



DC COMPONENTS CO., LTD.

RECTIFIER SPECIALISTS

**SA5.0
THRU
SA170CA**

TECHNICAL SPECIFICATIONS OF TRANSIENT VOLTAGE SUPPRESSOR

VOLTAGE RANGE - 5.0 to 170 Volts

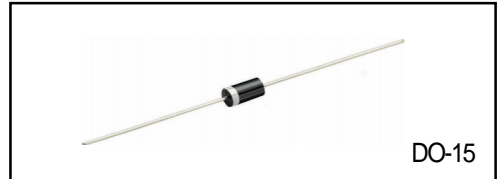
PEAK PULSE POWER - 500 Watts

FEATURES

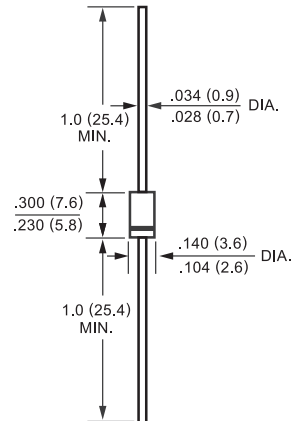
- * Glass passivated junction
- * 500 Watts Peak Pulse Power capability on 10/1000 μ s waveform
- * Excellent clamping capability
- * Low zener impedance
- * Fast response time

MECHANICAL DATA

- * Case: Molded plastic
- * Epoxy: UL 94V-0 rate flame retardant
- * Lead: MIL-STD-202E, Method 208 guaranteed
- * Polarity: Color band denotes positive end (cathode) except bidirectional types
- * Mounting position: Any
- * Weight: 0.4 gram



DO-15



Dimensions in inches and (millimeters)

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified.
Single phase, half wave, 60 Hz, resistive or inductive load,
For capacitive load, derate current by 20%.

DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA suffix (e.g. SA5.0C, SA170CA)

Electrical characteristics apply in both directions

| | SYMBOL | VALUE | UNITS |
|---|----------|--------------|------------------|
| Peak Pulse Power Dissipation on 10/1000 μ s waveform (Note1, FIG.1) | PPPM | Minimum 500 | Watts |
| Steady State Power Dissipation at $T_L = 75^\circ\text{C}$ Lead Lengths .375" (9.5 mm) (Note 2) | PM (AV) | 1.0 | Watts |
| Peak Forward Surge Current, 8.3ms single half sine-wave superimposed on rated load(JEDEC Method) (Note 3) | IFSM | 70 | Amps |
| Maximum Instantaneous Forward Voltage at 35A for Unidirectional Only | VF | 3.5 | Volts |
| Operating and Storage Temperature Range | TJ, TSTG | -65 to + 175 | $^\circ\text{C}$ |

- NOTES : 1. Non-repetitive current pulse, per Fig.3 and derated above $T_A = 25^\circ\text{C}$ per Fig.2.
2. Mounted on Copper Leaf area of 1.6 X 1.6" (40X40 mm) per Fig. 5
3. 8.3ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

RATING AND CHARACTERISTIC CURVES (SA5.0 THRU SA170CA)

