

## 1500W Surface Mount Transient Voltage Suppressor

### Features

- Stand-off voltage from 5.0 to 440 volts
- Glass passivated junction
- 1500W peak pulse power capability with a 10/1000 $\mu$ s waveform, repetition rate(duty cycle): 0.01%
- Fast response time: typically less than 1.0ps from 0v to VBR
- Low incremental surge resistance, excellent clamping capability
- High temperature soldering guaranteed: 250°C/10 seconds at terminals
- This series is UL recognized under component index. File number E315008



### Maximum Ratings ( $T_{Ambient}=25^{\circ}C$ unless noted otherwise)

| Symbol                                | Description                                                                      | Value        | Unit | Conditions      |
|---------------------------------------|----------------------------------------------------------------------------------|--------------|------|-----------------|
| <b>V<sub>WM</sub></b>                 | Stand-Off Voltage                                                                | 5.0 to 440   | V    |                 |
| <b>P<sub>PPM</sub></b>                | Peak Pulse Power Dissipation on 10/1000 $\mu$ s Waveform(1) (2)                  | Minimum 1500 | W    |                 |
| <b>I<sub>PPM</sub></b>                | Peak Pulse Current on 10/1000 $\mu$ s Waveform(1)                                | See Table    | A    |                 |
| <b>I<sub>FSM</sub></b>                | Peak Forward Surge Current 8.3ms Single Half Sine-wave, Uni-directional only (2) | 200          | A    |                 |
| <b>V<sub>F</sub></b>                  | Maximum Instantaneous Forward Voltage for Uni-directional only                   | 3.5          | V    | SMCJ5.0~SMCJ90  |
|                                       |                                                                                  | 5.0          |      | SMCJ100~SMCJ440 |
| <b>T<sub>J</sub>, T<sub>STG</sub></b> | Operating Junction and Storage Temperature Range                                 | -55 to 150   | ° C  |                 |

**Notes:** (1) Non-repetitive current pulse, per Fig.3 and derated above  $T_A = 25^{\circ}C$  per Fig. 2  
 (2) Mounted on 0.31 x 0.31" (8.0 x 8.0mm) copper pads to each terminal  
 (3) Mounted on minimum recommended pad layout

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## SMCJ 5.0A - 440CA

### Mechanical Data

|                           |                                                        |
|---------------------------|--------------------------------------------------------|
| <b>Case:</b>              | JEDEC DO-214AB(SMC) molded plastic                     |
| <b>Epoxy:</b>             | Meets UL 94V-0 flammability rating                     |
| <b>Terminals:</b>         | Solder plated, solderable per MIL-STD-750, Method 2026 |
| <b>Polarity:</b>          | Cathode indicated by color band except Bi-directional  |
| <b>Mounting Position:</b> | Any                                                    |
| <b>Weight:</b>            | 0.007 ounce, 0. 21 gram                                |

