 | 1.0 | 126 | 1.4 |
| SMF85A | 85A / NV | 94.4 | 104 | 1.0 | 85 | 1.0 | 137 | 1.3 |
| SMF90A | 90A / NX | 100 | 111 | 1.0 | 90 | 1.0 | 146 | 1.2 |
| SMF100A | 100 / NZ | 111 | 123 | 1.0 | 100 | 1.0 | 162 | 1.1 |
| SMF110A | 110 / PE | 122 | 135 | 1.0 | 110 | 1.0 | 177 | 1.0 |
| SMF120A | 120 / PG | 133 | 147 | 1.0 | 120 | 1.0 | 193 | 0.9 |
| SMF130A | 130 / PK | 144 | 159 | 1.0 | 130 | 1.0 | 209 | 0.8 |
| SMF150A | 150 / PM | 167 | 185 | 1.0 | 150 | 1.0 | 243 | 0.7 |
| SMF160A | 160 / PP | 178 | 197 | 1.0 | 160 | 1.0 | 259 | 0.7 |
| SMF170A | 170 / PR | 189 | 209 | 1.0 | 170 | 1.0 | 275 | 0.6 |

SMF5.0CA THRU SMF170CA

ELECTRICAL CHARACTERISTICS @25°C

| MCC PART NUMBER Bi-Polar | Marking Code | Breakdown Voltage $V_{BR} @ I_T$ (Volt) | | TEST CURRENT I_T mADC | RATED STANDOFF VOLTAGE V_{WM} V | MAXIMUM REVERSE LEAKAGE $I_b @ V_{WM}$ (μ A) | MAXIMUM CLAMPING VOLTAGE $V_C @ I_{PP}$ V | MAXIMUM PEAK PULSE CURRENT I_{PP} A |
|--------------------------------|-----------------|--------------------------------------------------|------|--------------------------------------|---------------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------|
| | | MIN | MAX | | | | | |
| SMF5.0CA | 5.0CA / AE | 6.4 | 7.0 | 10 | 5.0 | 400 | 9.2 | 21.7 |
| SMF6.0CA | 6.0CA / AG | 6.67 | 7.37 | 10 | 6.0 | 400 | 10.3 | 19.4 |
| SMF6.5CA | 6.5CA / AK | 7.22 | 7.98 | 10 | 6.5 | 250 | 11.2 | 17.9 |
| SMF7.0CA | 7.0CA / AM | 7.78 | 8.6 | 10 | 7.0 | 100 | 12 | 16.7 |
| SMF7.5CA | 7.5CA / AP | 8.33 | 9.21 | 1.0 | 7.5 | 50 | 12.9 | 15.5 |
| SMF8.0CA | 8.0CA / AR | 8.89 | 9.83 | 1.0 | 8.0 | 25 | 13.6 | 14.7 |
| SMF8.5CA | 8.5CA / AT | 9.44 | 10.4 | 1.0 | 8.5 | 10 | 14.4 | 13.9 |
| SMF9.0CA | 9.0CA / AV | 10 | 11.1 | 1.0 | 9.0 | 5.0 | 15.4 | 13 |
| SMF10CA | 10CA / AX | 11.1 | 12.3 | 1.0 | 10 | 2.5 | 17 | 11.8 |
| SMF11CA | 11CA / AZ | 12.2 | 13.5 | 1.0 | 11 | 2.5 | 18.2 | 11 |
| SMF12CA | 12CA / BE | 13.3 | 14.7 | 1.0 | 12 | 2.5 | 19.9 | 10.1 |
| SMF13CA | 13CA / BG | 14.4 | 15.9 | 1.0 | 13 | 1.0 | 21.5 | 9.3 |
| SMF14CA | 14CA / BK | 15.6 | 17.2 | 1.0 | 14 | 1.0 | 23.2 | 8.6 |
| SMF15CA | 15CA / BM | 16.7 | 18.5 | 1.0 | 15 | 1.0 | 24.4 | 8.2 |
| SMF16CA | 16CA / BP | 17.8 | 19.7 | 1.0 | 16 | 1.0 | 26 | 7.7 |
| SMF17CA | 17CA / BR | 18.9 | 20.9 | 1.0 | 17 | 1.0 | 27.6 | 7.2 |
| SMF18CA | 18CA / BT | 20 | 22.1 | 1.0 | 18 | 1.0 | 29.2 | 6.8 |
| SMF20CA | 20CA / BV | 22.2 | 24.5 | 1.0 | 20 | 1.0 | 32.4 | 6.2 |
| SMF22CA | 22CA / BX | 24.4 | 26.9 | 1.0 | 22 | 1.0 | 35.5 | 5.6 |
| SMF24CA | 24CA / BZ | 26.7 | 29.5 | 1.0 | 24 | 1.0 | 38.9 | 5.1 |
| SMF26CA | 26CA / CE | 28.9 | 31.9 | 1.0 | 26 | 1.0 | 42.1 | 4.8 |
| SMF28CA | 28CA / CG | 31.1 | 34.4 | 1.0 | 28 | 1.0 | 45.4 | 4.4 |
| SMF30CA | 30CA / CK | 33.3 | 36.8 | 1.0 | 30 | 1.0 | 48.4 | 4.1 |
| SMF33CA | 33CA / CM | 36.7 | 40.6 | 1.0 | 33 | 1.0 | 53.3 | 3.8 |
| SMF36CA | 36CA / CP | 40 | 44.2 | 1.0 | 36 | 1.0 | 58.1 | 3.4 |
| SMF40CA | 40CA / CR | 44.4 | 49.1 | 1.0 | 40 | 1.0 | 64.5 | 3.1 |
| SMF43CA | 43CA / CT | 47.8 | 52.8 | 1.0 | 43 | 1.0 | 69.4 | 2.9 |
| SMF45CA | 45CA / CV | 50 | 55.3 | 1.0 | 45 | 1.0 | 72.7 | 2.8 |
| SMF48CA | 48CA / CX | 53.3 | 58.9 | 1.0 | 48 | 1.0 | 77.4 | 2.6 |
| SMF51CA | 51CA / CZ | 56.7 | 62.7 | 1.0 | 51 | 1.0 | 82.4 | 2.4 |
| SMF54CA | 54CA / DE | 60 | 66.3 | 1.0 | 54 | 1.0 | 87.1 | 2.3 |
| SMF58CA | 58CA / DG | 64.4 | 71.2 | 1.0 | 58 | 1.0 | 93.6 | 2.1 |
| SMF60CA | 60CA / DK | 66.7 | 73.7 | 1.0 | 60 | 1.0 | 96.8 | 1.8 |
| SMF64CA | 64CA / DM | 71.1 | 78.6 | 1.0 | 64 | 1.0 | 103 | 1.7 |
| SMF70CA | 70CA / DP | 77.8 | 86 | 1.0 | 70 | 1.0 | 113 | 1.5 |
| SMF75CA | 75CA / DR | 83.3 | 92.1 | 1.0 | 75 | 1.0 | 121 | 1.4 |
| SMF78CA | 78CA / DT | 86.7 | 95.8 | 1.0 | 78 | 1.0 | 126 | 1.4 |
| SMF85CA | 85CA / DV | 94.4 | 104 | 1.0 | 85 | 1.0 | 137 | 1.3 |
| SMF90CA | 90CA / DX | 100 | 111 | 1.0 | 90 | 1.0 | 146 | 1.2 |
| SMF100CA | 100C / DZ | 111 | 123 | 1.0 | 100 | 1.0 | 162 | 1.1 |
| SMF110CA | 110C / EE | 122 | 135 | 1.0 | 110 | 1.0 | 177 | 1.0 |
| SMF120CA | 120C / EG | 133 | 147 | 1.0 | 120 | 1.0 | 193 | 0.9 |
| SMF130CA | 130C / EK | 144 | 159 | 1.0 | 130 | 1.0 | 209 | 0.8 |
| SMF150CA | 150C / EM | 167 | 185 | 1.0 | 150 | 1.0 | 243 | 0.7 |
| SMF160CA | 160C / EP | 178 | 197 | 1.0 | 160 | 1.0 | 259 | 0.7 |
| SMF170CA | 170C / ER | 189 | 209 | 1.0 | 170 | 1.0 | 275 | 0.6 |

