

1SMC_5.0_188A

Stand-off Voltage : 5.0 to 188V

Peak Pulse Power : 1500 W

Features

- 1500W surge capability at 1ms
- Excellent clamping capability
- Low zener impedance
- Fast response time : typically less than 1.0 ps from 0 volt to V_{BR}(min.)
- Typical IR less than 1µA above 10V

Mechanical Data

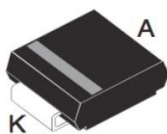
- Case : SMC Molded plastic
- Epoxy : UL94V-O rate flame retardant
- Lead : Lead formed for Surface mount
- Polarity : Color band denotes cathode end
- Mounting position : Any
- Weight : 0.229 gram

Applications

- For Bi-directional use C or CA Suffix
- Electrical characteristics apply in both directions

Packing & Order Information

3,000/Reel



RoHS
COMPLIANT

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

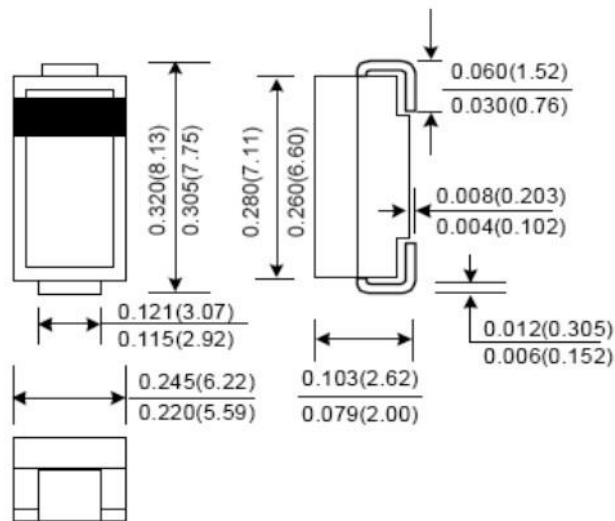
Rating at 25°C ambient temperature unless otherwise specified

| Symbol | Parameter | Value | Unit |
|-----------------------------------|---|----------------|------|
| P _{PPM} | Peak Pulse Power Dissipation ^{(1) (2)} | Minimum 1500 | W |
| I _{FSM} | Peak Forward Surge Current per Fig. 5 ⁽²⁾ | 200 | A |
| V _{PPM} | Maximum Forward Voltage at I _F = 200 mA | See Next Table | A |
| R _{θJA} | Typical Thermal Resistance , Junction to Ambient ⁽³⁾ | 75 | °C/W |
| T _J , T _{stg} | Operating Junction and Storage Temperature Range | -55 to +150 | °C |

Notes :

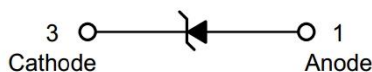
- (1) Non-repetitive Current pulse, per Fig. 3 and derated above T_a = 25 °C per Fig. 1
- (2) Mounted on 0.31x 0.31" (8.0 x 8.0mm) copper pads to each terminal.
- (3) Mounted on minimum recommended pad layout.

SMC (DO-214AB)



Dimensions in inches and (millimeter)

Graphic symbol



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ELECTRICAL CHARACTERISTICS (Rating at 25°C ambient temperature unless otherwise specified)

