



# P4SMAFJ SERIES

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR POWER 400 Watts

**STAND-OFF VOLTAGE**

**8.5 to 170 Volts**

**SMAF**

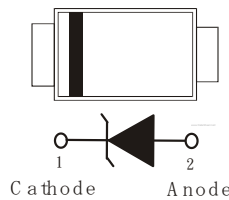
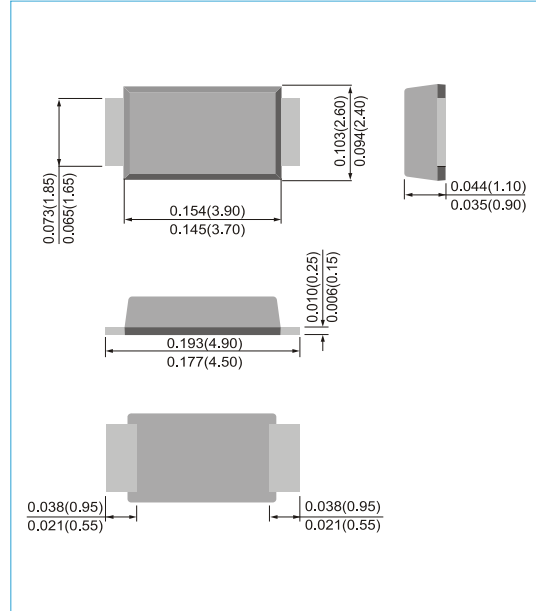
Unit : inch(mm)

### 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 Classification 94V-0
- High temperature soldering : 260°C /10 seconds at terminals
- Lead free in comply with EU RoHS 2002/95/EC directives
- Green molding compound as per IEC61249 Std. . (Halogen Free)

### MECHANICAL DATA

- Case: SMAF, Plastic
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode end
- Weight: 0.0011 ounces, 0.0328grams



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

| RATING  | SYMBOL   | VALUE       | UNITS |
|---|--|-------------|-------|
| Peak Pulse Power Dissipation on T <sub>A</sub> =25°C (Note 1,2,4, Fig1) | P <sub>PPM</sub>                                       | 400         | W     |
| Peak Forward Surge Current (Note 3, Fig 5)                              | I <sub>FSM</sub>                                       | 40          | A     |
| Peak Pulse Current on 10/1000 us waveform (Note 1, Fig 2)               | I <sub>PPM</sub>                                       | see Table 1 | A     |
| Typical Junction capacitance at V <sub>R</sub> =4V, f=1MHz              | C <sub>J</sub>   | 390         | pF    |
| ESD Voltage per IEC6100-4-2   | Contact<br>Air<br>V <sub>ESD</sub><br>V <sub>ESD</sub> | +8<br>-15   | kV    |
| Typical Thermal Resistance Junction to Ambient(Note 2)                  | R <sub>θJA</sub>                                       | 150         | °C/W  |
| Operating Junction Temperature and Storage Temperature Range            | T <sub>J</sub> , T <sub>STG</sub>                      | -55 to +150 | °C    |

#### NOTES:

1. Non-repetitive current pulse, per Fig.3 and derated above T<sub>A</sub> = 25 °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.

