



# SMF5.0(C)A THRU SMF440(C)A

Stand-off Voltage - 5.0 to 440 Volts Peak Pulse Power: 200 Watts

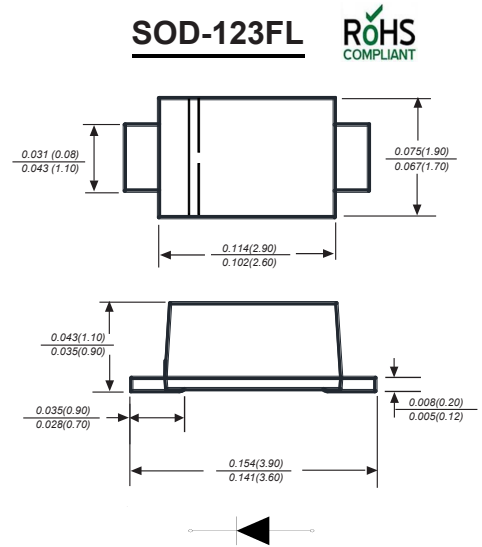
## TRANSIENT VOLTAGE SUPPRESSOR

### Features

- ◆ For surface mounted applications in order to optimize board space.
- ◆ Low profile package
- ◆ Glass passivated junction
- ◆ Low inductance
- ◆ Plastic package has Underwriters Laboratory Flammability

### Mechanical Data

Case: JEDEC SOD-123FL molded plastic body  
 Terminals: Solderable per MIL-STD-750, Method 2026A  
 Polarity: Polarity symbol marking on body  
 Mounting Position: Any  
 Weight: 0.0048 ounce, 0.015grams  
 Marking: Date Code and Marking Code See Page 2



Dimensions in inches and (millimeters)

### Maximum Ratings and Electrical characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

| Parameter  | Symbol             | Value       | Unit |
|--|--------------------|-------------|------|
| Peak Pulse Power Dissipation on TA=25°C (Note 1,2,5, Fig1) | $P_{PPM}$          | 200         | W    |
| Peak Forward Surge Current (Note 3)                        | $I_{FSM}$<br>(UNI) | 20          | A    |
| Peak Pulse Current on 10/1000 us waveform (Note 1) Fig 2   | $I_{PPM}$          | see Table 1 | A    |
| Steady State Power Dissipation (Note 4)                    | $P_{M(AV)}$        | 1.0         | W    |
| Operating Junction and Storage Range                       | $T_J, T_{STG}$     | -55 to +150 | °C   |
| Typical Thermal Resistance                                 | $R_{\theta JA}$    | 180         | °C/W |

#### NOTES

1. Non-repetitive current pulse per Fig 3 and derated above  $T_a=25^\circ\text{C}$  per Fig 2
2. Mounted on 5mm<sup>2</sup> copper pads to each terminal
3. 8.3ms single half sinewave, or equivalent square wave duty cycle=4 pulses per minutes maximum
4. lead temperature at  $T_l=75^\circ\text{C}$
5. Peak pulse powe. waveform is  $t_p=10/1000\text{us}$
6. A transient suppressor is selected according to the working peak reverse voltage( $V_{RWM}$ ), Which Should be equal to or greater than the DC or continuous peak operating voltage level



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Characteristics at Ta = 25°C

