

5 é / Descriptions

400W  $n \mu \text{É} \times 9 \text{Á} \ 9 \ \text{ò} \sim k \quad V_{RMW}: 5.0V \sim 440V \ \text{È} \ V^\circ \ \text{SMAF} / \text{xož}$   
400W Surface Mount Transient Voltage Suppressor È Stand-Off Voltage Ö 5.0V~440V È SMAF thin package.

¤ ª / Features

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For surface mounted applications in order to optimize board space È Glass passivated junction È Low inductance È Plastic package has Underwriters Laboratory Flammability Classifications 94V-0. Halogen free product.

Đ ÷ / Applications

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General purpose.

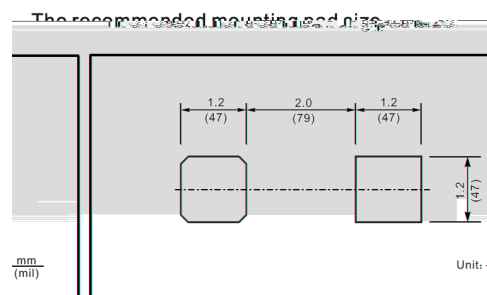
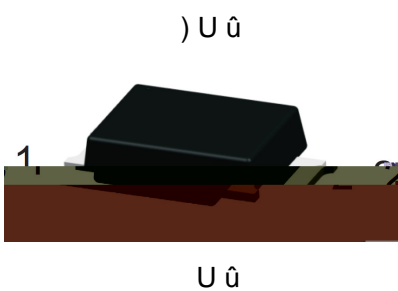
Ã W ] Ô . / Equivalent Circuit



• Ů - æ / Pinning



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



, M V / Marking

• - ~ ª øž See Marking Instructions.

Table 1 / Absolute Maximum Ratings(Ta=25 °C ; )

| Parameter  | Symbol                            | Rating      | Unit |
|--|-----------------------------------|-------------|------|
| Peak Pulse Power Dissipation on 10/1000us waveform           | P <sub>PPM</sub>                  | 400         | W    |
| Peak Forward Surge Current (Note 2, Fig 4)                   | I <sub>FSM</sub>                  | 60          | 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 VR=4V, f=1MHz                | C <sub>J</sub>                    | 390         | pF   |
| ESD Voltage per IEC6100-4-2 Contact Air                      | V <sub>ESD1</sub>                 | 8           | kV   |
|  | V <sub>ESD2</sub>                 | 15          | kV   |
| Operating Junction Temperature and Storage Temperature Range | T <sub>j</sub> , T <sub>stg</sub> | -55~+175    |      |
| Typical Thermal Resistance Junction to Ambient(Note 2)       | R <sub>JA</sub>                   | 120         | /W   |

NOTES:

1. Non-repetitive current pulse, per Fig.3 and derated above TA = 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 10/1000 S.

SMAFJ5.0(C)A~SMAFJ440(C)A  
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04i x ? d / Electrical Characteristics(Ta=25 ; )