FIG. 1 - PEAK PULSE POWER RATING CURVE

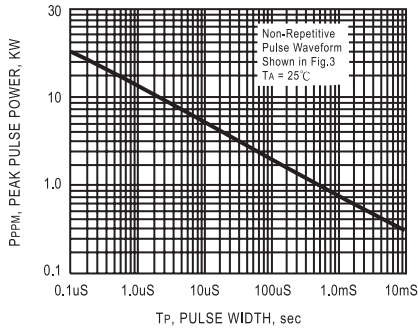


FIG. 3 - PULSE WAVEFORM

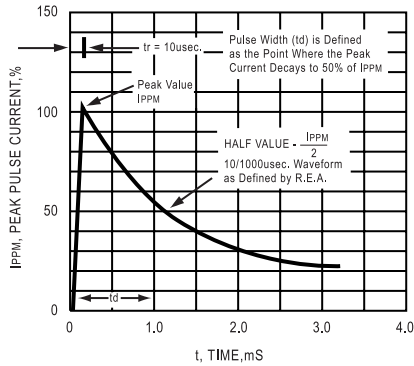


FIG. 5 - STEADY STATE POWER DERATING CURVE

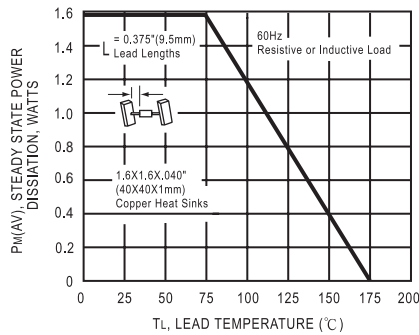


FIG. 2 - PULSE DERATING CURVE

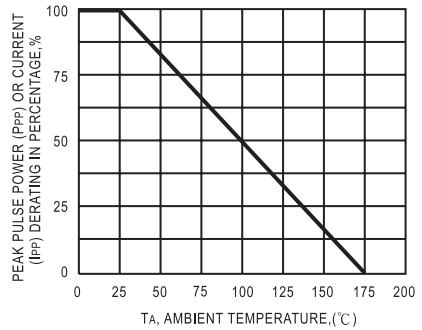


FIG. 4 - TYPICAL JUNCTION CAPACITANCE

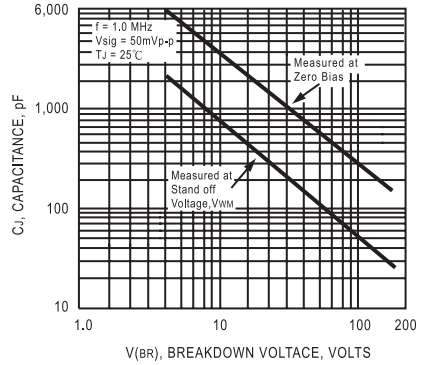


FIG. 6 - MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL

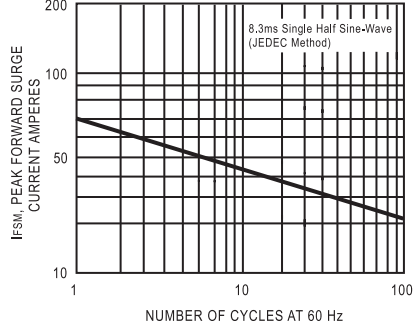
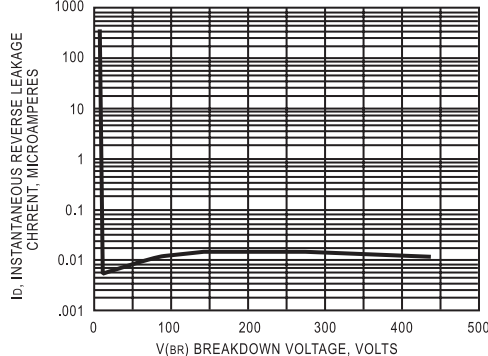


