




# THE DATASHEET OF SMAJP4KE300A-TP



|   |                |
|---|----------------|
|  | <b>E480232</b> |
|---|----------------|

### Features

- For Surface Mount Applications in Order to Optimize Board Space
- Low Profile Package
- Unidirectional and Bidirectional Available, for Bidirectional Devices add 'C' Suffix to The pn#, i.e..SMAJP4KE6.8CA for 5% Tolerance
- Fast Response Time: Typical Less Than 1.0ps From 0 Volts to  $V_{BR}$  Minimum
- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant (Note2) ("P" Suffix Designates Compliant. See Ordering Information)

### Mechanical Data

- Polarity: Color Band Denotes Positive end (cathode) Except Bidirectional
- Maximum Soldering Temperature: 260°C for 10 Seconds
- Case: JEDEC DO-214AC
- Terminals: Solderable Per MIL-STD-750, Method 2026

### Maximum Ratings

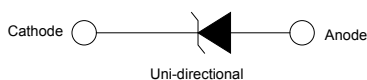
- Operating Junction Temperature Range: -55°C to +175°C
- Storage Temperature Range: -55°C to +175°C
- Typical Thermal Resistance: 100°C/W Junction to Ambient

|  |          |               |        |
|--|----------|---------------|--------|
| Peak Pulse Power Surge Current with a 10/1000µs Waveform | $I_{PP}$ | See the Table | Note 3 |
| Peak Pulse Power Dissipation                             | $P_{PP}$ | 400W          | Note 3 |

#### Note:

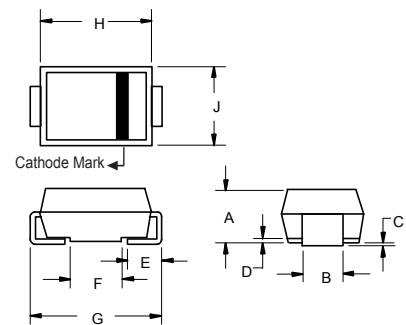
1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. High Temperature Solder Exemption Applied, see EU Directive Annex 7a.
3. Non-repetitive current pulse, per Fig.3 and derated above  $T_A=25^\circ\text{C}$  per Fig.4. Pin

Configuration:



