

# SMAFJ Series

Surface mount transient voltage suppressor power 400 watts

Stand-Off Voltage : 5V~440V

## FEATURES

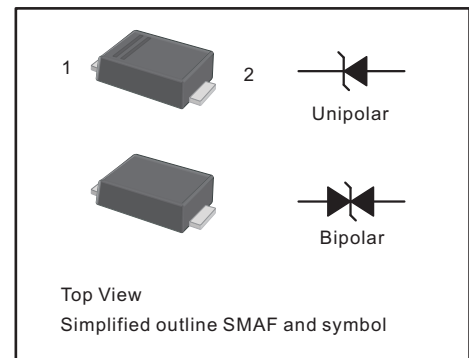
- For surface mounted applications in order to optimize board space.
- Low profile package
- Glass passivated junction
- Low inductance
- Plastic package has Underwriters Laboratory Flammability

## MECHANICAL DATA

- Case: SMAF
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 27mg 0.00095oz

## PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | Cathode     |
| 2   | Anode       |



## Maximum Ratings and Electrical characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

| Parameter                                                    | Symbol                   | Value               | Unit |
|--------------------------------------------------------------|--------------------------|---------------------|------|
| Peak Pulse Power Dissipation on 10/1000us waveform           | $P_{PPM}$                | 400                 | W    |
| Peak Forward Surge Current (Note 2, Fig 4)                   | $I_{FSM}$                | 60                  | A    |
| Peak Pulse Current on 10/1000 us waveform (Note 1, Fig 2)    | $I_{PPM}$                | see Table 1         | A    |
| Typical Junction capacitance at VR=4V, f=1MHz                | $C_J$                    | 390                 | pF   |
| ESD Voltage per IEC6100-4-2<br>Contact<br>Air                | $V_{ESD1}$<br>$V_{ESD2}$ | $\pm 8$<br>$\pm 15$ | kV   |
| Typical Thermal Resistance Junction to Ambient(Note 2)       | $R_{\theta JA}$          | 120                 | °C/W |
| Operating Junction Temperature and Storage Temperature Range | $T_J, T_{stg}$           | -55 ~ +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 FR-4 PCB single-sided copper, mini pad.
3. Peak Forward Surge Current : 8.3ms single half sine-wave Superimposed on rated load (JEDEC method).
4. Peak pulse power waveform is 10/1000μS.



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Characteristics at Ta = 25°C

