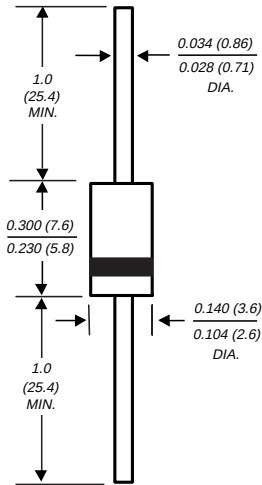


# SA5.0 THRU SA170CA

# TRANSZORB™ TRANSIENT VOLTAGE SUPPRESSOR

**Stand-off Voltage - 5.0 to 170 Volts      Peak Pulse Power - 500 Watts**

DO-204AC



*Dimensions in inches and (millimeters)*

## FEATURES

- ◆ Plastic package has Underwriters Laboratory Flammability Classification 94V-0
  - ◆ Glass passivated junction
  - ◆ 500W peak pulse power surge capability with a 10/1000 $\mu$ s waveform, repetition rate (duty cycle): 0.01%
  - ◆ Excellent clamping capability
  - ◆ Low incremental surge resistance
  - ◆ Fast response time: typically less than 1.0ps from 0 Volts to  $V_{(BR)}$  for uni-directional and 5.0ns for bi-directional types
  - ◆ For devices with  $V_{(BR)} \geq 10V$ ,  $I_D$  are typically less than 1.0 $\mu$ A
  - ◆ High temperature soldering guaranteed: 265°C/10 seconds 0.375" (9.5mm) lead length, 5lbs (2.3 kg) tension
- 

## MECHANICAL DATA

**Case:** JEDEC DO-204AC molded plastic body over passivated junction

**Terminals:** Solder plated axial leads, solderable per MIL-STD-750, Method 2026

**Polarity:** For uni-directional types the color band denotes the cathode, which is positive with respect to the anode under normal TVS operation

**Mounting Position:** Any

**Weight:** 0.015 ounce, 0.4 gram

## DEVICES FOR BIDIRECTIONAL APPLICATIONS

For bi-directional use C or CA Suffix. (e.g. SA5.0C, SA170CA).

Electrical characteristics apply in both directions.

## MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified

|                                                                                                                                       | <i>SYMBOL</i>                     | <i>VALUE</i> | <i>UNITS</i> |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------|--------------|
| Peak pulse power dissipation with a 10/1000μs waveform<br>(NOTE 1, FIG. 1)                                                            | P <sub>PPM</sub>                  | Minimum 500  | Watts        |
| Peak pulse current with a 10/1000μs waveform<br>(NOTE 1)                                                                              | I <sub>PPM</sub>                  | SEE TABLE 1  | Amps         |
| Steady state power dissipation at T <sub>L</sub> =75°C<br>lead lengths 0.375" (9.5mm) (NOTE 2)                                        | P <sub>M(AV)</sub>                | 3.0          | Watts        |
| Peak forward surge current, 8.3ms single half<br>sine-wave superimposed on rated load, unidirectional only<br>(JEDEC Method) (NOTE 3) | I <sub>FSM</sub>                  | 70           | Amps         |
| Maximum instantaneous forward voltage at 35A for<br>unidirectional only                                                               | V <sub>F</sub>                    | 3.5          | Volts        |
| Operating junction and storage temperature range                                                                                      | T <sub>J</sub> , T <sub>STG</sub> | -55 to +175  | °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 pad area of 1.6 x 1.6" (40 x 40mm) per Fig. 5

(3) 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum

ELECTRICAL CHARACTERISTICS at (T<sub>A</sub>=25°C unless otherwise noted) TABLE 1

