



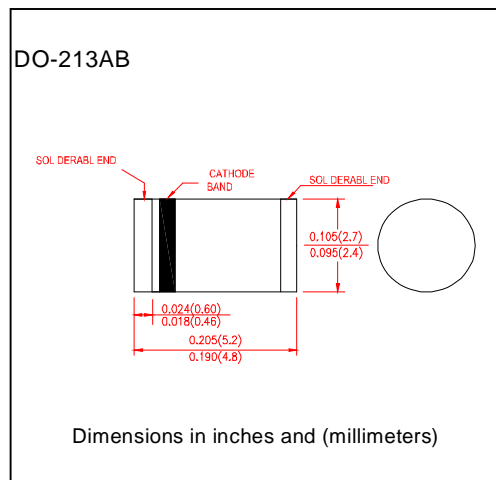
SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

SM6.8 THRU SM200CA

Breakdown Voltage 6.8 to 200 Volts
Peak Pulse Power 400 Watts

FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-O
- For surface mounted applications
- Glass passivated junction
- Low inductance surge resistance
- Fast response time: typical less than 1.0ps from 0 volts to $V_{(BR)}$ for unidirectional AND 5.0ns for bidirectional types
- 400W peak pulse capability with a 10/1000 μ s waveform, repetition rate (duty cycle): 0.01%
- For devices with $V_{(BR)} \geq 10V$, I_D are typically less than 1.0 μ A
- High temperature soldering guaranteed: 250°C/10 seconds at terminals



MECHANICAL DATA

- Cass: JEDEC DO-213AB, molded plastic body over passivated junction
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Blue bands denotes positive end (cathode) for unidirectional and yellow band in the Middle for bidirectional types
- Mounting position: any
- Weight: 0.116 ounces, 0.0064 gram

DEVICES FOR BIDIRECTIONAL APPLICATIONS

- For bidirectional applications use suffix letters C or CA for types SM6.8 thru SM200A (e.g. SM6.8C, SM200CA).Electrical Characteristics apply in both directions.

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

- Ratings at 25°C ambient temperature unless otherwise specified

| Ratings | Symbols | Value | Unit |
|---|-----------------------------------|-------------|-------|
| Peak Pulse power dissipation with a 10/1000 μ s waveform(NOTE1,FIG.1) | P _{PPM} | Minimum 400 | Watts |
| Steady Stage Power Dissipation at T _T =75°C (Note2) | P _{M(AV)} | 1.0 | Watt |
| Peak Pulse current with a 10/1000 μ s waveform (NOTE1,FIG.3) | I _{PPM} | See Table 1 | Amps |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load for unidirectional only (JEDEC Method) (Note3) | I _{FSM} | 40.0 | Amps |
| Maximum instantaneous forward voltage at 25A (NOTE 3) for unidirectional only | V _F | 3.5 | Volts |
| Operating Junction and Storage Temperature Range | T _J , T _{STG} | 50 to +150 | °C |

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above T_A=25°C per Fig.2
2. Mounted on copper pads to each terminal of 0.31 in (8.0mm²) per Fig 5.
3. Measured at 8.3ms single half sine-wave or equivalent square wave duty cycle = 4 pulses per minutes maximum.



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Electrical Characteristic at (T_A = 25°C unless otherwise noted) TABLE1