### Electrical Characteristics ( $T_{Ambient}=25^{\circ}C$ unless noted otherwise)

| P/N (note3) |           | Device Marking Code |     | Stand-Off Voltage | Breakdown Voltage @ |      | Max. Clamping Vltg. @ IPPM | Max. Peak Pulse Current | Max. Reverse Leakage Current @ V WM |                 |
|-------------|-----------|---------------------|-----|-------------------|---------------------|------|----------------------------|-------------------------|-------------------------------------|-----------------|
|             |           |                     |     |                   | Test Current        |      |                            |                         |                                     |                 |
| Uni-Polar   | Bi-Polar  | Uni                 | Bi  | V WM (V)          | V BR                |      | IT(mA)                     | VC (V)                  | IPPM (A) (note1)                    | ID (μA) (note2) |
|             |           |                     |     |                   | Min.                | Max. |                            |                         |                                     |                 |
| SMCJ5.0A    | SMCJ5.0CA | GDE                 | GDE | 5.0               | 6.4                 | 7.07 | 10                         | 9.2                     | 163.0                               | 800             |
| SMCJ6.0A    | SMCJ6.0CA | GDG                 | GDG | 6.0               | 6.67                | 7.37 |                            | 10.3                    | 145.6                               | 800             |
| SMCJ6.5A    | SMCJ6.5CA | GDK                 | BDK | 6.5               | 7.22                | 7.98 |                            | 11.2                    | 133.9                               | 500             |
| SMCJ7.0A    | SMCJ7.0CA | GDM                 | GDM | 7.0               | 7.78                | 8.60 |                            | 12.0                    | 125.0                               | 200             |
| SMCJ7.5A    | SMCJ7.5CA | GDP                 | BDP | 7.5               | 8.33                | 9.21 | 1.0                        | 12.9                    | 116.3                               | 100             |
| SMCJ8.0A    | SMCJ8.0CA | GDR                 | BDR | 8.0               | 8.89                | 9.83 |                            | 13.6                    | 110.3                               | 50              |
| SMCJ8.5A    | SMCJ8.5CA | GDT                 | BDT | 8.5               | 9.44                | 10.4 |                            | 14.4                    | 104.2                               | 10              |
| SMCJ9.0A    | SMCJ9.0CA | GDV                 | BDV | 9.0               | 10.0                | 11.1 |                            | 15.4                    | 97.4                                | 5.0             |
| SMCJ10A     | SMCJ10CA  | GDX                 | BDX | 10.0              | 11.1                | 12.3 |                            | 17.0                    | 88.2                                | 5.0             |
| SMCJ11A     | SMCJ11CA  | GDZ                 | GDZ | 11.0              | 12.2                | 13.5 |                            | 18.2                    | 82.4                                | 1.0             |
| SMCJ12A     | SMCJ12CA  | GEE                 | BEE | 12.0              | 13.3                | 14.7 |                            | 19.9                    | 75.4                                | 1.0             |
| SMCJ13A     | SMCJ13CA  | GEG                 | GEG | 13.0              | 14.4                | 15.9 |                            | 21.5                    | 69.8                                | 1.0             |
| SMCJ14A     | SMCJ14CA  | GEK                 | BEK | 14.0              | 15.6                | 17.2 |                            | 23.2                    | 64.7                                | 1.0             |
| SMCJ15A     | SMCJ15CA  | GEM                 | BEM | 15.0              | 16.7                | 18.5 |                            | 24.4                    | 61.5                                | 1.0             |
| SMCJ16A     | SMCJ16CA  | GEP                 | GEP | 16.0              | 17.8                | 19.7 |                            | 26.0                    | 57.7                                | 1.0             |
| SMCJ17A     | SMCJ17CA  | GER                 | GER | 17.0              | 18.9                | 20.9 |                            | 27.6                    | 54.3                                | 1.0             |