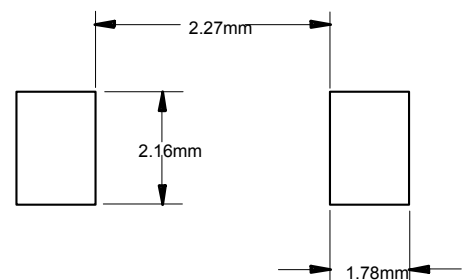
## 400 Watt TVS 6.8 to 550 Volts

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



| DIM | DIMENSIONS |       |       |       | NOTE |
|-----|------------|-------|-------|-------|------|
|     | INCHES     |       | MM    |       |      |
|     | 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)                               | $\mu A$  |              |
| SMAJP4KE6.8A       | 5.80  | 6.45   | 7.14   | 10         | 10.5                                      | 39.0                                 | 1000   | 6V8A         |
| SMAJP4KE7.5A       | 6.40  | 7.13   | 7.88   | 10         | 11.3                                      | 36.3                                 | 500  | 7V5A         |
| SMAJP4KE8.2A       | 7.02  | 7.79   | 8.61   | 10         | 12.1                                      | 33.9                                 | 200  | 8V2A         |
| SMAJP4KE9.1A       | 7.78  | 8.65   | 9.55   | 1          | 13.4                                      | 30.6                                 | 50   | 9V1A         |
| SMAJP4KE10A        | 8.55  | 9.50   | 10.50  | 1          | 14.5                                      | 28.3                                 | 10   | 10A          |
| SMAJP4KE11A        | 9.40  | 10.50  | 11.60  | 1          | 15.6                                      | 26.3                                 | 5  | 11A          |
| SMAJP4KE12A        | 10.20                                       | 11.40  | 12.60  | 1          | 16.7                                      | 24.6                                 | 5  | 12A          |
| SMAJP4KE13A        | 11.10                                       | 12.40  | 13.70  | 1          | 18.2                                      | 22.5                                 | 1  | 13A          |
| SMAJP4KE15A        | 12.80                                       | 14.30  | 15.80  | 1          | 21.2                                      | 19.3                                 | 1  | 15A          |
| SMAJP4KE16A        | 13.60                                       | 15.20  | 16.80  | 1          | 22.5                                      | 18.2                                 | 1  | 16A          |
| SMAJP4KE18A        | 15.30                                       | 17.10  | 18.90  | 1          | 25.5                                      | 16.1                                 | 1  | 18A          |
| SMAJP4KE20A        | 17.10                                       | 19.00  | 21.00  | 1          | 27.7                                      | 14.8                                 | 1  | 20A          |
| SMAJP4KE22A        | 18.80                                       | 20.90  | 23.10  | 1          | 30.6                                      | 13.4                                 | 1  | 22A          |
| SMAJP4KE24A        | 20.50                                       | 22.80  | 25.20  | 1          | 33.2                                      | 12.3                                 | 1  | 24A          |
| SMAJP4KE27A        | 23.10                                       | 25.70  | 28.40  | 1          | 37.5                                      | 10.9                                 | 1  | 27A          |
| SMAJP4KE30A        | 25.60                                       | 28.50  | 31.50  | 1          | 41.4                                      | 9.9                                  | 1  | 30A          |
| SMAJP4KE33A        | 28.20                                       | 31.40  | 34.70  | 1          | 45.7                                      | 9.0                                  | 1  | 33A          |
| SMAJP4KE36A        | 30.80                                       | 34.20  | 37.80  | 1          | 49.9                                      | 8.2                                  | 1  | 36A          |
| SMAJP4KE39A        | 33.30                                       | 37.10  | 41.00  | 1          | 53.9                                      | 7.6                                  | 1  | 39A          |
| SMAJP4KE43A        | 36.80                                       | 40.90  | 45.20  | 1          | 59.3                                      | 6.9                                  | 1  | 43A          |
