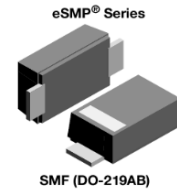


## TRANSIENT VOLTAGE SUPPRESSOR

### 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 2026  
 Polarity : Polarity symbol marking on body  
 Mounting Position : Any  
 Weight : 0.0007 ounce, 0.02 grams  
 Marking : Date Code and Marking Code See Page 2

### 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) | 30          | 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 power. waveform is tp=10/1000us
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

Characteristics at Ta = 25°C

Table 1

| Type    |          | Marking |      | VRMW | Breakdown Voltage |      | Test Current | Reverse Leakage | Max. Clamp Voltage | Peak Pulse Current |
|---------|----------|---------|------|------|-------------------|------|--------------|-----------------|--------------------|--------------------|
|         |          |         |      |      | VBR @ IT          |      | IT           | IR @ VRWM       | VC @ IPP           | IPP                |
|         |          |         |      |      | Min               | Max  |              |                 |                    |                    |
| Uni     | Bi       | Uni     | Bi   | V    | V                 | V    | mA           | μA              | V                  | A                  |
| SMF5.0A | SMF5.0CA | AE      | NE   | 5    | 6.4               | 7    | 10           | 400             | 9.2                | 21.7               |
| SMF6.0A | SMF6.0CA | AG      | NG   | 6    | 6.67              | 7.37 | 10           | 400             | 10.3               | 19.4               |
| SMF6.5A | SMF6.5CA | AK      | NK   | 6.5  | 7.22              | 7.98 | 10           | 250             | 11.2               | 17.9               |
| SMF7.0A | SMF7.0CA | AM      | NM   | 7    | 7.78              | 8.6  | 10           | 100             | 12                 | 16.7               |
| SMF7.5A | SMF7.5CA | AP      | NP   | 7.5  | 8.33              | 9.21 | 1            | 50              | 12.9               | 15.5               |
| SMF8.0A | SMF8.0CA | AR      | NR   | 8    | 8.89              | 9.83 | 1            | 25              | 13.6               | 14.7               |
| SMF8.5A | SMF8.5CA | AT      | NT   | 8.5  | 9.44              | 10.4 | 1            | 10              | 14.4               | 13.9               |
| SMF9.0A | SMF9.0CA | AV      | NV   | 9    | 10                | 11.1 | 1            | 5               | 15.4               | 13                 |
| SMF10A  | SMF10CA  | AX      | NX   | 10   | 11.1              | 12.3 | 1            | 2.5             | 17                 | 11.8               |
| SMF11A  | SMF11CA  | AZ      | NZ   | 11   | 12.2              | 13.5 | 1            | 2.5             | 18.2               | 11                 |
| SMF12A  | SMF12CA  | BE      | OE   | 12   | 13.3              | 14.7 | 1            | 2.5             | 19.9               | 10.1               |
| SMF13A  | SMF13CA  | BG      | OG   | 13   | 14.4              | 15.9 | 1            | 1               | 21.5               | 9.3                |
| SMF14A  | SMF14CA  | BK      | OK   | 14   | 15.6              | 17.2 | 1            | 1               | 23.2               | 8.6                |
| SMF15A  | SMF15CA  | BM      | OM   | 15   | 16.7              | 18.5 | 1            | 1               | 24.4               | 8.2                |
| SMF16A  | SMF16CA  | BP      | OP   | 16   | 17.8              | 19.7 | 1            | 1               | 26                 | 7.7                |
| SMF17A  | SMF17CA  | BR      | OR   | 17   | 18.9              | 20.9 | 1            | 1               | 27.6               | 7.2                |
| SMF18A  | SMF18CA  | BT      | OT   | 18   | 20                | 22.1 | 1            | 1               | 29.2               | 6.8                |
| SMF20A  | SMF20CA  | BV      | OV   | 20   | 22.2              | 24.5 | 1            | 1               | 32.4               | 6.2                |
| SMF22A  | SMF22CA  | BX      | OX   | 22   | 24.4              | 26.9 | 1            | 1               | 35.5               | 5.6                |
| SMF24A  | SMF24CA  | BZ      | OZ   | 24   | 26.7              | 29.5 | 1            | 1               | 38.9               | 5.1                |
| SMF26A  | SMF26CA  | CE      | PE   | 26   | 28.9              | 31.9 | 1            | 1               | 42.1               | 4.8                |
| SMF28A  | SMF28CA  | CG      | PG   | 28   | 31.1              | 34.4 | 1            | 1               | 45.4               | 4.4                |
| SMF30A  | SMF30CA  | CK      | PK   | 30   | 33.3              | 36.8 | 1            | 1               | 48.4               | 4.1                |
