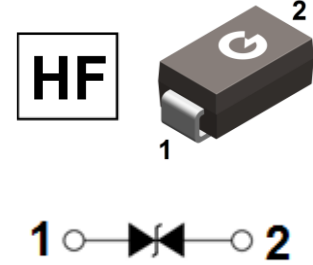


# Transient Voltage Suppressor

## T SMAJ5.0CA - T SMAJ440CA

### Features

- Low profile package with built-in strain relief for SMT applications
- Low incremental surge resistance, excellent clamping capability
- 400W peak pulse power capability with very fast response time
- High temperature soldering guaranteed: 260°C / 10s at terminals
- Bi-directional applications
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 Standards



### Mechanical Data

- Case: SMA molded plastic
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Solder plated; solderable per MIL- STD-202, Method 208

### Maximum Ratings (@T<sub>A</sub> = 25°C unless otherwise specified)

| Parameter                                                   | Symbol                            | Value                  | Unit |
|-------------------------------------------------------------|-----------------------------------|------------------------|------|
| Peak power dissipation with a 10/1000μs waveform *1 (FIG.1) | P <sub>PPM</sub>                  | 400                    | W    |
| Peak pulse current with a 10/1000μs waveform *1             | I <sub>PP</sub>                   | see E. Characteristics | A    |
| Power Dissipation                                           | P <sub>D</sub>                    | 2.14                   | W    |
| Typical Thermal Resistance *2                               | R <sub>θJA</sub>                  | 70                     | °C/W |
|                                                             | R <sub>θJC</sub>                  | 25                     |      |
|                                                             | R <sub>θJL</sub>                  | 30                     |      |
| Operating junction and storage temperature range            | T <sub>J</sub> , T <sub>STG</sub> | -55 ~ +175             | °C   |

Note \*1: Non-repetitive current pulses, per Fig. 3 and derated above T<sub>A</sub> = 25°C

