



Micro Commercial Components



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## SMAJ5.0 THRU SMAJ440CA

### Features

- Halogen free available upon request by adding suffix "-HF"
- For Surface Mount Applications
- Unidirectional And Bidirectional
- Low Inductance
- High Temp Soldering: 260°C for 10 Seconds At Terminals
- For Bidirectional Devices Add "C" To The Suffix of The Part Number: i.e.SMAJ5.0CA for 5% Tolerance
- Lead Free Finish/Rohs Compliant (Note1) ("P" Suffix designates Compliant. See ordering information)
- UL Recognized File # E331408

### Mechanical Data

- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Polarity: Indicated by cathode band except bi-directional types

### Maximum Rating:

- Operating Temperature: -55°C to +175°C
- Storage Temperature: -55°C to +175°C
- Typical Thermal Resistance: 100°C/W Junction to Ambient

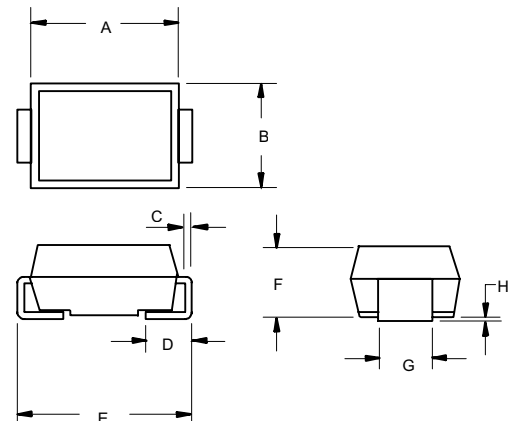
|                                          |                    |             |           |
|------------------------------------------|--------------------|-------------|-----------|
| Peak Pulse Current on 10/1000µs Waveform | I <sub>PPM</sub>   | See Table 1 | Note 2    |
| Peak Pulse Power Dissipation             | P <sub>PPM</sub>   | Min 400 W   | Note 2, 6 |
| Steady State Power Dissipation           | P <sub>M(AV)</sub> | 1.5 W       | Note 2, 5 |

Note: 1. High Temperature Solder Exemptions Applied, see EU Directive Annex 7.

2. Non-repetitive current pulse, per Fig.3 and derated above T<sub>A</sub>=25°C per Fig.2.
3. Mounted on 5.0mm<sup>2</sup> copper pads to each terminal.
4. 8.3ms, single half sine wave duty cycle = 4 pulses per Minutes maximum.
5. Lead temperature at T<sub>L</sub> = 75°C.
6. Peak pulse power waveform is 10/1000µs.

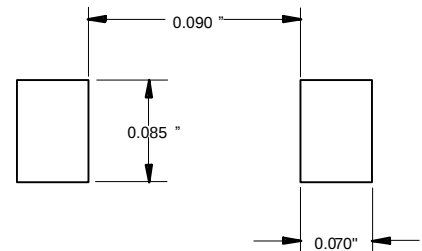
## 400 Watt Transient Voltage Suppressors 5.0 to 440 Volts

### DO-214AC (SMA)(LEAD FRAME)



| DIM | INCHES |      | MM    |       | NOTE |
|-----|--------|------|-------|-------|------|
|     | MIN    | MAX  | MIN   | MAX   |      |
| A   | .157   | .181 | 4.00  | 4.60  |      |
| B   | .098   | .114 | 2.50  | 2.90  |      |
| C   | .006   | .012 | 0.152 | 0.305 |      |
| D   | .030   | .060 | 0.76  | 1.52  |      |
| E   | .188   | .208 | 4.80  | 5.28  |      |
| F   | .078   | .096 | 2.00  | 2.44  |      |
| G   | .050   | .064 | 1.27  | 1.63  |      |
| H   | .002   | .008 | 0.051 | 0.203 |      |