| SMF33A  | SMF33CA  | CM      | PM   | 33   | 36.7              | 40.6 | 1            | 1               | 53.3               | 3.8                |
| SMF36A  | SMF36CA  | CP      | PP   | 36   | 40                | 44.2 | 1            | 1               | 58.1               | 3.4                |
| SMF40A  | SMF40CA  | CR      | PR   | 40   | 44.4              | 49.1 | 1            | 1               | 64.5               | 3.1                |
| SMF43A  | SMF43CA  | CT      | PT   | 43   | 47.8              | 52.8 | 1            | 1               | 69.4               | 2.9                |
| SMF45A  | SMF45CA  | CV      | PV   | 45   | 50                | 55.3 | 1            | 1               | 72.7               | 2.8                |
| SMF48A  | SMF48CA  | CX      | PX   | 48   | 53.3              | 58.9 | 1            | 1               | 77.4               | 2.6                |
| SMF51A  | SMF51CA  | CZ      | PZ   | 51   | 56.7              | 62.7 | 1            | 1               | 82.4               | 2.4                |
| SMF54A  | SMF54CA  | DE      | PA   | 54   | 60                | 66.3 | 1            | 1               | 87.1               | 2.3                |
| SMF58A  | SMF58CA  | DG      | PC   | 58   | 64.4              | 71.2 | 1            | 1               | 93.6               | 2.1                |
| SMF60A  | SMF60CA  | DK      | CDK  | 60   | 66.7              | 73.7 | 1            | 1               | 96.8               | 1.8                |
| SMF64A  | SMF64CA  | DM      | CDM  | 64   | 71.1              | 78.6 | 1            | 1               | 103                | 1.7                |
| SMF70A  | SMF70CA  | DP      | CDP  | 70   | 77.8              | 86   | 1            | 1               | 113                | 1.5                |
| SMF75A  | SMF75CA  | DR      | CDR  | 75   | 83.3              | 92.1 | 1            | 1               | 121                | 1.4                |
| SMF78A  | SMF78CA  | DT      | CDT  | 78   | 86.7              | 95.8 | 1            | 1               | 126                | 1.4                |
| SMF85A  | SMF85CA  | DV      | CDV  | 85   | 94.4              | 104  | 1            | 1               | 137                | 1.3                |
| SMF90A  | SMF90CA  | DX      | CDX  | 90   | 100               | 111  | 1            | 1               | 146                | 1.2                |
| SMF100A | SMF100CA | DZ      | CDZ  | 100  | 111               | 123  | 1            | 1               | 162                | 1.1                |
| SMF110A | SMF110CA | EE      | CEE  | 110  | 122               | 135  | 1            | 1               | 177                | 1                  |
| SMF120A | SMF120CA | EG      | CEG  | 120  | 133               | 147  | 1            | 1               | 193                | 0.9                |
| SMF130A | SMF130CA | EK      | CEK  | 130  | 144               | 159  | 1            | 1               | 209                | 0.8                |
| SMF150A | SMF150CA | EM      | CEM  | 150  | 167               | 185  | 1            | 1               | 243                | 0.7                |
| SMF160A | SMF160CA | EP      | CEP  | 160  | 178               | 197  | 1            | 1               | 259                | 0.7                |
| SMF170A | SMF170CA | ER      | CER  | 170  | 189               | 209  | 1            | 1               | 275                | 0.6                |
| SMF180A | SMF180CA | ET      | CET  | 180  | 201               | 222  | 1            | 1               | 292                | 0.5                |
| SMF190A | SMF190CA | EV      | CEV  | 190  | 211               | 232  | 1            | 1               | 308                | 0.5                |
| SMF200A | SMF200CA | EX      | CEX  | 200  | 224               | 247  | 1            | 1               | 324                | 0.5                |
| SMF220A | SMF220CA | E22     | CE22 | 220  | 246               | 272  | 1            | 1               | 356                | 0.5                |
| SMF250A | SMF250CA | E25     | CE25 | 250  | 279               | 309  | 1            | 1               | 405                | 0.5                |
| SMF300A | SMF300CA | E30     | CE30 | 300  | 335               | 371  | 1            | 1               | 486                | 0.45               |
| SMF350A | SMF350CA | E35     | CE35 | 350  | 391               | 432  | 1            | 1               | 567                | 0.4                |
| SMF400A | SMF400CA | E40     | CE40 | 400  | 447               | 494  | 1            | 1               | 648                | 0.35               |
| SMF440A | SMF440CA | E44     | CE44 | 440  | 492               | 543  | 1            | 1               | 713                | 0.3                |