FIG. 7 - TYPICAL REVERSE LEAKAGE CHARACTERISTICS



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SA (500W) SERIES TRANSIENT VOLTAGE SUPPRESSORS

| TYPE | Breakdown Voltage | | | Reverse Stand off Voltage V _{WM} (Volts) | Maximum Reverse Leakage at V _{WM} I _D (μ A) | Maximum Peak Pulse Current IPPM (Amps) | Maximum Clamping Voltage at IPPM V _C (Volts) |
|--------|-------------------|------|----------------------|---|--|--|---|
| | VBR (Volts) | | @I _T (mA) | | | | |
| | MIN. | MAX. | | | | | |
| SA5.0 | 6.40 | 7.30 | 1.0 | 5.0 | 600 | 52.0 | 9.6 |
| SA5.0A | 6.40 | 7.00 | 1.0 | 5.0 | 600 | 54.3 | 9.2 |
| SA6.0 | 6.67 | 8.15 | 1.0 | 6.0 | 600 | 43.9 | 11.4 |
| SA6.0A | 6.67 | 7.37 | 1.0 | 6.0 | 600 | 48.5 | 10.3 |
| SA6.5 | 7.22 | 8.82 | 1.0 | 6.5 | 400 | 40.7 | 12.3 |
| SA6.5A | 7.22 | 7.98 | 1.0 | 6.5 | 400 | 44.7 | 11.2 |
| SA7.0 | 7.78 | 9.51 | 1.0 | 7.0 | 150 | 37.8 | 13.3 |
| SA7.0A | 7.78 | 8.60 | 1.0 | 7.0 | 150 | 41.7 | 12.0 |
| SA7.5 | 8.33 | 10.2 | 1.0 | 7.5 | 50 | 35.0 | 14.3 |
| SA7.5A | 8.33 | 9.21 | 1.0 | 7.5 | 50 | 38.8 | 12.9 |
| SA8.0 | 8.89 | 10.9 | 1.0 | 8.0 | 25 | 33.3 | 15.0 |
| SA8.0A | 8.89 | 9.83 | 1.0 | 8.0 | 25 | 36.7 | 13.6 |
| SA8.5 | 9.44 | 11.5 | 1.0 | 8.5 | 10 | 31.4 | 15.9 |
| SA8.5A | 9.44 | 10.4 | 1.0 | 8.5 | 10 | 34.7 | 14.4 |
| SA9.0 | 10.0 | 12.2 | 1.0 | 9.0 | 5.0 | 29.5 | 16.9 |
| SA9.0A | 10.0 | 11.1 | 1.0 | 9.0 | 5.0 | 32.5 | 15.4 |
| SA10 | 11.1 | 13.6 | 1.0 | 10.0 | 3.0 | 26.6 | 18.8 |
| SA10A | 11.1 | 12.3 | 1.0 | 10.0 | 3.0 | 29.4 | 17.0 |
| SA11 | 12.2 | 14.9 | 1.0 | 11.0 | 3.0 | 24.9 | 20.1 |
| SA11A | 12.2 | 13.5 | 1.0 | 11.0 | 3.0 | 27.4 | 18.2 |