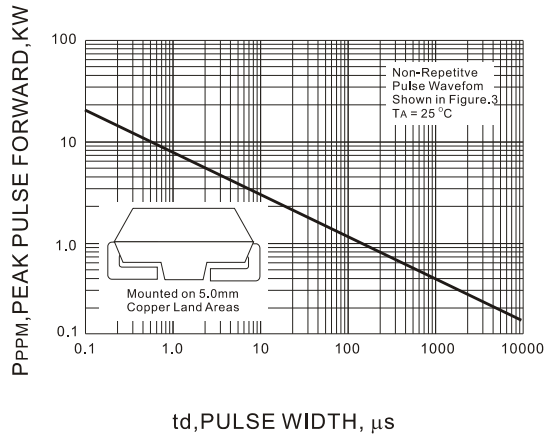


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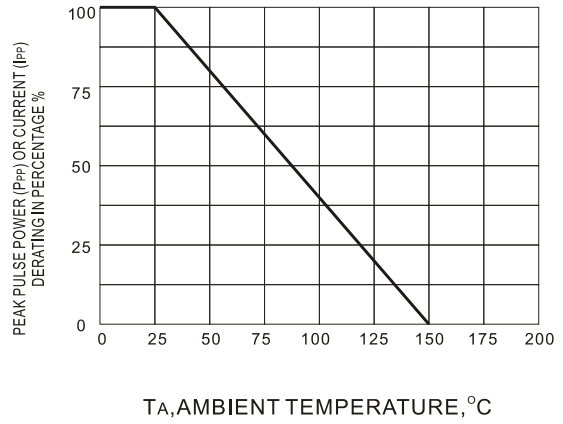
| Part Number                              | Reverse Stand-off Voltage | Breakdown Voltage                |       | Test Current   | Reverse Leakage                   | Max. Clamp Voltage               | Peak Pulse Current | Marking Code |
|--|---------------------------|----------------------------------|-------|----------------|-----------------------------------|----------------------------------|--------------------|--------------|
|  | V <sub>RWM</sub>          | V <sub>BR</sub> @ I <sub>T</sub> |       | I <sub>T</sub> | I <sub>R</sub> @ V <sub>RWM</sub> | V <sub>C</sub> @ I <sub>PP</sub> | I <sub>PP</sub>    |              |
|  |                           | Min.                             | Max.  |                |                                   |                                  |                    |              |
| <b>400W Transient Voltage Suppressor</b> |                           |                                  |       |                |                                   |                                  |                    |              |
| P4SMAFJ8.5A                              | 8.50                      | 9.44                             | 10.82 | 1              | 10                                | 14.4                             | 27.7               | HT           |
| P4SMAFJ9.0A                              | 9                         | 10                               | 11.5  | 1              | 5                                 | 15.4                             | 26                 | HV           |
| P4SMAFJ10A                               | 10                        | 11.1                             | 12.8  | 1              | 5                                 | 17                               | 23.5               | HX           |
| P4SMAFJ11A                               | 11                        | 12.2                             | 14    | 1              | 1                                 | 18.2                             | 22                 | HZ           |
| P4SMAFJ12A                               | 12                        | 13.3                             | 15.3  | 1              | 1                                 | 19.9                             | 20.1               | IE           |
| P4SMAFJ13A                               | 13                        | 14.4                             | 16.5  | 1              | 1                                 | 21.5                             | 18.6               | IG           |
| P4SMAFJ14A                               | 14                        | 15.6                             | 17.9  | 1              | 1                                 | 23.2                             | 17.2               | IK           |
| P4SMAFJ15A                               | 15                        | 16.7                             | 19.2  | 1              | 1                                 | 24.4                             | 16.4               | IM           |
| P4SMAFJ16A                               | 16                        | 17.8                             | 20.5  | 1              | 1                                 | 26                               | 15.3               | IP           |
| P4SMAFJ17A                               | 17                        | 18.9                             | 21.7  | 1              | 1                                 | 27.6                             | 14.5               | IR           |
| P4SMAFJ18A                               | 18                        | 20                               | 23.3  | 1              | 1                                 | 29.2                             | 13.7               | IT           |
| P4SMAFJ20A                               | 20                        | 22.2                             | 25.5  | 1              | 1                                 | 32.4                             | 12.3               | IV           |
| P4SMAFJ22A                               | 22                        | 24.4                             | 28    | 1              | 1                                 | 35.5                             | 11.2               | IX           |
| P4SMAFJ24A                               | 24                        | 26.7                             | 30.7  | 1              | 1                                 | 38.9                             | 10.3               | IZ           |
| P4SMAFJ26A                               | 26                        | 28.9                             | 33.2  | 1              | 1                                 | 42.1                             | 9.5                | JE           |
| P4SMAFJ28A                               | 28                        | 31.1                             | 35.8  | 1              | 1                                 | 45.4                             | 8.8                | JG           |
| P4SMAFJ30A                               | 30                        | 33.3                             | 38.3  | 1              | 1                                 | 48.4                             | 8.3                | JK           |
| P4SMAFJ33A                               | 33                        | 36.7                             | 42.2  | 1              | 1                                 | 53.3                             | 7.5                | JM           |
| P4SMAFJ36A                               | 36                        | 40                               | 46    | 1              | 1                                 | 58.1                             | 6.9                | JP           |
| P4SMAFJ40A                               | 40                        | 44.4                             | 51.1  | 1              | 1                                 | 64.5                             | 6.2                | JR           |
| P4SMAFJ43A                               | 43                        | 47.8                             | 54.9  | 1              | 1                                 | 69.4                             | 5.7                | JT           |
| P4SMAFJ45A                               | 45                        | 50                               | 57.5  | 1              | 1                                 | 72.7                             | 5.5                | JV           |
| P4SMAFJ48A                               | 48                        | 53.3                             | 61.3  | 1              | 1                                 | 77.4                             | 5.2                | JX           |
| P4SMAFJ51A                               | 51                        | 56.7                             | 65.2  | 1              | 1                                 | 82.4                             | 4.9                | JZ           |
| P4SMAFJ54A                               | 54                        | 60                               | 69    | 1              | 1                                 | 87.1                             | 4.6                | RE           |
| P4SMAFJ58A                               | 58                        | 64.4                             | 74.1  | 1              | 1                                 | 93.6                             | 4.3                | RG           |
| P4SMAFJ60A                               | 60                        | 66.7                             | 76.7  | 1              | 1                                 | 96.8                             | 4.1                | RK           |
| P4SMAFJ64A                               | 64                        | 71.1                             | 81.8  | 1              | 1                                 | 103                              | 3.9                | RM           |
| P4SMAFJ70A                               | 70                        | 77.8                             | 89.5  | 1              | 1                                 | 113                              | 3.5                | RP           |
| P4SMAFJ75A                               | 75                        | 83.3                             | 95.8  | 1              | 1                                 | 121                              | 3.3                | RR           |
| P4SMAFJ78A                               | 78                        | 86.7                             | 99.7  | 1              | 1                                 | 126                              | 2.2                | RT           |
| P4SMAFJ85A                               | 85                        | 94.4                             | 108.2 | 1              | 1                                 | 137                              | 2.9                | RV           |
| P4SMAFJ90A                               | 90                        | 100                              | 115.5 | 1              | 1                                 | 146                              | 2.7                | RX           |
| P4SMAFJ100A                              | 100                       | 111                              | 128   | 1              | 1                                 | 162                              | 2.5                | RZ           |
| P4SMAFJ110A                              | 110                       | 122                              | 140.5 | 1              | 1                                 | 177                              | 2.3                | SE           |
| P4SMAFJ120A                              | 120                       | 133                              | 153   | 1              | 1                                 | 193                              | 2                  | SG           |
| P4SMAFJ130A                              | 130                       | 144                              | 165.5 | 1              | 1                                 | 209                              | 1.9                | SK           |
| P4SMAFJ150A                              | 150                       | 167                              | 192.5 | 1              | 1                                 | 243                              | 1.6                | SM           |
| P4SMAFJ160A                              | 160                       | 178                              | 205   | 1              | 1                                 | 259                              | 1.5                | SP           |
| P4SMAFJ170A                              | 170                       | 189                              | 217.5 | 1              | 1                                 | 275                              | 1.4                | SR           |