| Type      |            | Device Marking Ccode |    | Reverse Stand-off Voltage | Breakdown Voltage  |      | Test Current | Reverse Leakage | Max. Clamp Voltage  | Peak Pulse Current |
|-----------|------------|----------------------|----|---------------------------|--------------------|------|--------------|-----------------|---------------------|--------------------|
|           |            |                      |    |                           | V <sub>BR@IT</sub> |      |              |                 |                     |                    |
|           |            |                      |    |                           | V <sub>RMW</sub>   | Min  | Max          | I <sub>T</sub>  | I <sub>R@VRWM</sub> | V <sub>C@IPP</sub> |
| Uni       | Bi         | Uni                  | Bi | V                         | V                  | V    | mA           | A               | V                   | A                  |
| SMAFJ5.0A | SMAFJ5.0CA | AE                   | WE | 5.0                       | 6.4                | 7.0  | 10           | 800             | 9.2                 | 43.5               |
| SMAFJ6.0A | SMAFJ6.0CA | AG                   | WG | 6.0                       | 6.67               | 7.37 | 10           | 800             | 10.3                | 38.8               |
| SMAFJ6.5A | SMAFJ6.5CA | AK                   | WK | 6.5                       | 7.22               | 7.98 | 10           | 500             | 11.2                | 35.7               |
| SMAFJ7.0A | SMAFJ7.0CA | AM                   | WM | 7.0                       | 7.78               | 8.6  | 10           | 200             | 12.0                | 33.3               |
| SMAFJ7.5A | SMAFJ7.5CA | AP                   | WP | 7.5                       | 8.33               | 9.21 | 1.0          | 100             | 12.9                | 31.0               |
| SMAFJ8.0A | SMAFJ8.0CA | AR                   | WR | 8.0                       | 8.89               | 9.83 | 1.0          | 50              | 13.6                | 29.4               |
| SMAFJ8.5A | SMAFJ8.5CA | AT                   | WT | 8.5                       | 9.44               | 10.4 | 1.0          | 20              | 14.4                | 27.8               |
| SMAFJ9.0A | SMAFJ9.0CA | AV                   | WV | 9.0                       | 10                 | 11.1 | 1.0          | 10              | 15.4                | 26.0               |
| SMAFJ10A  | SMAFJ10CA  | AX                   | WX | 10                        | 11.1               | 12.3 | 1.0          | 5               | 17.0                | 23.5               |
| SMAFJ11A  | SMAFJ11CA  | AZ                   | WZ | 11                        | 12.2               | 13.5 | 1.0          | 1.0             | 18.2                | 22.0               |
| SMAFJ12A  | SMAFJ12CA  | BE                   | XE | 12                        | 13.3               | 14.7 | 1.0          | 1.0             | 19.9                | 20.1               |
| SMAFJ13A  | SMAFJ13CA  | BG                   | XG | 13                        | 14.4               | 15.9 | 1.0          | 1.0             | 21.5                | 18.6               |
| SMAFJ14A  | SMAFJ14CA  | BK                   | XK | 14                        | 15.6               | 17.2 | 1.0          | 1.0             | 23.2                | 17.2               |
| SMAFJ15A  | SMAFJ15CA  | BM                   | XM | 15                        | 16.7               | 18.5 | 1.0          | 1.0             | 24.4                | 16.4               |
| SMAFJ16A  | SMAFJ16CA  | BP                   | XP | 16                        | 17.8               | 19.7 | 1.0          | 1.0             | 26.0                | 15.4               |
| SMAFJ17A  | SMAFJ17CA  | BR                   | XR | 17                        | 18.9               | 20.9 | 1.0          | 1.0             | 27.6                | 14.5               |
| SMAFJ18A  | SMAFJ18CA  | BT                   | XT | 18                        | 20                 | 22.1 | 1.0          | 1.0             | 29.2                | 13.7               |
| SMAFJ20A  | SMAFJ20CA  | BV                   | XV | 20                        | 22.2               | 24.5 | 1.0          | 1.0             | 32.4                | 12.3               |
| SMAFJ22A  | SMAFJ22CA  | BX                   | XX | 22                        | 24.4               | 26.9 | 1.0          | 1.0             | 35.5                | 11.3               |
| SMAFJ24A  | SMAFJ24CA  | BZ                   | XZ | 24                        | 26.7               | 29.5 | 1.0          | 1.0             | 38.9                | 10.3               |
| SMAFJ26A  | SMAFJ26CA  | CE                   | YE | 26                        | 28.9               | 31.9 | 1.0          | 1.0             | 42.1                | 9.5                |
| SMAFJ28A  | SMAFJ28CA  | CG                   | YG | 28                        | 31.1               | 34.4 | 1.0          | 1.0             | 45.4                | 8.8                |
| SMAFJ30A  | SMAFJ30CA  | CK                   | YK | 30                        | 33.3               | 36.8 | 1.0          | 1.0             | 48.4                | 8.3                |