Table 1

| Type    |          | Marking |       | V <sub>RWM</sub> | Breakdown Voltage                |      | Test Current   | Reverse Leakage                   | Max. Clamp Voltage               | Peak Pulse Current |
|---------|----------|---------|-------|------------------|----------------------------------|------|----------------|-----------------------------------|----------------------------------|--------------------|
|         |          |         |       |                  | V <sub>BR</sub> @ I <sub>T</sub> |      |                |                                   |                                  |                    |
|         |          |         |       |                  | Min                              | Max  | I <sub>T</sub> | I <sub>R</sub> @ V <sub>RWM</sub> | V <sub>C</sub> @ I <sub>PP</sub> | I <sub>PP</sub>    |
| Uni     | Bi       | Uni     | Bi    | V                | V                                | V    | mA             | µA                                | V                                | A                  |
| SMF5.0A | SMF5.0CA | 5.0A    | 5.0CA | 5                | 6.4                              | 7    | 10             | 400                               | 9.2                              | 21.7               |
| SMF6.0A | SMF6.0CA | 6.0A    | 6.0CA | 6                | 6.67                             | 7.37 | 10             | 400                               | 10.3                             | 19.4               |
| SMF6.5A | SMF6.5CA | 6.5A    | 6.5CA | 6.5              | 7.22                             | 7.98 | 10             | 250                               | 11.2                             | 17.9               |
| SMF7.0A | SMF7.0CA | 7.0A    | 7.0CA | 7                | 7.78                             | 8.6  | 10             | 100                               | 12                               | 16.7               |
| SMF7.5A | SMF7.5CA | 7.5A    | 7.5CA | 7.5              | 8.33                             | 9.21 | 1              | 50                                | 12.9                             | 15.5               |
| SMF8.0A | SMF8.0CA | 8.0A    | 8.0CA | 8                | 8.89                             | 9.83 | 1              | 25                                | 13.6                             | 14.7               |
| SMF8.5A | SMF8.5CA | 8.5A    | 8.5CA | 8.5              | 9.44                             | 10.4 | 1              | 10                                | 14.4                             | 13.9               |
| SMF9.0A | SMF9.0CA | 9.0A    | 9.0CA | 9                | 10                               | 11.1 | 1              | 5                                 | 15.4                             | 13                 |
| SMF10A  | SMF10CA  | 10A     | 10CA  | 10               | 11.1                             | 12.3 | 1              | 2.5                               | 17                               | 11.8               |
| SMF11A  | SMF11CA  | 11A     | 11CA  | 11               | 12.2                             | 13.5 | 1              | 2.5                               | 18.2                             | 11                 |
| SMF12A  | SMF12CA  | 12A     | 12CA  | 12               | 13.3                             | 14.7 | 1              | 2.5                               | 19.9                             | 10.1               |
| SMF13A  | SMF13CA  | 13A     | 13CA  | 13               | 14.4                             | 15.9 | 1              | 1                                 | 21.5                             | 9.3                |
| SMF14A  | SMF14CA  | 14A     | 14CA  | 14               | 15.6                             | 17.2 | 1              | 1                                 | 23.2                             | 8.6                |
| SMF15A  | SMF15CA  | 15A     | 15CA  | 15               | 16.7                             | 18.5 | 1              | 1                                 | 24.4                             | 8.2                |
| SMF16A  | SMF16CA  | 16A     | 16CA  | 16               | 17.8                             | 19.7 | 1              | 1                                 | 26                               | 7.7                |
| SMF17A  | SMF17CA  | 17A     | 17CA  | 17               | 18.9                             | 20.9 | 1              | 1                                 | 27.6                             | 7.2                |
| SMF18A  | SMF18CA  | 18A     | 18CA  | 18               | 20                               | 22.1 | 1              | 1                                 | 29.2                             | 6.8                |
| SMF20A  | SMF20CA  | 20A     | 20CA  | 20               | 22.2                             | 24.5 | 1              | 1                                 | 32.4                             | 6.2                |
| SMF22A  | SMF22CA  | 22A     | 22CA  | 22               | 24.4                             | 26.9 | 1              | 1                                 | 35.5                             | 5.6                |
| SMF24A  | SMF24CA  | 24A     | 24CA  | 24               | 26.7                             | 29.5 | 1              | 1                                 | 38.9                             | 5.1                |
| SMF26A  | SMF26CA  | 26A     | 26CA  | 26               | 28.9                             | 31.9 | 1              | 1                                 | 42.1                             | 4.8                |
| SMF28A  | SMF28CA  | 28A     | 28CA  | 28               | 31.1                             | 34.4 | 1              | 1                                 | 45.4                             | 4.4                |
| SMF30A  | SMF30CA  | 30A     | 30CA  | 30               | 33.3                             | 36.8 | 1              | 1                                 | 48.4                             | 4.1                |
| SMF33A  | SMF33CA  | 33A     | 33CA  | 33               | 36.7                             | 40.6 | 1              | 1                                 | 53.3                             | 3.8                |
| SMF36A  | SMF36CA  | 36A     | 36CA  | 36               | 40                               | 44.2 | 1              | 1                                 | 58.1                             | 3.4                |