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## SMCJ 5.0A - 440CA

| P/N (note3) |           | Device Marking Code |     | Stand-Off Voltage | Breakdown Voltage @ |      | Max. Clamping Vltg. @ IPPM | Max. Peak Pulse Current | Max. Reverse Leakage Current @ V WM |                 |
|-------------|-----------|---------------------|-----|-------------------|---------------------|------|----------------------------|-------------------------|-------------------------------------|-----------------|
|             |           |                     |     |                   | Test Current        |      |                            |                         |                                     |                 |
| Uni-Polar   | Bi-Polar  | Uni                 | Bi  | V WM (V)          | V BR                |      | IT(mA)                     | VC (V)                  | IPPM (A) (note1)                    | ID (μA) (note2) |
|             |           |                     |     |                   | Min.                | Max. |                            |                         |                                     |                 |
| SMCJ18A     | SMCJ18CA  | GET                 | BET | 18.0              | 20.0                | 22.1 | 1.0                        | 29.2                    | 51.4                                | 1.0             |
| SMCJ20A     | SMCJ20CA  | GEV                 | BEV | 20.0              | 22.2                | 24.5 |                            | 32.4                    | 46.3                                | 1.0             |
| SMCJ22A     | SMCJ22CA  | GEX                 | BEX | 22.0              | 24.4                | 26.9 |                            | 35.5                    | 42.3                                | 1.0             |
| SMCJ24A     | SMCJ24CA  | GEZ                 | BEZ | 24.0              | 26.7                | 29.5 |                            | 38.9                    | 38.6                                | 1.0             |
| SMCJ26A     | SMCJ26CA  | GFE                 | BFE | 26.0              | 28.9                | 31.9 |                            | 42.1                    | 35.6                                | 1.0             |
| SMCJ28A     | SMCJ28CA  | GFG                 | BFG | 28.0              | 31.1                | 34.4 |                            | 45.4                    | 33.0                                | 1.0             |
| SMCJ30A     | SMCJ30CA  | GFK                 | BFK | 30.0              | 33.3                | 36.8 |                            | 48.4                    | 31.0                                | 1.0             |
| SMCJ33A     | SMCJ33CA  | GFM                 | BFM | 33.0              | 36.7                | 40.6 |                            | 53.3                    | 28.1                                | 1.0             |
| SMCJ36A     | SMCJ36CA  | GFP                 | BFP | 36.0              | 40.0                | 44.2 |                            | 58.1                    | 25.8                                | 1.0             |
| SMCJ40A     | SMCJ40CA  | GFR                 | BFR | 40.0              | 44.4                | 49.1 |                            | 64.5                    | 23.3                                | 1.0             |
| SMCJ43A     | SMCJ43CA  | GFT                 | BFT | 43.0              | 47.8                | 52.8 |                            | 69.4                    | 21.6                                | 1.0             |
| SMCJ45A     | SMCJ45CA  | GFV                 | GFV | 45.0              | 50.0                | 55.3 |                            | 72.7                    | 20.6                                | 1.0             |
| SMCJ48A     | SMCJ48CA  | GFX                 | GFX | 48.0              | 53.3                | 58.9 |                            | 77.4                    | 19.4                                | 1.0             |
| SMCJ51A     | SMCJ51CA  | GFZ                 | GFZ | 51.0              | 56.7                | 62.7 |                            | 82.4                    | 18.2                                | 1.0             |
| SMCJ54A     | SMCJ54CA  | GGE                 | GGE | 54.0              | 60.0                | 66.3 |                            | 87.1                    | 17.2                                | 1.0             |
| SMCJ58A     | SMCJ58CA  | GGG                 | GGG | 58.0              | 64.4                | 71.2 |                            | 93.6                    | 16.0                                | 1.0             |
| SMCJ60A     | SMCJ60CA  | GGK                 | GGK | 60.0              | 66.7                | 73.7 |                            | 96.8                    | 15.5                                | 1.0             |
| SMCJ64A     | SMCJ64CA  | GGM                 | GGM | 64.0              | 71.1                | 78.6 |                            | 103                     | 14.6                                | 1.0             |
| SMCJ70A     | SMCJ70CA  | GGP                 | GGP | 70.0              | 77.8                | 86.0 |                            | 113                     | 13.3                                | 1.0             |
| SMCJ75A     | SMCJ75CA  | GGR                 | GGR | 75.0              | 83.3                | 92.1 |                            | 121                     | 12.4                                | 1.0             |
| SMCJ78A     | SMCJ78CA  | GGT                 | GGT | 78.0              | 86.7                | 95.8 |                            | 126                     | 11.9                                | 1.0             |
| SMCJ85A     | SMCJ85CA  | GGV                 | GGV | 85.0              | 94.4                | 104  |                            | 137                     | 10.9                                | 1.0             |
| SMCJ90A     | SMCJ90CA  | GGX                 | GGX | 90.0              | 100                 | 111  |                            | 146                     | 10.3                                | 1.0             |
| SMCJ100A    | SMCJ100CA | GGZ                 | GGZ | 100               | 111                 | 123  |                            | 162                     | 9.3                                 | 1.0             |
| SMCJ110A    | SMCJ110CA | GHE                 | GHE | 110               | 122                 | 135  |                            | 177                     | 8.5                                 | 1.0             |
| SMCJ120A    | SMCJ120CA | GHG                 | GHG | 120               | 133                 | 147  |                            | 193                     | 7.8                                 | 1.0             |

