



# P4SMAJ SERIES

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR POWER 400 Watt

**STAND-OFF VOLTAGE**

**5 to 220 Volt**

**SMA / DO-214AC**

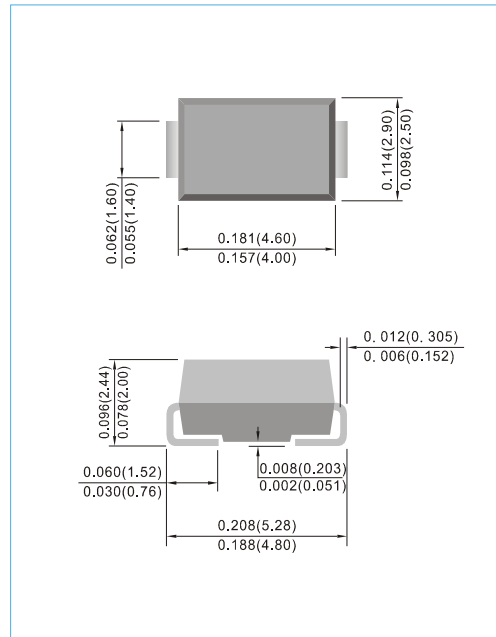
Unit : inch(mm)

### FEATURES

- For surface mounted applications in order to optimize board space.
- Glass passivated junction
- Low inductance
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- High temperature soldering : 260°C /10 seconds at terminals
- ESD IEC-61000-4-2 Air  $\pm$  30kV, Contact  $\pm$  30kV
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### MECHANICAL DATA

- Case: JEDEC DO-214AC, Molded plastic over passivated junction
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode end
- Standard Packaging: 12mm tape (EIA-481)
- Weight: 0.0023 ounces, 0.0679 grams



### DEVICES FOR BIPOLAR APPLICATIONS

For Bidirectional use C or CA Suffix for types P4SMAJ5.0 thru types P4SMAJ220.  
Electrical characteristics apply in both directions.

### MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

| Rating  | Symbol          | Value                | Units                       |
|---|-----------------|----------------------|-----------------------------|
| Peak Pulse Power Dissipation on $T_A = 25^\circ\text{C}$ (Notes 1,2,5, Fig.1) | $P_{PP}$        | 400                  | Watts                       |
| Peak Forward Surge Current per Fig.5 (Notes 3)                                | $I_{FSM}$       | 40                   | Amps                        |
| Peak Pulse Current on $t_p=10/1000\mu\text{s}$ waveform (Notes 1) Fig.2       | $I_{PPM}$       | see Table 1          | Amps                        |
| Typical Thermal Resistance Junction to Air (Notes 2)                          | $R_{\theta JA}$ | 70                   | $^\circ\text{C} / \text{W}$ |
| ESD IEC-61000-4-2 (Air)<br>ESD IEC-61000-4-2 (Contact)                        | $V_{ESD}$       | $\pm 30$<br>$\pm 30$ | kV                          |
| Operating Junction and Storage Temperature Range                              | $T_J, T_{STG}$  | -55 to +150          | $^\circ\text{C}$            |

#### NOTES :

1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A = 25^\circ\text{C}$  per Fig. 2.
2. Mounted on 5mm<sup>2</sup> copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle = 4 pulses per minutes maximum.
4. Lead temperature at 75°C =  $T_L$ .
5. Peak pulse power waveform is 10/1000  $\mu\text{s}$ .
6. A transient suppressor is selected according to the working peak reverse voltage ( $V_{RWM}$ ), which should be equal to or greater than the DC or continuous peak operating voltage level.