# SMAFJ5.0(C)A~SMAFJ440(C)A

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Electrical Characteristics(Ta=25 ; )

| Type      |            | Device Marking Ccode |    | Reverse Stand-off Voltage | Breakdown Voltage |                    | Test Current | Reverse Leakage | Max. Clamp Voltage | Peak Pulse Current |     |
|-----------|------------|----------------------|----|---------------------------|-------------------|--------------------|--------------|-----------------|--------------------|--------------------|-----|
|           |            |                      |    |                           | V <sub>RWM</sub>  | V <sub>BR@IT</sub> |              |                 |                    |                    |     |
|           |            |                      |    |                           |                   | Min                |              |                 |                    |                    | Max |
| Uni       | Bi         | Uni                  | Bi | V                         | V                 | V                  | mA           | A               | V                  | A                  |     |
| SMAFJ33A  | SMAFJ33CA  | CM                   | YM | 33                        | 36.7              | 40.6               | 1.0          | 1.0             | 53.3               | 7.5                |     |
| SMAFJ36A  | SMAFJ36CA  | CP                   | YP | 36                        | 40                | 44.2               | 1.0          | 1.0             | 58.1               | 6.9                |     |
| SMAFJ40A  | SMAFJ40CA  | CR                   | YR | 40                        | 44.4              | 49.1               | 1.0          | 1.0             | 64.5               | 6.2                |     |
| SMAFJ43A  | SMAFJ43CA  | CT                   | YT | 43                        | 47.8              | 52.8               | 1.0          | 1.0             | 69.4               | 5.8                |     |
| SMAFJ45A  | SMAFJ45CA  | CV                   | YV | 45                        | 50                | 55.3               | 1.0          | 1.0             | 72.7               | 5.5                |     |
| SMAFJ48A  | SMAFJ48CA  | CX                   | YX | 48                        | 53.3              | 58.9               | 1.0          | 1.0             | 77.4               | 5.2                |     |
| SMAFJ51A  | SMAFJ51CA  | CZ                   | YZ | 51                        | 56.7              | 62.7               | 1.0          | 1.0             | 82.4               | 4.9                |     |
| SMAFJ54A  | SMAFJ54CA  | RE                   | ZE | 54                        | 60                | 66.3               | 1.0          | 1.0             | 87.1               | 4.6                |     |
| SMAFJ58A  | SMAFJ58CA  | RG                   | ZG | 58                        | 64.4              | 71.2               | 1.0          | 1.0             | 93.6               | 4.3                |     |
| SMAFJ60A  | SMAFJ60CA  | RK                   | ZK | 60                        | 66.7              | 73.7               | 1.0          | 1.0             | 96.8               | 4.1                |     |
| SMAFJ64A  | SMAFJ64CA  | RM                   | ZM | 64                        | 71.1              | 78.6               | 1.0          | 1.0             | 103.0              | 3.9                |     |
| SMAFJ70A  | SMAFJ70CA  | RP                   | ZP | 70                        | 77.8              | 86                 | 1.0          | 1.0             | 113.0              | 3.5                |     |
| SMAFJ75A  | SMAFJ75CA  | RR                   | ZR | 75                        | 83.3              | 92.1               | 1.0          | 1.0             | 121.0              | 3.3                |     |
| SMAFJ78A  | SMAFJ78CA  | RT                   | ZT | 78                        | 86.7              | 95.8               | 1.0          | 1.0             | 126.0              | 3.2                |     |
| SMAFJ85A  | SMAFJ85CA  | RV                   | ZV | 85                        | 94.4              | 104                | 1.0          | 1.0             | 137.0              | 2.9                |     |
| SMAFJ90A  | SMAFJ90CA  | RX                   | ZX | 90                        | 100               | 111                | 1.0          | 1.0             | 146.0              | 2.7                |     |
| SMAFJ100A | SMAFJ100CA | RZ                   | ZZ | 100                       | 111               | 123                | 1.0          | 1.0             | 162.0              | 2.5                |     |
| SMAFJ110A | SMAFJ110CA | SE                   | VE | 110                       | 122               | 135                | 1.0          | 1.0             | 177.0              | 2.3                |     |
| SMAFJ120A | SMAFJ120CA | SG                   | VG | 120                       | 133               | 147                | 1.0          | 1.0             | 193.0              | 2.1                |     |
| SMAFJ130A | SMAFJ130CA | SK                   | VK | 130                       | 144               | 159                | 1.0          | 1.0             | 209.0              | 1.9                |     |
| SMAFJ150A | SMAFJ150CA | SM                   | VM | 150                       | 167               | 185                | 1.0          | 1.0             | 243.0              | 1.6                |     |
| SMAFJ160A | SMAFJ160CA | SP                   | VP | 160                       | 178               | 197                | 1.0          | 1.0             | 259.0              | 1.5                |     |
| SMAFJ170A | SMAFJ170CA | SR                   | VR | 170                       | 189               | 209                | 1.0          | 1.0             | 275.0              | 1.5                |     |
| SMAFJ180A | SMAFJ180CA | ST                   | VT | 180                       | 201               | 222                | 1.0          | 1.0             | 292.0              | 1.4                |     |