| SA12 | 13.3 | 16.3 | 1.0 | 12.0 | 3.0 | 22.7 | 22.0 |
| SA12A | 13.3 | 14.7 | 1.0 | 12.0 | 3.0 | 25.1 | 19.9 |
| SA13 | 14.4 | 17.6 | 1.0 | 13.0 | 3.0 | 21.0 | 23.8 |
| SA13A | 14.4 | 15.9 | 1.0 | 13.0 | 3.0 | 23.2 | 21.5 |
| SA14 | 15.6 | 19.1 | 1.0 | 14.0 | 3.0 | 19.4 | 25.8 |
| SA14A | 15.6 | 17.2 | 11.0 | 14.0 | 3.0 | 21.5 | 23.2 |
| SA15 | 16.7 | 20.4 | 1.0 | 15.0 | 3.0 | 18.8 | 26.9 |
| SA15A | 16.7 | 18.5 | 1.0 | 15.0 | 3.0 | 20.6 | 24.4 |
| SA16 | 17.8 | 21.8 | 1.0 | 16.0 | 3.0 | 17.6 | 28.8 |
| SA16A | 17.8 | 19.7 | 1.0 | 16.0 | 3.0 | 19.2 | 26.0 |
| SA17 | 18.9 | 23.1 | 1.0 | 17.0 | 3.0 | 16.4 | 30.5 |
| SA17A | 18.9 | 20.9 | 1.0 | 17.0 | 3.0 | 18.1 | 27.6 |
| SA18 | 20.0 | 24.4 | 1.0 | 18.0 | 3.0 | 15.5 | 32.2 |
| SA18A | 20.0 | 22.1 | 1.0 | 18.0 | 3.0 | 17.2 | 29.2 |
| SA20 | 22.2 | 27.1 | 1.0 | 20.0 | 3.0 | 13.9 | 35.8 |
| SA20A | 22.2 | 24.5 | 1.0 | 20.0 | 3.0 | 15.4 | 32.4 |
| SA22 | 24.4 | 29.8 | 1.0 | 22.0 | 3.0 | 12.7 | 39.4 |
| SA22A | 24.4 | 26.9 | 1.0 | 22.0 | 3.0 | 14.1 | 35.5 |
| SA24 | 26.7 | 32.6 | 1.0 | 24.0 | 3.0 | 11.6 | 43.0 |
| SA24A | 26.7 | 29.5 | 1.0 | 24.0 | 3.0 | 12.8 | 38.9 |
| SA26 | 28.9 | 35.3 | 1.0 | 26.0 | 3.0 | 10.7 | 46.6 |
| SA26A | 28.9 | 31.9 | 1.0 | 26.0 | 3.0 | 11.9 | 42.1 |
| SA28 | 31.1 | 38.0 | 1.0 | 28.0 | 3.0 | 9.9 | 50.1 |
| SA28A | 31.1 | 34.4 | 1.0 | 28.0 | 3.0 | 11.0 | 45.4 |
| SA30 | 33.3 | 40.7 | 1.0 | 30.0 | 3.0 | 9.3 | 53.5 |
| SA30A | 33.3 | 36.8 | 1.0 | 30.0 | 3.0 | 10.3 | 48.4 |
| SA33 | 36.7 | 44.9 | 1.0 | 33.0 | 3.0 | 8.6 | 59.0 |
| SA33A | 36.7 | 4.06 | 1.0 | 33.0 | 3.0 | 9.4 | 53.5 |



