



**E480232**

## Features

- AEC-Q101 Qualified
- For Surface Mount Applications in Order to Optimize Board Space
- Halogen Free
- Low Profile Package
- Unidirectional and Bidirectional Available, for Bidirectional Devices add 'C' Suffix to The pn#, i.e. SMAJP4KE12CAHE3
- Fast Response Time: Typical Less Than 1.0ps From 0 Volts to  $V_{BR}$  Minimum
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating

## Mechanical Data

- Polarity: Color Band Denotes Positive end (cathode) Except Bidirectional
- Maximum Soldering Temperature: 260°C for 10 Seconds
- Manufacturing Code Added for Better Tracking
- CASE: JEDEC DO214AC
- Terminals: Plated Axial leads, Solderable Per MIL-STD-750, Methode 2026

## Maximum Ratings

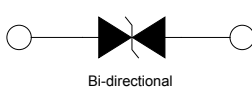
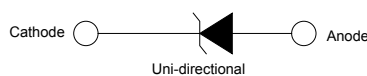
- Operating Junction Temperature Range: -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Typical Thermal Resistance: 100°C/W Junction to Ambient

|                                                          |          |               |        |
|----------------------------------------------------------|----------|---------------|--------|
| Peak Pulse Power Surge Current with a 10/1000µs Waveform | $I_{PP}$ | See the Table | Note 1 |
| Peak Pulse Power Dissipation                             | $P_{PP}$ | 400W          | Note 1 |

Note:

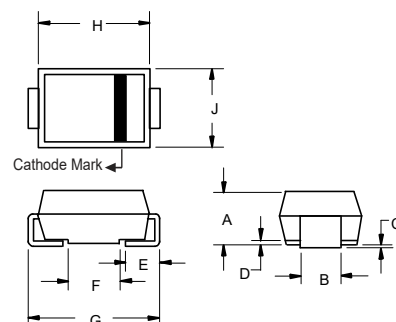
1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A=25^\circ\text{C}$  per Fig.4.
2. Mounted on 5.0mm<sup>2</sup> copper pads to each terminal.

Pin Configuration:



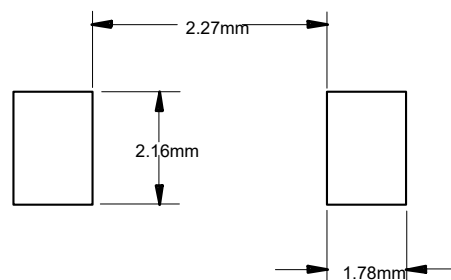
**400 Watt TVS**  
**12 to 100 Volts**

## SMA (DO-214AC) LEAD FRAME



| DIM | INCHES |       | MM    |       | NOTE |
|-----|--------|-------|-------|-------|------|
|     | MIN    | MAX   | MIN   | MAX   |      |
| A   | 0.079  | 0.096 | 2.00  | 2.44  |      |
| B   | 0.050  | 0.064 | 1.27  | 1.63  |      |
| C   | 0.002  | 0.008 | 0.051 | 0.203 |      |
| D   | ---    | 0.020 | ---   | 0.51  |      |
| E   | 0.030  | 0.060 | 0.76  | 1.52  |      |
| F   | 0.065  | 0.091 | 1.65  | 2.32  |      |
| G   | 0.189  | 0.220 | 4.80  | 5.59  |      |
| H   | 0.157  | 0.181 | 4.00  | 4.60  |      |
| J   | 0.090  | 0.115 | 2.25  | 2.92  |      |