| Device Type | Breakdown Voltage V _(BR) (Volts) (Note 1) | | Test Current at I _r (mA) | Stand-off Voltage V _{WM} (Volts) | Maximum Reverse Leakage at V _{WM} I _D (μ A) | Maximum Peak Pulse Current I _{PPM} (Note 2) (Amps) | Maximum Clamping Voltage at I _{PPM} V _c (Volts) | Maximum Temperature Coefficient of V _(BR) (%/°C) |
|-------------|--|------|-------------------------------------|---|---|---|---|---|
| | MIN | MAX | | | | | | |
| SM6.8 | 6.12 | 7.48 | 10 | 5.5 | 1000 | 37 | 10.8 | 0.06 |
| SM6.8A | 6.45 | 7.14 | 10 | 5.8 | 1000 | 38.1 | 10.5 | 0.06 |
| SM7.5 | 6.75 | 8.25 | 10 | 6.05 | 500 | 34.2 | 11.7 | 0.064 |
| SM7.5A | 7.13 | 7.88 | 10 | 6.4 | 500 | 35.4 | 11.3 | 0.064 |
| SM8.2 | 7.38 | 9.02 | 10 | 6.63 | 200 | 32 | 12.5 | 0.068 |
| SM8.2A | 7.79 | 8.61 | 10 | 7.02 | 200 | 33.1 | 12.1 | 0.068 |
| SM9.1 | 8.19 | 10 | 1 | 7.37 | 50 | 29 | 13.8 | 0.071 |
| SM9.1A | 7.65 | 9.55 | 1 | 7.78 | 50 | 29.9 | 13.4 | 0.071 |
| SM10 | 9 | 11 | 1 | 8.1 | 10 | 26.7 | 15 | 0.076 |
| SM10A | 9.5 | 10.5 | 1 | 8.55 | 10 | 27.6 | 14.5 | 0.076 |
| SM11 | 9.9 | 12.1 | 1 | 8.92 | 5 | 24.7 | 16.2 | 0.078 |
| SM11A | 10.5 | 11.6 | 1 | 9.4 | 5 | 25.6 | 15.6 | 0.078 |
| SM12 | 10.8 | 13.2 | 1 | 9.372 | 5 | 23.1 | 17.3 | 0.081 |
| SM12A | 11.4 | 12.6 | 1 | 10.2 | 5 | 24 | 16.7 | 0.081 |
| SM13 | 11.7 | 14.3 | 1 | 10.5 | 5 | 21.1 | 19 | 0.084 |
| SM13A | 12.4 | 13.7 | 1 | 11.1 | 5 | 22 | 18.2 | 0.084 |
| SM15 | 13.5 | 16.5 | 1 | 12.1 | 5 | 18.2 | 22 | 0.087 |
| SM15A | 14.3 | 15.8 | 1 | 12.8 | 5 | 18.9 | 21.2 | 0.087 |
| SM16 | 14.4 | 17.6 | 1 | 12.9 | 5 | 17 | 23.5 | 0.089 |
| SM16A | 15.2 | 16.8 | 1 | 13.6 | 5 | 17.8 | 22.5 | 0.089 |
| SM18 | 16.2 | 19.8 | 1 | 14.5 | 5 | 15.1 | 26.5 | 0.091 |
| SM18A | 17.1 | 18.9 | 1 | 15.3 | 5 | 15.9 | 25.2 | 0.091 |
| SM20 | 18 | 22 | 1 | 16.2 | 5 | 13.7 | 29.1 | 0.093 |
| SM20A | 19 | 21 | 1 | 17.1 | 5 | 14.4 | 27.7 | 0.093 |
| SM22 | 19.8 | 24.2 | 1 | 17.8 | 5 | 12.5 | 31.9 | 0.095 |
| SM22A | 20.9 | 23.1 | 1 | 18.8 | 5 | 13.1 | 30.6 | 0.095 |
| SM24 | 21.6 | 26.4 | 1 | 19.4 | 5 | 11.5 | 34.7 | 0.097 |
| SM24A | 22.8 | 25.2 | 1 | 20.5 | 5 | 12 | 33.2 | 0.097 |
| SM27 | 24.3 | 29.7 | 1 | 21.8 | 5 | 10.2 | 39.1 | 0.099 |
| SM27A | 25.7 | 28.4 | 1 | 23.1 | 5 | 10.7 | 37.5 | 0.099 |
| SM30 | 27 | 33 | 1 | 24.3 | 5 | 9.2 | 43.5 | 0.1 |
| SM30A | 28.5 | 31.5 | 1 | 25.6 | 5 | 9.7 | 41.4 | 0.1 |
| SM33 | 29.7 | 36.3 | 1 | 26.8 | 5 | 8.4 | 47.7 | 0.101 |
| SM33A | 31.4 | 34.7 | 1 | 28.2 | 5 | 8.8 | 45.7 | 0.101 |
| SM36 | 32.4 | 39.6 | 1 | 29.1 | 5 | 7.7 | 52 | 0.102 |
| SM36A | 34.2 | 37.8 | 1 | 30.8 | 5 | 8 | 49.9 | 0.102 |
| SM39 | 35.1 | 42.9 | 1 | 31.6 | 5 | 7.1 | 56.4 | 0.103 |
| SM39A | 37.1 | 41 | 1 | 33.3 | 5 | 7.4 | 53.9 | 0.103 |
| SM43 | 38.7 | 47.3 | 1 | 34.8 | 5 | 6.5 | 61.9 | 0.104 |
| SM43A | 40.9 | 45.2 | 1 | 36.8 | 5 | 6.7 | 59.3 | 0.104 |
| SM47 | 42.3 | 51.7 | 1 | 38.1 | 5 | 5.9 | 67.8 | 0.104 |
| SM47A | 44.7 | 49.4 | 1 | 40.2 | 5 | 6.2 | 64.8 | 0.104 |
| SM51 | 45.7 | 56.1 | 1 | 41.3 | 5 | 5.4 | 73.5 | 0.105 |
| SM51A | 48.5 | 43.6 | 1 | 43.6 | 5 | 5.7 | 70.1 | 0.105 |
| SM56 | 50.4 | 61.6 | 1 | 45.4 | 5 | 5 | 80.5 | 0.106 |
| SM56A | 53.2 | 58.8 | 1 | 47.8 | 5 | 5.2 | 77 | 0.106 |
| SM62 | 55.8 | 68.2 | 1 | 50.2 | 5 | 4.5 | 89 | 0.107 |
| SM62A | 58.9 | 65.1 | 1 | 53 | 5 | 4.7 | 85 | 0.107 |