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## SMCJ 5.0A - 440CA

| P/N (note3) |           | Device Marking Code |     | Stand-Off Voltage | Breakdown Voltage Test Current @ |      |     | Max. Clamping Vltg. @ IPPM | Max. Peak Pulse Current | Max. Reverse Leakage Current @ V WM |
|-------------|-----------|---------------------|-----|-------------------|----------------------------------|------|-----|----------------------------|-------------------------|-------------------------------------|
|             |           |                     |     |                   | V BR                             |      |     |                            |                         |                                     |
| Uni-Polar   | Bi-Polar  | Uni                 | Bi  | V WM (V)          | Min.                             | Max. |     | V C (V)                    | IPPM (A) (note1)        | ID (μA) (note2)                     |
| SMCJ130A    | SMCJ130CA | GHK                 | GHK | 130               | 144                              | 159  | 1.0 | 209                        | 7.2                     | 1.0                                 |
| SMCJ150A    | SMCJ150CA | GHM                 | GHM | 150               | 167                              | 185  |     | 243                        | 6.2                     | 1.0                                 |
| SMCJ160A    | SMCJ160CA | GHP                 | GHP | 160               | 178                              | 197  |     | 259                        | 5.8                     | 1.0                                 |
| SMCJ170A    | SMCJ170CA | GHR                 | GHR | 170               | 189                              | 209  |     | 275                        | 5.5                     | 1.0                                 |
| SMCJ180A    | SMCJ180CA | GHT                 | BHT | 180               | 201                              | 222  |     | 292                        | 5.1                     | 1.0                                 |
| SMCJ200A    | SMCJ200CA | GHV                 | BHV | 200               | 224                              | 247  |     | 324                        | 4.6                     | 1.0                                 |
| SMCJ220A    | SMCJ220CA | GHX                 | BHX | 220               | 246                              | 272  |     | 356                        | 4.2                     | 1.0                                 |
| SMCJ250A    | SMCJ250CA | GHZ                 | BHZ | 250               | 279                              | 309  |     | 405                        | 3.7                     | 1.0                                 |
| SMCJ300A    | SMCJ300CA | GJE                 | BJE | 300               | 335                              | 371  |     | 486                        | 3.1                     | 1.0                                 |
| SMCJ350A    | SMCJ350CA | GJG                 | BJG | 350               | 391                              | 432  |     | 567                        | 2.6                     | 1.0                                 |
| SMCJ400A    | SMCJ400CA | GJK                 | BJK | 400               | 447                              | 494  |     | 648                        | 2.3                     | 1.0                                 |
| SMCJ440A    | SMCJ440CA | GJM                 | BJM | 440               | 492                              | 543  |     | 713                        | 2.1                     | 1.0                                 |

- Note:**
1. Surge current waveform per Fig. 3 and derate per Fig. 2
  2. For Bi-directional types with V<sub>WM</sub> of 10 volts and less, the I<sub>D</sub> limit is doubled.
  3. C suffix for Bidirectional use, A suffix for 5% tolerance.

## Typical Characteristics Curves

Fig.1- Peak Pulse Power Rating Curve

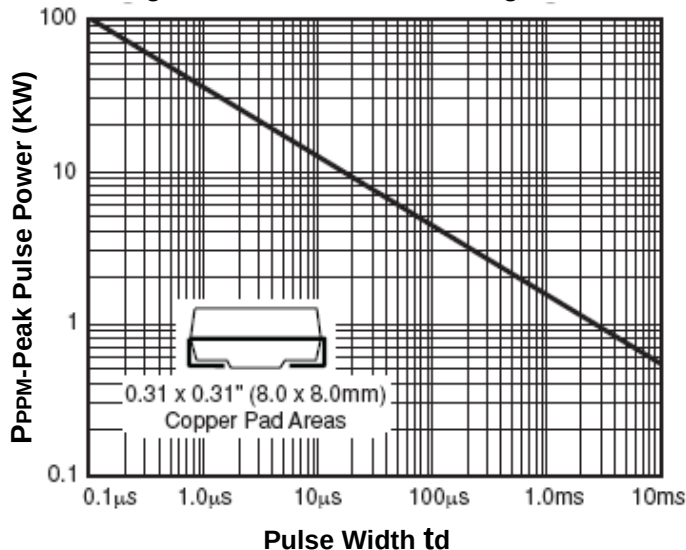
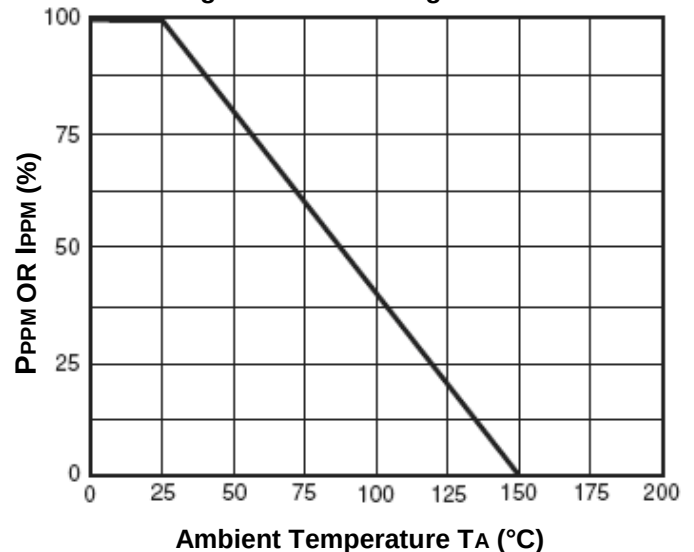