Electrical Characteristics(Ta=25 ; )

| Type      |            | Device Marking Ccode |     | Reverse Stand-off Voltage | Breakdown Voltage |                    | Test Current | Reverse Leakage | Max. Clamp Voltage | Peak Pulse Current |     |
|-----------|------------|----------------------|-----|---------------------------|-------------------|--------------------|--------------|-----------------|--------------------|--------------------|-----|
|           |            |                      |     |                           | V <sub>RMW</sub>  | V <sub>BR@IT</sub> |              |                 |                    |                    |     |
|           |            |                      |     |                           |                   | Min                |              |                 |                    |                    | Max |
| Uni       | Bi         | Uni                  | Bi  | V                         | V                 | V                  | mA           | A               | V                  | A                  |     |
| SMAFJ200A | SMAFJ200CA | SV                   | V V | 200                       | 224               | 247                | 1.0          | 1.0             | 324.0              | 1.2                |     |
| SMAFJ220A | SMAFJ220CA | SX                   | VX  | 220                       | 246               | 272                | 1.0          | 1.0             | 356                | 1.1                |     |
| SMAFJ250A | SMAFJ250CA | SZ                   | VZ  | 250                       | 279               | 309                | 1.0          | 1.0             | 405.0              | 1.0                |     |
| SMAFJ300A | SMAFJ300CA | TE                   | UE  | 300                       | 335               | 371                | 1.0          | 1.0             | 486.0              | 0.8                |     |
| SMAFJ350A | SMAFJ350CA | TG                   | UG  | 350                       | 391               | 432                | 1.0          | 1.0             | 567.0              | 0.7                |     |
| SMAFJ400A | SMAFJ400CA | TK                   | UK  | 400                       | 447               | 494                | 1.0          | 1.0             | 648.0              | 0.6                |     |
| SMAFJ440A | SMAFJ440CA | TM                   | UM  | 440                       | 492               | 543                | 1.0          | 1.0             | 713.0              | 0.6                |     |