Note \*2: Device mounted on p.c.b. with 10 mm x 20 mm x 0.1 mm copper pad area

# Transient Voltage Suppressor

## T SMAJ5.0CA - T SMAJ440CA

### Electrical Characteristics (@T<sub>A</sub> = 25°C unless otherwise specified)

| Type        | Device Marking Code | Breakdown Voltage V <sub>BR</sub> @ I <sub>T</sub> |      | Test Current   | Reverse Stand off Voltage | Max. Reverse Leakage @ V <sub>RWM</sub> | Max. Peak Pulse Current | Max. Clamping Voltage @ I <sub>PP</sub> |
|-------------|---------------------|----------------------------------------------------|------|----------------|---------------------------|-----------------------------------------|-------------------------|-----------------------------------------|
|             |                     | V                                                  |      | I <sub>T</sub> | V <sub>RWM</sub>          | I <sub>R</sub>                          | I <sub>PP</sub>         | V <sub>C</sub>                          |
|             |                     | Min.                                               | Max. | mA             | V                         | μA                                      | A                       | V                                       |
| T SMAJ5.0CA | AWE                 | 6.4                                                | 7.08 | 10             | 5                         | 800                                     | 43.5                    | 9.2                                     |
| T SMAJ6.0CA | AWG                 | 6.67                                               | 7.37 | 10             | 6                         | 800                                     | 38.8                    | 10.3                                    |
| T SMAJ6.5CA | AWK                 | 7.22                                               | 7.98 | 10             | 6.5                       | 500                                     | 35.7                    | 11.2                                    |
| T SMAJ6.8CA | AFE                 | 7.56                                               | 8.35 | 10             | 6.8                       | 200                                     | 36.4                    | 11                                      |
| T SMAJ7.0CA | AWM                 | 7.78                                               | 8.6  | 10             | 7                         | 200                                     | 33.3                    | 12                                      |
| T SMAJ7.5CA | AWP                 | 8.33                                               | 9.21 | 1              | 7.5                       | 100                                     | 31                      | 12.9                                    |
| T SMAJ8.0CA | AWR                 | 8.89                                               | 9.83 | 1              | 8                         | 50                                      | 29.4                    | 13.6                                    |
| T SMAJ8.5CA | AWT                 | 9.44                                               | 10.4 | 1              | 8.5                       | 10                                      | 27.8                    | 14.4                                    |
| T SMAJ9.0CA | AWV                 | 10                                                 | 11.1 | 1              | 9                         | 5                                       | 26                      | 15.4                                    |
| T SMAJ10CA  | AWX                 | 11.1                                               | 12.3 | 1              | 10                        | 5                                       | 23.5                    | 17                                      |
| T SMAJ11CA  | AWZ                 | 12.2                                               | 13.5 | 1              | 11                        | 1                                       | 22                      | 18.2                                    |
| T SMAJ12CA  | AXE                 | 13.3                                               | 14.7 | 1              | 12                        | 1                                       | 20.1                    | 19.9                                    |
| T SMAJ13CA  | AXG                 | 14.4                                               | 15.9 | 1              | 13                        | 1                                       | 18.6                    | 21.5                                    |
| T SMAJ14CA  | AXK                 | 15.6                                               | 17.2 | 1              | 14                        | 1                                       | 17.2                    | 23.2                                    |
| T SMAJ15CA  | AXM                 | 16.7                                               | 18.5 | 1              | 15                        | 1                                       | 16.4                    | 24.4                                    |
| T SMAJ16CA  | AXP                 | 17.8                                               | 19.7 | 1              | 16                        | 1                                       | 15.4                    | 26                                      |
| T SMAJ17CA  | AXR                 | 18.9                                               | 20.9 | 1              | 17                        | 1                                       | 14.5                    | 27.6                                    |
| T SMAJ18CA  | AXT                 | 20                                                 | 22.4 | 1              | 18                        | 1                                       | 13.7                    | 29.2                                    |
| T SMAJ20CA  | AXV                 | 22.2                                               | 24.5 | 1              | 20                        | 1                                       | 12.3                    | 32.4                                    |
| T SMAJ22CA  | AXX                 | 24.4                                               | 26.9 | 1              | 22                        | 1                                       | 11.3                    | 35.5                                    |
| T SMAJ24CA  | AXZ                 | 26.7                                               | 29.5 | 1              | 24                        | 1                                       | 10.3                    | 38.9                                    |
| T SMAJ26CA  | AYE                 | 28.9                                               | 31.9 | 1              | 26                        | 1                                       | 9.5                     | 42.1                                    |
| T SMAJ28CA  | AYG                 | 31.3                                               | 34.4 | 1              | 28                        | 1                                       | 8.8                     | 45.4                                    |
| T SMAJ30CA  | AYK                 | 33.3                                               | 36.8 | 1              | 30                        | 1                                       | 8.3                     | 48.4                                    |
| T SMAJ33CA  | AYM                 | 36.7                                               | 40.6 | 1              | 33                        | 1                                       | 7.5                     | 53.3                                    |
| T SMAJ36CA  | AYP                 | 40                                                 | 44.2 | 1              | 36                        | 1                                       | 6.9                     | 58.1                                    |
| T SMAJ40CA  | AYR                 | 44.4                                               | 49.1 | 1              | 40                        | 1                                       | 6.2                     | 64.5                                    |
| T SMAJ45CA  | AYV                 | 50                                                 | 55.3 | 1              | 45                        | 1                                       | 5.5                     | 72.7                                    |
| T SMAJ48CA  | AYX                 | 53.3                                               | 58.9 | 1              | 48                        | 1                                       | 5.2                     | 77.4                                    |
| T SMAJ50CA  | AFG                 | 55.5                                               | 61.3 | 1              | 50                        | 1                                       | 4.9                     | 81                                      |
| T SMAJ51CA  | AYZ                 | 56.7                                               | 62.7 | 1              | 51                        | 1                                       | 4.9                     | 82.4                                    |