## SUGGESTED SOLDER PAD LAYOUT



## Electrical Characteristics @ 25°C Unless Otherwise Specified

| 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<br>PULSE<br>CURRENT<br>$I_{PP}$ | MAXIMUM<br>REVERSE<br>LEAKAGE<br>@ $V_{WM}$<br>$I_D$ | MARKING CODE |
|--------------------|---------------------------------------------|--------------------------------------------------|--------|------------|-------------------------------------------|--------------------------------------|------------------------------------------------------|--------------|
|                    | (VOLTS)                                     | MIN                                              | MAX    | $I_T$ (mA) | (VOLTS)                                   | (AMPS)                               | $\mu A$                                              |              |
| SMAJP4KE12AHE3     | 10.20                                       | 11.40                                            | 12.60  | 1          | 16.7                                      | 24.6                                 | 5                                                    | 12A          |
| SMAJP4KE13AHE3     | 11.10                                       | 12.40                                            | 13.70  | 1          | 18.2                                      | 22.5                                 | 1                                                    | 13A          |
| SMAJP4KE15AHE3     | 12.80                                       | 14.30                                            | 15.80  | 1          | 21.2                                      | 19.3                                 | 1                                                    | 15A          |
| SMAJP4KE16AHE3     | 13.60                                       | 15.20                                            | 16.80  | 1          | 22.5                                      | 18.2                                 | 1                                                    | 16A          |
| SMAJP4KE18AHE3     | 15.30                                       | 17.10                                            | 18.90  | 1          | 25.5                                      | 16.1                                 | 1                                                    | 18A          |
| SMAJP4KE20AHE3     | 17.10                                       | 19.00                                            | 21.00  | 1          | 27.7                                      | 14.8                                 | 1                                                    | 20A          |
| SMAJP4KE22AHE3     | 18.80                                       | 20.90                                            | 23.10  | 1          | 30.6                                      | 13.4                                 | 1                                                    | 22A          |
| SMAJP4KE24AHE3     | 20.50                                       | 22.80                                            | 25.20  | 1          | 33.2                                      | 12.3                                 | 1                                                    | 24A          |
| SMAJP4KE27AHE3     | 23.10                                       | 25.70                                            | 28.40  | 1          | 37.5                                      | 10.9                                 | 1                                                    | 27A          |
| SMAJP4KE30AHE3     | 25.60                                       | 28.50                                            | 31.50  | 1          | 41.4                                      | 9.9                                  | 1                                                    | 30A          |
| SMAJP4KE33AHE3     | 28.20                                       | 31.40                                            | 34.70  | 1          | 45.7                                      | 9.0                                  | 1                                                    | 33A          |
| SMAJP4KE36AHE3     | 30.80                                       | 34.20                                            | 37.80  | 1          | 49.9                                      | 8.2                                  | 1                                                    | 36A          |
| SMAJP4KE39AHE3     | 33.30                                       | 37.10                                            | 41.00  | 1          | 53.9                                      | 7.6                                  | 1                                                    | 39A          |
| SMAJP4KE43AHE3     | 36.80                                       | 40.90                                            | 45.20  | 1          | 59.3                                      | 6.9                                  | 1                                                    | 43A          |
| SMAJP4KE47AHE3     | 40.20                                       | 44.70                                            | 49.40  | 1          | 64.8                                      | 6.3                                  | 1                                                    | 47A          |
| SMAJP4KE51AHE3     | 43.60                                       | 48.50                                            | 53.60  | 1          | 70.1                                      | 5.8                                  | 1                                                    | 51A          |
| SMAJP4KE56AHE3     | 47.80                                       | 53.20                                            | 58.80  | 1          | 77.0                                      | 5.3                                  | 1                                                    | 56A          |
| SMAJP4KE62AHE3     | 53.00                                       | 58.90                                            | 65.10  | 1          | 85.0                                      | 4.8                                  | 1                                                    | 62A          |
| SMAJP4KE68AHE3     | 58.10                                       | 64.60                                            | 71.40  | 1          | 92.0                                      | 4.5                                  | 1                                                    | 68A          |
| SMAJP4KE75AHE3     | 64.10                                       | 71.30                                            | 78.80  | 1          | 103.0                                     | 4.0                                  | 1                                                    | 75A          |
| SMAJP4KE82AHE3     | 70.10                                       | 77.90                                            | 86.10  | 1          | 113.0                                     | 3.6                                  | 1                                                    | 82A          |
| SMAJP4KE91AHE3     | 77.80                                       | 86.50                                            | 95.50  | 1          | 125.0                                     | 3.3                                  | 1                                                    | 91A          |
