



**THE DATASHEET OF  
SMF20A\_R1\_00001**



# SMF5.0A~SMF175A

## Surface Mount Transient Voltage Suppressor

|                |                      |              |                 |
|----------------|----------------------|--------------|-----------------|
| <b>VOLTAGE</b> | <b>5 to 175 Volt</b> | <b>POWER</b> | <b>200 Watt</b> |
|----------------|----------------------|--------------|-----------------|

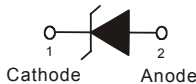
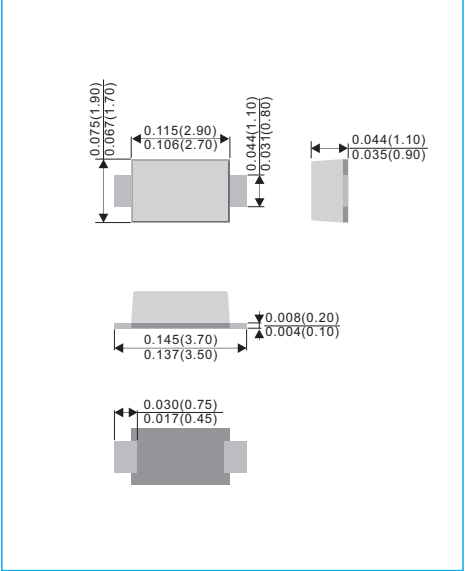
**SOD-123FL** Unit : inch(mm)

### FEATURES

- For surface mounted applications in order to optimize board space.
- Ultra Thin Profile Package for Space Constrained Utilization
- Package suitable for Automated Handling
- Low inductance
- High temperature soldering : 260°C/10 seconds at terminals
- ESD IEC-61000-4-2 Air ± 30kV, Contact ± 30kV
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### MECHANICAL DATA

- Case : SOD-123FL, Plastic
- Terminals : Solderable per MIL-STD-750, Method 2026
- Polarity : Color band denotes cathode end
- Approx. Weight : 0.0173 grams
- Standard Packaging : 8mm tape (EIA-481)



## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                                                                 | SYMBOL                            | VALUE       | UNITS |
|---------------------------------------------------------------------------|-----------------------------------|-------------|-------|
| Peak Pulse Power Dissipation on T <sub>A</sub> = 25°C (Notes 1,2,5) Fig.1 | PPPM                              | 200         | W     |
| Peak Forward Surge Current per <sup>(Note 3)</sup>                        | I <sub>FSM</sub>                  | 20          | A     |
| Peak Pulse Current on tp=10/1000µs waveform (Notes 1) Fig.3               | I <sub>PPM</sub>                  | see Table 1 | A     |
| Steady State Power Dissipation <sup>(Note 4)</sup>                        | P <sub>M(AV)</sub>                | 1           | W     |
| ESD IEC-61000-4-2 (Air)<br>ESD IEC-61000-4-2 (Contact)                    | V <sub>ESD</sub>                  | ±30<br>±30  | kV    |
| Operating Junction and Storage Temperature Range                          | T <sub>J</sub> , T <sub>STG</sub> | -55 to +150 | °C    |
| Typical thermal resistance                                                | R <sub>θJA</sub>                  | 180         | °C/W  |

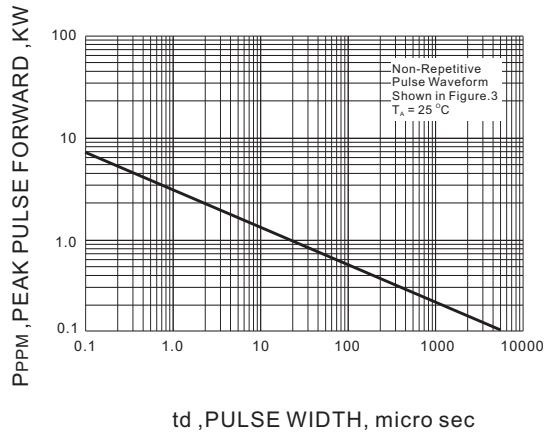
### NOTES :

1. Non-repetitive current pulse, per Fig.3 and derated above T<sub>A</sub>=25°C per Fig.2.
2. Mounted on 5mm<sup>2</sup> copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle = 4 pulses per minutes maximum.
4. Lead temperature at 75°C = T<sub>L</sub>.
5. Peak pulse power waveform is tp=10/1000µs.
6. A transient suppressor is selected according to the working peak reverse voltage(V<sub>RWM</sub>), which should be equal to or greater than the DC or continuous peak operating voltage level.