## Transient Voltage Suppressor

## TSM AJ5.0CA - TSM AJ440CA

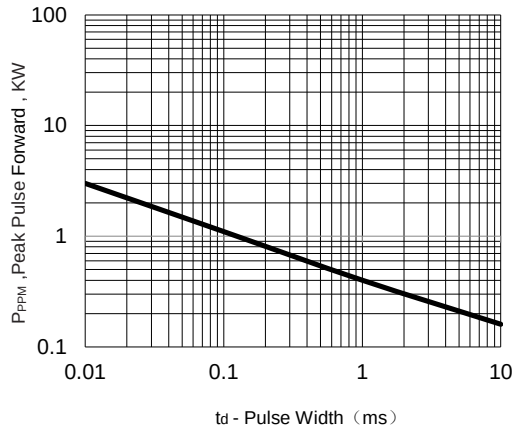
| Type        | Device Marking Code | Breakdown Voltage $V_{BR}$ @ $I_T$ |       | Test Current | Reverse Stand off Voltage | Max. Reverse Leakage @ $V_{RWM}$ | Max. Peak Pulse Current | Max. Clamping Voltage @ $I_{PP}$ |
|-------------|---------------------|------------------------------------|-------|--------------|---------------------------|----------------------------------|-------------------------|----------------------------------|
|             |                     | V                                  |       | $I_T$        | $V_{RWM}$                 | $I_R$                            | $I_{PP}$                | $V_C$                            |
|             |                     | Min.                               | Max.  | mA           | V                         | $\mu A$                          | A                       | V                                |
| TSM AJ56CA  | AUZ                 | 62.2                               | 68.8  | 1            | 56                        | 1                                | 4.4                     | 90.3                             |
| TSM AJ58CA  | AZG                 | 64.4                               | 71.2  | 1            | 58                        | 1                                | 4.3                     | 93.6                             |
| TSM AJ60CA  | AZK                 | 66.7                               | 73.7  | 1            | 60                        | 1                                | 4.1                     | 96.8                             |
| TSM AJ63CA  | AZM                 | 69.9                               | 77.2  | 1            | 63                        | 1                                | 3.9                     | 102.1                            |
| TSM AJ64CA  | AZP                 | 71.1                               | 78.6  | 1            | 64                        | 1                                | 3.9                     | 103                              |
| TSM AJ70CA  | AFK                 | 77.8                               | 86    | 1            | 70                        | 1                                | 3.5                     | 113                              |
| TSM AJ75CA  | AZR                 | 83.3                               | 92.1  | 1            | 75                        | 1                                | 3.3                     | 121                              |
| TSM AJ78CA  | AZT                 | 86.7                               | 95.8  | 1            | 78                        | 1                                | 3.2                     | 126                              |
| TSM AJ85CA  | AZV                 | 94.4                               | 104   | 1            | 85                        | 1                                | 2.9                     | 137                              |
| TSM AJ90CA  | AZX                 | 100                                | 111   | 1            | 90                        | 1                                | 2.7                     | 146                              |
| TSM AJ100CA | AZZ                 | 111                                | 123   | 1            | 100                       | 1                                | 2.5                     | 162                              |
| TSM AJ110CA | AVE                 | 122                                | 135   | 1            | 110                       | 1                                | 2.3                     | 177                              |
| TSM AJ120CA | AVG                 | 133                                | 147   | 1            | 120                       | 1                                | 2.1                     | 193                              |
| TSM AJ130CA | AVK                 | 144                                | 159   | 1            | 130                       | 1                                | 1.9                     | 209                              |
| TSM AJ150CA | AVM                 | 167                                | 185   | 1            | 150                       | 1                                | 1.6                     | 243                              |
| TSM AJ160CA | AVP                 | 178                                | 197   | 1            | 160                       | 1                                | 1.5                     | 259                              |
| TSM AJ170CA | AVR                 | 189                                | 209   | 1            | 170                       | 1                                | 1.5                     | 275                              |
| TSM AJ175CA | AFM                 | 194.6                              | 215.2 | 1            | 175                       | 1                                | 1.4                     | 280.3                            |
| TSM AJ180CA | AUX                 | 200                                | 221   | 1            | 180                       | 1                                | 1.4                     | 291                              |
| TSM AJ188CA | AVS                 | 209                                | 231   | 1            | 188                       | 1                                | 1.3                     | 304                              |
| TSM AJ200CA | AVV                 | 222                                | 246   | 1            | 200                       | 1                                | 1.2                     | 323                              |
| TSM AJ220CA | AVX                 | 245                                | 270   | 1            | 220                       | 1                                | 1.1                     | 355                              |
| TSM AJ240CA | AVZ                 | 267                                | 295   | 1            | 240                       | 1                                | 1                       | 388                              |
| TSM AJ250CA | AUT                 | 278                                | 307   | 1            | 250                       | 1                                | 1                       | 404                              |
| TSM AJ300CA | AUG                 | 333                                | 368   | 1            | 300                       | 1                                | 0.8                     | 485                              |
| TSM AJ350CA | AUR                 | 389                                | 430   | 1            | 350                       | 1                                | 0.7                     | 565                              |
| TSM AJ360CA | AUK                 | 400                                | 442   | 1            | 360                       | 1                                | 0.7                     | 582                              |
| TSM AJ400CA | AUM                 | 445                                | 491   | 1            | 400                       | 1                                | 0.6                     | 646                              |
| TSM AJ440CA | AUP                 | 489                                | 540   | 1            | 440                       | 1                                | 0.6                     | 711                              |