| Device Type | Breakdown Voltage<br>V <sub>(BR)</sub><br>(Volts) (NOTE 1) |      | Test<br>Current<br>at I <sub>r</sub><br>(mA) | Stand-off<br>Voltage<br>V <sub>WM</sub><br>(Volts) | Maximum<br>Reverse<br>Leakage<br>at V <sub>WM</sub><br>I <sub>D</sub> (NOTE3) (μA) | Maximum<br>Peak Pulse<br>Current<br>I <sub>PPM</sub><br>(NOTE 2)<br>(Amps) | Maximum<br>Clamping<br>Voltage at<br>I <sub>PPM</sub><br>V <sub>c</sub> (Volts) | Maximum<br>Temperature<br>Coefficient<br>of V <sub>(BR)</sub><br>(mV / °C) |
|-------------|------------------------------------------------------------|------|----------------------------------------------|----------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------|
|             | MIN                                                        | MAX  |                                              |                                                    |                                                                                    |                                                                            |                                                                                 |                                                                            |
| SA5.0       | 6.40                                                       | 7.30 | 10                                           | 5.0                                                | 600                                                                                | 52.1                                                                       | 9.6                                                                             | 5.0                                                                        |
| SA5.0A      | 6.40                                                       | 7.00 | 10                                           | 5.0                                                | 600                                                                                | 54.3                                                                       | 9.2                                                                             | 5.0                                                                        |
| SA6.0       | 6.67                                                       | 8.15 | 10                                           | 6.0                                                | 600                                                                                | 43.9                                                                       | 11.4                                                                            | 5.0                                                                        |
| SA6.0A      | 6.67                                                       | 7.37 | 10                                           | 6.0                                                | 600                                                                                | 48.5                                                                       | 10.3                                                                            | 5.0                                                                        |
| SA6.5       | 7.22                                                       | 8.82 | 10                                           | 6.5                                                | 400                                                                                | 40.7                                                                       | 12.3                                                                            | 5.0                                                                        |
| SA6.5A      | 7.22                                                       | 7.98 | 10                                           | 6.5                                                | 400                                                                                | 44.7                                                                       | 11.2                                                                            | 5.0                                                                        |
| SA7.0       | 7.78                                                       | 9.51 | 10                                           | 7.0                                                | 150                                                                                | 37.6                                                                       | 13.3                                                                            | 6.0                                                                        |
| SA7.0A      | 7.78                                                       | 8.60 | 10                                           | 7.0                                                | 150                                                                                | 41.7                                                                       | 12.0                                                                            | 6.0                                                                        |
| SA7.5       | 8.33                                                       | 10.2 | 1.0                                          | 7.5                                                | 50                                                                                 | 35.0                                                                       | 14.3                                                                            | 7.0                                                                        |
| SA7.5A      | 8.33                                                       | 9.21 | 1.0                                          | 7.5                                                | 50                                                                                 | 38.8                                                                       | 12.9                                                                            | 7.0                                                                        |
| SA8.0       | 8.89                                                       | 10.9 | 1.0                                          | 8.0                                                | 25                                                                                 | 33.3                                                                       | 15.0                                                                            | 7.0                                                                        |
| SA8.0A      | 8.89                                                       | 9.83 | 1.0                                          | 8.0                                                | 25                                                                                 | 36.8                                                                       | 13.6                                                                            | 7.0                                                                        |
| SA8.5       | 9.44                                                       | 11.5 | 1.0                                          | 8.5                                                | 10                                                                                 | 31.4                                                                       | 15.9                                                                            | 8.0                                                                        |
| SA8.5A      | 9.44                                                       | 10.4 | 1.0                                          | 8.5                                                | 10                                                                                 | 34.7                                                                       | 14.4                                                                            | 8.0                                                                        |
| SA9.0       | 10.0                                                       | 12.2 | 1.0                                          | 9.0                                                | 5.0                                                                                | 29.6                                                                       | 16.9                                                                            | 9.0                                                                        |
| SA9.0A      | 10.0                                                       | 11.1 | 1.0                                          | 9.0                                                | 5.0                                                                                | 32.5                                                                       | 15.4                                                                            | 9.0                                                                        |
| SA10        | 11.1                                                       | 13.6 | 1.0                                          | 10.0                                               | 1.0                                                                                | 26.6                                                                       | 18.8                                                                            | 10.0                                                                       |
| SA10A       | 11.1                                                       | 12.3 | 1.0                                          | 10.0                                               | 1.0                                                                                | 29.4                                                                       | 17.0                                                                            | 10.0                                                                       |
| SA11        | 12.2                                                       | 14.9 | 1.0                                          | 11.0                                               | 1.0                                                                                | 24.9                                                                       | 20.1                                                                            | 11.0                                                                       |
| SA11A       | 12.2                                                       | 13.5 | 1.0                                          | 11.0                                               | 1.0                                                                                | 27.5                                                                       | 18.2                                                                            | 11.0                                                                       |
| SA12        | 13.3                                                       | 16.3 | 1.0                                          | 12.0                                               | 1.0                                                                                | 22.7                                                                       | 22.0                                                                            | 12.0                                                                       |
| SA12A       | 13.3                                                       | 14.7 | 1.0                                          | 12.0                                               | 1.0                                                                                | 25.1                                                                       | 19.9                                                                            | 12.0                                                                       |
| SA13        | 14.4                                                       | 17.6 | 1.0                                          | 13.0                                               | 1.0                                                                                | 21.0                                                                       | 23.8                                                                            | 13.0                                                                       |
| SA13A       | 14.4                                                       | 15.9 | 1.0                                          | 13.0                                               | 1.0                                                                                | 23.3                                                                       | 21.5                                                                            | 13.0                                                                       |
| SA14        | 15.6                                                       | 19.1 | 1.0                                          | 14.0                                               | 1.0                                                                                | 19.4                                                                       | 25.8                                                                            | 14.0                                                                       |