## P4SMAJ SERIES

| Part Number |             | Reverse Stand-off Voltage | Breakdown Voltage |       | Test Current | Reverse Leakage |         | Max. Clamp Voltage<br>10/1000 $\mu$ s | Peak Pulse Current<br>10/1000 $\mu$ s | Marking Code |    |
|-------------|-------------|---------------------------|-------------------|-------|--------------|-----------------|---------|---------------------------------------|---------------------------------------|--------------|----|
|             |             |                           | $V_{BR} @ I_T$    |       |              | $I_R @ V_{RWM}$ |         |                                       |                                       |              |    |
|             |             | $V_{RWM}$ (Notes 6)       | Min.              | Max.  | $I_T$        | UNI             | BI      | $V_C @ I_{PP}$                        | $I_{PP}$                              |              |    |
| UNI         | BI          | V                         | V                 | V     | mA           | $\mu$ A         | $\mu$ A | V                                     | A                                     | UNI          | BI |
| P4SMAJ5.0   | P4SMAJ5.0C  | 5                         | 6.4               | 7.55  | 10           | 800             | 1600    | 9.6                                   | 41.6                                  | HD           | TD |
| P4SMAJ5.0A  | P4SMAJ5.0CA | 5                         | 6.4               | 7     | 10           | 800             | 1600    | 9.2                                   | 43.5                                  | HE           | TE |
| P4SMAJ6.0   | P4SMAJ6.0C  | 6                         | 6.67              | 8.45  | 10           | 800             | 1600    | 11.4                                  | 35.1                                  | HF           | TF |
| P4SMAJ6.0A  | P4SMAJ6.0CA | 6                         | 6.67              | 7.37  | 10           | 800             | 1600    | 10.3                                  | 38.8                                  | HG           | TG |
| P4SMAJ6.5   | P4SMAJ6.5C  | 6.5                       | 7.22              | 9.14  | 10           | 500             | 1000    | 12.3                                  | 32.5                                  | HH           | TH |
| P4SMAJ6.5A  | P4SMAJ6.5CA | 6.5                       | 7.22              | 7.98  | 10           | 500             | 1000    | 11.2                                  | 35.7                                  | HK           | TK |
| P4SMAJ7.0   | P4SMAJ7.0C  | 7                         | 7.78              | 9.86  | 10           | 200             | 400     | 13.3                                  | 30.1                                  | HL           | TL |
| P4SMAJ7.0A  | P4SMAJ7.0CA | 7                         | 7.78              | 8.6   | 10           | 200             | 400     | 12                                    | 33.3                                  | HM           | TM |
| P4SMAJ7.5   | P4SMAJ7.5C  | 7.5                       | 8.33              | 10.67 | 1            | 100             | 200     | 14.3                                  | 28                                    | HN           | TN |
| P4SMAJ7.5A  | P4SMAJ7.5CA | 7.5                       | 8.33              | 9.21  | 1            | 100             | 200     | 12.9                                  | 31                                    | HP           | TP |
| P4SMAJ8.0   | P4SMAJ8.0C  | 8                         | 8.89              | 11.3  | 1            | 50              | 100     | 15                                    | 26.5                                  | HQ           | TQ |
| P4SMAJ8.0A  | P4SMAJ8.0CA | 8                         | 8.89              | 9.83  | 1            | 50              | 100     | 13.6                                  | 29.4                                  | HR           | TR |
| P4SMAJ8.5   | P4SMAJ8.5C  | 8.50                      | 9.44              | 11.92 | 1            | 10              | 20      | 15.9                                  | 25.1                                  | HS           | TS |
| P4SMAJ8.5A  | P4SMAJ8.5CA | 8.50                      | 9.44              | 10.4  | 1            | 10              | 20      | 14.4                                  | 27.7                                  | HT           | TT |
| P4SMAJ9.0   | P4SMAJ9.0C  | 9                         | 10                | 12.6  | 1            | 5               | 5       | 16.9                                  | 23.6                                  | HU           | TU |
| P4SMAJ9.0A  | P4SMAJ9.0CA | 9                         | 10                | 11.1  | 1            | 5               | 5       | 15.4                                  | 26                                    | HV           | TV |
| P4SMAJ10    | P4SMAJ10C   | 10                        | 11.1              | 14.1  | 1            | 5               | 5       | 18.8                                  | 21.2                                  | HW           | TW |
| P4SMAJ10A   | P4SMAJ10CA  | 10                        | 11.1              | 12.3  | 1            | 5               | 5       | 17                                    | 23.5                                  | HX           | TX |
| P4SMAJ11    | P4SMAJ11C   | 11                        | 12.2              | 15.4  | 1            | 1               | 1       | 20.1                                  | 20                                    | HY           | TY |
| P4SMAJ11A   | P4SMAJ11CA  | 11                        | 12.2              | 13.5  | 1            | 1               | 1       | 18.2                                  | 22                                    | HZ           | TZ |
| P4SMAJ12    | P4SMAJ12C   | 12                        | 13.3              | 16.9  | 1            | 1               | 1       | 22                                    | 18.1                                  | ID           | UD |
| P4SMAJ12A   | P4SMAJ12CA  | 12                        | 13.3              | 14.7  | 1            | 1               | 1       | 19.9                                  | 20.1                                  | IE           | UE |
| P4SMAJ13    | P4SMAJ13C   | 13                        | 14.4              | 18.2  | 1            | 1               | 1       | 23.8                                  | 16.8                                  | IF           | UF |