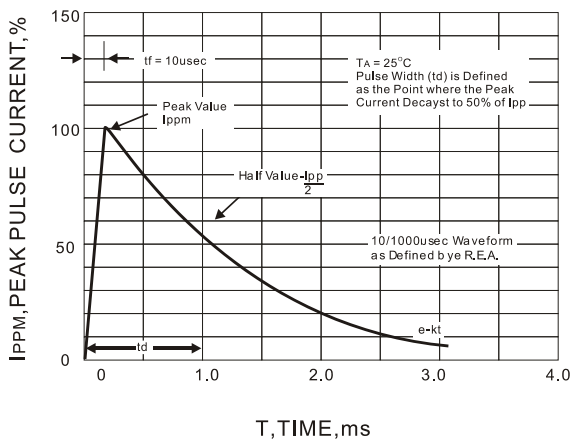
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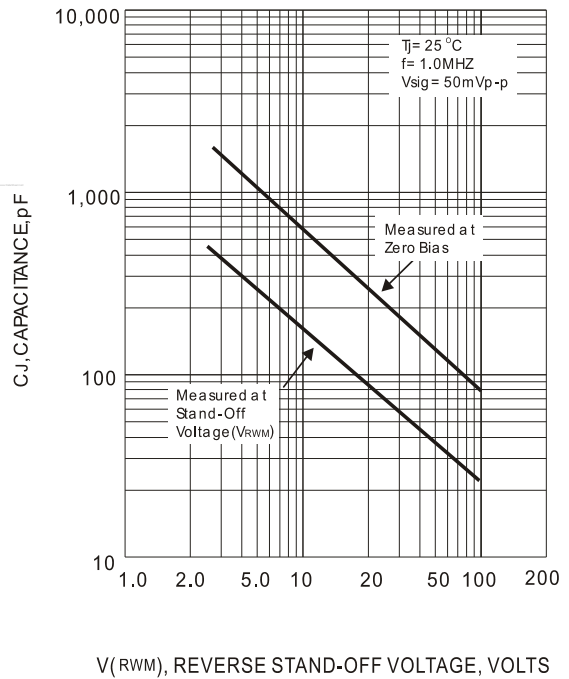
**Fig.1 PEAK PULSE POWER RATING CURVE**



