

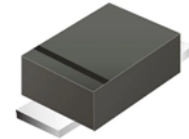
RoHS Compliant Product

A suffix of "-C" specifies halogen-free and lead-free

## FEATURES

- Glass passivated junction
- Solder dip 260°C, 10s
- Moisture sensitivity: level 1, per J-STD-020
- Low profile, typical thickness 1mm
- Excellent clamping capability and Fast response time
- 400W peak pulse power capability with a 10/1000µs waveform
- Polarity: Uni-directional

**SMAF**



## PACKAGE INFORMATION

| Package | MPQ | Leader Size |
|---------|-----|-------------|
| SMAF    | 3K  | 13 inch     |

## ORDER INFORMATION

| Part Number              | Type                            |
|--------------------------|---------------------------------|
| SMAF4J10A-C~SMAF4J190A-C | Lead (Pb)-free and Halogen-free |

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

| Parameter  | Symbol                            | Value          | Unit |
|--|-----------------------------------|----------------|------|
| Peak Power Dissipation with a 10/1000µs waveform <sup>1</sup><br>@T <sub>A</sub> =25°C | P <sub>PP</sub>                   | 400            | W    |
| Peak Pulse Current with a 10/1000µs waveform <sup>1</sup>                              | I <sub>PP</sub>                   | See next table | A    |
| Power Dissipation <sup>2</sup>   | P <sub>D</sub>                    | 1              | W    |
| Steady state   |                                   |                |      |
| Peak Forward Surge Current, 8.3ms Single Half Sine-Wave<br>uni-directional only        | I <sub>FSM</sub>                  | 40             | A    |
| Maximum Instantaneous Forward Clamping Voltage at 25A                                  | V <sub>F</sub>                    | 2              | V    |
| Thermal Resistance Junction to Ambient air <sup>3</sup>                                | R <sub>θJA</sub>                  | 75             | °C/W |
| Operating Junction and Storage Temperature Range                                       | T <sub>J</sub> , T <sub>STG</sub> | -55~150        | °C   |

Notes:

1. Non-repetitive current pulse per Fig.3 and derated above T<sub>A</sub>=25°C per Fig.4.
2. Power dissipation mounted on recommended pad layout.
3. Thermal resistance from junction to ambient, mounted on PCB with 8.0x8.0mm copper pads.

**ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

| Part Number | Marking Code | Reverse Stand-off Voltage | Breakdown Voltage $V_{BR}$ @ $I_T$ |      | Test Current | Maximum Reverse Leakage $I_R$ @ $V_R$ | Maximum Peak Pulse Current | Maximum Clamping Voltage $V_C$ @ $I_{PP}$ |
|-------------|--------------|---------------------------|------------------------------------|------|--------------|---------------------------------------|----------------------------|---|
|             |              | $V_{RWM}$                 | Min.                               | Max. | $I_T$        | $I_R$                                 | $I_{PP}$                   | $V_C$                                     |
| Uni         | Uni          | V                         | V                                  |      | mA           | $\mu\text{A}$                         | A                          | V   |
| SMAF4J10A-C | L410A        | 10                        | 11.1                               | 12.3 | 1            | 2.5                                   | 23.5                       | 17  |
| SMAF4J11A-C | L411A        | 11                        | 12.2                               | 13.5 | 1            | 2.5                                   | 22                         | 18.2                                      |
| SMAF4J12A-C | L412A        | 12                        | 13.3                               | 14.7 | 1            | 2.5                                   | 20.1                       | 19.9                                      |
| SMAF4J13A-C | L413A        | 13                        | 14.4                               | 15.9 | 1            | 1                                     | 18.6                       | 21.5                                      |
| SMAF4J14A-C | L414A        | 14                        | 15.6                               | 17.2 | 1            | 1                                     | 17.2                       | 23.2                                      |
| SMAF4J15A-C | L415A        | 15                        | 16.7                               | 18.5 | 1            | 1                                     | 16.4                       | 24.4                                      |
| SMAF4J16A-C | L416A        | 16                        | 17.8                               | 19.7 | 1            | 1                                     | 15.4                       | 26  |
| SMAF4J17A-C | L417A        | 17                        | 18.9                               | 20.9 | 1            | 1                                     | 14.5                       | 27.6                                      |
| SMAF4J18A-C | L418A        | 18                        | 20                                 | 22.1 | 1            | 1                                     | 13.7                       | 29.2                                      |
| SMAF4J20A-C | L420A        | 20                        | 22.2                               | 24.5 | 1            | 1                                     | 12.3                       | 32.4                                      |
| SMAF4J22A-C | L422A        | 22                        | 24.4                               | 26.9 | 1            | 1                                     | 11.3                       | 35.5                                      |
| SMAF4J24A-C | L424A        | 24                        | 26.7                               | 29.5 | 1            | 1                                     | 10.3                       | 38.9                                      |
| SMAF4J26A-C | L426A        | 26                        | 28.9                               | 31.9 | 1            | 1                                     | 9.5                        | 42.1                                      |
| SMAF4J28A-C | L428A        | 28                        | 31.1                               | 34.4 | 1            | 1                                     | 8.8                        | 45.4                                      |
| SMAF4J30A-C | L430A        | 30                        | 33.3                               | 36.8 | 1            | 1                                     | 8.3                        | 48.4                                      |
| SMAF4J33A-C | L433A        | 33                        | 36.7                               | 40.6 | 1            | 1                                     | 7.5                        | 53.3                                      |
| SMAF4J36A-C | L436A        | 36                        | 40                                 | 44.2 | 1            | 1                                     | 6.9                        | 58.1                                      |
| SMAF4J40A-C | L440A        | 40                        | 44.4                               | 49.1 | 1            | 1                                     | 6.2                        | 64.5                                      |
| SMAF4J43A-C | L443A        | 43                        | 47.8                               | 52.8 | 1            | 1                                     | 5.8                        | 69.4                                      |
| SMAF4J45A-C | L445A        | 45                        | 50                                 | 55.3 | 1            | 1                                     | 5.5                        | 72.7                                      |
| SMAF4J48A-C | L448A        | 48                        | 53.3                               | 58.9 | 1            | 1                                     | 5.2                        | 77.4                                      |
| SMAF4J51A-C | L451A        | 51                        | 56.7                               | 62.7 | 1            | 1                                     | 4.9                        | 82.4                                      |
| SMAF4J54A-C | L454A        | 54                        | 60                                 | 66.3 | 1            | 1                                     | 4.6                        | 87.1                                      |
| SMAF4J58A-C | L458A        | 58                        | 64.4                               | 71.2 | 1            | 1                                     | 4.3                        | 93.6                                      |
| SMAF4J60A-C | L460A        | 60                        | 66.7                               | 73.7 | 1            | 1                                     | 4.1                        | 96.8                                      |
| SMAF4J64A-C | L464A        | 64                        | 71.1                               | 78.6 | 1            | 1                                     | 3.9                        | 103                                       |
| SMAF4J70A-C | L470A        | 70                        | 77.8                               | 86   | 1            | 1                                     | 3.5                        | 114                                       |
| SMAF4J75A-C | L475A        | 75                        | 83.3                               | 92.1 | 1            | 1                                     | 3.3                        | 121                                       |
| SMAF4J78A-C | L478A        | 78                        | 86.7                               | 95.8 | 1            | 1                                     | 3.2                        | 126                                       |
| SMAF4J80A-C | L480A        | 80                        | 88.8                               | 97.6 | 1            | 1                                     | 3.1                        | 129                                       |
| SMAF4J85A-C | L485A        | 85                        | 94.4                               | 104  | 1            | 1                                     | 2.9                        | 138                                       |