| Type No. | Breakdown Voltage @ T ⁽¹⁾ | | Working Peak Reverse Voltage | Maximum Reverse Leakage @ VWM | Maximum Peak Pulse Surge Current | Maximum Clamping Voltage @ IPPM | |
|----------|--------------------------------------|------|------------------------------|-------------------------------|----------------------------------|---------------------------------|------|
| | VBR (V) | | | | | | IT |
| | Min. | Max. | (mA) | (V) | μA | (A) | (V) |
| 1SMC5.0A | 6.4 | 7.07 | 10 | 5.0 | 1000 | 163.0 | 9.2 |
| 1SMC6.0A | 66.7 | 7.37 | 10 | 6.0 | 1000 | 145.6 | 10.3 |
| 1SMC6.5A | 7.22 | 7.98 | 10 | 6.5 | 500 | 133.9 | 11.2 |
| 1SMC7.0A | 7.78 | 8.6 | 10 | 7.0 | 200 | 125.0 | 12.0 |
| 1SMC7.5A | 8.33 | 9.21 | 1.0 | 7.5 | 100 | 116.3 | 12.9 |
| 1SMC8.0A | 8.89 | 9.83 | 1.0 | 8.0 | 50 | 110.3 | 13.6 |
| 1SMC8.5A | 9.44 | 10.4 | 1.0 | 8.5 | 20 | 104.2 | 14.4 |
| 1SMC9.0A | 10.0 | 11.1 | 1.0 | 9.0 | 10 | 97.4 | 15.4 |
| 1SMC10A | 11.1 | 12.3 | 1.0 | 10 | 5.0 | 88.2 | 17.0 |
| 1SMC11A | 12.2 | 13.5 | 1.0 | 11 | 5.0 | 82.4 | 18.2 |
| 1SMC12A | 13.3 | 14.7 | 1.0 | 12 | 5.0 | 75.4 | 19.9 |
| 1SMC13A | 14.4 | 15.9 | 1.0 | 13 | 5.0 | 69.8 | 21.5 |
| 1SMC14A | 15.6 | 17.2 | 1.0 | 14 | 5.0 | 64.7 | 23.2 |
| 1SMC15A | 16.7 | 18.5 | 1.0 | 15 | 5.0 | 61.5 | 24.4 |
| 1SMC16A | 17.8 | 19.7 | 1.0 | 16 | 5.0 | 57.7 | 26.0 |
| 1SMC17A | 18.9 | 20.9 | 1.0 | 17 | 5.0 | 54.3 | 27.6 |
| 1SMC18A | 20.0 | 22.1 | 1.0 | 18 | 5.0 | 51.4 | 29.2 |
| 1SMC20A | 22.2 | 24.5 | 1.0 | 20 | 5.0 | 46.3 | 32.4 |
| 1SMC22A | 24.4 | 26.9 | 1.0 | 22 | 5.0 | 42.3 | 35.5 |
| 1SMC24A | 26.7 | 29.5 | 1.0 | 24 | 5.0 | 38.6 | 38.9 |
| 1SMC26A | 28.9 | 31.9 | 1.0 | 26 | 5.0 | 35.6 | 42.1 |
| 1SMC28A | 31.1 | 34.4 | 1.0 | 28 | 5.0 | 33.0 | 45.4 |
| 1SMC30A | 33.3 | 36.8 | 1.0 | 30 | 5.0 | 31.0 | 48.4 |
| 1SMC33A | 36.7 | 40.6 | 1.0 | 33 | 5.0 | 28.1 | 53.3 |
| 1SMC36A | 40.0 | 44.2 | 1.0 | 36 | 5.0 | 25.8 | 58.1 |
| 1SMC40A | 44.4 | 49.1 | 1.0 | 40 | 5.0 | 23.3 | 64.5 |
| 1SMC43A | 47.8 | 52.8 | 1.0 | 43 | 5.0 | 21.6 | 69.4 |
| 1SMC45A | 50.0 | 55.3 | 1.0 | 45 | 5.0 | 20.6 | 72.7 |
| 1SMC48A | 53.3 | 58.9 | 1.0 | 48 | 5.0 | 19.4 | 77.4 |

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| Type No. | Breakdown Voltage @ T ⁽¹⁾ | | Working Peak Reverse Voltage | Maximum Reverse Leakage @ VWM | Maximum Peak Pulse Surge Current | Maximum Clamping Voltage @ IPPM | |
|----------|--------------------------------------|------|------------------------------|-------------------------------|----------------------------------|---------------------------------|------|
| | VBR (V) | | | | | | VWM |
| | Min. | Max. | (mA) | (V) | μA | (A) | (V) |
| 1SMC51A | 56.7 | 62.7 | 1.0 | 51 | 5.0 | 18.2 | 82.4 |
| 1SMC54A | 60.0 | 66.3 | 1.0 | 54 | 5.0 | 17.2 | 87.1 |
| 1SMC58A | 64.4 | 71.2 | 1.0 | 58 | 5.0 | 16.0 | 93.6 |
| 1SMC60A | 66.7 | 73.7 | 1.0 | 60 | 5.0 | 15.5 | 96 |
| 1SMC64A | 71.1 | 78.6 | 1.0 | 64 | 5.0 | 14.6 | 103 |
| 1SMC70A | 77.8 | 86 | 1.0 | 70 | 5.0 | 13.3 | 113 |
| 1SMC75A | 83.3 | 92.1 | 1.0 | 75 | 5.0 | 12.4 | 121 |
| 1SMC78A | 86.7 | 95.8 | 1.0 | 78 | 5.0 | 11.9 | 126 |
| 1SMC85A | 94.4 | 104 | 1.0 | 85 | 5.0 | 10.9 | 137 |
| 1SMC90A | 100 | 111 | 1.0 | 90 | 5.0 | 10.3 | 146 |
| 1SMC100A | 111 | 123 | 1.0 | 100 | 5.0 | 9.3 | 162 |
| 1SMC110A | 122 | 135 | 1.0 | 110 | 5.0 | 8.5 | 177 |
| 1SMC120A | 133 | 147 | 1.0 | 120 | 5.0 | 7.8 | 193 |
| 1SMC130A | 144 | 159 | 1.0 | 130 | 5.0 | 7.2 | 209 |
| 1SMC150A | 167 | 185 | 1.0 | 150 | 5.0 | 6.2 | 243 |
| 1SMC160A | 178 | 197 | 1.0 | 160 | 5.0 | 5.8 | 259 |
| 1SMC170A | 189 | 209 | 1.0 | 170 | 5.0 | 5.50 | 275 |
| 1SMC188A | 209 | 231 | 1.0 | 188 | 5.0 | 4.60 | 328 |

Notes :

(1) Pulse test : $t_p \leq 50\text{ms}$.