| SA14A       | 15.6                                                       | 17.2 | 1.0                                          | 14.0                                               | 1.0                                                                                | 21.6                                                                       | 23.2                                                                            | 14.0                                                                       |
| SA15        | 16.7                                                       | 20.4 | 1.0                                          | 15.0                                               | 1.0                                                                                | 18.6                                                                       | 26.9                                                                            | 16.0                                                                       |
| SA15A       | 16.7                                                       | 18.5 | 1.0                                          | 15.0                                               | 1.0                                                                                | 20.5                                                                       | 24.4                                                                            | 16.0                                                                       |
| SA16        | 17.8                                                       | 21.8 | 1.0                                          | 16.0                                               | 1.0                                                                                | 17.4                                                                       | 28.8                                                                            | 19.0                                                                       |
| SA16A       | 17.8                                                       | 19.7 | 1.0                                          | 16.0                                               | 1.0                                                                                | 19.2                                                                       | 26.0                                                                            | 17.0                                                                       |
| SA17        | 18.9                                                       | 23.1 | 1.0                                          | 17.0                                               | 1.0                                                                                | 16.4                                                                       | 30.5                                                                            | 20.0                                                                       |
| SA17A       | 18.9                                                       | 20.9 | 1.0                                          | 17.0                                               | 1.0                                                                                | 18.1                                                                       | 27.6                                                                            | 19.0                                                                       |
| SA18        | 20.0                                                       | 24.4 | 1.0                                          | 18.0                                               | 1.0                                                                                | 15.5                                                                       | 32.2                                                                            | 21.0                                                                       |
| SA18A       | 20.0                                                       | 22.1 | 1.0                                          | 18.0                                               | 1.0                                                                                | 17.1                                                                       | 29.2                                                                            | 20.0                                                                       |
| SA20        | 22.2                                                       | 27.1 | 1.0                                          | 20.0                                               | 1.0                                                                                | 14.0                                                                       | 35.8                                                                            | 25.0                                                                       |
| SA20A       | 22.2                                                       | 24.5 | 1.0                                          | 20.0                                               | 1.0                                                                                | 15.4                                                                       | 32.4                                                                            | 23.0                                                                       |
| SA22        | 24.4                                                       | 29.8 | 1.0                                          | 22.0                                               | 1.0                                                                                | 22.7                                                                       | 39.4                                                                            | 28.0                                                                       |
| SA22A       | 24.4                                                       | 26.9 | 1.0                                          | 22.0                                               | 1.0                                                                                | 14.1                                                                       | 35.5                                                                            | 25.0                                                                       |
| SA24        | 26.7                                                       | 32.6 | 1.0                                          | 24.0                                               | 1.0                                                                                | 11.6                                                                       | 43.0                                                                            | 31.0                                                                       |
| SA24A       | 26.7                                                       | 29.5 | 1.0                                          | 24.0                                               | 1.0                                                                                | 12.9                                                                       | 38.9                                                                            | 28.0                                                                       |
| SA26        | 28.9                                                       | 35.3 | 1.0                                          | 26.0                                               | 1.0                                                                                | 10.7                                                                       | 46.6                                                                            | 31.0                                                                       |
| SA26A       | 28.9                                                       | 31.9 | 1.0                                          | 26.0                                               | 1.0                                                                                | 11.9                                                                       | 42.1                                                                            | 30.0                                                                       |
| SA28        | 31.1                                                       | 38.0 | 1.0                                          | 28.0                                               | 1.0                                                                                | 10.0                                                                       | 50.1                                                                            | 35.0                                                                       |
| SA28A       | 31.1                                                       | 34.4 | 1.0                                          | 28.0                                               | 1.0                                                                                | 11.0                                                                       | 45.4                                                                            | 31.0                                                                       |
| SA30        | 33.3                                                       | 40.7 | 1.0                                          | 30.0                                               | 1.0                                                                                | 9.3                                                                        | 53.5                                                                            | 39.0                                                                       |
| SA30A       | 33.3                                                       | 36.8 | 1.0                                          | 30.0                                               | 1.0                                                                                | 10                                                                         | 48.4                                                                            | 36.0                                                                       |
| SA33        | 36.7                                                       | 44.9 | 1.0                                          | 33.0                                               | 1.0                                                                                | 8.5                                                                        | 59.0                                                                            | 42.0                                                                       |
| SA33A       | 36.7                                                       | 40.6 | 1.0                                          | 33.0                                               | 1.0                                                                                | 9.4                                                                        | 53.3                                                                            | 39.0                                                                       |
| SA36        | 40.0                                                       | 48.9 | 1.0                                          | 36.0                                               | 1.0                                                                                | 7.8                                                                        | 64.3                                                                            | 46.0                                                                       |
| SA36A       | 40.0                                                       | 44.2 | 1.0                                          | 36.0                                               | 1.0                                                                                | 8.6                                                                        | 58.1                                                                            | 41.0                                                                       |
| SA40        | 44.4                                                       | 54.3 | 1.0                                          | 40.0                                               | 1.0                                                                                | 7.0                                                                        | 71.4                                                                            | 51.0                                                                       |
| SA40A       | 44.4                                                       | 49.1 | 1.0                                          | 40.0                                               | 1.0                                                                                | 7.8                                                                        | 64.5                                                                            | 46.0                                                                       |