Electrical Characteristic Curve

Fig.1 Peak Pulse Power Rating Curve

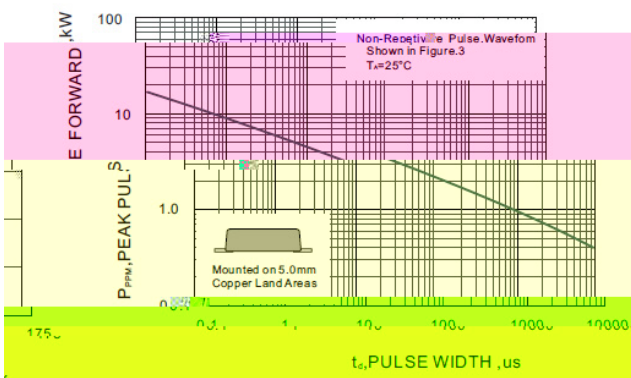


Fig.2 Forward Current Derating Curve

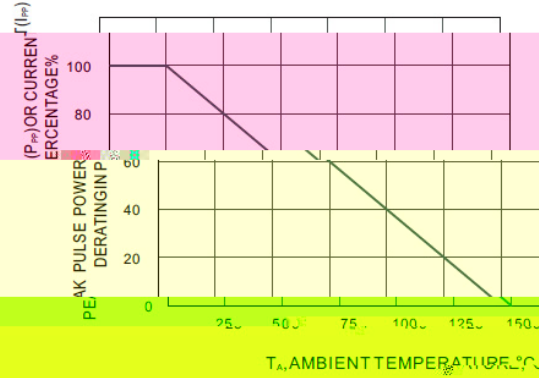


Fig.3 Pulse Waveform

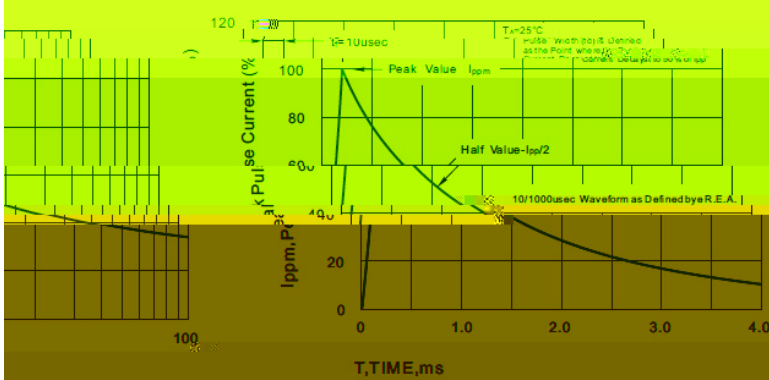
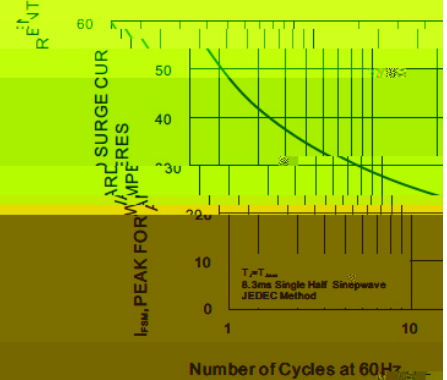
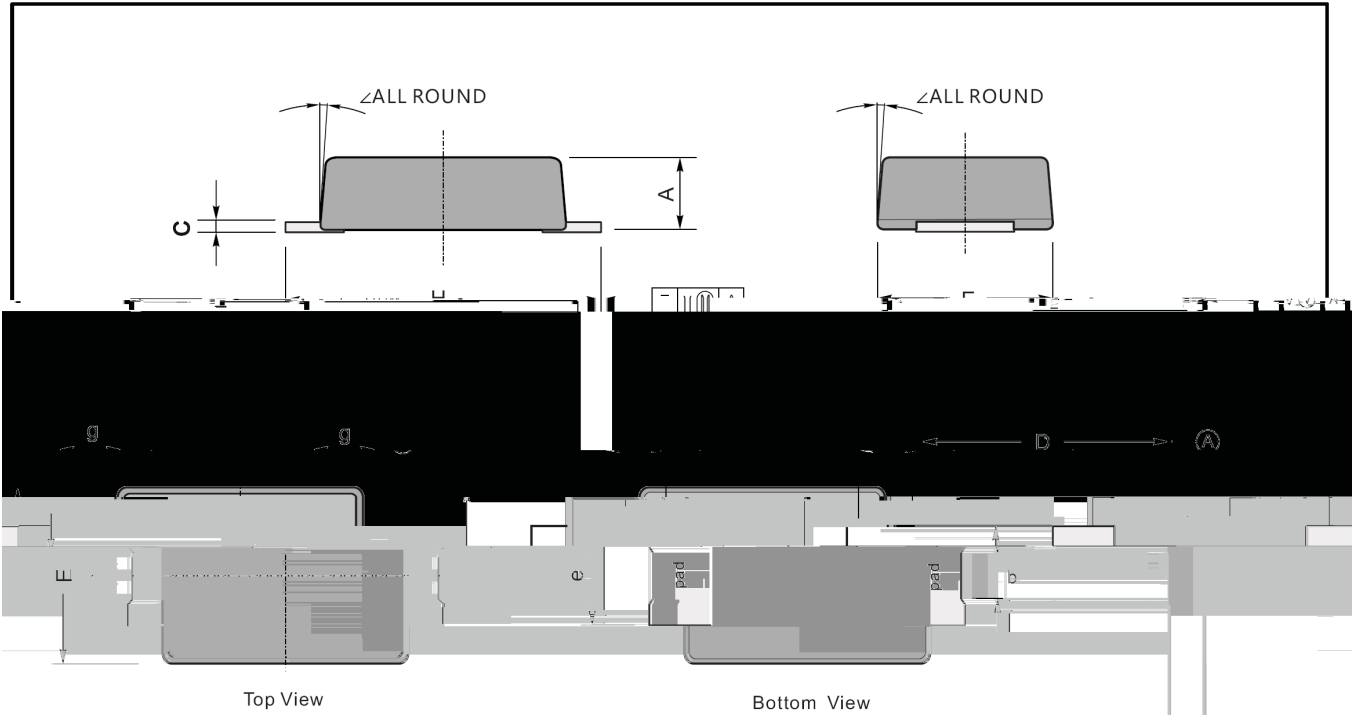