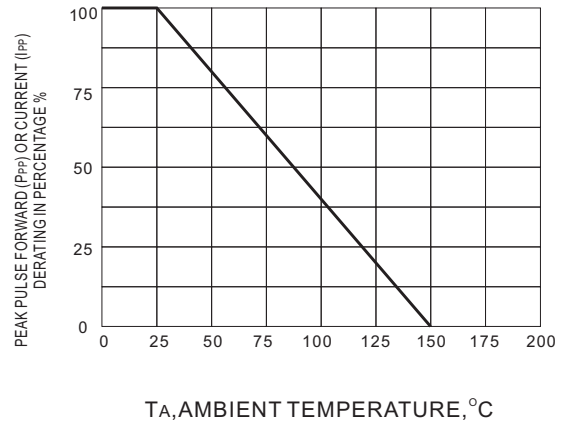
# SMF5.0A~SMF175A

| Part Number                       | V <sub>RWM</sub><br>(Note 6) | V <sub>BR</sub> @ I <sub>T</sub> |      |                | I <sub>R</sub> @ V <sub>RWM</sub> | V <sub>C</sub> @ I <sub>PP</sub> |      | Marking Code |
|-----------------------------------|------------------------------|----------------------------------|------|----------------|-----------------------------------|----------------------------------|------|--------------|
|                                   |                              | Min.                             | Max. | I <sub>T</sub> |                                   | V                                | A    |              |
|                                   | V                            | V                                | mA   | μA             |                                   |                                  |      |              |
| 200W Transient Voltage Suppressor |                              |                                  |      |                |                                   |                                  |      |              |
| SMF5.0A                           | 5                            | 6.4                              | 7    | 10             | 200                               | 9.2                              | 21.7 | HE           |
| SMF6.0A                           | 6                            | 6.7                              | 7.4  | 10             | 100                               | 10.3                             | 19.4 | HG           |
| SMF6.5A                           | 6.5                          | 7.2                              | 8    | 10             | 75                                | 11.2                             | 17.9 | HK           |
| SMF7.0A                           | 7                            | 7.8                              | 8.6  | 10             | 50                                | 12                               | 16.7 | HM           |
| SMF7.5A                           | 7.5                          | 8.3                              | 9.2  | 1              | 50                                | 12.9                             | 15.5 | HP           |
| SMF8.0A                           | 8                            | 8.9                              | 9.8  | 1              | 25                                | 13.6                             | 14.7 | HR           |
| SMF8.5A                           | 8.5                          | 9.4                              | 10.4 | 1              | 10                                | 14.4                             | 13.9 | HT           |
| SMF9.0A                           | 9                            | 10                               | 11.1 | 1              | 5                                 | 15.4                             | 13   | HV           |
| SMF10A                            | 10                           | 11.1                             | 12.3 | 1              | 2.5                               | 17                               | 11.8 | HX           |
| SMF11A                            | 11                           | 12.2                             | 13.5 | 1              | 2.5                               | 18.2                             | 11   | HZ           |
| SMF12A                            | 12                           | 13.3                             | 14.7 | 1              | 2.5                               | 19.9                             | 10.1 | IE           |
| SMF13A                            | 13                           | 14.4                             | 15.9 | 1              | 1                                 | 21.5                             | 9.3  | IG           |
| SMF14A                            | 14                           | 15.6                             | 17.2 | 1              | 1                                 | 23.2                             | 8.6  | IK           |
| SMF15A                            | 15                           | 16.7                             | 18.5 | 1              | 1                                 | 24.4                             | 8.2  | IM           |
| SMF16A                            | 16                           | 17.8                             | 19.7 | 1              | 1                                 | 26                               | 7.7  | IP           |
| SMF17A                            | 17                           | 18.9                             | 20.9 | 1              | 1                                 | 27.6                             | 7.2  | IR           |
| SMF18A                            | 18                           | 20                               | 22.1 | 1              | 1                                 | 29.2                             | 6.8  | IT           |
| SMF20A                            | 20                           | 22.2                             | 24.5 | 1              | 1                                 | 32.4                             | 6.2  | IV           |
| SMF22A                            | 22                           | 24.4                             | 26.9 | 1              | 1                                 | 35.5                             | 5.6  | IX           |
| SMF24A                            | 24                           | 26.7                             | 29.5 | 1              | 1                                 | 38.9                             | 5.1  | IZ           |
| SMF26A                            | 26                           | 28.9                             | 31.9 | 1              | 1                                 | 42.1                             | 4.8  | JE           |