**ELECTRICAL CHARACTERISTICS at (T<sub>A</sub>=25°C unless otherwise noted) TABLE 1 (Cont'd)**

| Device Type | Breakdown Voltage<br>V <sub>(BR)</sub><br>Volts (NOTE 1) |      | Test<br>Current<br>at I <sub>r</sub><br>(mA) | Stand-off<br>Voltage<br>V <sub>WM</sub><br>(Volts) | Maximum<br>Reverse<br>Leakage<br>at V <sub>WM</sub><br>I <sub>D</sub> (NOTE3) (μA) | Maximum<br>Peak Pulse<br>Current<br>I <sub>PPM</sub><br>(NOTE 2)<br>(Amps) | Maximum<br>Clamping<br>Voltage at<br>I <sub>PPM</sub><br>V <sub>C</sub> (Volts) | Maximum<br>Temperature<br>Coefficient<br>of V <sub>(BR)</sub><br>(mV / °C) |
|-------------|----------------------------------------------------------|------|----------------------------------------------|----------------------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------|
|             | MIN                                                      | MAX  |                                              |                                                    |                                                                                    |                                                                            |                                                                                 |                                                                            |
| SA43        | 47.8                                                     | 58.4 | 1.0                                          | 43.0                                               | 1.0                                                                                | 6.5                                                                        | 76.7                                                                            | 55.0                                                                       |
| SA43A       | 47.8                                                     | 52.8 | 1.0                                          | 43.0                                               | 1.0                                                                                | 7.2                                                                        | 69.4                                                                            | 50.0                                                                       |
| SA45        | 50.0                                                     | 61.1 | 1.0                                          | 45.0                                               | 1.0                                                                                | 6.2                                                                        | 80.3                                                                            | 58.0                                                                       |
| SA45A       | 50.0                                                     | 55.3 | 1.0                                          | 45.0                                               | 1.0                                                                                | 6.9                                                                        | 72.7                                                                            | 52.0                                                                       |
| SA48        | 53.3                                                     | 65.2 | 1.0                                          | 48.0                                               | 1.0                                                                                | 5.8                                                                        | 85.5                                                                            | 63.0                                                                       |
| SA48A       | 53.3                                                     | 58.9 | 1.0                                          | 48.0                                               | 1.0                                                                                | 6.5                                                                        | 77.4                                                                            | 56.0                                                                       |
| SA51        | 56.7                                                     | 69.3 | 1.0                                          | 51.0                                               | 1.0                                                                                | 5.5                                                                        | 91.1                                                                            | 66.0                                                                       |
| SA51A       | 56.7                                                     | 62.7 | 1.0                                          | 51.0                                               | 1.0                                                                                | 6.1                                                                        | 82.4                                                                            | 61.0                                                                       |
| SA54        | 60.0                                                     | 73.3 | 1.0                                          | 54.0                                               | 1.0                                                                                | 5.2                                                                        | 96.3                                                                            | 71.0                                                                       |
| SA54A       | 60.0                                                     | 66.3 | 1.0                                          | 54.0                                               | 1.0                                                                                | 5.7                                                                        | 87.1                                                                            | 65.0                                                                       |
| SA58        | 64.4                                                     | 78.7 | 1.0                                          | 58.0                                               | 1.0                                                                                | 4.9                                                                        | 103                                                                             | 78.0                                                                       |
| SA58A       | 64.4                                                     | 71.2 | 1.0                                          | 58.0                                               | 1.0                                                                                | 5.3                                                                        | 93.6                                                                            | 70.0                                                                       |
| SA60        | 66.7                                                     | 81.5 | 1.0                                          | 60.0                                               | 1.0                                                                                | 4.7                                                                        | 107                                                                             | 80.0                                                                       |
| SA60A       | 66.7                                                     | 73.7 | 1.0                                          | 60.0                                               | 1.0                                                                                | 5.2                                                                        | 96.8                                                                            | 71.0                                                                       |
| SA64        | 71.1                                                     | 86.9 | 1.0                                          | 64.0                                               | 1.0                                                                                | 4.4                                                                        | 114                                                                             | 86.0                                                                       |
| SA64A       | 71.1                                                     | 78.6 | 1.0                                          | 64.0                                               | 1.0                                                                                | 4.9                                                                        | 103                                                                             | 76.0                                                                       |
| SA70        | 77.8                                                     | 95.1 | 1.0                                          | 70.0                                               | 1.0                                                                                | 4.0                                                                        | 125                                                                             | 94.0                                                                       |
| SA70A       | 77.8                                                     | 86.0 | 1.0                                          | 70.0                                               | 1.0                                                                                | 4.4                                                                        | 113                                                                             | 85.0                                                                       |
| SA75        | 83.3                                                     | 102  | 1.0                                          | 75.0                                               | 1.0                                                                                | 3.7                                                                        | 134                                                                             | 101                                                                        |