### SUGGESTED SOLDER PAD LAYOUT



# SMAJ5.0 thru SMAJ440CA



Fig. 1-PEAK PULSE POWER RATING CURVE



Fig. 2-PULSE RATING CURVE

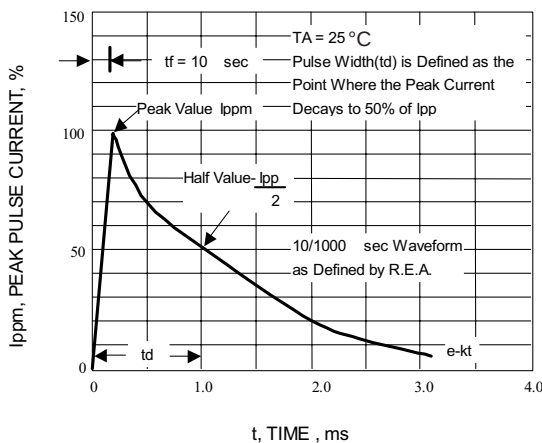


Fig. 3-PULSE WAVEFORM

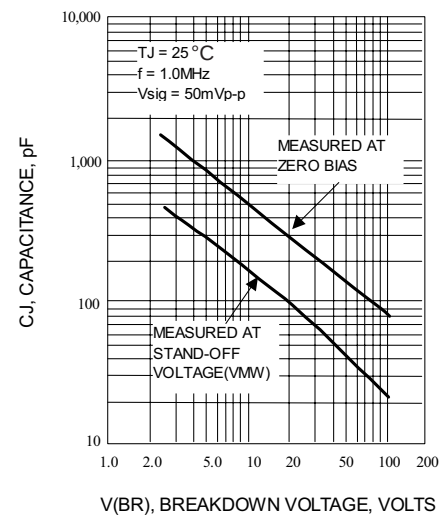


Fig. 4-TYPICAL JUNCTION CAPACITANCE

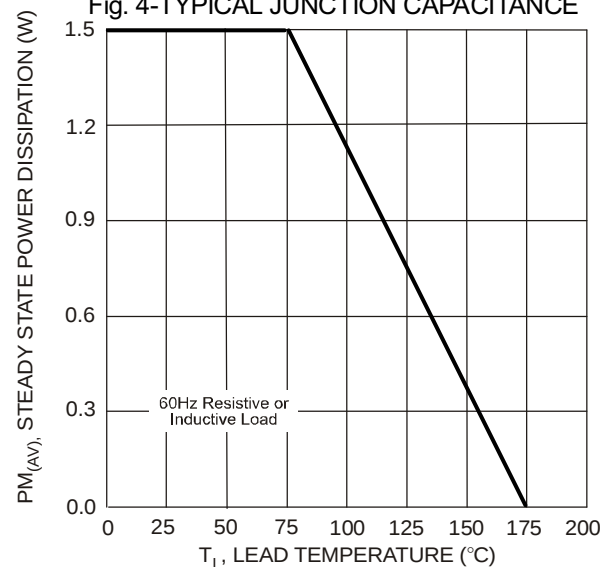


Fig.5-Steady State Power Derating Curve

# SMAJ5.0 thru SMAJ440CA



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## ELECTRICAL CHARACTERISTICS @25°C