| SMF28A                            | 28                           | 31.1                             | 34.4 | 1              | 1                                 | 45.4                             | 4.4  | JG           |
| SMF30A                            | 30                           | 33.3                             | 36.8 | 1              | 1                                 | 48.4                             | 4.1  | JK           |
| SMF33A                            | 33                           | 36.7                             | 40.6 | 1              | 1                                 | 53.3                             | 3.8  | JM           |
| SMF36A                            | 36                           | 40                               | 44.2 | 1              | 1                                 | 58.1                             | 3.4  | JP           |
| SMF40A                            | 40                           | 44.4                             | 49.1 | 1              | 1                                 | 64.5                             | 3.1  | JR           |
| SMF43A                            | 43                           | 47.8                             | 52.8 | 1              | 1                                 | 69.4                             | 2.9  | JT           |
| SMF45A                            | 45                           | 50                               | 55.3 | 1              | 1                                 | 72.7                             | 2.8  | JV           |
| SMF48A                            | 48                           | 53.3                             | 58.9 | 1              | 1                                 | 77.4                             | 2.6  | JX           |
| SMF51A                            | 51                           | 56.7                             | 62.7 | 1              | 1                                 | 82.4                             | 2.4  | JZ           |
| SMF54A                            | 54                           | 60                               | 66.3 | 1              | 1                                 | 87.1                             | 2.3  | RE           |
| SMF58A                            | 58                           | 64.4                             | 71.2 | 1              | 1                                 | 93.6                             | 2.1  | RG           |
| SMF60A                            | 60                           | 66.7                             | 73.7 | 1              | 1                                 | 96.8                             | 1.8  | RK           |
| SMF64A                            | 64                           | 71.1                             | 78.6 | 1              | 1                                 | 103                              | 1.7  | RM           |
| SMF70A                            | 70                           | 77.8                             | 86   | 1              | 1                                 | 113                              | 1.5  | RP           |
| SMF75A                            | 75                           | 83.3                             | 92.1 | 1              | 1                                 | 121                              | 1.4  | RR           |
| SMF78A                            | 78                           | 86.7                             | 95.8 | 1              | 1                                 | 126                              | 1.4  | RT           |
| SMF85A                            | 85                           | 94.4                             | 104  | 1              | 1                                 | 137                              | 1.3  | RV           |
| SMF90A                            | 90                           | 100                              | 111  | 1              | 1                                 | 146                              | 1.2  | RX           |
| SMF100A                           | 100                          | 111                              | 123  | 1              | 1                                 | 162                              | 1.1  | RZ           |
| SMF110A                           | 110                          | 122                              | 135  | 1              | 1                                 | 177                              | 1    | SE           |
| SMF120A                           | 120                          | 133                              | 147  | 1              | 1                                 | 193                              | 0.9  | SG           |
| SMF130A                           | 130                          | 144                              | 159  | 1              | 1                                 | 209                              | 0.8  | SK           |
| SMF150A                           | 150                          | 167                              | 185  | 1              | 1                                 | 243                              | 0.7  | SM           |
| SMF160A                           | 160                          | 178                              | 197  | 1              | 1                                 | 259                              | 0.7  | SP           |
| SMF170A                           | 170                          | 189                              | 209  | 1              | 1                                 | 275                              | 0.6  | SR           |
| SMF175A                           | 175                          | 198                              | 214  | 1              | 1                                 | 284                              | 0.6  | S5           |