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Peak Pulse Power

400 Watts

Electrical Characteristic at (T_A =25°C unless otherwise noted) TABLE 1 (Cont'd)

| Device Type | Breakdown Voltage V _{BR} (Volts) (Note 1) | | Test Current at I _r (mA) | Stand-off Voltage V _{WM} (Volts) | Maximum Reverse Leakage at V _{WM} I _D (μ A) (Note 4) | Maximum Peak Pulse Current I _{PPM} (Note 2) (Amps) | Maximum Clamping Voltage at I _{PPM} V _c (Volts) | Maximum Temperature Coefficient of V _{BR} (%/°C) |
|-------------|--|------|-------------------------------------|---|--|---|---|---|
| | MIN | MAX | | | | | | |
| SM68 | 61.2 | 74.8 | 1 | 55.1 | 5 | 4.1 | 98 | 0.107 |
| SM68A | 64.6 | 71.4 | 1 | 58.1 | 5 | 4.3 | 92 | 0.107 |
| SM75 | 67.5 | 82.5 | 1 | 60.7 | 5 | 3.7 | 105 | 0.108 |
| SM75A | 71.3 | 78.8 | 1 | 64.1 | 5 | 3.9 | 103 | 0.108 |
| SM82 | 73.8 | 90.2 | 1 | 66.4 | 5 | 3.4 | 118 | 0.108 |
| SM82A | 77.9 | 86.1 | 1 | 70.1 | 5 | 3.5 | 113 | 0.108 |
| SM91 | 81.9 | 100 | 1 | 73.7 | 5 | 3.1 | 131 | 0.109 |
| SM91A | 86.5 | 95.5 | 1 | 77.8 | 5 | 3.2 | 125 | 0.109 |
| SM100 | 90 | 110 | 1 | 81 | 5 | 1.39 | 144 | 0.109 |
| SM100A | 95 | 105 | 1 | 85.5 | 5 | 1.46 | 137 | 0.109 |
| SM110 | 99 | 121 | 1 | 89.2 | 5 | 1.27 | 158 | 0.11 |
| SM110A | 105 | 116 | 1 | 94 | 5 | 1.32 | 152 | 0.11 |
| SM120 | 108 | 132 | 1 | 97.2 | 5 | 1.16 | 173 | 0.11 |
| SM120A | 114 | 126 | 1 | 102 | 5 | 1.21 | 165 | 0.11 |
| SM130 | 117 | 143 | 1 | 105 | 5 | 1.07 | 187 | 0.11 |
| SM130A | 124 | 137 | 1 | 111 | 5 | 1.12 | 179 | 0.11 |
| SM150 | 135 | 165 | 1 | 121 | 5 | 0.93 | 215 | 0.111 |
| SM150A | 143 | 159 | 1 | 128 | 5 | 0.97 | 207 | 0.111 |
| SM160 | 144 | 175 | 1 | 130 | 5 | 0.87 | 230 | 0.111 |
| SM160A | 152 | 167 | 1 | 136 | 5 | 0.91 | 219 | 0.111 |
| SM170 | 153 | 187 | 1 | 138 | 5 | 0.82 | 244 | 0.111 |
| SM170A | 162 | 179 | 1 | 145 | 5 | 0.85 | 234 | 0.111 |
| SM180 | 162 | 197 | 1 | 146 | 5 | 0.78 | 258 | 0.111 |
| SM180A | 171 | 189 | 1 | 154 | 5 | 0.81 | 246 | 0.111 |
| SM200 | 180 | 220 | 1 | 162 | 5 | 0.7 | 287 | 0.111 |
| SM200A | 190 | 210 | 1 | 171 | 5 | 0.73 | 274 | 0.111 |

Notes:

- (1) V_{BR} measured after IT applied for 300ms square wave pulse or equivalent
- (2) Surge current waveform per Figure 3 and derate per Fig.2
- (3) All terms and symbols are consistent with ANSI/IEEE C62.35



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RATING AND CHARACTERISTIC CURVES SM6.8 THRU SM200CA