| SMAJP4KE47A        | 40.20                                       | 44.70  | 49.40  | 1          | 64.8                                      | 6.3                                  | 1  | 47A          |
| SMAJP4KE51A        | 43.60                                       | 48.50  | 53.60  | 1          | 70.1                                      | 5.8                                  | 1  | 51A          |
| SMAJP4KE56A        | 47.80                                       | 53.20  | 58.80  | 1          | 77.0                                      | 5.3                                  | 1  | 56A          |
| SMAJP4KE62A        | 53.00                                       | 58.90  | 65.10  | 1          | 85.0                                      | 4.8                                  | 1  | 62A          |
| SMAJP4KE68A        | 58.10                                       | 64.60  | 71.40  | 1          | 92.0                                      | 4.5                                  | 1  | 68A          |
| SMAJP4KE75A        | 64.10                                       | 71.30  | 78.80  | 1          | 103.0                                     | 4.0                                  | 1  | 75A          |
| SMAJP4KE82A        | 70.10                                       | 77.90  | 86.10  | 1          | 113.0                                     | 3.6                                  | 1  | 82A          |
| SMAJP4KE91A        | 77.80                                       | 86.50  | 95.50  | 1          | 125.0                                     | 3.3                                  | 1  | 91A          |
| SMAJP4KE100A       | 85.50                                       | 95.00  | 105.00 | 1          | 137.0                                     | 3.0                                  | 1  | 100A         |
| SMAJP4KE110A       | 94.00                                       | 105.00   | 116.00 | 1          | 152.0                                     | 2.7                                  | 1  | 110A         |
| SMAJP4KE120A       | 102.00                                      | 114.00   | 126.00 | 1          | 165.0                                     | 2.5                                  | 1  | 120A         |
| SMAJP4KE130A       | 111.00                                      | 124.00   | 137.00 | 1          | 179.0                                     | 2.3                                  | 1  | 130A         |
| SMAJP4KE150A       | 128.00                                      | 143.00   | 158.00 | 1          | 207.0                                     | 2.0                                  | 1  | 150A         |
| SMAJP4KE160A       | 136.00                                      | 152.00   | 168.00 | 1          | 219.0                                     | 1.9                                  | 1  | 160A         |
| SMAJP4KE170A       | 145.00                                      | 162.00   | 179.00 | 1          | 234.0                                     | 1.8                                  | 1  | 170A         |
| SMAJP4KE180A       | 154.00                                      | 171.00   | 189.00 | 1          | 246.0                                     | 1.7                                  | 1  | 180A         |
| SMAJP4KE200A       | 171.00                                      | 190.00   | 210.00 | 1          | 274.0                                     | 1.5                                  | 1  | 200A         |
| SMAJP4KE220A       | 185.00                                      | 209.00   | 231.00 | 1          | 328.0                                     | 1.3                                  | 1  | 220A         |
| SMAJP4KE250A       | 214.00                                      | 237.00   | 263.00 | 1          | 344.0                                     | 1.2                                  | 1  | 250A         |
| SMAJP4KE300A       | 256.00                                      | 285.00   | 315.00 | 1          | 414.0                                     | 1.0                                  | 1  | 300A         |
| SMAJP4KE350A       | 300.00                                      | 332.00   | 368.00 | 1          | 482.0                                     | 0.9                                  | 1  | 350A         |