Fig.2- Pulse Derating Curve



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## SMCJ 5.0A - 440CA

Fig.3- Pulse Waveform

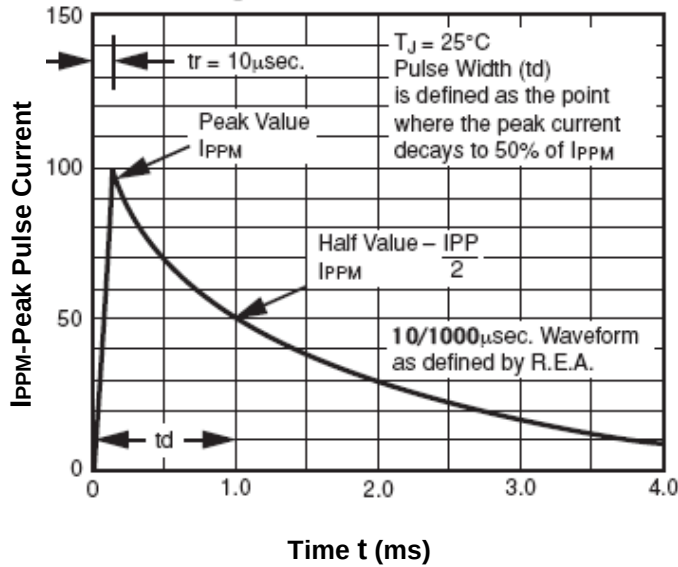


Fig.4- Max. Non-Repetitive Forward Surge Current Uni-directional only

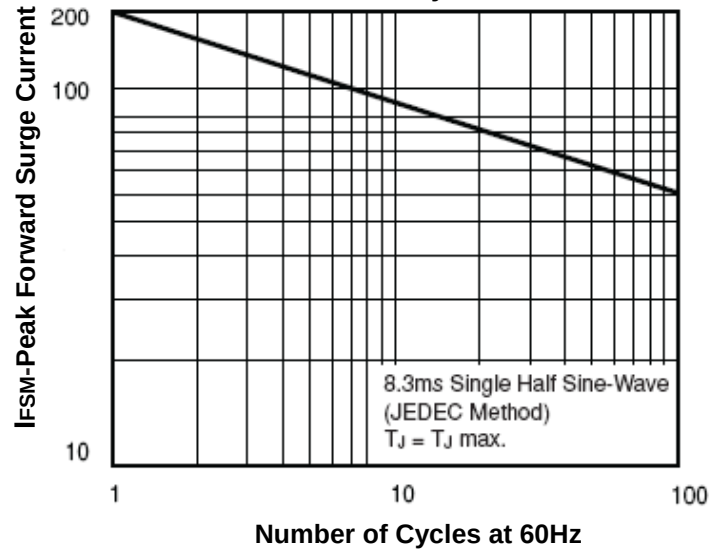
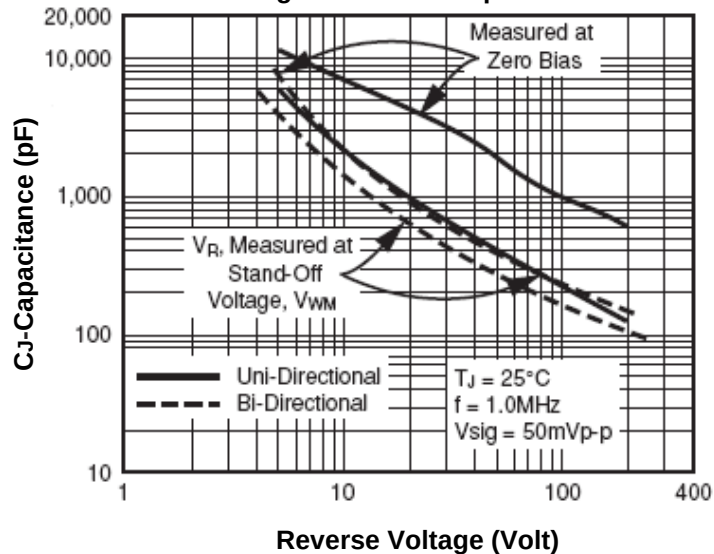