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| TYPE | Breakdown Voltage | | | Reverse Stand off Voltage VWM (Volts) | Maximum Reverse Leakage at VWM Id(uA) | Maximum Peak Pulse Current IPPM (Amps) | Maximum Clamping Voltage at IPPM Vc (Volts) |
|--------|-------------------|------|----------|---------------------------------------|---------------------------------------|--|---|
| | VBR (Volts) | | @IT (mA) | | | | |
| | MIN. | MAX. | | | | | |
| SA36 | 40.0 | 48.9 | 1.0 | 36.0 | 3.0 | 7.8 | 64.3 |
| SA36A | 40.0 | 44.2 | 1.0 | 36.0 | 3.0 | 8.6 | 58.1 |
| SA40 | 44.4 | 54.3 | 1.0 | 40.0 | 3.0 | 7.0 | 71.4 |
| SA40A | 44.4 | 49.1 | 1.0 | 40.0 | 3.0 | 7.8 | 64.5 |
| SA43 | 47.8 | 58.4 | 1.0 | 43.0 | 3.0 | 6.5 | 76.7 |
| SA43A | 47.8 | 52.8 | 1.0 | 43.0 | 3.0 | 7.2 | 69.4 |
| SA45 | 50.0 | 61.1 | 1.0 | 45.0 | 3.0 | 6.2 | 80.3 |
| SA45A | 50.0 | 55.3 | 1.0 | 45.0 | 3.0 | 6.9 | 72.7 |
| SA48 | 53.3 | 65.2 | 1.0 | 48.0 | 3.0 | 5.8 | 85.5 |
| SA48A | 53.3 | 58.9 | 1.0 | 48.0 | 3.0 | 6.5 | 77.4 |
| SA51 | 56.7 | 69.3 | 1.0 | 51.0 | 3.0 | 5.5 | 91.1 |
| SA51A | 56.7 | 62.7 | 1.0 | 51.0 | 3.0 | 6.1 | 82.4 |
| SA54 | 60.0 | 73.3 | 1.0 | 54.0 | 3.0 | 5.2 | 96.3 |
| SA54A | 60.0 | 66.3 | 1.0 | 54.0 | 3.0 | 5.7 | 87.1 |
| SA58 | 64.4 | 78.7 | 1.0 | 58.0 | 3.0 | 4.9 | 103 |
| SA58A | 64.4 | 71.2 | 1.0 | 58.0 | 3.0 | 5.3 | 93.6 |
| SA60 | 66.7 | 81.5 | 1.0 | 60.0 | 3.0 | 4.7 | 107 |
| SA60A | 66.7 | 73.7 | 1.0 | 60.6 | 3.0 | 5.2 | 96.8 |
| SA64 | 71.1 | 86.9 | 1.0 | 64.0 | 3.0 | 4.4 | 114 |
| SA64A | 71.1 | 78.6 | 1.0 | 64.0 | 3.0 | 4.9 | 103 |
| SA70 | 77.8 | 95.1 | 1.0 | 70.0 | 3.0 | 4.0 | 125 |
| SA70A | 77.8 | 86.0 | 1.0 | 70.0 | 3.0 | 4.4 | 113 |
| SA75 | 83.3 | 102 | 1.0 | 75.0 | 3.0 | 3.7 | 134 |
| SA75A | 83.3 | 92.1 | 1.0 | 75.0 | 3.0 | 4.1 | 121 |
| SA78 | 86.7 | 106 | 1.0 | 78.0 | 3.0 | 3.6 | 139 |
| SA78A | 86.7 | 95.8 | 1.0 | 78.0 | 3.0 | 4.0 | 126 |
| SA85 | 94.4 | 115 | 1.0 | 85.0 | 3.0 | 3.3 | 151 |
| SA85A | 94.4 | 104 | 1.0 | 85.0 | 3.0 | 3.6 | 137 |
| SA90 | 100 | 122 | 1.0 | 90.0 | 3.0 | 3.1 | 160 |
| SA90A | 100 | 111 | 1.0 | 90.0 | 3.0 | 3.4 | 146 |
| SA100 | 111 | 136 | 1.0 | 100 | 3.0 | 2.8 | 179 |
| SA100A | 111 | 123 | 1.0 | 100 | 3.0 | 3.1 | 162 |
| SA110 | 122 | 149 | 1.0 | 110 | 3.0 | 2.6 | 196 |
| SA110A | 122 | 135 | 1.0 | 110 | 3.0 | 2.8 | 177 |
| SA120 | 133 | 163 | 1.0 | 120 | 3.0 | 2.3 | 214 |
| SA120A | 133 | 147 | 1.0 | 120 | 3.0 | 2.0 | 193 |
| SA130 | 144 | 176 | 1.0 | 130 | 3.0 | 2.2 | 230 |
| SA130A | 144 | 159 | 1.0 | 130 | 3.0 | 2.4 | 209 |
| SA150 | 167 | 204 | 1.0 | 150 | 3.0 | 1.9 | 268 |
| SA150A | 167 | 185 | 1.0 | 150 | 3.0 | 2.1 | 243 |
| SA160 | 178 | 218 | 1.0 | 160 | 3.0 | 1.7 | 257 |
| SA160A | 178 | 197 | 1.0 | 160 | 3.0 | 1.9 | 259 |
| SA170 | 189 | 231 | 1.0 | 170 | 3.0 | 1.6 | 304 |
| SA170A | 189 | 209 | 1.0 | 170 | 3.0 | 1.8 | 275 |

- NOTES : 1.VBR measured after IT applied for 300 μ s. IT = Square Wave Pulse or equivalent.
 2.For bidirectional use C or CA suffixs for all types (ex. SA5.0C, SA170CA).
 electrical characteristics apply in both directions.
 3.For bidirectional types having VWM of 10 volts and less, the Id limit is doubled.



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