| MCC<br>PART NUMBER |           | REVERSE<br>STAND-OFF<br>VOLTAGE<br>$V_{WM}$ | BREAKDOWN VOLTAGE<br>$V_{(BR)}$ @ $I_T$<br>(VOLTS) |      |            | MAXIMUM<br>CLAMPING<br>VOLTAGE @ $I_{PP}$ | PEAK PULSE<br>CURRENT<br>$I_{PP}$ | MAXIMUM<br>REVERSE<br>LEAKAGE<br>@ $V_{WM}$<br>$I_D$ | MARKING<br>CODE |    |
|--------------------|-----------|---------------------------------------------|----------------------------------------------------|------|------------|-------------------------------------------|-----------------------------------|------------------------------------------------------|-----------------|----|
| UNI-POLAR          | BI-POLAR  | (VOLTS)                                     | MIN                                                | MAX  | $I_T$ (mA) | (VOLTS)                                   | (AMPS)                            | ( $\mu$ A)                                           | 1               | 2  |
| SMAJ5.0A           | SMAJ5.0CA | 5.0                                         | 6.40                                               | 7.00 | 10         | 9.2                                       | 43.5                              | 800                                                  | AE              | WE |
| SMAJ6.0A           | SMAJ6.0CA | 6.0                                         | 6.67                                               | 7.37 | 10         | 10.3                                      | 38.8                              | 800                                                  | AG              | WG |
| SMAJ6.5A           | SMAJ6.5CA | 6.5                                         | 7.22                                               | 7.98 | 10         | 11.2                                      | 35.7                              | 500                                                  | AK              | WK |
| SMAJ7.0A           | SMAJ7.0CA | 7.0                                         | 7.78                                               | 8.60 | 10         | 12.0                                      | 33.3                              | 200                                                  | AM              | WM |
| SMAJ7.5A           | SMAJ7.5CA | 7.5                                         | 8.33                                               | 9.21 | 1          | 12.9                                      | 31.0                              | 100                                                  | AP              | WP |
| SMAJ8.0A           | SMAJ8.0CA | 8.0                                         | 8.89                                               | 9.83 | 1          | 13.6                                      | 29.4                              | 50                                                   | AR              | WR |
| SMAJ8.5A           | SMAJ8.5CA | 8.5                                         | 9.44                                               | 10.4 | 1          | 14.4                                      | 27.7                              | 20                                                   | AT              | WT |
| SMAJ9.0A           | SMAJ9.0CA | 9.0                                         | 10.0                                               | 11.1 | 1          | 15.4                                      | 26.0                              | 10                                                   | AV              | WV |
| SMAJ10A            | SMAJ10CA  | 10                                          | 11.1                                               | 12.3 | 1          | 17.0                                      | 23.5                              | 5                                                    | AX              | WX |
| SMAJ11A            | SMAJ11CA  | 11                                          | 12.2                                               | 13.5 | 1          | 18.2                                      | 22.0                              | 1                                                    | AZ              | WZ |
| SMAJ12A            | SMAJ12CA  | 12                                          | 13.3                                               | 14.7 | 1          | 19.9                                      | 20.1                              | 1                                                    | BE              | XE |
| SMAJ13A            | SMAJ13CA  | 13                                          | 14.4                                               | 15.9 | 1          | 21.5                                      | 18.6                              | 1                                                    | BG              | XG |
| SMAJ14A            | SMAJ14CA  | 14                                          | 15.6                                               | 17.2 | 1          | 23.2                                      | 17.2                              | 1                                                    | BK              | XK |
| SMAJ15A            | SMAJ15CA  | 15                                          | 16.7                                               | 18.5 | 1          | 24.4                                      | 16.4                              | 1                                                    | BM              | XM |
| SMAJ16A            | SMAJ16CA  | 16                                          | 17.8                                               | 19.7 | 1          | 26.0                                      | 15.3                              | 1                                                    | BP              | XP |
| SMAJ17A            | SMAJ17CA  | 17                                          | 18.9                                               | 20.9 | 1          | 27.6                                      | 14.5                              | 1                                                    | BR              | XR |
| SMAJ18A            | SMAJ18CA  | 18                                          | 20.0                                               | 22.1 | 1          | 29.2                                      | 13.7                              | 1                                                    | BT              | XT |
| SMAJ20A            | SMAJ20CA  | 20                                          | 22.2                                               | 24.5 | 1          | 32.4                                      | 12.3                              | 1                                                    | BV              | XV |
| SMAJ22A            | SMAJ22CA  | 22                                          | 24.4                                               | 26.9 | 1          | 35.5                                      | 11.2                              | 1                                                    | BX              | XX |
| SMAJ24A            | SMAJ24CA  | 24                                          | 26.7                                               | 29.5 | 1          | 38.9                                      | 10.3                              | 1                                                    | BZ              | XZ |
| SMAJ26A            | SMAJ26CA  | 26                                          | 28.9                                               | 31.9 | 1          | 42.1                                      | 9.5                               | 1                                                    | CE              | YE |
| SMAJ28A            | SMAJ28CA  | 28                                          | 31.1                                               | 34.4 | 1          | 45.4                                      | 8.8                               | 1                                                    | CG              | YG |
| SMAJ30A            | SMAJ30CA  | 30                                          | 33.3                                               | 36.8 | 1          | 48.4                                      | 8.3                               | 1                                                    | CK              | YK |
| SMAJ33A            | SMAJ33CA  | 33                                          | 36.7                                               | 40.6 | 1          | 53.3                                      | 7.5                               | 1                                                    | CM              | YM |
| SMAJ36A            | SMAJ36CA  | 36                                          | 40.0                                               | 44.2 | 1          | 58.1                                      | 6.9                               | 1                                                    | CP              | YP |
| SMAJ40A            | SMAJ40CA  | 40                                          | 44.4                                               | 49.1 | 1          | 64.5                                      | 6.2                               | 1                                                    | CR              | YR |