Table 1

| Type      |            | Reverse<br>Stand-off<br>Voltage | Breakdown<br>Voltage |      | Test<br>Current | Reverse<br>Leakage | Max. Clmp<br>Voltage | Peak Pulse<br>Current | Package              |    |
|-----------|------------|---------------------------------|----------------------|------|-----------------|--------------------|----------------------|-----------------------|----------------------|----|
|           |            |                                 | $V_{BR} @ I_T$       |      | $I_T$           | $I_R @ V_{RRM}$    | $V_C @ I_{PP}$       | $I_{PP}$              | SMAF                 |    |
|           |            | $V_{RRM}$                       | Min                  | Max  |                 |                    |                      |                       | Device Marking Ccode |    |
| UNI       | BI         | V                               | V                    | V    | mA              | μA                 | V                    | A                     | UNI                  | BI |
| SMAFJ5.0A | SMAFJ5.0CA | 5                               | 6.4                  | 7    | 10              | 800                | 9.2                  | 43.5                  | AE                   | WE |
| SMAFJ6.0A | SMAFJ6.0CA | 6                               | 6.67                 | 7.37 | 10              | 800                | 10.3                 | 38.8                  | AG                   | WG |
| SMAFJ6.5A | SMAFJ6.5CA | 6.5                             | 7.22                 | 7.98 | 10              | 500                | 11.2                 | 35.7                  | AK                   | WK |
| SMAFJ7.0A | SMAFJ7.0CA | 7                               | 7.78                 | 8.6  | 10              | 200                | 12                   | 33.3                  | AM                   | WM |
| SMAFJ7.5A | SMAFJ7.5CA | 7.5                             | 8.33                 | 9.21 | 1               | 100                | 12.9                 | 31                    | AP                   | WP |
| SMAFJ8.0A | SMAFJ8.0CA | 8                               | 8.89                 | 9.83 | 1               | 50                 | 13.6                 | 29.4                  | AR                   | WR |
| SMAFJ8.5A | SMAFJ8.5CA | 8.5                             | 9.44                 | 10.4 | 1               | 20                 | 14.4                 | 27.8                  | AT                   | WT |
| SMAFJ9.0A | SMAFJ9.0CA | 9                               | 10                   | 11.1 | 1               | 10                 | 15.4                 | 26                    | AV                   | WV |
| SMAFJ10A  | SMAFJ10CA  | 10                              | 11.1                 | 12.3 | 1               | 5                  | 17                   | 23.5                  | AX                   | WX |
| SMAFJ11A  | SMAFJ11CA  | 11                              | 12.2                 | 13.5 | 1               | 1                  | 18.2                 | 22                    | AZ                   | WZ |
| SMAFJ12A  | SMAFJ12CA  | 12                              | 13.3                 | 14.7 | 1               | 1                  | 19.9                 | 20.1                  | BE                   | XE |
| SMAFJ13A  | SMAFJ13CA  | 13                              | 14.4                 | 15.9 | 1               | 1                  | 21.5                 | 18.6                  | BG                   | XG |
| SMAFJ14A  | SMAFJ14CA  | 14                              | 15.6                 | 17.2 | 1               | 1                  | 23.2                 | 17.2                  | BK                   | XK |
| SMAFJ15A  | SMAFJ15CA  | 15                              | 16.7                 | 18.5 | 1               | 1                  | 24.4                 | 16.4                  | BM                   | XM |
| SMAFJ16A  | SMAFJ16CA  | 16                              | 17.8                 | 19.7 | 1               | 1                  | 26                   | 15.4                  | BP                   | XP |
| SMAFJ17A  | SMAFJ17CA  | 17                              | 18.9                 | 20.9 | 1               | 1                  | 27.6                 | 14.5                  | BR                   | XR |
| SMAFJ18A  | SMAFJ18CA  | 18                              | 20                   | 22.1 | 1               | 1                  | 29.2                 | 13.7                  | BT                   | XT |
| SMAFJ20A  | SMAFJ20CA  | 20                              | 22.2                 | 24.5 | 1               | 1                  | 32.4                 | 12.3                  | BV                   | XV |
| SMAFJ22A  | SMAFJ22CA  | 22                              | 24.4                 | 26.9 | 1               | 1                  | 35.5                 | 11.3                  | BX                   | XX |
| SMAFJ24A  | SMAFJ24CA  | 24                              | 26.7                 | 29.5 | 1               | 1                  | 38.9                 | 10.3                  | BZ                   | XZ |
| SMAFJ26A  | SMAFJ26CA  | 26                              | 28.9                 | 31.9 | 1               | 1                  | 42.1                 | 9.5                   | CE                   | YE |
| SMAFJ28A  | SMAFJ28CA  | 28                              | 31.1                 | 34.4 | 1               | 1                  | 45.4                 | 8.8                   | CG                   | YG |
| SMAFJ30A  | SMAFJ30CA  | 30                              | 33.3                 | 36.8 | 1               | 1                  | 48.4                 | 8.3                   | CK                   | YK |
| SMAFJ33A  | SMAFJ33CA  | 33                              | 36.7                 | 40.6 | 1               | 1                  | 53.3                 | 7.5                   | CM                   | YM |
