

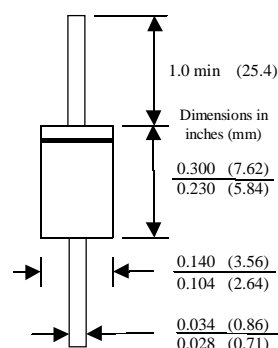
## SA5.0(C)A - SA170(C)A

### Features

- Glass passivated junction.
- 500W Peak Pulse Power capability on 10/1000  $\mu$ s waveform.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time; typically less than 1.0 ps from 0 volts to BV for unidirectional and 5.0 ns for bidirectional.
- Typical  $I_R$  less than 1.0  $\mu$ A above 10V.



**DO-15**  
COLOR BAND DENOTES CATHODE  
EXCEPT BIPOLAR



### DEVICES FOR BIPOLAR APPLICATIONS

- Bidirectional types use CA suffix.
- Electrical Characteristics apply in both directions.

## 500 Watt Transient Voltage Suppressors

### Absolute Maximum Ratings\* $T_A = 25^\circ\text{C}$ unless otherwise noted

| Symbol         | Parameter  | Value       | Units            |
|----------------|--|-------------|------------------|
| $P_{PPM}$      | Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform                         | minimum 500 | W                |
| $I_{PPM}$      | Peak Pulse Current on 10/1000 $\mu$ s waveform                                   | see table   | A                |
| $P_{M(AV)}$    | Steady State Power Dissipation<br>.375" lead length @ $T_A = 75^\circ\text{C}$   | 1.0         | W                |
| $i_{f(surge)}$ | Peak Forward Surge Current<br>superimposed on rated load (JEDEC method) (Note 1) | 70          | A                |
| $T_{stg}$      | Storage Temperature Range  | -65 to +175 | $^\circ\text{C}$ |
| $T_J$          | Operating Junction Temperature   | -65 to +175 | $^\circ\text{C}$ |

\*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

**Note 1:** Measured on 8.3 ms single half-sine wave or equivalent square wave; Duty cycle = 4 pulses per minute maximum.

# Transient Voltage Suppressors

(continued)