| SMF40A  | SMF40CA  | 40A     | 40CA  | 40               | 44.4                             | 49.1 | 1              | 1                                 | 64.5                             | 3.1                |
| SMF43A  | SMF43CA  | 43A     | 43CA  | 43               | 47.8                             | 52.8 | 1              | 1                                 | 69.4                             | 2.9                |
| SMF45A  | SMF45CA  | 45A     | 45CA  | 45               | 50                               | 55.3 | 1              | 1                                 | 72.7                             | 2.8                |
| SMF48A  | SMF48CA  | 48A     | 48CA  | 48               | 53.3                             | 58.9 | 1              | 1                                 | 77.4                             | 2.6                |
| SMF51A  | SMF51CA  | 51A     | 51CA  | 51               | 56.7                             | 62.7 | 1              | 1                                 | 82.4                             | 2.4                |
| SMF54A  | SMF54CA  | 54A     | 54CA  | 54               | 60                               | 66.3 | 1              | 1                                 | 87.1                             | 2.3                |
| SMF58A  | SMF58CA  | 58A     | 58CA  | 58               | 64.4                             | 71.2 | 1              | 1                                 | 93.6                             | 2.1                |
| SMF60A  | SMF60CA  | 60A     | 60CA  | 60               | 66.7                             | 73.7 | 1              | 1                                 | 96.8                             | 1.8                |
| SMF64A  | SMF64CA  | 64A     | 64CA  | 64               | 71.1                             | 78.6 | 1              | 1                                 | 103                              | 1.7                |
| SMF70A  | SMF70CA  | 70A     | 70CA  | 70               | 77.8                             | 86   | 1              | 1                                 | 113                              | 1.5                |
| SMF75A  | SMF75CA  | 75A     | 75CA  | 75               | 83.3                             | 92.1 | 1              | 1                                 | 121                              | 1.4                |
| SMF78A  | SMF78CA  | 78A     | 78CA  | 78               | 86.7                             | 95.8 | 1              | 1                                 | 126                              | 1.4                |
| SMF85A  | SMF85CA  | 85A     | 85CA  | 85               | 94.4                             | 104  | 1              | 1                                 | 137                              | 1.3                |
| SMF90A  | SMF90CA  | 90A     | 90CA  | 90               | 100                              | 111  | 1              | 1                                 | 146                              | 1.2                |
| SMF100A | SMF100CA | 100A    | 100CA | 100              | 111                              | 123  | 1              | 1                                 | 162                              | 1.1                |
| SMF110A | SMF110CA | 110A    | 110CA | 110              | 122                              | 135  | 1              | 1                                 | 177                              | 1                  |
| SMF120A | SMF120CA | 120A    | 120CA | 120              | 133                              | 147  | 1              | 1                                 | 193                              | 0.9                |
| SMF130A | SMF130CA | 130A    | 130CA | 130              | 144                              | 159  | 1              | 1                                 | 209                              | 0.8                |
| SMF150A | SMF150CA | 150A    | 150CA | 150              | 167                              | 185  | 1              | 1                                 | 243                              | 0.7                |
| SMF160A | SMF160CA | 160A    | 160CA | 160              | 178                              | 197  | 1              | 1                                 | 259                              | 0.7                |
| SMF170A | SMF170CA | 170A    | 170CA | 170              | 189                              | 209  | 1              | 1                                 | 275                              | 0.6                |
| SMF180A | SMF180CA | 180A    | 180CA | 180              | 201                              | 222  | 1              | 1                                 | 292                              | 0.5                |
| SMF190A | SMF190CA | 190A    | 190CA | 190              | 211                              | 232  | 1              | 1                                 | 308                              | 0.5                |
| SMF200A | SMF200CA | 200A    | 200CA | 200              | 224                              | 247  | 1              | 1                                 | 324                              | 0.5                |
| SMF220A | SMF220CA | 220A    | 220CA | 220              | 246                              | 272  | 1              | 1                                 | 356                              | 0.5                |
| SMF250A | SMF250CA | 250A    | 250CA | 250              | 279                              | 309  | 1              | 1                                 | 405                              | 0.5                |
| SMF300A | SMF300CA | 300A    | 300CA | 300              | 335                              | 371  | 1              | 1                                 | 486                              | 0.45               |
| SMF350A | SMF350CA | 350A    | 350CA | 350              | 391                              | 432  | 1              | 1                                 | 567                              | 0.4                |
| SMF400A | SMF400CA | 400A    | 400CA | 400              | 447                              | 494  | 1              | 1                                 | 648                              | 0.35               |
| SMF440A | SMF440CA | 440A    | 440CA | 440              | 492                              | 543  | 1              | 1                                 | 713                              | 0.3                |