| SMAJP4KE100AHE3    | 85.50                                       | 95.00                                            | 105.00 | 1          | 137.0                                     | 3.0                                  | 1                                                    | 100A         |
| SMAJP4KE12CAHE3    | 10.20                                       | 11.40                                            | 12.60  | 1          | 16.7                                      | 24.6                                 | 5                                                    | 12C          |
| SMAJP4KE13CAHE3    | 11.10                                       | 12.40                                            | 13.70  | 1          | 18.2                                      | 22.5                                 | 1                                                    | 13C          |
| SMAJP4KE15CAHE3    | 12.80                                       | 14.30                                            | 15.80  | 1          | 21.2                                      | 19.3                                 | 1                                                    | 15C          |
| SMAJP4KE16CAHE3    | 13.60                                       | 15.20                                            | 16.80  | 1          | 22.5                                      | 18.2                                 | 1                                                    | 16C          |
| SMAJP4KE18CAHE3    | 15.30                                       | 17.10                                            | 18.90  | 1          | 25.5                                      | 16.1                                 | 1                                                    | 18C          |
| SMAJP4KE20CAHE3    | 17.10                                       | 19.00                                            | 21.00  | 1          | 27.7                                      | 14.8                                 | 1                                                    | 20C          |
| SMAJP4KE22CAHE3    | 18.80                                       | 20.90                                            | 23.10  | 1          | 30.6                                      | 13.4                                 | 1                                                    | 22C          |
| SMAJP4KE24CAHE3    | 20.50                                       | 22.80                                            | 25.20  | 1          | 33.2                                      | 12.3                                 | 1                                                    | 24C          |
| SMAJP4KE27CAHE3    | 23.10                                       | 25.70                                            | 28.40  | 1          | 37.5                                      | 10.9                                 | 1                                                    | 27C          |
| SMAJP4KE30CAHE3    | 25.60                                       | 28.50                                            | 31.50  | 1          | 41.4                                      | 9.9                                  | 1                                                    | 30C          |
| SMAJP4KE33CAHE3    | 28.20                                       | 31.40                                            | 34.70  | 1          | 45.7                                      | 9.0                                  | 1                                                    | 33C          |
| SMAJP4KE36CAHE3    | 30.80                                       | 34.20                                            | 37.80  | 1          | 49.9                                      | 8.2                                  | 1                                                    | 36C          |
| SMAJP4KE39CAHE3    | 33.30                                       | 37.10                                            | 41.00  | 1          | 53.9                                      | 7.6                                  | 1                                                    | 39C          |
| SMAJP4KE43CAHE3    | 36.80                                       | 40.90                                            | 45.20  | 1          | 59.3                                      | 6.9                                  | 1                                                    | 43C          |
| SMAJP4KE47CAHE3    | 40.20                                       | 44.70                                            | 49.40  | 1          | 64.8                                      | 6.3                                  | 1                                                    | 47C          |
| SMAJP4KE51CAHE3    | 43.60                                       | 48.50                                            | 53.60  | 1          | 70.1                                      | 5.8                                  | 1                                                    | 51C          |
| SMAJP4KE56CAHE3    | 47.80                                       | 53.20                                            | 58.80  | 1          | 77.0                                      | 5.3                                  | 1                                                    | 56C          |
| SMAJP4KE62CAHE3    | 53.00                                       | 58.90                                            | 65.10  | 1          | 85.0                                      | 4.8                                  | 1                                                    | 62C          |
| SMAJP4KE68CAHE3    | 58.10                                       | 64.60                                            | 71.40  | 1          | 92.0                                      | 4.5                                  | 1                                                    | 68C          |
| SMAJP4KE75CAHE3    | 64.10                                       | 71.30                                            | 78.80  | 1          | 103.0                                     | 4.0                                  | 1                                                    | 75C          |
| SMAJP4KE82CAHE3    | 70.10                                       | 77.90                                            | 86.10  | 1          | 113.0                                     | 3.6                                  | 1                                                    | 82C          |
| SMAJP4KE91CAHE3    | 77.80                                       | 86.50                                            | 95.50  | 1          | 125.0                                     | 3.3                                  | 1                                                    | 91C          |
| SMAJP4KE100CAHE3   | 85.50                                       | 95.00                                            | 105.00 | 1          | 137.0                                     | 3.0                                  | 1                                                    | 100C         |