**ELECTRICAL CHARACTERISTICS** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

| Part Number  | Marking Code | Reverse Stand-off Voltage | Breakdown Voltage $V_{BR}$ @ $I_T$ |     | Test Current | Maximum Reverse Leakage $I_R$ @ $V_R$ | Maximum Peak Pulse Current $I_{PP}$ | Maximum Clamping Voltage $V_C$ @ $I_{PP}$ |
|--------------|--------------|---------------------------|------------------------------------|-----|--------------|---------------------------------------|-------------------------------------|---|
|              |              | $V_{RWM}$                 | Min                                | Max |              |                                       |                                     |   |
| Uni          | Uni          | V                         | V                                  | V   | mA           | $\mu\text{A}$                         | A                                   | V   |
| SMAF4J90A-C  | L490A        | 90                        | 100                                | 111 | 1            | 1                                     | 2.7                                 | 148                                       |
| SMAF4J100A-C | L4100A       | 100                       | 111                                | 123 | 1            | 1                                     | 2.5                                 | 160                                       |
| SMAF4J110A-C | L4110A       | 110                       | 122                                | 135 | 1            | 1                                     | 2.2                                 | 182                                       |
| SMAF4J120A-C | L4120A       | 120                       | 133                                | 147 | 1            | 1                                     | 2.1                                 | 191                                       |
| SMAF4J130A-C | L4130A       | 130                       | 144                                | 159 | 1            | 1                                     | 1.9                                 | 211                                       |
| SMAF4J140A-C | L4140A       | 140                       | 155                                | 171 | 1            | 1                                     | 1.8                                 | 223                                       |
| SMAF4J150A-C | L4150A       | 150                       | 167                                | 185 | 1            | 1                                     | 1.6                                 | 250                                       |
| SMAF4J160A-C | L4160A       | 160                       | 178                                | 197 | 1            | 1                                     | 1.5                                 | 267                                       |
| SMAF4J170A-C | L4170A       | 170                       | 189                                | 209 | 1            | 1                                     | 1.4                                 | 286                                       |
| SMAF4J180A-C | L4180A       | 180                       | 201                                | 222 | 1            | 1                                     | 1.4                                 | 286                                       |
| SMAF4J190A-C | L4190A       | 190                       | 211                                | 232 | 1            | 1                                     | 1.2                                 | 334                                       |