| P4SMAJ13A   | P4SMAJ13CA  | 13                        | 14.4              | 15.9  | 1            | 1               | 1       | 21.5                                  | 18.6                                  | IG           | UG |
| P4SMAJ14    | P4SMAJ14C   | 14                        | 15.6              | 19.8  | 1            | 1               | 1       | 25.8                                  | 15.5                                  | IH           | UH |
| P4SMAJ14A   | P4SMAJ14CA  | 14                        | 15.6              | 17.2  | 1            | 1               | 1       | 23.2                                  | 17.2                                  | IK           | UK |
| P4SMAJ15    | P4SMAJ15C   | 15                        | 16.7              | 21.1  | 1            | 1               | 1       | 26.9                                  | 14.8                                  | IL           | UL |
| P4SMAJ15A   | P4SMAJ15CA  | 15                        | 16.7              | 18.5  | 1            | 1               | 1       | 24.4                                  | 16.4                                  | IM           | UM |
| P4SMAJ16    | P4SMAJ16C   | 16                        | 17.8              | 22.6  | 1            | 1               | 1       | 28.8                                  | 13.8                                  | IN           | UN |
| P4SMAJ16A   | P4SMAJ16CA  | 16                        | 17.8              | 19.7  | 1            | 1               | 1       | 26                                    | 15.3                                  | IP           | UP |
| P4SMAJ17    | P4SMAJ17C   | 17                        | 18.9              | 23.9  | 1            | 1               | 1       | 30.5                                  | 13.1                                  | IQ           | UQ |
| P4SMAJ17A   | P4SMAJ17CA  | 17                        | 18.9              | 20.9  | 1            | 1               | 1       | 27.6                                  | 14.5                                  | IR           | UR |
| P4SMAJ18    | P4SMAJ18C   | 18                        | 20                | 25.3  | 1            | 1               | 1       | 32.2                                  | 12.4                                  | IS           | US |
| P4SMAJ18A   | P4SMAJ18CA  | 18                        | 20                | 22.1  | 1            | 1               | 1       | 29.2                                  | 13.7                                  | IT           | UT |
| P4SMAJ20    | P4SMAJ20C   | 20                        | 22.2              | 28.1  | 1            | 1               | 1       | 35.8                                  | 11.1                                  | IU           | UU |
| P4SMAJ20A   | P4SMAJ20CA  | 20                        | 22.2              | 24.5  | 1            | 1               | 1       | 32.4                                  | 12.3                                  | IV           | UV |
| P4SMAJ22    | P4SMAJ22C   | 22                        | 24.4              | 30.9  | 1            | 1               | 1       | 39.4                                  | 10.1                                  | IW           | UW |
| P4SMAJ22A   | P4SMAJ22CA  | 22                        | 24.4              | 26.9  | 1            | 1               | 1       | 35.5                                  | 11.2                                  | IX           | UX |
| P4SMAJ24    | P4SMAJ24C   | 24                        | 26.7              | 33.8  | 1            | 1               | 1       | 43                                    | 9.3                                   | IY           | UY |
| P4SMAJ24A   | P4SMAJ24CA  | 24                        | 26.7              | 29.5  | 1            | 1               | 1       | 38.9                                  | 10.3                                  | IZ           | UZ |
| P4SMAJ26    | P4SMAJ26C   | 26                        | 28.9              | 36.6  | 1            | 1               | 1       | 46.6                                  | 8.6                                   | JD           | VD |
| P4SMAJ26A   | P4SMAJ26CA  | 26                        | 28.9              | 31.9  | 1            | 1               | 1       | 42.1                                  | 9.5                                   | JE           | VE |
| P4SMAJ28    | P4SMAJ28C   | 28                        | 31.1              | 39.4  | 1            | 1               | 1       | 50                                    | 8                                     | JF           | VF |
| P4SMAJ28A   | P4SMAJ28CA  | 28                        | 31.1              | 34.4  | 1            | 1               | 1       | 45.4                                  | 8.8                                   | JG           | VG |
| P4SMAJ30    | P4SMAJ30C   | 30                        | 33.3              | 42.2  | 1            | 1               | 1       | 53.5                                  | 7.5                                   | JH           | VH |
| P4SMAJ30A   | P4SMAJ30CA  | 30                        | 33.3              | 36.8  | 1            | 1               | 1       | 48.4                                  | 8.3                                   | JK           | VK |
| P4SMAJ33    | P4SMAJ33C   | 33                        | 36.7              | 46.5  | 1            | 1               | 1       | 59                                    | 6.8                                   | JL           | VL |
| P4SMAJ33A   | P4SMAJ33CA  | 33                        | 36.7              | 40.6  | 1            | 1               | 1       | 53.3                                  | 7.5                                   | JM           | VM |
| P4SMAJ36    | P4SMAJ36C   | 36                        | 40                | 50.7  | 1            | 1               | 1       | 64.3                                  | 6.2                                   | JN           | VN |
| P4SMAJ36A   | P4SMAJ36CA  | 36                        | 40                | 44.2  | 1            | 1               | 1       | 58.1                                  | 6.9                                   | JP           | VP |
| P4SMAJ40    | P4SMAJ40C   | 40                        | 44.4              | 56.3  | 1            | 1               | 1       | 71.4                                  | 5.6                                   | JQ           | VQ |
| P4SMAJ40A   | P4SMAJ40CA  | 40                        | 44.4              | 49.1  | 1            | 1               | 1       | 64.5                                  | 6.2                                   | JR           | VR |