| SMAFJ36A  | SMAFJ36CA  | 36                              | 40                   | 44.2 | 1               | 1                  | 58.1                 | 6.9                   | CP                   | YP |
| SMAFJ40A  | SMAFJ40CA  | 40                              | 44.4                 | 49.1 | 1               | 1                  | 64.5                 | 6.2                   | CR                   | YR |
| SMAFJ43A  | SMAFJ43CA  | 43                              | 47.8                 | 52.8 | 1               | 1                  | 69.4                 | 5.8                   | CT                   | YT |
| SMAFJ45A  | SMAFJ45CA  | 45                              | 50                   | 55.3 | 1               | 1                  | 72.7                 | 5.5                   | CV                   | YV |
| SMAFJ48A  | SMAFJ48CA  | 48                              | 53.3                 | 58.9 | 1               | 1                  | 77.4                 | 5.2                   | CX                   | YX |
| SMAFJ51A  | SMAFJ51CA  | 51                              | 56.7                 | 62.7 | 1               | 1                  | 82.4                 | 4.9                   | CZ                   | YZ |
| SMAFJ54A  | SMAFJ54CA  | 54                              | 60                   | 66.3 | 1               | 1                  | 87.1                 | 4.6                   | RE                   | ZE |
| SMAFJ58A  | SMAFJ58CA  | 58                              | 64.4                 | 71.2 | 1               | 1                  | 93.6                 | 4.3                   | RG                   | ZG |
| SMAFJ60A  | SMAFJ60CA  | 60                              | 66.7                 | 73.7 | 1               | 1                  | 96.8                 | 4.1                   | RK                   | ZK |
| SMAFJ64A  | SMAFJ64CA  | 64                              | 71.1                 | 78.6 | 1               | 1                  | 103                  | 3.9                   | RM                   | ZM |
| SMAFJ70A  | SMAFJ70CA  | 70                              | 77.8                 | 86   | 1               | 1                  | 113                  | 3.5                   | RP                   | ZP |
| SMAFJ75A  | SMAFJ75CA  | 75                              | 83.3                 | 92.1 | 1               | 1                  | 121                  | 3.3                   | RR                   | ZR |
| SMAFJ78A  | SMAFJ78CA  | 78                              | 86.7                 | 95.8 | 1               | 1                  | 126                  | 3.2                   | RT                   | ZT |
| SMAFJ85A  | SMAFJ85CA  | 85                              | 94.4                 | 104  | 1               | 1                  | 137                  | 2.9                   | RV                   | ZV |
| SMAFJ90A  | SMAFJ90CA  | 90                              | 100                  | 111  | 1               | 1                  | 146                  | 2.7                   | RX                   | ZX |
| SMAFJ100A | SMAFJ100CA | 100                             | 111                  | 123  | 1               | 1                  | 162                  | 2.5                   | RZ                   | ZZ |
| SMAFJ110A | SMAFJ110CA | 110                             | 122                  | 135  | 1               | 1                  | 177                  | 2.3                   | SE                   | VE |
| SMAFJ120A | SMAFJ120CA | 120                             | 133                  | 147  | 1               | 1                  | 193                  | 2.1                   | SG                   | VG |
| SMAFJ130A | SMAFJ130CA | 130                             | 144                  | 159  | 1               | 1                  | 209                  | 1.9                   | SK                   | VK |
| SMAFJ150A | SMAFJ150CA | 150                             | 167                  | 185  | 1               | 1                  | 243                  | 1.6                   | SM                   | VM |
| SMAFJ160A | SMAFJ160CA | 160                             | 178                  | 197  | 1               | 1                  | 259                  | 1.5                   | SP                   | VP |
| SMAFJ170A | SMAFJ170CA | 170                             | 189                  | 209  | 1               | 1                  | 275                  | 1.5                   | SR                   | VR |
| SMAFJ180A | SMAFJ180CA | 180                             | 201                  | 222  | 1               | 1                  | 292                  | 1.4                   | ST                   | VT |
| SMAFJ200A | SMAFJ200CA | 200                             | 224                  | 247  | 1               | 1                  | 324                  | 1.2                   | SV                   | VV |
| SMAFJ220A | SMAFJ220CA | 220                             | 246                  | 272  | 1               | 1                  | 356                  | 1.1                   | SX                   | VX |
| SMAFJ250A | SMAFJ250CA | 250                             | 279                  | 309  | 1               | 1                  | 405                  | 1                     | SZ                   | VZ |
| SMAFJ300A | SMAFJ300CA | 300                             | 335                  | 371  | 1               | 1                  | 486                  | 0.8                   | TE                   | UE |
| SMAFJ350A | SMAFJ350CA | 350                             | 391                  | 432  | 1               | 1                  | 567                  | 0.7                   | TG                   | UG |
| SMAFJ400A | SMAFJ400CA | 400                             | 447                  | 494  | 1               | 1                  | 648                  | 0.6                   | TK                   | UK |
| SMAFJ440A | SMAFJ440CA | 440                             | 492                  | 543  | 1               | 1                  | 713                  | 0.6                   | TM                   | UM |