\*For Bi-directional type having  $V_{WM}$  of 10 volts and less, the  $I_R$  limit is double.

\*The available parts are "A" type only, the parts without A ( $V_{BR}$  is  $\pm 10\%$ ) is not available.

**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)                               | $\mu A$  |              |
| SMAJP4KE400A       | 342.00                                      | 380.00   | 420.00 | 1          | 548.0                                     | 0.8                                  | 1  | 400A         |
| SMAJP4KE440A       | 376.00                                      | 418.00   | 462.00 | 1          | 602.0                                     | 0.7                                  | 1  | 440A         |
| SMAJP4KE480A       | 408.00                                      | 456.00   | 504.00 | 1          | 658.0                                     | 0.6                                  | 1  | 480A         |
| SMAJP4KE510A       | 434.00                                      | 485.00   | 535.00 | 1          | 698.0                                     | 0.6                                  | 1  | 510A         |
| SMAJP4KE530A       | 477.00                                      | 503.50   | 556.50 | 1          | 725.0                                     | 0.6                                  | 1  | 530A         |
| SMAJP4KE540A       | 459.00                                      | 513.00   | 567.00 | 1          | 740.0                                     | 0.5                                  | 1  | 540A         |
| SMAJP4KE550A       | 495.00                                      | 522.50   | 577.50 | 1          | 760.0                                     | 0.5                                  | 1  | 550A         |
| SMAJP4KE6.8CA      | 5.80  | 6.45   | 7.14   | 10         | 10.5                                      | 39.0                                 | 1000   | 6V8C         |
| SMAJP4KE7.5CA      | 6.40  | 7.13   | 7.88   | 10         | 11.3                                      | 36.3                                 | 500  | 7V5C         |
| SMAJP4KE8.2CA      | 7.02  | 7.79   | 8.61   | 10         | 12.1                                      | 33.9                                 | 200  | 8V2C         |
| SMAJP4KE9.1CA      | 7.78  | 8.65   | 9.55   | 1          | 13.4                                      | 30.6                                 | 50   | 9V1C         |
| SMAJP4KE10CA       | 8.55  | 9.50   | 10.50  | 1          | 14.5                                      | 28.3                                 | 10   | 10C          |
| SMAJP4KE11CA       | 9.40  | 10.50  | 11.60  | 1          | 15.6                                      | 26.3                                 | 5  | 11C          |
| SMAJP4KE12CA       | 10.20                                       | 11.40  | 12.60  | 1          | 16.7                                      | 24.6                                 | 5  | 12C          |
| SMAJP4KE13CA       | 11.10                                       | 12.40  | 13.70  | 1          | 18.2                                      | 22.5                                 | 1  | 13C          |
| SMAJP4KE15CA       | 12.80                                       | 14.30  | 15.80  | 1          | 21.2                                      | 19.3                                 | 1  | 15C          |
| SMAJP4KE16CA       | 13.60                                       | 15.20  | 16.80  | 1          | 22.5                                      | 18.2                                 | 1  | 16C          |
| SMAJP4KE18CA       | 15.30                                       | 17.10  | 18.90  | 1          | 25.5                                      | 16.1                                 | 1  | 18C          |
| SMAJP4KE20CA       | 17.10                                       | 19.00  | 21.00  | 1          | 27.7                                      | 14.8                                 | 1  | 20C          |
| SMAJP4KE22CA       | 18.80                                       | 20.90  | 23.10  | 1          | 30.6                                      | 13.4                                 | 1  | 22C          |
| SMAJP4KE24CA       | 20.50                                       | 22.80  | 25.20  | 1          | 33.2                                      | 12.3                                 | 1  | 24C          |
| SMAJP4KE27CA       | 23.10                                       | 25.70  | 28.40  | 1          | 37.5                                      | 10.9                                 | 1  | 27C          |
| SMAJP4KE30CA       | 25.60                                       | 28.50  | 31.50  | 1          | 41.4                                      | 9.9                                  | 1  | 30C          |
| SMAJP4KE33CA       | 28.20                                       | 31.40  | 34.70  | 1          | 45.7                                      | 9.0                                  | 1  | 33C          |
| SMAJP4KE36CA       | 30.80                                       | 34.20  | 37.80  | 1          | 49.9                                      | 8.2                                  | 1  | 36C          |
| SMAJP4KE39CA       | 33.30                                       | 37.10  | 41.00  | 1          | 53.9                                      | 7.6                                  | 1  | 39C          |
| SMAJP4KE43CA       | 36.80                                       | 40.90  | 45.20  | 1          | 59.3                                      | 6.9                                  | 1  | 43C          |
| SMAJP4KE47CA       | 40.20                                       | 44.70  | 49.40  | 1          | 64.8                                      | 6.3                                  | 1  | 47C          |
| SMAJP4KE51CA       | 43.60                                       | 48.50  | 53.60  | 1          | 70.1                                      | 5.8                                  | 1  | 51C          |
| SMAJP4KE56CA       | 47.80                                       | 53.20  | 58.80  | 1          | 77.0                                      | 5.3                                  | 1  | 56C          |
| SMAJP4KE62CA       | 53.00                                       | 58.90  | 65.10  | 1          | 85.0                                      | 4.8                                  | 1  | 62C          |
| SMAJP4KE68CA       | 58.10                                       | 64.60  | 71.40  | 1          | 92.0                                      | 4.5                                  | 1  | 68C          |
| SMAJP4KE75CA       | 64.10                                       | 71.30  | 78.80  | 1          | 103.0                                     | 4.0                                  | 1  | 75C          |
| SMAJP4KE82CA       | 70.10                                       | 77.90  | 86.10  | 1          | 113.0                                     | 3.6                                  | 1  | 82C          |
| SMAJP4KE91CA       | 77.80                                       | 86.50  | 95.50  | 1          | 125.0                                     | 3.3                                  | 1  | 91C          |
| SMAJP4KE100CA      | 85.50                                       | 95.00  | 105.00 | 1          | 137.0                                     | 3.0                                  | 1  | 100C         |
| SMAJP4KE110CA      | 94.00                                       | 105.00   | 116.00 | 1          | 152.0                                     | 2.7                                  | 1  | 110C         |
| SMAJP4KE120CA      | 102.00                                      | 114.00   | 126.00 | 1          | 165.0                                     | 2.5                                  | 1  | 120C         |
| SMAJP4KE130CA      | 111.00                                      | 124.00   | 137.00 | 1          | 179.0                                     | 2.3                                  | 1  | 130C         |
| SMAJP4KE150CA      | 128.00                                      | 143.00   | 158.00 | 1          | 207.0                                     | 2.0                                  | 1  | 150C         |
| SMAJP4KE160CA      | 136.00                                      | 152.00   | 168.00 | 1          | 219.0                                     | 1.9                                  | 1  | 160C         |
| SMAJP4KE170CA      | 145.00                                      | 162.00   | 179.00 | 1          | 234.0                                     | 1.8                                  | 1  | 170C         |