Note:

1. For Bi-directional type having  $V_{WM}$  of 10 volts and less, the  $I_R$  limit is double.
2. The available parts are "A" type only, the parts without A ( $V_{BR}$  is  $\pm 10\%$ ) is not available.

## Curve Characteristics

Fig. 1 - Peak Pulse Power Rating Curve

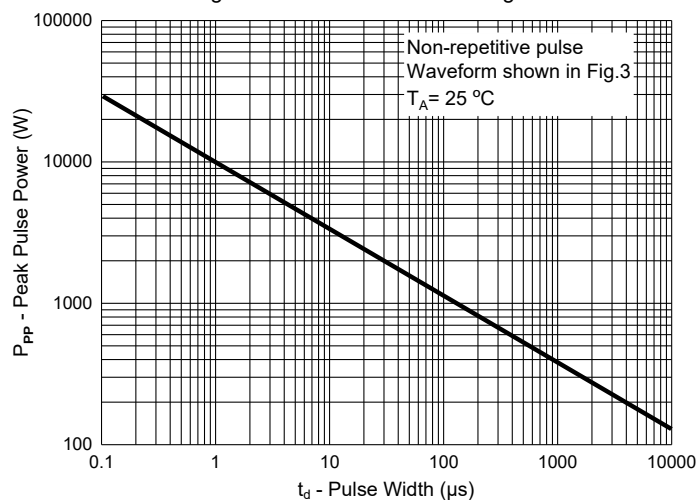


Fig. 2 - Typical Junction Capacitance

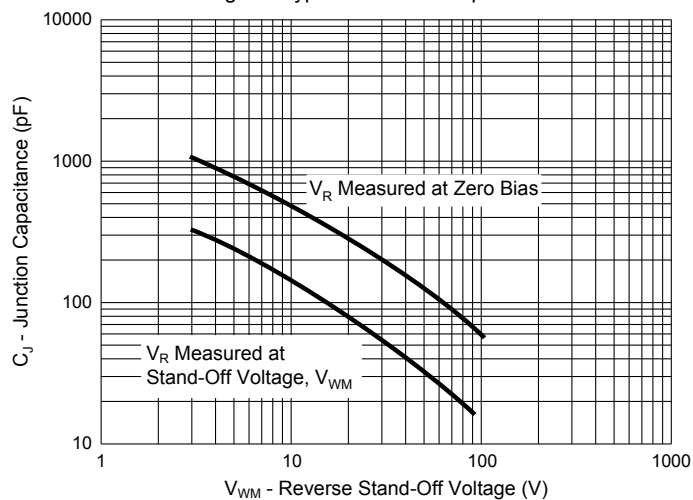


Fig. 3 - Pulse Waveform

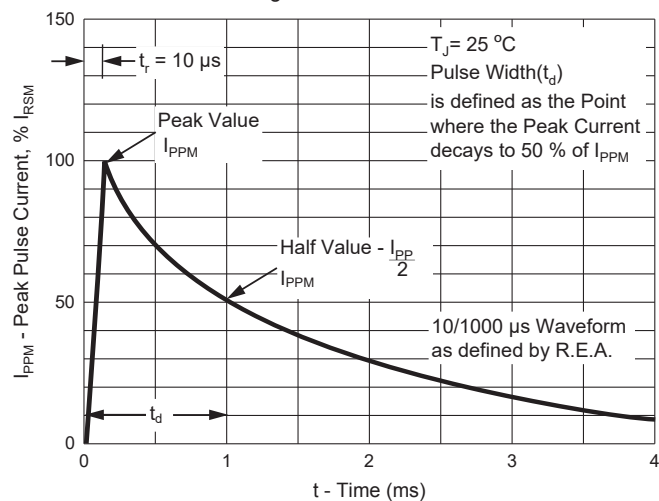
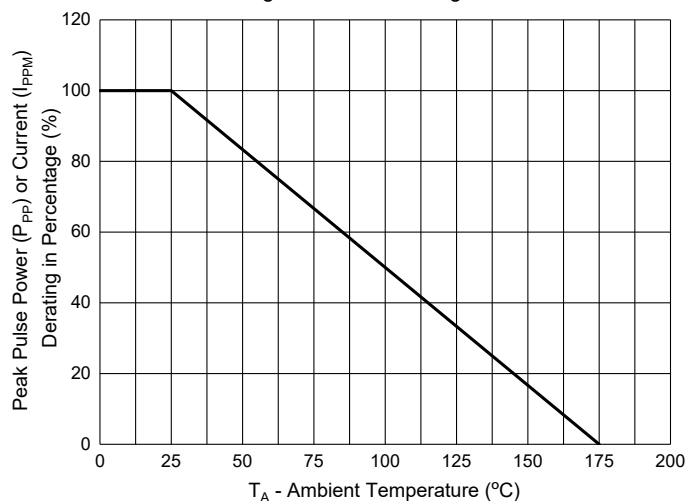


Fig. 4 - Pulse Derating Curve



## 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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| <a href="#"><u>SMAJP4KE13AHE3-TP</u></a>  | <a href="#"><u>SMAJP4KE13CAHE3-TP</u></a>  | <a href="#"><u>SMAJP4KE82AHE3-TP</u></a> | <a href="#"><u>SMAJP4KE82CAHE3-TP</u></a> |
| <a href="#"><u>SMAJP4KE91AHE3-TP</u></a>  | <a href="#"><u>SMAJP4KE91CAHE3-TP</u></a>  | <a href="#"><u>SMAJP4KE62AHE3-TP</u></a> | <a href="#"><u>SMAJP4KE62CAHE3-TP</u></a> |