# Transient Voltage Suppressor

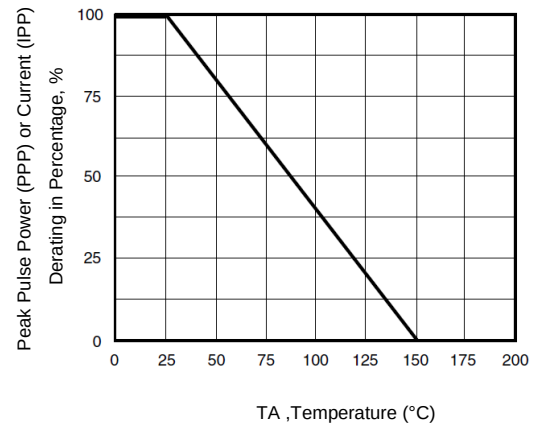
## TSM AJ5.0CA - TSM AJ440CA

### Ratings and Characteristic Curves (@ $T_A=25^{\circ}\text{C}$ unless otherwise noted)

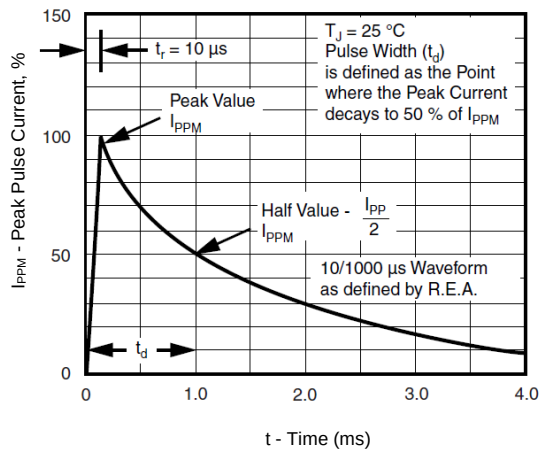
**Fig.1 Peak Pulse Power Rating Curve**



**Fig.2 DERATING CURVE**



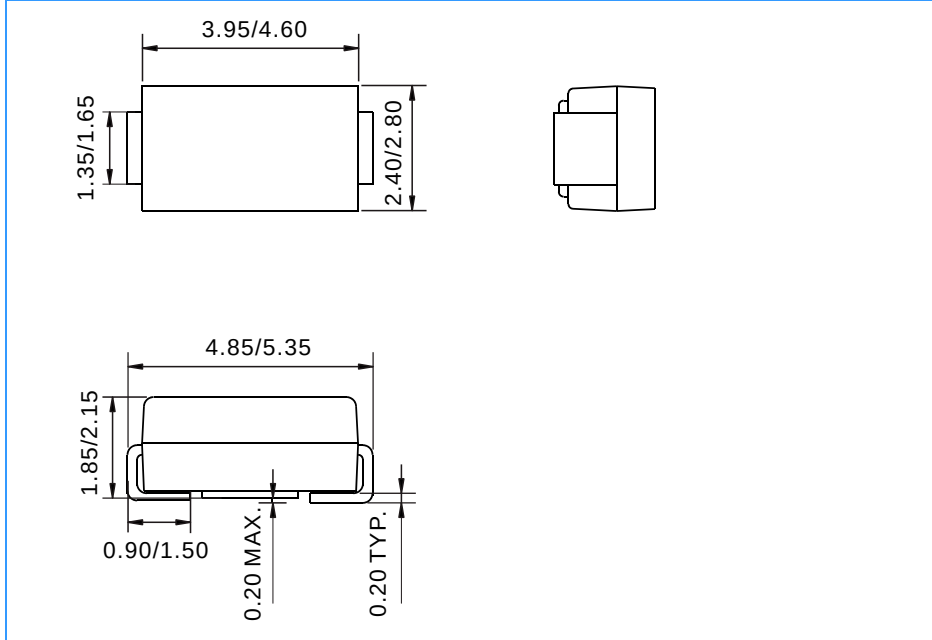
**Fig.3 Pulse Waveform**



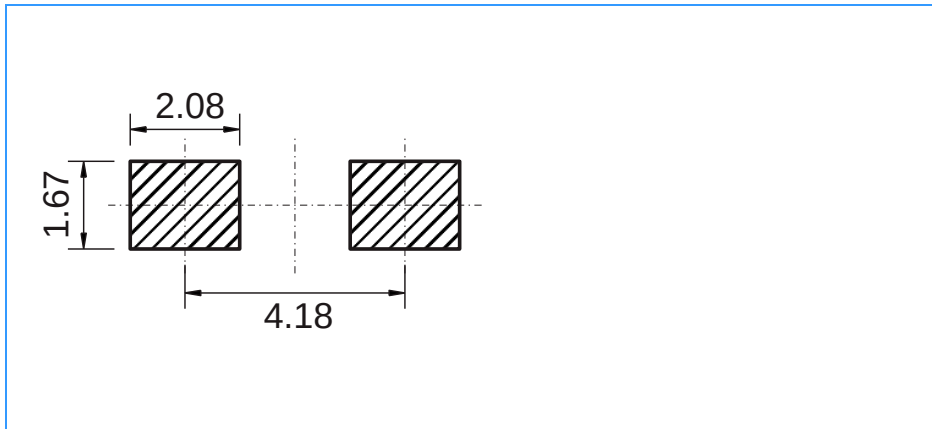
# Transient Voltage Suppressor

T SMAJ5.0CA - T SMAJ440CA

## Package Outline Dimensions (Unit: mm)



## Mounting Pad Layout (Unit: mm)



## Ordering Information

| Part Number               | Package | Shipping Quantity      |
|---------------------------|---------|------------------------|
| T SMAJ5.0CA - T SMAJ440CA | SMA     | 5000 pcs / Tape & Reel |