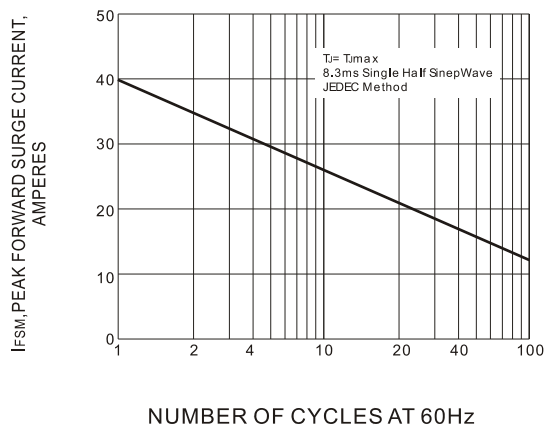
**Fig.2 DERATING CURVE**



**Fig.3 PULSE WAVEFORM**



**Fig.4 TYPICAL JUNCTION CAPACITANCE**

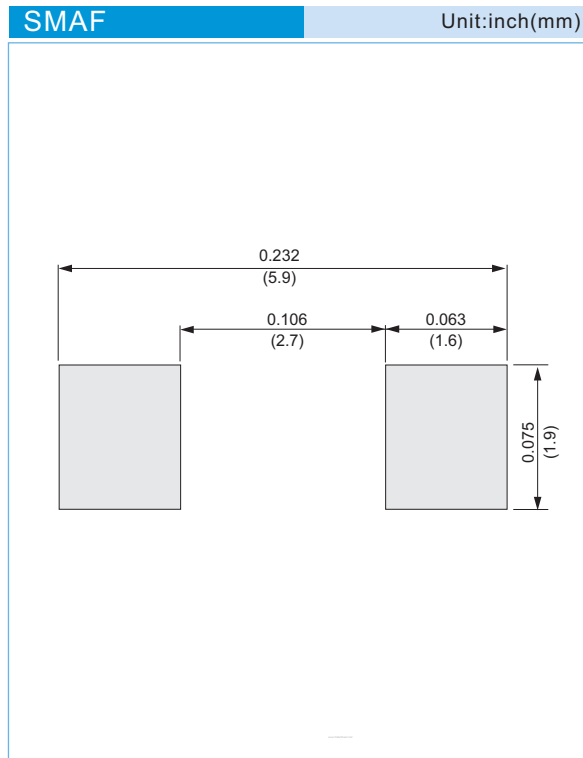


**Fig.5 MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT**



# P4SMAFJ SERIES

## MOUNTING PAD LAYOUT



## ORDER INFORMATION

- Packing information
  - T/R - 10K per 13" plastic Reel
  - T/R - 3K per 7" plastic Reel



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Part No\_packing code\_Version

P4SMAFJ8.5A\_R1\_00001

P4SMAFJ8.5A\_R2\_00001

For example :

**RB500V-40\_R2\_00001**



| Packing Code <b>XX</b>               |                      |                                  |                      | Version Code <b>XXXXX</b> |                      |                                       |
|--------------------------------------|----------------------|----------------------------------|----------------------|---------------------------|----------------------|---------------------------------------|
| Packing type                         | 1 <sup>st</sup> Code | Packing size code                | 2 <sup>nd</sup> Code | HF or RoHS                | 1 <sup>st</sup> Code | 2 <sup>nd</sup> ~5 <sup>th</sup> Code |
| Tape and Ammunition Box (T/B)        | <b>A</b>             | N/A                              | <b>0</b>             | <b>HF</b>                 | <b>0</b>             | serial number                         |
| Tape and Reel (T/R)                  | <b>R</b>             | 7"                               | <b>1</b>             | <b>RoHS</b>               | <b>1</b>             | serial number                         |
| Bulk Packing (B/P)                   | <b>B</b>             | 13"                              | <b>2</b>             |                           |                      |                                       |
| Tube Packing (T/P)                   | <b>T</b>             | 26mm                             | <b>X</b>             |                           |                      |                                       |
| Tape and Reel (Right Oriented) (TRR) | <b>S</b>             | 52mm                             | <b>Y</b>             |                           |                      |                                       |
| Tape and Reel (Left Oriented) (TRL)  | <b>L</b>             | PANASERT T/B CATHODE UP (PBCU)   | <b>U</b>             |                           |                      |                                       |
| FORMING                              | <b>F</b>             | PANASERT T/B CATHODE DOWN (PBCD) | <b>D</b>             |                           |                      |                                       |



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