Note:

\*For Bi-directional type having  $V_{WM}$  of 10 volts and less, the  $I_R$  limit is double.

\*The available parts are "A" type only, the parts without A ( $V_{BR}$  is  $\pm 10\%$ ) is not available.

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)                               | $\mu A$  |              |
| SMAJP4KE180CA      | 154.00                                      | 171.00   | 189.00 | 1          | 246.0                                     | 1.7                                  | 1  | 180C         |
| SMAJP4KE200CA      | 171.00                                      | 190.00   | 210.00 | 1          | 274.0                                     | 1.5                                  | 1  | 200C         |
| SMAJP4KE220CA      | 185.00                                      | 209.00   | 231.00 | 1          | 328.0                                     | 1.3                                  | 1  | 220C         |
| SMAJP4KE250CA      | 214.00                                      | 237.00   | 263.00 | 1          | 344.0                                     | 1.2                                  | 1  | 250C         |
| SMAJP4KE300CA      | 256.00                                      | 285.00   | 315.00 | 1          | 414.0                                     | 1.0                                  | 1  | 300C         |
| SMAJP4KE350CA      | 300.00                                      | 332.00   | 368.00 | 1          | 482.0                                     | 0.9                                  | 1  | 350C         |
| SMAJP4KE400CA      | 342.00                                      | 380.00   | 420.00 | 1          | 548.0                                     | 0.8                                  | 1  | 400C         |
| SMAJP4KE440CA      | 376.00                                      | 418.00   | 462.00 | 1          | 602.0                                     | 0.7                                  | 1  | 440C         |
| SMAJP4KE480CA      | 408.00                                      | 456.00   | 504.00 | 1          | 658.0                                     | 0.6                                  | 1  | 480C         |
| SMAJP4KE510CA      | 434.00                                      | 485.00   | 535.00 | 1          | 698.0                                     | 0.6                                  | 1  | 510C         |
| SMAJP4KE530CA      | 477.00                                      | 503.50   | 556.50 | 1          | 725.0                                     | 0.6                                  | 1  | 530C         |
| SMAJP4KE540CA      | 459.00                                      | 513.00   | 567.00 | 1          | 740.0                                     | 0.5                                  | 1  | 540C         |
| SMAJP4KE550CA      | 495.00                                      | 522.50   | 577.50 | 1          | 760.0                                     | 0.5                                  | 1  | 550C         |

Note:

\*For Bi-directional type having  $V_{WM}$  of 10 volts and less, the  $I_R$  limit is double.