| SA75A       | 83.3                                                     | 92.1 | 1.0                                          | 75.0                                               | 1.0                                                                                | 4.1                                                                        | 121                                                                             | 91.0                                                                       |
| SA78        | 86.7                                                     | 106  | 1.0                                          | 78.0                                               | 1.0                                                                                | 3.6                                                                        | 139                                                                             | 105                                                                        |
| SA78A       | 86.7                                                     | 95.8 | 1.0                                          | 78.0                                               | 1.0                                                                                | 4.0                                                                        | 126                                                                             | 95.0                                                                       |
| SA85        | 94.4                                                     | 115  | 1.0                                          | 85.0                                               | 1.0                                                                                | 3.3                                                                        | 151                                                                             | 114                                                                        |
| SA85A       | 94.4                                                     | 104  | 1.0                                          | 85.0                                               | 1.0                                                                                | 3.6                                                                        | 137                                                                             | 103                                                                        |
| SA90        | 100                                                      | 122  | 1.0                                          | 90.0                                               | 1.0                                                                                | 3.1                                                                        | 160                                                                             | 121                                                                        |
| SA90A       | 100                                                      | 111  | 1.0                                          | 90.0                                               | 1.0                                                                                | 3.4                                                                        | 146                                                                             | 110                                                                        |
| SA100       | 111                                                      | 136  | 1.0                                          | 100                                                | 1.0                                                                                | 2.8                                                                        | 179                                                                             | 135                                                                        |
| SA100A      | 111                                                      | 123  | 1.0                                          | 100                                                | 1.0                                                                                | 3.1                                                                        | 162                                                                             | 123                                                                        |
| SA110       | 122                                                      | 149  | 1.0                                          | 110                                                | 1.0                                                                                | 2.6                                                                        | 196                                                                             | 148                                                                        |
| SA110A      | 122                                                      | 135  | 1.0                                          | 110                                                | 1.0                                                                                | 2.8                                                                        | 177                                                                             | 133                                                                        |
| SA120       | 133                                                      | 163  | 1.0                                          | 120                                                | 1.0                                                                                | 2.3                                                                        | 214                                                                             | 162                                                                        |
| SA120A      | 133                                                      | 147  | 1.0                                          | 120                                                | 1.0                                                                                | 2.6                                                                        | 193                                                                             | 146                                                                        |
| SA130       | 144                                                      | 176  | 1.0                                          | 130                                                | 1.0                                                                                | 2.2                                                                        | 230                                                                             | 175                                                                        |
| SA130A      | 144                                                      | 159  | 1.0                                          | 130                                                | 1.0                                                                                | 2.4                                                                        | 209                                                                             | 158                                                                        |
| SA150       | 167                                                      | 204  | 1.0                                          | 150                                                | 1.0                                                                                | 1.9                                                                        | 268                                                                             | 203                                                                        |
| SA150A      | 167                                                      | 185  | 1.0                                          | 150                                                | 1.0                                                                                | 2.1                                                                        | 243                                                                             | 184                                                                        |
| SA160       | 178                                                      | 218  | 1.0                                          | 160                                                | 1.0                                                                                | 1.7                                                                        | 257                                                                             | 217                                                                        |
| SA160A      | 178                                                      | 197  | 1.0                                          | 160                                                | 1.0                                                                                | 1.9                                                                        | 259                                                                             | 196                                                                        |
| SA170       | 189                                                      | 231  | 1.0                                          | 170                                                | 1.0                                                                                | 1.6                                                                        | 304                                                                             | 230                                                                        |
| SA170A      | 189                                                      | 209  | 1.0                                          | 170                                                | 1.0                                                                                | 1.8                                                                        | 275                                                                             | 208                                                                        |

**NOTES**

- (1) V<sub>(BR)</sub> measured after I<sub>r</sub> applied for 300μs. I<sub>r</sub>=square wave pulse or equivalent
- (2) Surge current waveform per Fig. 3 and derate per Fig. 2
- (3) For bidirectional types with V<sub>WM</sub> of 10 Volts and less, the I<sub>D</sub> limit is doubled.
- (4) All terms and symbols are consistent with ANSI/IEEE C62.35