SMF5.0CA THRU SMF170CA

Electrical Characteristics

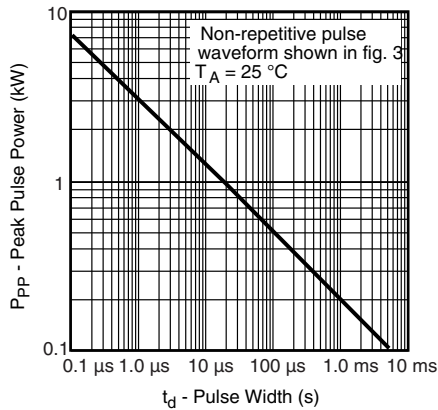


Fig. 1 - Peak Pulse Power Rating

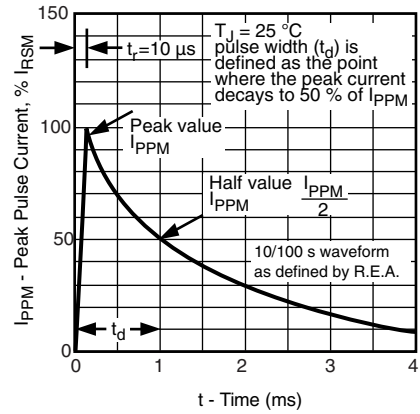


Fig. 3 - Pulse Waveform

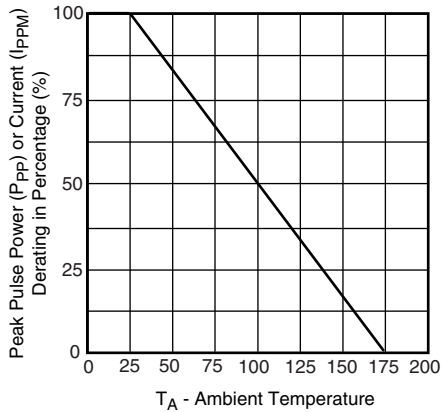


Fig. 2 - Pulse Derating Curve



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Ordering Information :

| Device | Packing |
|----------------|-------------------------|
| Part Number-TP | Tape&Reel: 2.5Kpcs/Reel |

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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