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Curve Characteristics

Fig. 1 - Peak Pulse Power Rating Curve

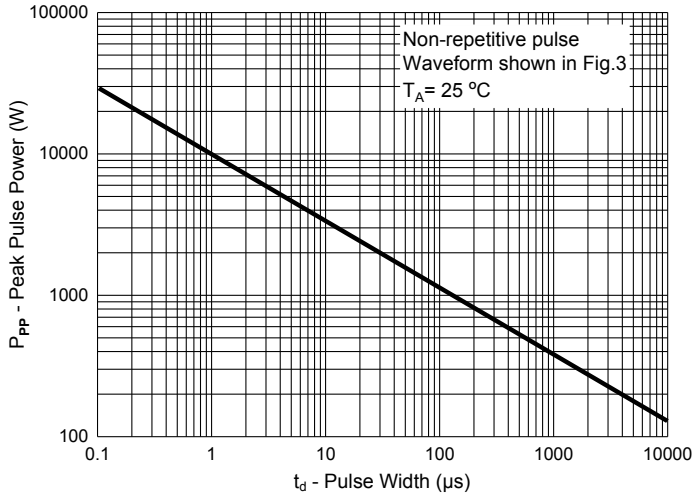


Fig. 2 - Typical Junction Capacitance

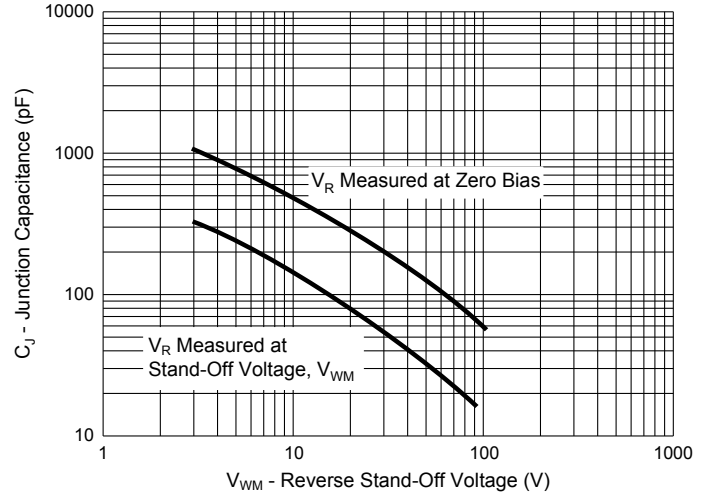


Fig. 3 - Pulse Waveform

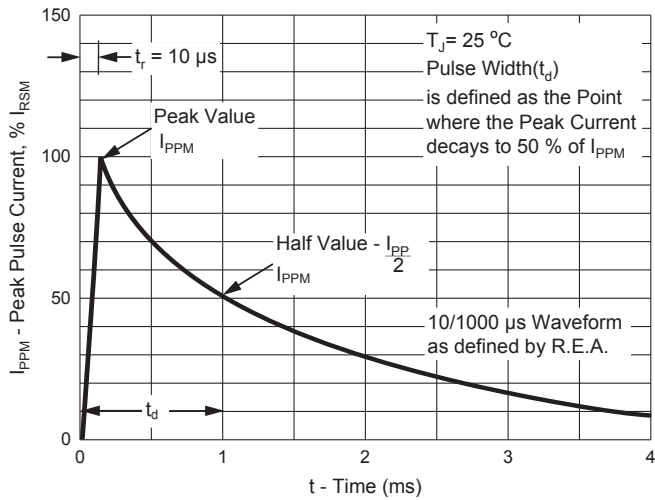
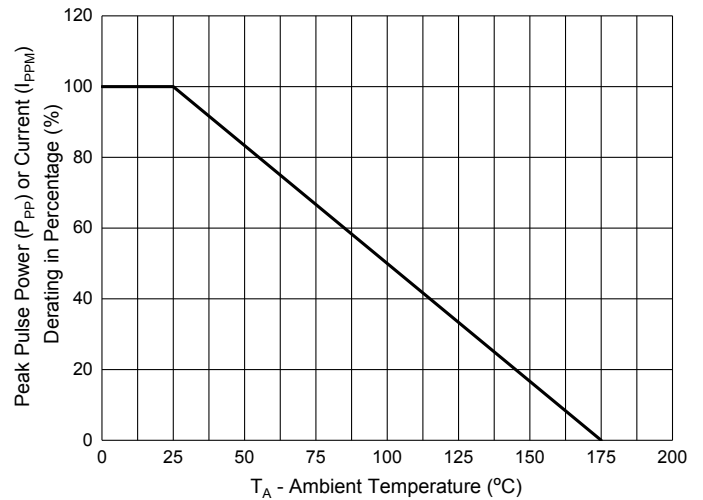


Fig. 4 - Pulse Derating Curve



**Ordering Information**

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

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- ✓ Obsolete Management
- ✓ Cost Control Management
- ✓ Shortage Management
- ✓ Alternative Solution
- ✓ Excess Inventory Management