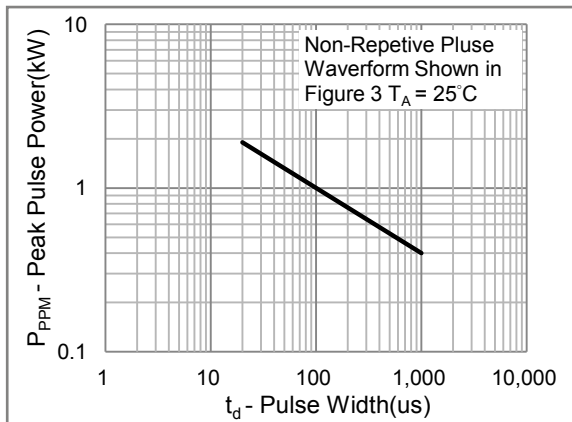


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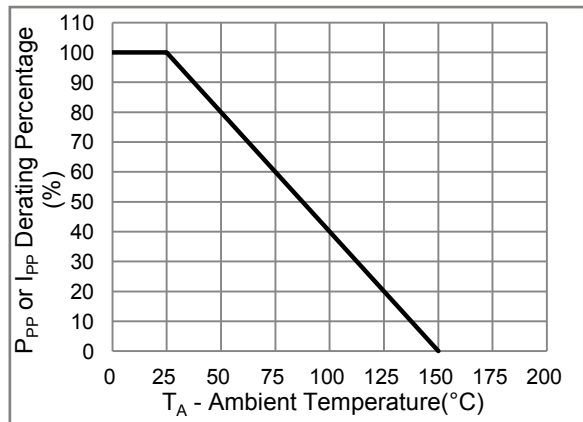
| Part Number |             | Reverse Stand-off Voltage | Breakdown Voltage                |       | Test Current | Reverse Leakage                   |                | Max. Clamp Voltage<br>10/1000µs | Peak Pulse Current<br>10/1000µs | Marking Code |    |
|-------------|-------------|---------------------------|----------------------------------|-------|--------------|-----------------------------------|----------------|---------------------------------|---------------------------------|--------------|----|
|             |             |                           | V <sub>BR</sub> @ I <sub>T</sub> |       |              | I <sub>R</sub> @ V <sub>RRM</sub> |                |                                 |                                 |              |    |
|             |             |                           | V <sub>RRM</sub> (Notes 6)       | Min.  |              | Max.                              | I <sub>T</sub> |                                 |                                 |              |    |
| UNI         | BI          | V                         | V                                | V     | mA           | µA                                | µA             | V                               | A                               | UNI          | BI |
| P4SMAJ43    | P4SMAJ43C   | 43                        | 47.8                             | 60.5  | 1            | 1                                 | 1              | 76.7                            | 5.2                             | JS           | VS |
| P4SMAJ43A   | P4SMAJ43CA  | 43                        | 47.8                             | 52.8  | 1            | 1                                 | 1              | 69.4                            | 5.7                             | JT           | VT |
| P4SMAJ45    | P4SMAJ45C   | 45                        | 50                               | 63.3  | 1            | 1                                 | 1              | 80.3                            | 5                               | JU           | VU |
| P4SMAJ45A   | P4SMAJ45CA  | 45                        | 50                               | 55.3  | 1            | 1                                 | 1              | 72.7                            | 5.5                             | JV           | VV |
| P4SMAJ48    | P4SMAJ48C   | 48                        | 53.3                             | 67.5  | 1            | 1                                 | 1              | 85.5                            | 4.7                             | JW           | VW |
| P4SMAJ48A   | P4SMAJ48CA  | 48                        | 53.3                             | 58.9  | 1            | 1                                 | 1              | 77.4                            | 5.2                             | JX           | VX |
| P4SMAJ51    | P4SMAJ51C   | 51                        | 56.7                             | 71.8  | 1            | 1                                 | 1              | 91.1                            | 4.4                             | JY           | VY |
| P4SMAJ51A   | P4SMAJ51CA  | 51                        | 56.7                             | 62.7  | 1            | 1                                 | 1              | 82.4                            | 4.9                             | JZ           | VZ |
| P4SMAJ54    | P4SMAJ54C   | 54                        | 60                               | 76    | 1            | 1                                 | 1              | 96.3                            | 4.2                             | RD           | WD |
| P4SMAJ54A   | P4SMAJ54CA  | 54                        | 60                               | 66.3  | 1            | 1                                 | 1              | 87.1                            | 4.6                             | RE           | WE |
| P4SMAJ58    | P4SMAJ58C   | 58                        | 64.4                             | 81.6  | 1            | 1                                 | 1              | 103                             | 3.9                             | RF           | WF |
| P4SMAJ58A   | P4SMAJ58CA  | 58                        | 64.4                             | 71.2  | 1            | 1                                 | 1              | 93.6                            | 4.3                             | RG           | WG |
| P4SMAJ60    | P4SMAJ60C   | 60                        | 66.7                             | 84.5  | 1            | 1                                 | 1              | 107                             | 3.7                             | RH           | WH |