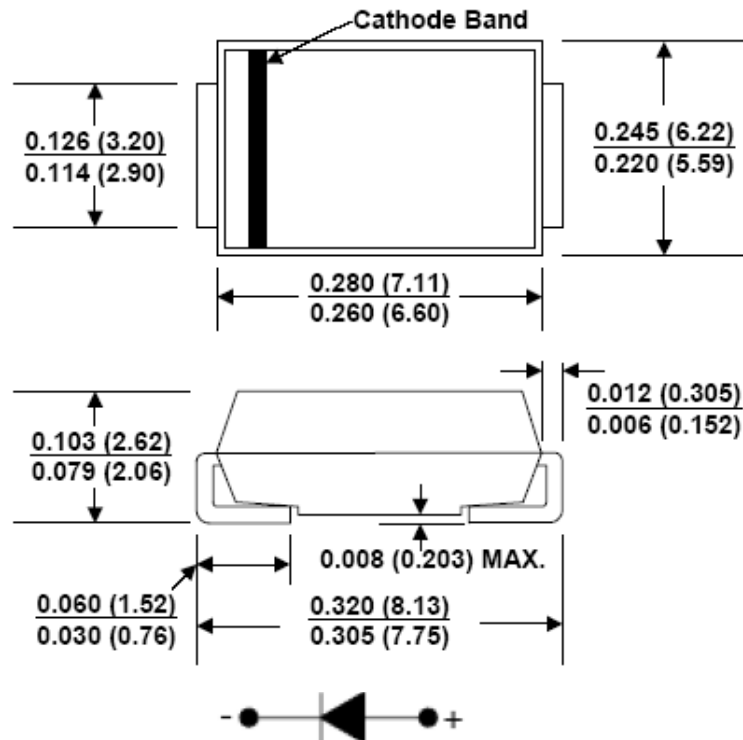
Fig.5- Junction Capacitance



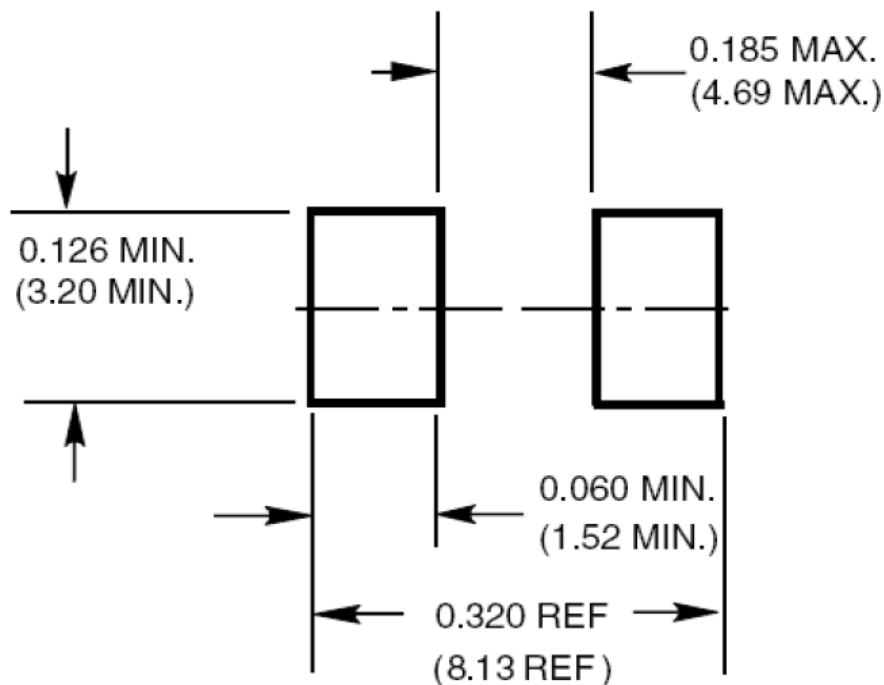
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SMCJ 5.0A - 440CA