# RATINGS AND CHARACTERISTIC CURVES SA5.0 THRU SA170CA

FIG. 1 - PEAK PULSE POWER RATING CURVE

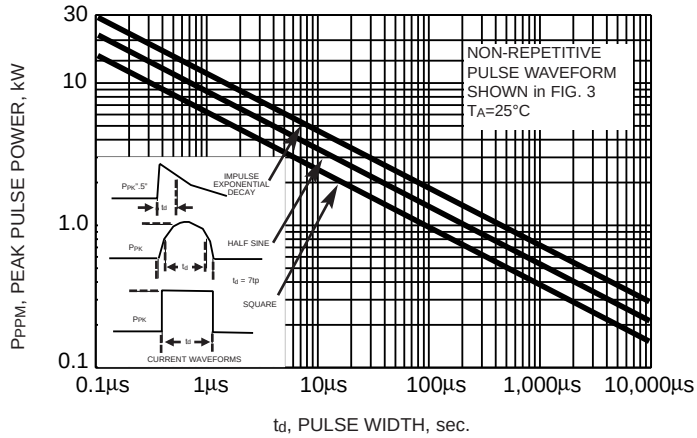


FIG. 2 - PULSE DERATING CURVE

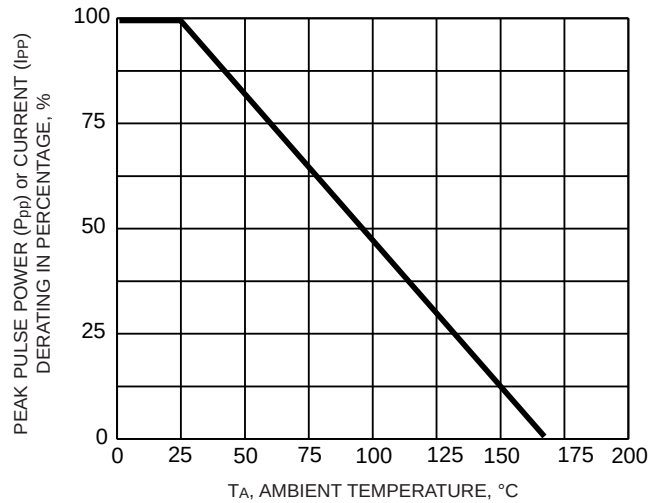


FIG. 3 - PULSE WAVEFORM

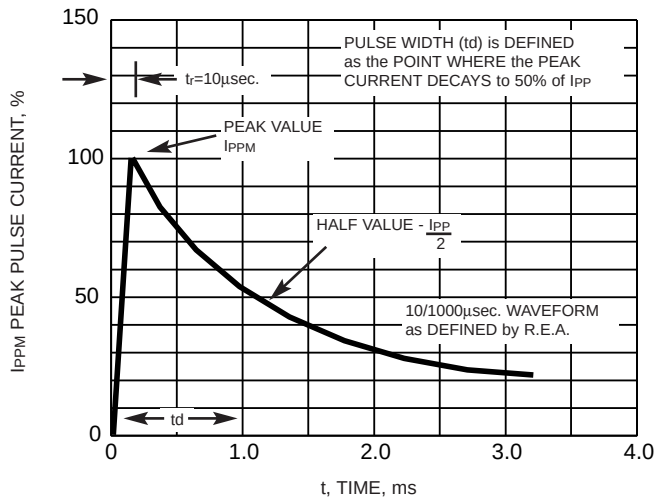


FIG. 4 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY

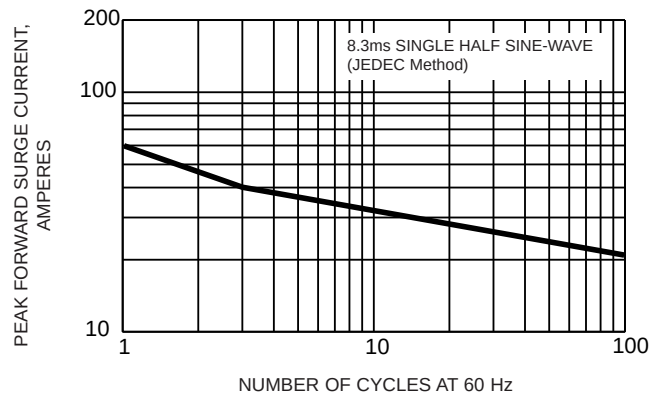