| P4SMAJ60A   | P4SMAJ60CA  | 60                        | 66.7                             | 73.7  | 1            | 1                                 | 1              | 96.8                            | 4.1                             | RK           | WK |
| P4SMAJ64    | P4SMAJ64C   | 64                        | 71.1                             | 90.1  | 1            | 1                                 | 1              | 114                             | 3.5                             | RL           | WL |
| P4SMAJ64A   | P4SMAJ64CA  | 64                        | 71.1                             | 78.6  | 1            | 1                                 | 1              | 103                             | 3.9                             | RM           | WM |
| P4SMAJ70    | P4SMAJ70C   | 70                        | 77.8                             | 98.6  | 1            | 1                                 | 1              | 125                             | 3.2                             | RN           | WN |
| P4SMAJ70A   | P4SMAJ70CA  | 70                        | 77.8                             | 86    | 1            | 1                                 | 1              | 113                             | 3.5                             | RP           | WP |
| P4SMAJ75    | P4SMAJ75C   | 75                        | 83.3                             | 105.7 | 1            | 1                                 | 1              | 134                             | 3                               | RQ           | WQ |
| P4SMAJ75A   | P4SMAJ75CA  | 75                        | 83.3                             | 92.1  | 1            | 1                                 | 1              | 121                             | 3.3                             | RR           | WR |
| P4SMAJ78    | P4SMAJ78C   | 78                        | 86.7                             | 109.8 | 1            | 1                                 | 1              | 139                             | 2.9                             | RS           | WS |
| P4SMAJ78A   | P4SMAJ78CA  | 78                        | 86.7                             | 95.8  | 1            | 1                                 | 1              | 126                             | 3.2                             | RT           | WT |
| P4SMAJ85    | P4SMAJ85C   | 85                        | 94.4                             | 119.2 | 1            | 1                                 | 1              | 151                             | 2.6                             | RU           | WU |
| P4SMAJ85A   | P4SMAJ85CA  | 85                        | 94.4                             | 104   | 1            | 1                                 | 1              | 137                             | 2.9                             | RV           | WV |
| P4SMAJ90    | P4SMAJ90C   | 90                        | 100                              | 126.5 | 1            | 1                                 | 1              | 160                             | 2.5                             | RW           | WW |
| P4SMAJ90A   | P4SMAJ90CA  | 90                        | 100                              | 111   | 1            | 1                                 | 1              | 146                             | 2.7                             | RX           | WX |
| P4SMAJ100   | P4SMAJ100C  | 100                       | 111                              | 141   | 1            | 1                                 | 1              | 179                             | 2.2                             | RY           | WY |
| P4SMAJ100A  | P4SMAJ100CA | 100                       | 111                              | 123   | 1            | 1                                 | 1              | 162                             | 2.5                             | RZ           | WZ |
| P4SMAJ110   | P4SMAJ110C  | 110                       | 122                              | 154.5 | 1            | 1                                 | 1              | 196                             | 2                               | SD           | XD |
| P4SMAJ110A  | P4SMAJ110CA | 110                       | 122                              | 135   | 1            | 1                                 | 1              | 177                             | 2.3                             | SE           | XE |
| P4SMAJ120   | P4SMAJ120C  | 120                       | 133                              | 169   | 1            | 1                                 | 1              | 214                             | 1.9                             | SF           | XF |