**CHARACTERISTICS CURVE**

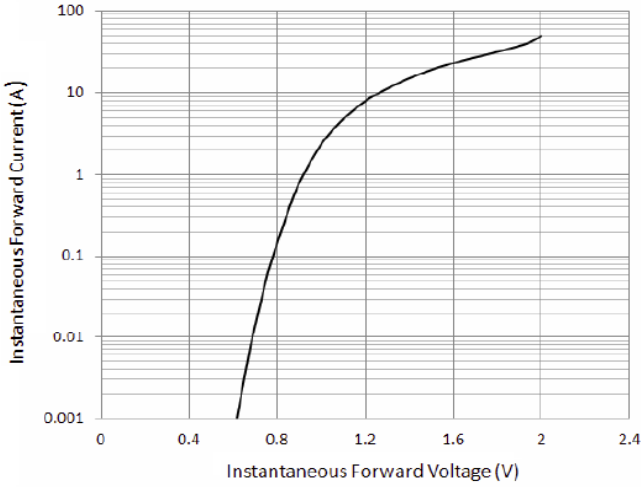


Figure 1. Typical Instantaneous Forward Characteristics

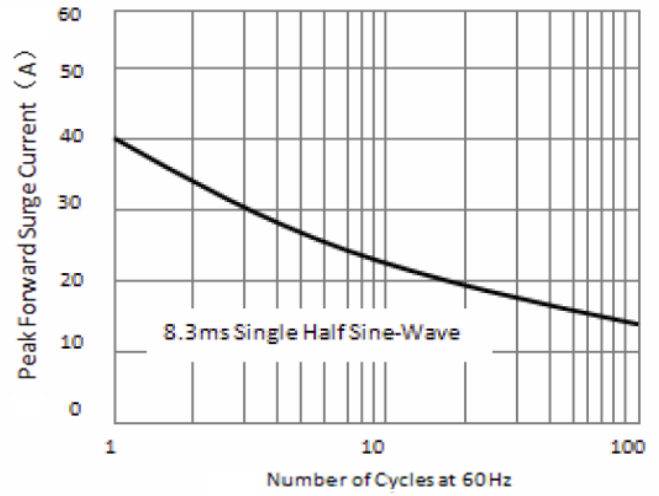


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

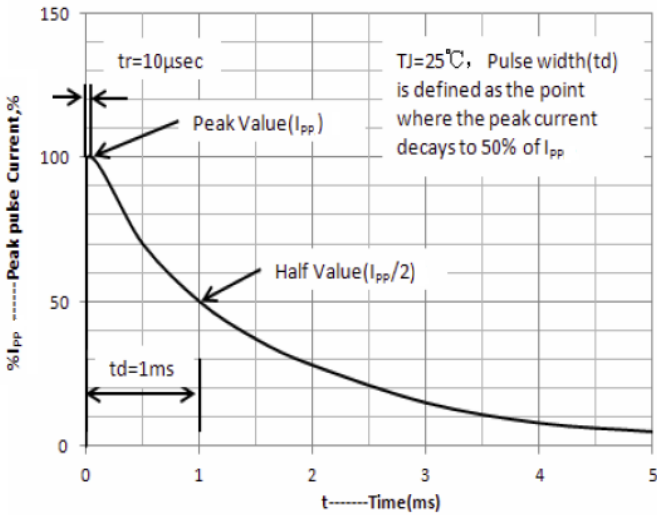


Figure 3. Pulse Waveform

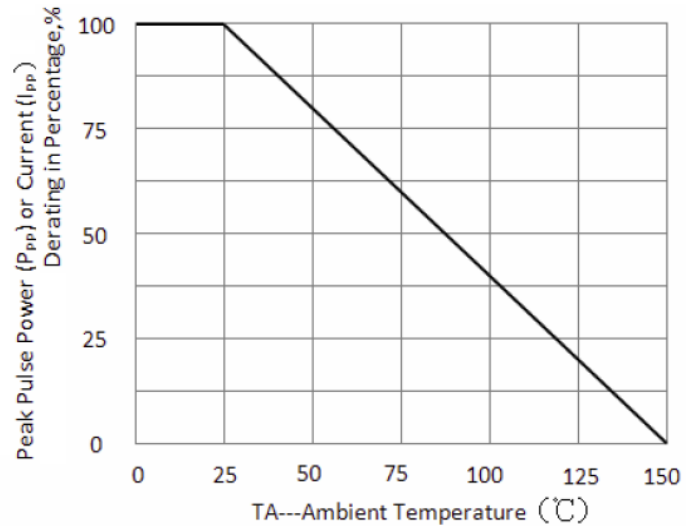


Figure 4. Peak Pulse Power Derating Curve

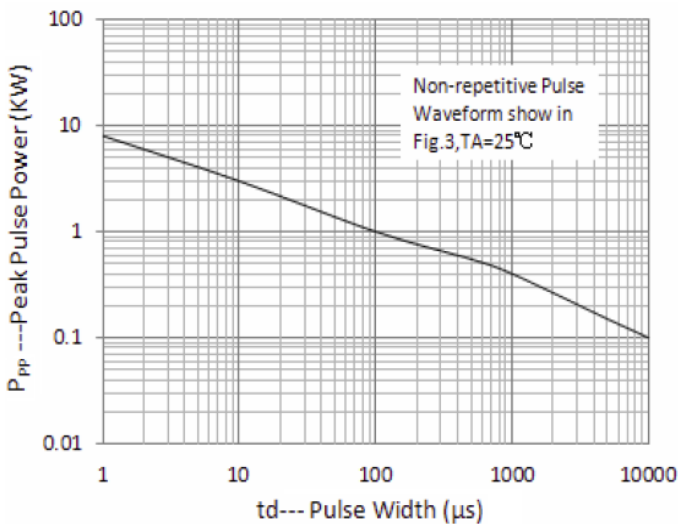
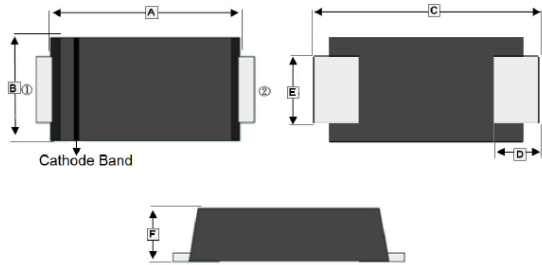


Figure 5. Peak Pulse Power Derating Curve

**PACKAGE OUTLINE DIMENSIONS**

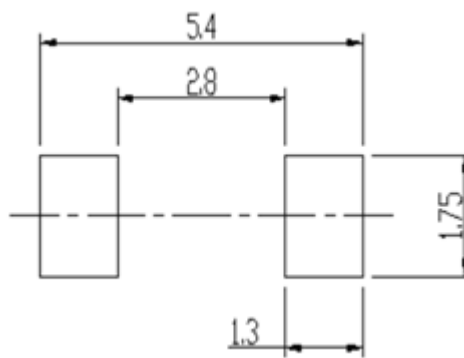
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| REF. | Millimeter |      |
|------|------------|------|
|      | Min.       | Max. |
| A    | 3.20       | 4.60 |
| B    | 2.25       | 2.95 |
| C    | 4.40       | 5.60 |
| D    | 0.50       | 1.50 |
| E    | 1.25       | 1.65 |
| F    | 0.90       | 1.25 |

**MOUNTING PAD LAYOUT**

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\*Dimensions in millimeters