| SMAJ43A            | SMAJ43CA  | 43                                          | 47.8                                               | 52.8 | 1          | 69.4                                      | 5.7                               | 1                                                    | CT              | YT |
| SMAJ45A            | SMAJ45CA  | 45                                          | 50.0                                               | 55.3 | 1          | 72.7                                      | 5.5                               | 1                                                    | CV              | YV |
| SMAJ48A            | SMAJ48CA  | 48                                          | 53.3                                               | 58.9 | 1          | 77.4                                      | 5.2                               | 1                                                    | CX              | YX |
| SMAJ51A            | SMAJ51CA  | 51                                          | 56.7                                               | 62.7 | 1          | 82.4                                      | 4.9                               | 1                                                    | CZ              | YZ |
| SMAJ54A            | SMAJ54CA  | 54                                          | 60.0                                               | 66.3 | 1          | 87.1                                      | 4.6                               | 1                                                    | RE              | ZE |
| SMAJ58A            | SMAJ58CA  | 58                                          | 64.4                                               | 71.2 | 1          | 93.6                                      | 4.3                               | 1                                                    | RG              | ZG |
| SMAJ60A            | SMAJ60CA  | 60                                          | 66.7                                               | 73.7 | 1          | 96.8                                      | 4.1                               | 1                                                    | RK              | ZK |
| SMAJ64A            | SMAJ64CA  | 64                                          | 71.1                                               | 78.6 | 1          | 103                                       | 3.9                               | 1                                                    | RM              | ZM |
| SMAJ70A            | SMAJ70CA  | 70                                          | 77.8                                               | 86.0 | 1          | 113                                       | 3.5                               | 1                                                    | RP              | ZP |
| SMAJ75A            | SMAJ75CA  | 75                                          | 83.3                                               | 92.1 | 1          | 121                                       | 3.3                               | 1                                                    | RR              | ZR |
| SMAJ78A            | SMAJ78CA  | 78                                          | 86.7                                               | 95.8 | 1          | 126                                       | 2.2                               | 1                                                    | RT              | ZT |
| SMAJ85A            | SMAJ85CA  | 85                                          | 94.4                                               | 104  | 1          | 137                                       | 2.9                               | 1                                                    | RV              | ZV |
| SMAJ90A            | SMAJ90CA  | 90                                          | 100                                                | 111  | 1          | 146                                       | 2.7                               | 1                                                    | RX              | ZX |
| SMAJ100A           | SMAJ100CA | 100                                         | 111                                                | 123  | 1          | 162                                       | 2.5                               | 1                                                    | RZ              | ZZ |
| SMAJ110A           | SMAJ110CA | 110                                         | 122                                                | 135  | 1          | 177                                       | 2.3                               | 1                                                    | SE              | VE |
| SMAJ120A           | SMAJ120CA | 120                                         | 133                                                | 147  | 1          | 193                                       | 2.1                               | 1                                                    | SG              | VG |
| SMAJ130A           | SMAJ130CA | 130                                         | 144                                                | 159  | 1          | 209                                       | 1.9                               | 1                                                    | SK              | VK |
| SMAJ150A           | SMAJ150CA | 150                                         | 167                                                | 185  | 1          | 243                                       | 1.6                               | 1                                                    | SM              | VM |
| SMAJ160A           | SMAJ160CA | 160                                         | 178                                                | 197  | 1          | 259                                       | 1.5                               | 1                                                    | SP              | VP |
| SMAJ170A           | SMAJ170CA | 170                                         | 189                                                | 209  | 1          | 275                                       | 1.5                               | 1                                                    | SR              | VR |
| SMAJ180A           | SMAJ180CA | 180                                         | 201                                                | 222  | 1          | 292                                       | 1.4                               | 1                                                    | ST              | VT |
| SMAJ200A           | SMAJ200CA | 200                                         | 224                                                | 247  | 1          | 324                                       | 1.2                               | 1                                                    | SV              | VV |
| SMAJ220A           | SMAJ220CA | 220                                         | 246                                                | 272  | 1          | 356                                       | 1.1                               | 1                                                    | SX              | VX |
| SMAJ250A           | SMAJ250CA | 250                                         | 279                                                | 309  | 1          | 405                                       | 1.0                               | 1                                                    | SZ              | VZ |
| SMAJ300A           | SMAJ300CA | 300                                         | 335                                                | 371  | 1          | 486                                       | 0.8                               | 1                                                    | TE              | UE |
| SMAJ350A           | SMAJ350CA | 350                                         | 391                                                | 432  | 1          | 567                                       | 0.7                               | 1                                                    | TG              | UG |
| SMAJ400A           | SMAJ400CA | 400                                         | 447                                                | 494  | 1          | 648                                       | 0.6                               | 1                                                    | TK              | UK |
| SMAJ440A           | SMAJ440CA | 440                                         | 492                                                | 543  | 1          | 713                                       | 0.6                               | 1                                                    | TM              | UM |

For bi-directional type having  $V_{rwm}$  of 10 Volts and less, the IR limit is double.

For parts without A, the VBR is +10%.

## Ordering Information :

| Device         | Packing               |
|----------------|-----------------------|
| Part Number-TP | Tape&Reel: 5Kpcs/Reel |

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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