| P4SMAJ120A  | P4SMAJ120CA | 120                       | 133                              | 147   | 1            | 1                                 | 1              | 193                             | 2                               | SG           | XG |
| P4SMAJ130   | P4SMAJ130C  | 130                       | 144                              | 182.5 | 1            | 1                                 | 1              | 231                             | 1.7                             | SH           | XH |
| P4SMAJ130A  | P4SMAJ130CA | 130                       | 144                              | 159   | 1            | 1                                 | 1              | 209                             | 1.9                             | SK           | XK |
| P4SMAJ150   | P4SMAJ150C  | 150                       | 167                              | 211.5 | 1            | 1                                 | 1              | 268                             | 1.5                             | SL           | XL |
| P4SMAJ150A  | P4SMAJ150CA | 150                       | 167                              | 185   | 1            | 1                                 | 1              | 243                             | 1.6                             | SM           | XM |
| P4SMAJ160   | P4SMAJ160C  | 160                       | 178                              | 226   | 1            | 1                                 | 1              | 287                             | 1.4                             | SN           | XN |
| P4SMAJ160A  | P4SMAJ160CA | 160                       | 178                              | 197   | 1            | 1                                 | 1              | 259                             | 1.5                             | SP           | XP |
| P4SMAJ170   | P4SMAJ170C  | 170                       | 189                              | 239.5 | 1            | 1                                 | 1              | 304                             | 1.3                             | SQ           | XQ |
| P4SMAJ170A  | P4SMAJ170CA | 170                       | 189                              | 209   | 1            | 1                                 | 1              | 275                             | 1.4                             | SR           | XR |
| P4SMAJ180   | P4SMAJ180C  | 180                       | 198                              | 253.8 | 1            | 1                                 | 1              | 322                             | 1.2                             | SS           | YS |
| P4SMAJ180A  | P4SMAJ180CA | 180                       | 198                              | 222   | 1            | 1                                 | 1              | 292                             | 1.3                             | ST           | YT |
| P4SMAJ190   | P4SMAJ190C  | 190                       | 209                              | 267.9 | 1            | 1                                 | 1              | 340                             | 1.2                             | SU           | YU |
| P4SMAJ190A  | P4SMAJ190CA | 190                       | 209                              | 243.2 | 1            | 1                                 | 1              | 308                             | 1.3                             | SV           | YV |
| P4SMAJ200   | P4SMAJ200C  | 200                       | 220                              | 282   | 1            | 1                                 | 1              | 358                             | 1.1                             | SW           | YW |
| P4SMAJ200A  | P4SMAJ200CA | 200                       | 220                              | 247   | 1            | 1                                 | 1              | 324                             | 1.2                             | SX           | YX |
| P4SMAJ210   | P4SMAJ210C  | 210                       | 231                              | 296.1 | 1            | 1                                 | 1              | 376                             | 1.1                             | SY           | YY |
| P4SMAJ210A  | P4SMAJ210CA | 210                       | 231                              | 268.8 | 1            | 1                                 | 1              | 340                             | 1.2                             | SZ           | YZ |
| P4SMAJ220   | P4SMAJ220C  | 220                       | 242                              | 310.2 | 1            | 1                                 | 1              | 394                             | 1                               | GD           | ZD |
| P4SMAJ220A  | P4SMAJ220CA | 220                       | 242                              | 272   | 1            | 1                                 | 1              | 356                             | 1.1                             | GE           | ZE |