## Electrical Characteristics

$T_A = 25^\circ\text{C}$  unless otherwise noted

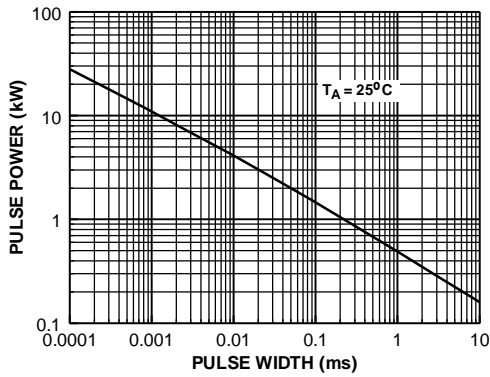
| Uni-directional<br>Bi-directional (C)<br>Device | Reverse<br>Stand-off Voltage<br>$V_{RWM}$ (V) | Breakdown Voltage<br>$V_{BR}$ (V) |       | Test<br>Current<br>$I_T$ (mA) | Max Clamping<br>Voltage @ IPPM<br>$V_C$ (V) | Max Peak Pulse<br>Surge Current<br>$I_{PPM}$ (A) | Max Reverse<br>Leakage $V_{RWM}$<br>$I_R$ (uA)* |
|---|---|-----------------------------------|-------|-------------------------------|---|--|---|
|   |   | min                               | max   |                               |   |  |   |
| SA5.0(C)A                                       | 5.0   | 6.40                              | 7.00  | 10                            | 9.2   | 54.3   | 600   |
| SA6.0(C)A                                       | 6.0   | 6.67                              | 7.37  | 10                            | 10.3  | 48.5   | 600   |
| SA6.5(C)A                                       | 6.5   | 7.22                              | 7.98  | 10                            | 11.2  | 44.7   | 400   |
| SA7.0(C)A                                       | 7.0   | 7.78                              | 8.60  | 10                            | 12.0  | 41.7   | 150   |
| SA7.5(C)A                                       | 7.5   | 8.33                              | 9.21  | 1.0                           | 12.9  | 38.8   | 50  |
| SA8.0(C)A                                       | 8.0   | 8.89                              | 9.83  | 1.0                           | 13.6  | 36.7   | 25  |
| SA8.5(C)A                                       | 8.5   | 9.44                              | 10.4  | 1.0                           | 14.4  | 34.7   | 10  |
| SA9.0(C)A                                       | 9.0   | 10.0                              | 11.1  | 1.0                           | 15.4  | 32.5   | 5   |
| SA10(C)A  | 10  | 11.1                              | 12.3  | 1.0                           | 17.0  | 29.4   | 1   |
| SA11(C)A  | 11  | 12.2                              | 13.5  | 1.0                           | 18.2  | 27.4   | 1   |
| SA12(C)A  | 12  | 13.3                              | 14.7  | 1.0                           | 19.9  | 25.1   | 1   |
| SA13(C)A  | 13  | 14.4                              | 15.9  | 1.0                           | 21.5  | 23.2   | 1   |
| SA14(C)A  | 14  | 15.6                              | 17.2  | 1.0                           | 23.2  | 21.5   | 1   |
| SA15(C)A  | 15  | 16.7                              | 18.5  | 1.0                           | 24.4  | 20.6   | 1   |
| SA16(C)A  | 16  | 17.8                              | 19.7  | 1.0                           | 26.0  | 19.2   | 1   |
| SA17(C)A  | 17  | 18.9                              | 20.9  | 1.0                           | 27.6  | 18.1   | 1   |
| SA18(C)A  | 18  | 20.0                              | 22.1  | 1.0                           | 29.2  | 17.2   | 1   |
| SA20(C)A  | 20  | 22.2                              | 24.5  | 1.0                           | 32.4  | 15.4   | 1   |
| SA22(C)A  | 22  | 24.4                              | 26.9  | 1.0                           | 35.5  | 14.1   | 1   |
| SA24(C)A  | 24  | 26.7                              | 29.5  | 1.0                           | 38.9  | 12.8   | 1   |
| SA26(C)A  | 26  | 28.9                              | 31.9  | 1.0                           | 42.1  | 11.9   | 1   |
| SA28(C)A  | 28  | 31.1                              | 34.4  | 1.0                           | 45.4  | 11.0   | 1   |
| SA30(C)A  | 30  | 33.3                              | 36.8  | 1.0                           | 48.4  | 10.3   | 1   |
| SA33(C)A  | 33  | 36.7                              | 40.6  | 1.0                           | 53.3  | 9.4  | 1   |
| SA36(C)A  | 36  | 40.0                              | 44.2  | 1.0                           | 58.1  | 8.6  | 1   |
| SA40(C)A  | 40  | 44.4                              | 49.1  | 1.0                           | 64.5  | 7.8  | 1   |
| SA43(C)A  | 43  | 47.8                              | 52.8  | 1.0                           | 69.4  | 7.2  | 1   |
| SA45(C)A  | 45  | 50.0                              | 55.3  | 1.0                           | 72.7  | 6.9  | 1   |
| SA48(C)A  | 48  | 53.3                              | 58.9  | 1.0                           | 77.4  | 6.5  | 1   |
| SA51(C)A  | 51  | 56.7                              | 62.7  | 1.0                           | 82.4  | 6.1  | 1   |
| SA54(C)A  | 54  | 60.0                              | 66.3  | 1.0                           | 87.1  | 5.7  | 1   |
| SA58(C)A  | 58  | 64.4                              | 71.2  | 1.0                           | 93.6  | 5.3  | 1   |
| SA60(C)A  | 60  | 66.7                              | 73.7  | 1.0                           | 96.8  | 5.2  | 1   |
| SA64(C)A  | 64  | 71.1                              | 78.6  | 1.0                           | 103.0                                       | 4.9  | 1   |
| SA70(C)A  | 70  | 77.8                              | 86.0  | 1.0                           | 113.0                                       | 4.4  | 1   |
| SA75(C)A  | 75  | 83.3                              | 92.1  | 1.0                           | 121.0                                       | 4.1  | 1   |
| SA78(C)A  | 78  | 86.7                              | 95.8  | 1.0                           | 126.0                                       | 4.0  | 1   |
| SA85(C)A  | 85  | 94.4                              | 104.0 | 1.0                           | 137.0                                       | 3.6  | 1   |
| SA90(C)A  | 90  | 100.0                             | 111.0 | 1.0                           | 146.0                                       | 3.4  | 1   |
| SA100(C)A                                       | 100   | 111.0                             | 123.0 | 1.0                           | 162.0                                       | 3.1  | 1   |
| SA110(C)A                                       | 110   | 122.0                             | 135.0 | 1.0                           | 177.0                                       | 2.8  | 1   |
| SA120(C)A                                       | 120   | 133.0                             | 147.0 | 1.0                           | 193.0                                       | 2.7  | 1   |
| SA130(C)A                                       | 130   | 144.0                             | 159.0 | 1.0                           | 209.0                                       | 2.4  | 1   |
| SA150(C)A                                       | 150   | 167.0                             | 185.0 | 1.0                           | 243.0                                       | 2.1  | 1   |
| SA160(C)A                                       | 160   | 178.0                             | 197.0 | 1.0                           | 259.0                                       | 1.9  | 1   |
| SA170(C)A                                       | 170   | 189.0                             | 209.0 | 1.0                           | 275.0                                       | 1.8  | 1   |

\* For bidirectional parts with  $V_{RWM} < 10\text{V}$ , the  $I_R$  max limit is doubled.