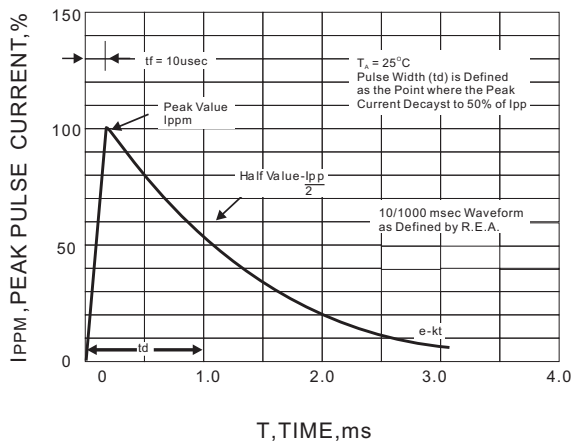
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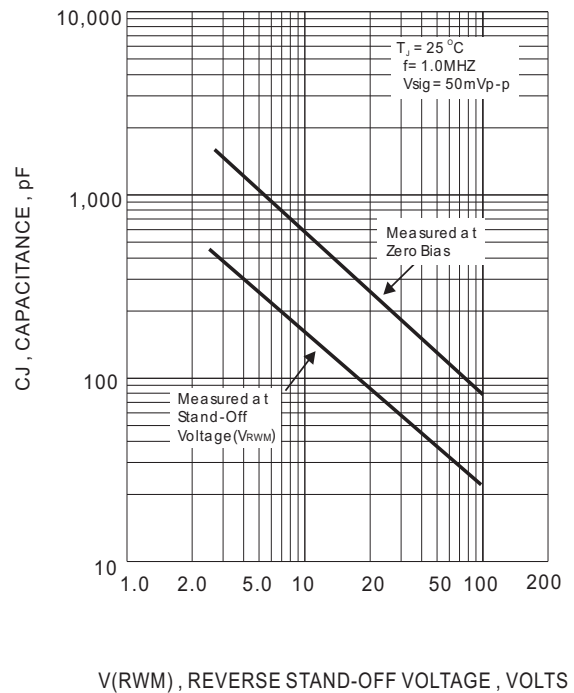
**Fig.1 PEAK PULSE POWER RATING CURVE**



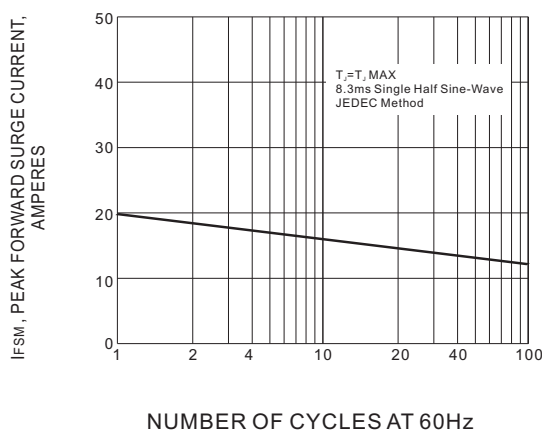
**Fig.2 DERATING CURVE**



**Fig.3 PULSE WAVEFORM**



**Fig.4 TYPICAL JUNCTION CAPACITANCE**



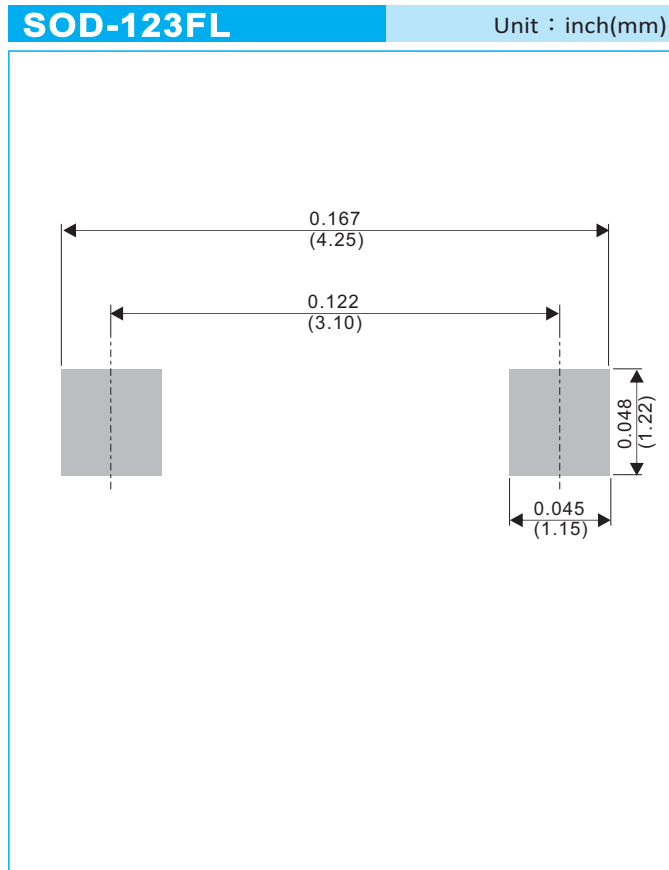
**Fig.5 MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT**

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## Product and Packing Information

| Part No. | Package Type | Packing Type | Marking   |
|----------|--------------|--------------|-----------|
| SMFxxxA  | SOD-123FL    | 3K / 7" Reel | See Table |

## Mounting Pad Layout



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