Dimensions in inch (mm)



Soldering Pad in inch (mm)



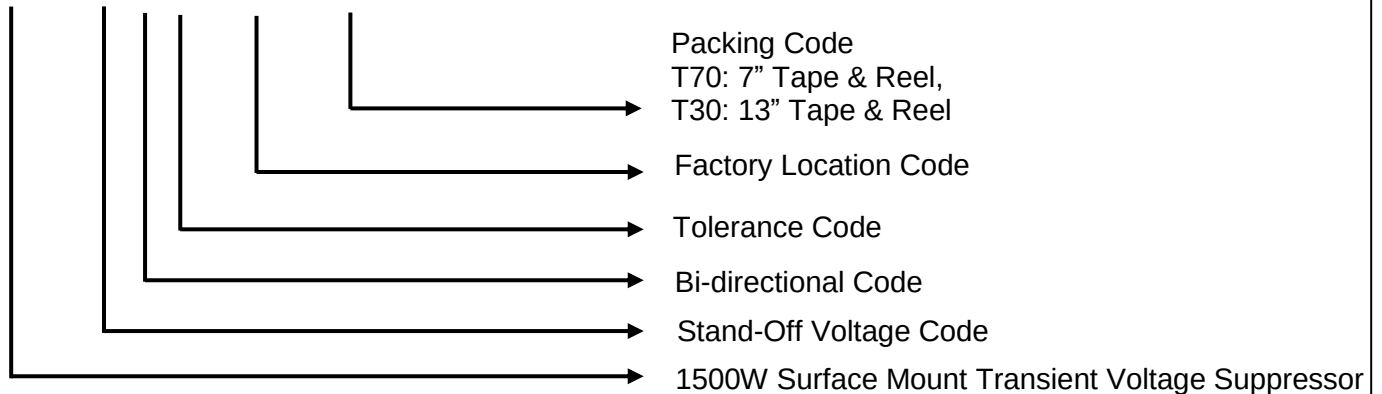
SMC

# 1500W Surface Mount Transient Voltage Suppressor

## SMCJ 5.0A - 440CA

### Ordering Information

SMCJ XX C A - XX - XX



### How to contact us:

#### USA HEADQUARTERS

28040 WEST HARRISON PARKWAY, VALENCIA, CA 91355-4162

Tel: (800)-TAITRON (800)-824-8766 (661)-257-6060

Fax: (800)-TAITFAX (800)-824-8329 (661)-257-6415

Email: [taitron@taitroncomponents.com](mailto:taitron@taitroncomponents.com)

Http://[www.taitroncomponents.com](http://www.taitroncomponents.com)

#### TAITRON COMPONENTS INCORPORATED TAIWAN BRANCH

6F., NO.190, SEC. 2, ZHONGXING RD., XINDIAN DIST., NEW TAIPEI CITY 23146, TAIWAN R.O.C.

Tel: 886-2-2913-6238

Fax: 886-2-2913-6239

#### TAITRON COMPONENT TECHNOLOG SHANGHAI CORPORATION

SUITE 1503, METROBANK PLAZA, 1160 WEST YAN'AN ROAD, SHANGHAI, 200052, CHINA

Tel: +86-21-5424-9942

Fax: +86-21-2302-5027