## Typical Characteristics

Fig.1 Peak Pulse Power Rating Curve

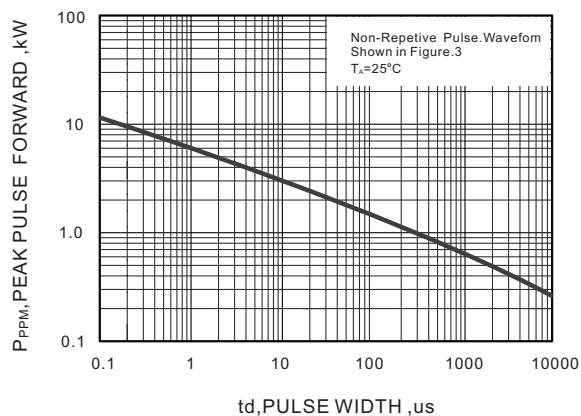


Fig.2 Forward Current Derating Curve

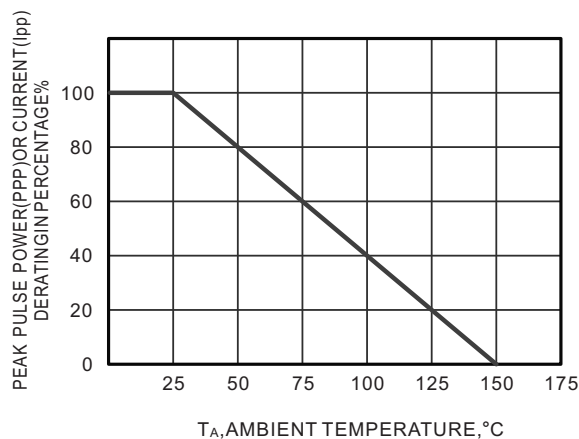


Fig.3 Pulse Waveform

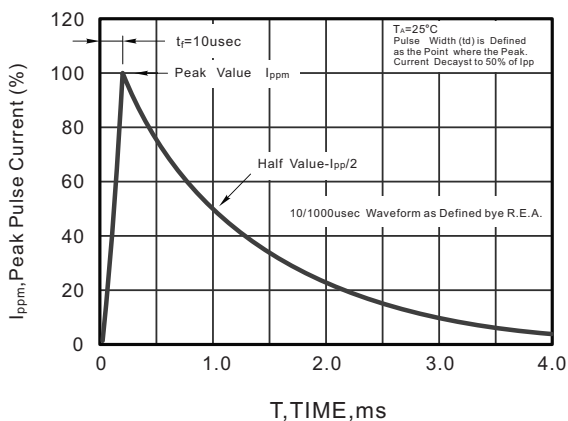
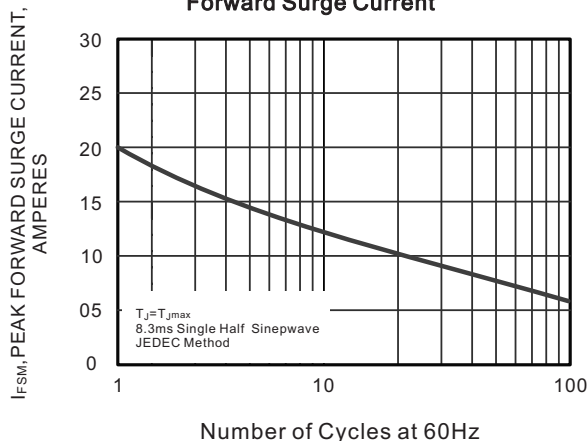
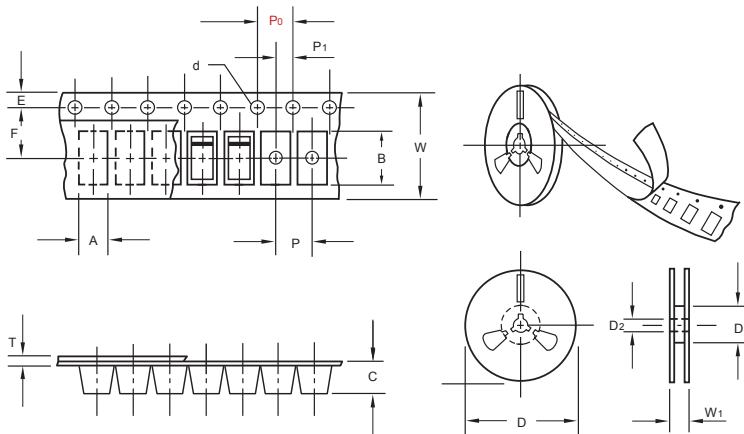


Fig.4 Maximum Non-Repetitive Peak Forward Surge Current



## Packing information



unit:mm

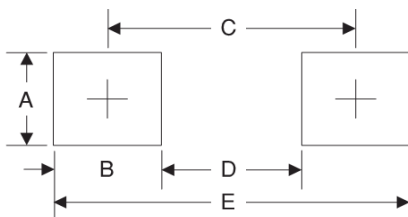
| Item                     | Symbol         | Tolerance | SOD-123FL |
|--------------------------|----------------|-----------|-----------|
| Carrier width            | A              | 0.1       | 2.1       |
| Carrier length           | B              | 0.1       | 4.0       |
| Carrier depth            | 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   | D <sub>1</sub> | min       | 50.0      |
| Feed hole diameter       | D <sub>2</sub> | 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      | P <sub>0</sub> | 0.1       | 4.00      |
| Embossment center        | P <sub>1</sub> | 0.1       | 2.00      |
| Overall tape thickness   | T              | 0.1       | 0.25      |
| Tape width               | W              | 0.3       | 8.15      |
| Reel width               | W <sub>1</sub> | 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       |