| <a href="#"><u>SMAJP4KE68AHE3-TP</u></a>  | <a href="#"><u>SMAJP4KE68CAHE3-TP</u></a>  | <a href="#"><u>SMAJP4KE75AHE3-TP</u></a> | <a href="#"><u>SMAJP4KE75CAHE3-TP</u></a> |
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| <a href="#"><u>SMAJP4KE39AHE3-TP</u></a>  | <a href="#"><u>SMAJP4KE39CAHE3-TP</u></a>  | <a href="#"><u>SMAJP4KE43AHE3-TP</u></a> | <a href="#"><u>SMAJP4KE43CAHE3-TP</u></a> |
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| <a href="#"><u>SMAJP4KE22AHE3-TP</u></a>  | <a href="#"><u>SMAJP4KE22CAHE3-TP</u></a>  | <a href="#"><u>SMAJP4KE24AHE3-TP</u></a> | <a href="#"><u>SMAJP4KE24CAHE3-TP</u></a> |
| <a href="#"><u>SMAJP4KE15AHE3-TP</u></a>  | <a href="#"><u>SMAJP4KE15CAHE3-TP</u></a>  | <a href="#"><u>SMAJP4KE16AHE3-TP</u></a> | <a href="#"><u>SMAJP4KE16CAHE3-TP</u></a> |
| <a href="#"><u>SMAJP4KE18AHE3-TP</u></a>  | <a href="#"><u>SMAJP4KE18CAHE3-TP</u></a>  |                                          |                                           |