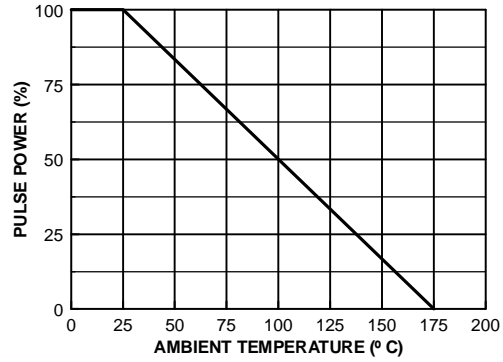
SA5.0(C)A - SA170(C)A

Typical Characteristics

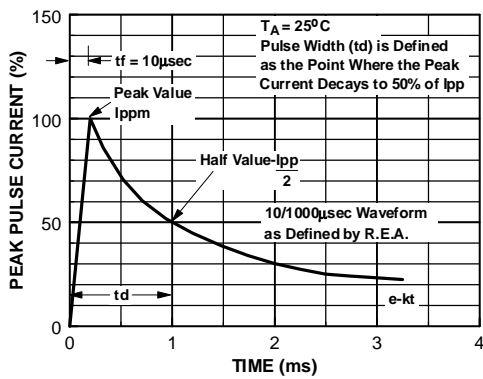
Peak Pulse Power Rating Curve



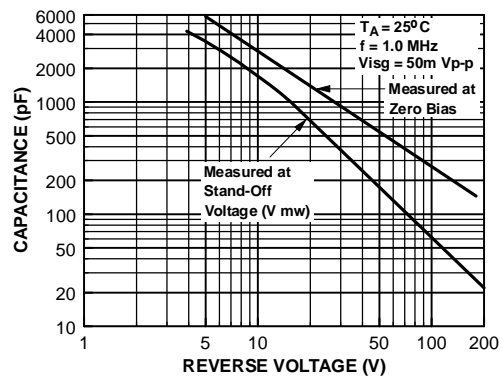
Pulse Derating Curve



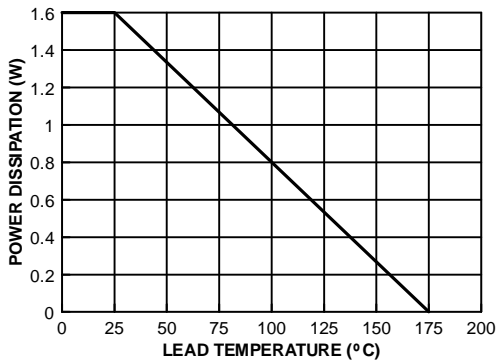
Pulse Waveform



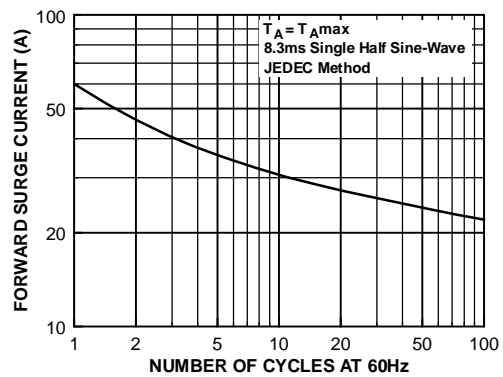
Junction Capacitance - Unidirectional



Steady State Power Derating Curve



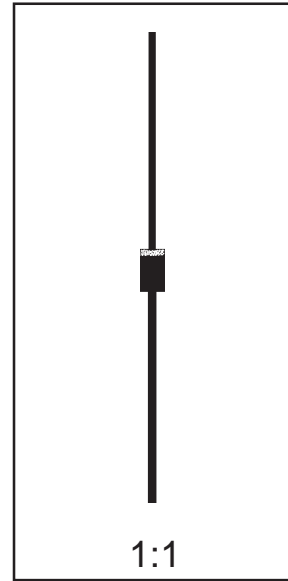
Non-Repetitive Surge Current



# DO-15 Package Dimensions



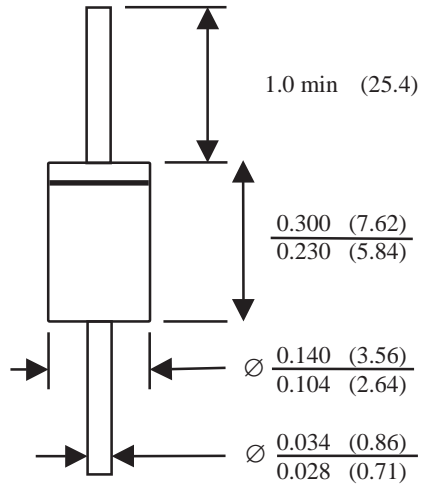
## DO-15 (FS PKG Code P2)



Scale 1:1 on letter size paper

Dimensions shown below are in:  
inches [millimeters]

Part Weight per unit (gram): 0.4



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