FIG. 5 - STEADY STATE POWER DERATING CURVE

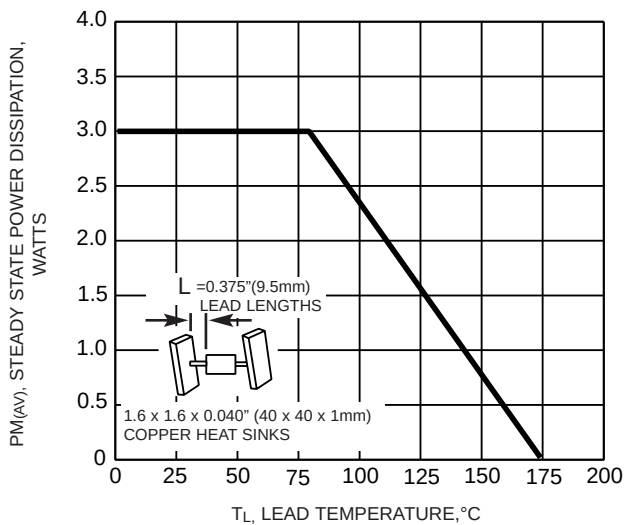
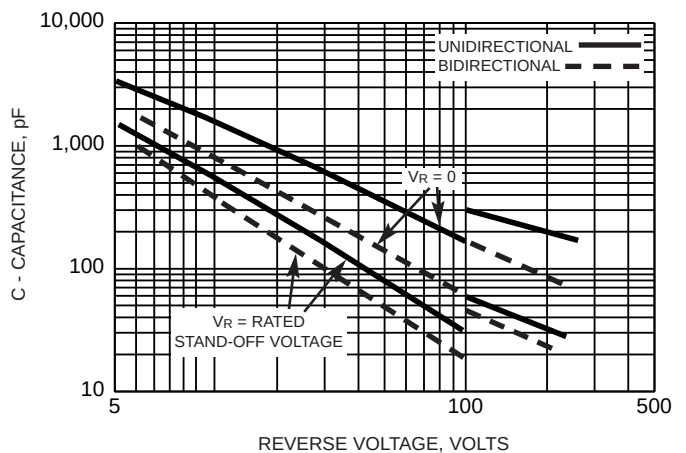
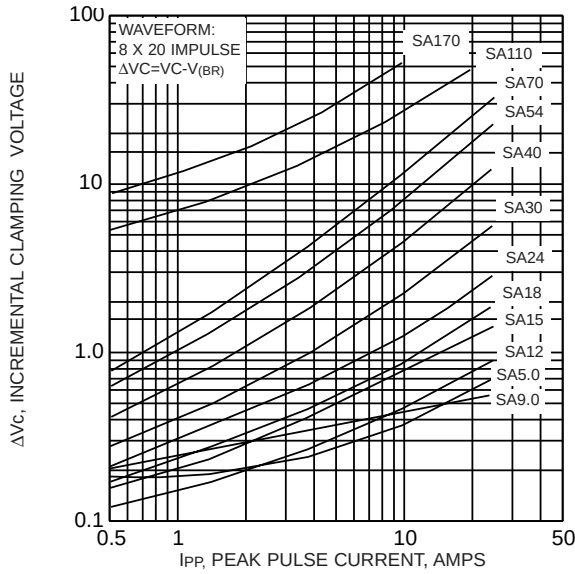


FIG. 6 - CAPACITANCE

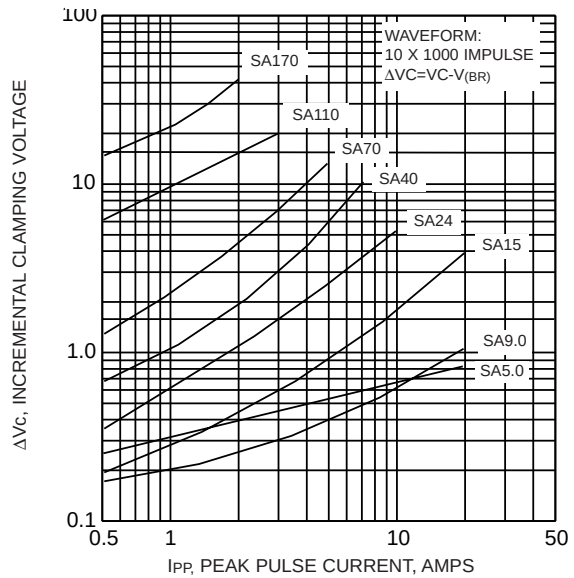


# RATINGS AND CHARACTERISTIC CURVES SA5.0 THRU SA170CA

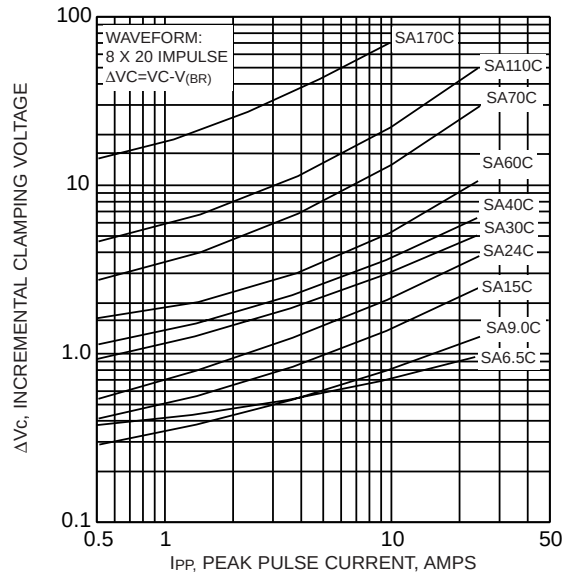
**FIG. 7 - INCREMENTAL CLAMPING VOLTAGE CURVE  
UNIDIRECTIONAL**