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## Typical Characteristics

Fig.1 Peak Pulse Power Rating Curve

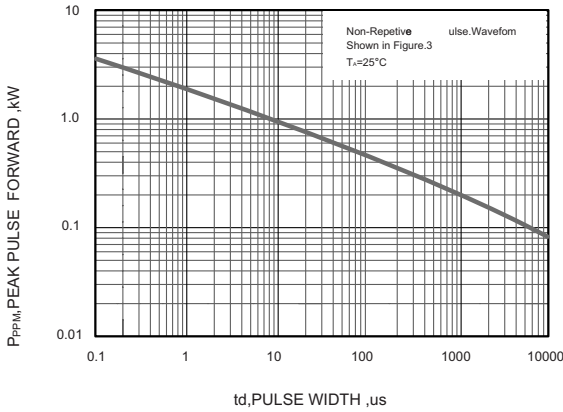


Fig.2 Forward Current Derating Curve

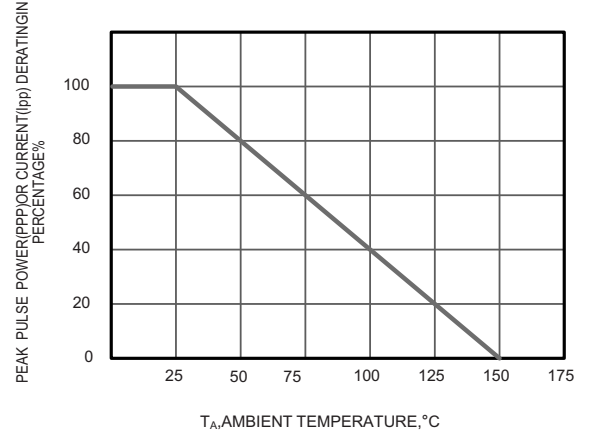


Fig.3 Pulse Waveform

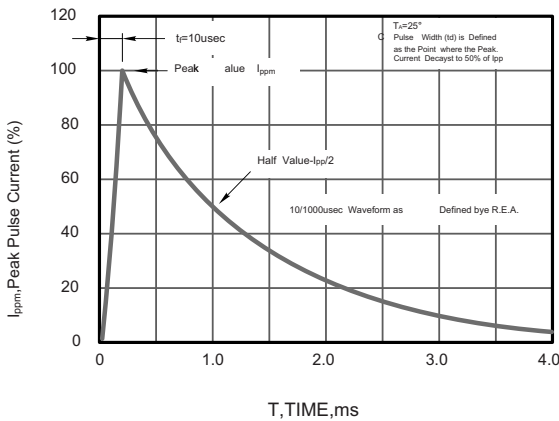
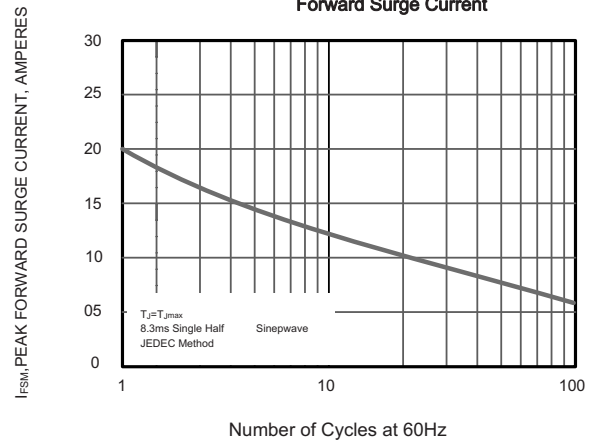


Fig.4 Maximum Non-Repetitive Peak Forward Surge Current



The curve above is for reference only.



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## Packing information



unit:mm

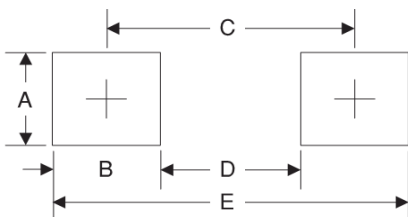
| Item                     | Symbol | Tolerance | SOD-123FL |
|--------------------------|--------|-----------|-----------|
| Carrier width            | A      | 0.1       | 2.1       |
| Carrier length           | B      | 0.1       | 4.0       |
| Carrier depth            | C      | 0.1       | 1.60      |
| Sprocket hole            | d      | 0.05      | 1.55      |
| 7" Reel outside diameter | D      | 2.0       | 178.00    |
| 7" Reel inner diameter   | D1     | min       | 50.0      |
| Feed hole diameter       | D2     | 0.5       | 13.00     |
| Sprocket hole position   | E      | 0.1       | 1.75      |
| Punch hole position      | F      | 0.1       | 3.50      |
| Punch hole pitch         | P      | 0.1       | 4.00      |
| Sprocket hole pitch      | P0     | 0.1       | 4.00      |
| Embossment center        | P1     | 0.1       | 2.00      |
| Overall tape thickness   | T      | 0.1       | 0.25      |
| Tape width               | W      | 0.3       | 8.15      |
| Reel width               | W1     | 1.0       | 10.5      |

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

## Reel packing

| PACKAGE   | REEL SIZE | REEL (pcs) | COMPONENT SPACING (m/m) | BOX (pcs) | INNER BOX (m/m) | REEL DIA, (m/m) | CARTON SIZE (m/m) | CARTON (pcs) | APPROX. GROSS WEIGHT (kg) |
|-----------|-----------|------------|-------------------------|-----------|-----------------|-----------------|-------------------|--------------|---------------------------|
| SOD-123FL | 7"        | 3,000      | 4.0                     | 45,000    | 210*208*203     | 178             | 430*430*235       | 180,000      | 9.0                       |

## Suggested Pad Layout



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 1.2       | 0.047       |
| B      | 1.2       | 0.047       |
| C      | 3.2       | 0.126       |
| D      | 2         | 0.079       |
| E      | 4.4       | 0.173       |

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