(2) Surge Current Waveform per Figure 5 and Derate per Figure

(3) For bi-directional types have VWM of 10 Volts and less , the D limit is doubled

(4) For the bi-directional 1SMC5.0CA, the maximum VBR is 7.25V

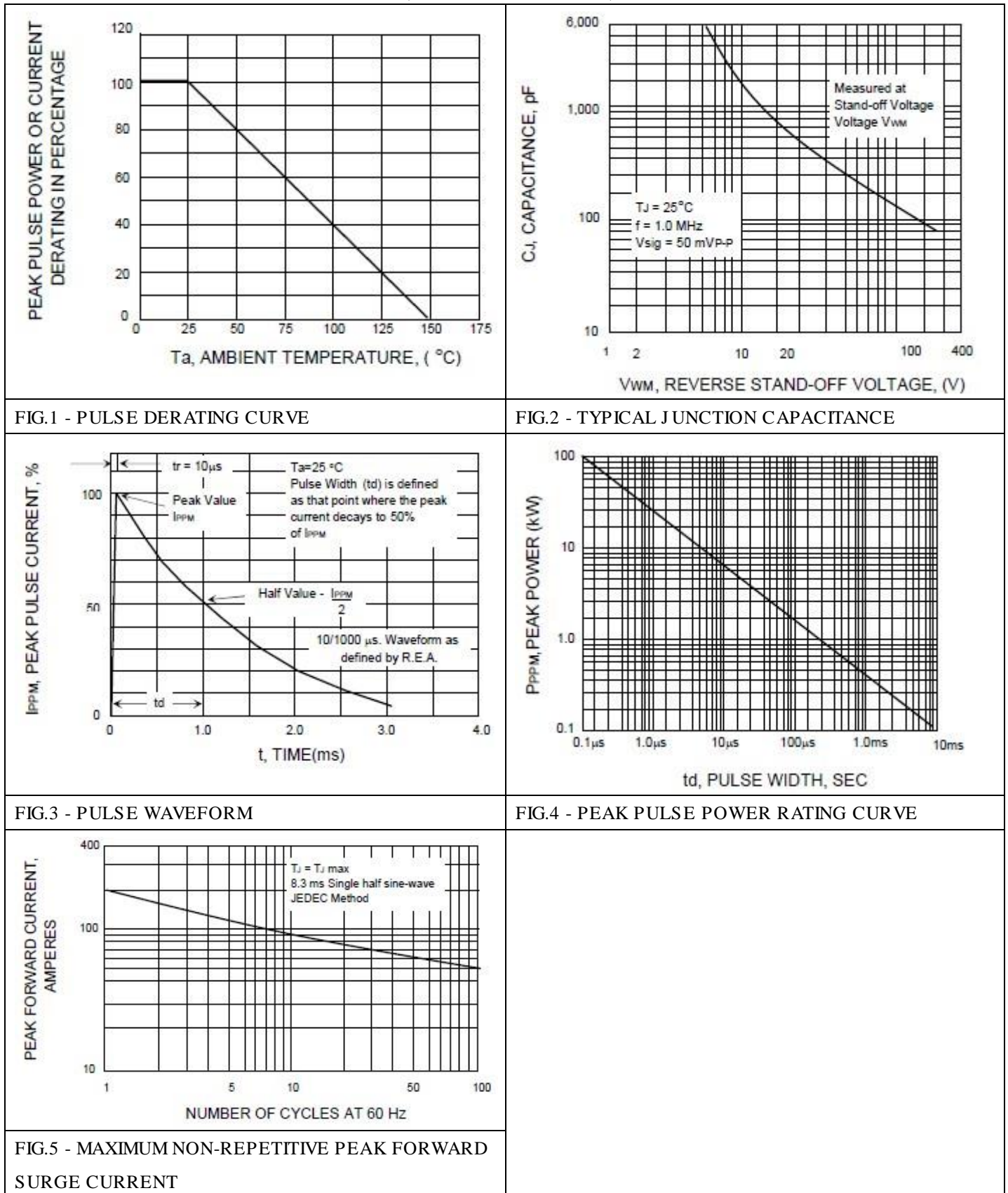
(5) "1SMC" will be omitted in marking on the diode

1SMC_5.0_188A

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■ RATING AND CHARACTERISTIC CURVES (1SMC5.0 - 1SMC188A)



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