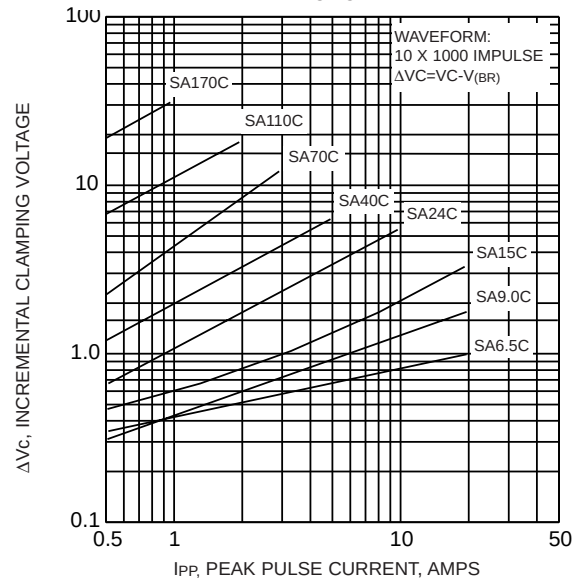
**FIG. 8 - INCREMENTAL CLAMPING VOLTAGE CURVE  
UNIDIRECTIONAL**



**FIG. 9 - INCREMENTAL CLAMPING VOLTAGE CURVE  
BIDIRECTIONAL**



**FIG. 10 - INCREMENTAL CLAMPING VOLTAGE CURVE  
BIDIRECTIONAL**



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## RATINGS AND CHARACTERISTIC CURVES SA5.0 THRU SA170CA

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FIG. 11 - TYPICAL INSTANTANEOUS FORWARD VOLTAGE CHARACTERISTICS CURVE

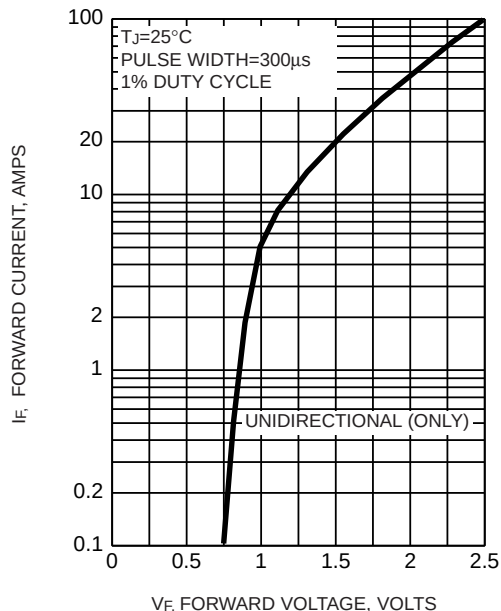
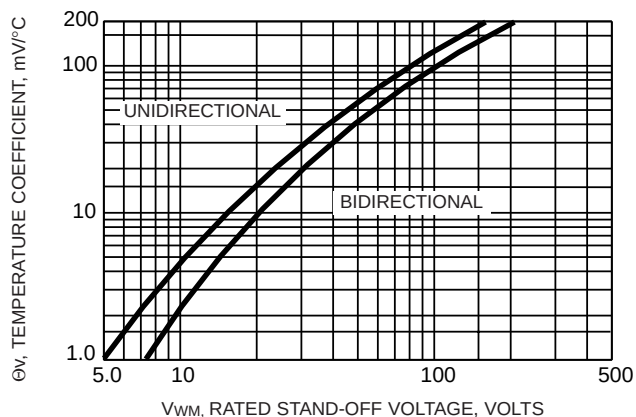


FIG. 12 - BREAKDOWN VOLTAGE TEMPERATURE COEFFICIENT CURVE



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## APPLICATIONS

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This TVS series is a low cost, 500 watt commercial and industrial product for use in applications where space is a premium and where large voltage transients can permanently damage voltage-sensitive components.

The response time of TVS clamping action is 1.0ns for uni-directional and 5.0ns for bi-directional; therefore, they can protect integrated circuits, MOS devices, hybrids, and other voltage-sensitive semiconductor components.