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**Fig.1 Peak Pulse Power Rating Curve**

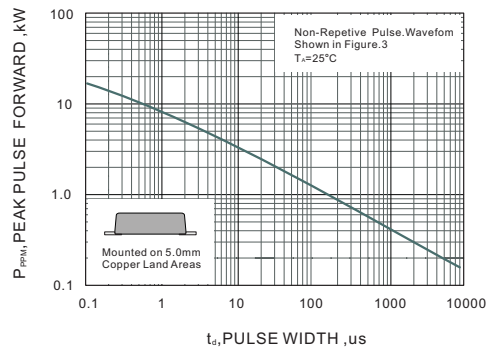


**Fig.2 Forward Current Derating Curve**

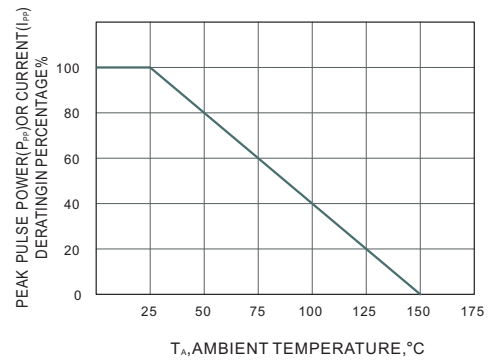


**Fig.3 Pulse Waveform**

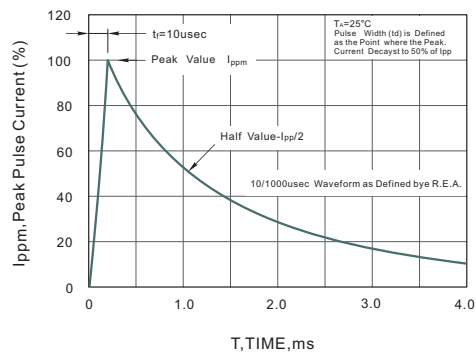
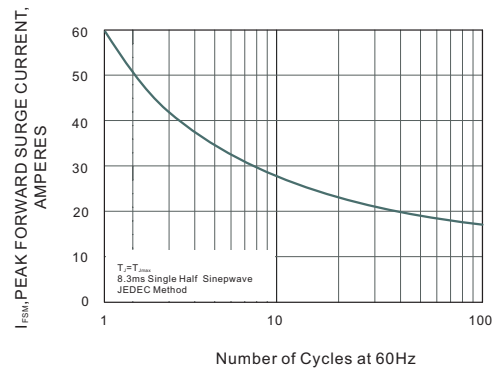


**Fig.4 Maximum Non-Repetitive Peak Forward Surge Current**



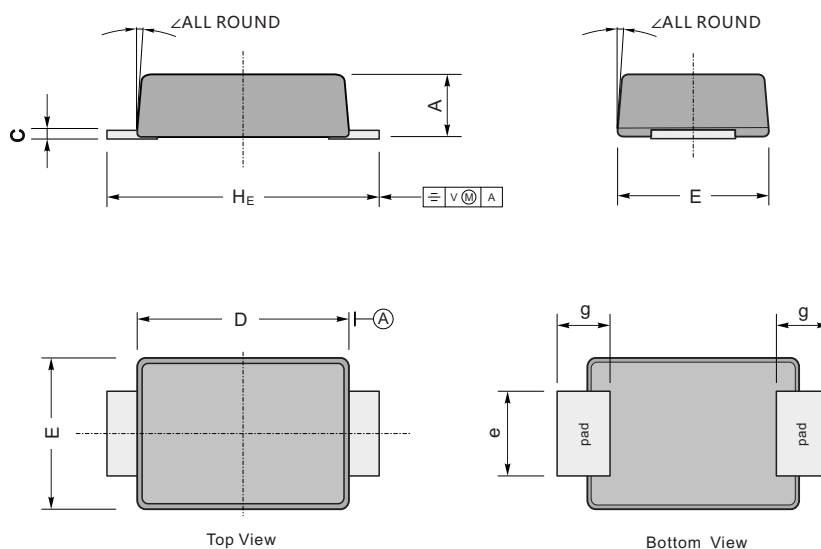


# SMAFJ Series

## PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

SMAF



| UNIT |     | A   | C    | D   | E   | e   | g   | H <sub>E</sub> | ∠  |
|------|-----|-----|------|-----|-----|-----|-----|----------------|----|
| mm   | max | 1.2 | 0.20 | 3.7 | 2.7 | 1.6 | 1.2 | 4.9            | 7° |
|      | min | 0.9 | 0.12 | 3.3 | 2.4 | 1.3 | 0.8 | 4.4            |    |
| mil  | max | 43  | 7.9  | 146 | 106 | 63  | 47  | 193            |    |
|      | min | 35  | 4.7  | 130 | 94  | 51  | 31  | 173            |    |

## The recommended mounting pad size