Fig.4 Maximum Non-Repetitive Peak Forward Surge Current



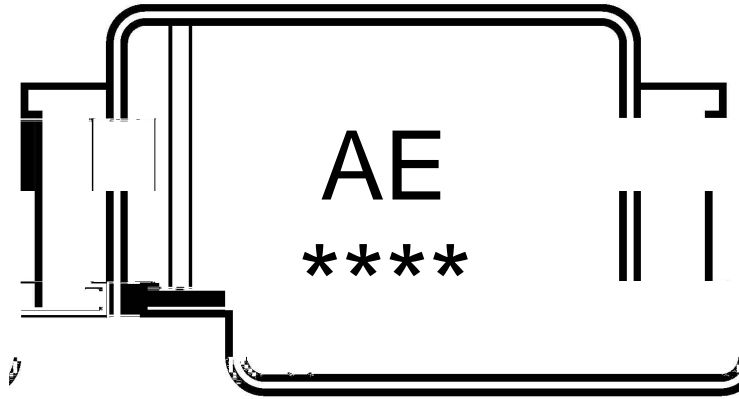
∅ □ = ) ∅ / Package Dimensions



| T   | A   | C    | D    | E   | e   | g   | H <sub>E</sub> | b    | ∠    | UNI |
|-----|-----|------|------|-----|-----|-----|----------------|------|------|-----|
| max | 1.2 | 0.20 | 3.7  | 2.7 | 1.6 | 1.2 | 4.9            | 1.05 |      |     |
| mm  |     |      |      |     |     |     |                |      |      |     |
| min |     | 0.9  | 0.12 | 3.3 | 2.4 | 1.3 | 0.8            | 4.4  | 0.65 | 7°  |
| max |     | 47   | 7.9  | 146 | 106 | 63  | 47             | 193  | 41   |     |
| mil |     |      |      |     |     |     |                |      |      |     |
| min |     | 27   | 4.7  | 120 | 84  | 51  | 34             | 170  | 26   |     |

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' + y      ° Z W A  
 \*\*\*\* y      ÿ D Z AÇ A k †      v ã W A k e µ      ç ã 4 Z W A

Note:

' + y      Product Type Code  
 \*\*\*\* y      Lot No. Code kThe 1st    means:YM Code kThe last 3    means:little Lot No Code

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= + y                      ° Z W A  
 \*\*\*\* y                      ÿ D Z A Ç A k †                      v ã W A k e µ                      ç ã 4 Z W A

Note:

= + y                      Product Type Code  
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