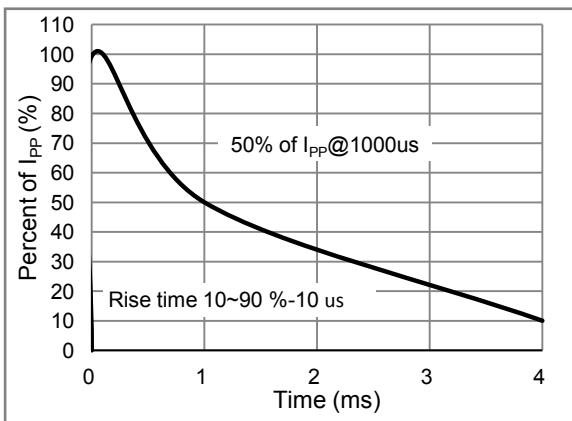
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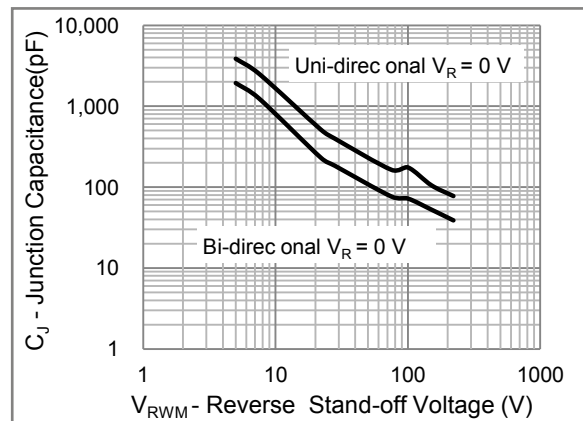
**Fig.1 Peak Pulse Power Rating**



**Fig.2 Derating Curve**



**Fig.3 Pulse Waveform**

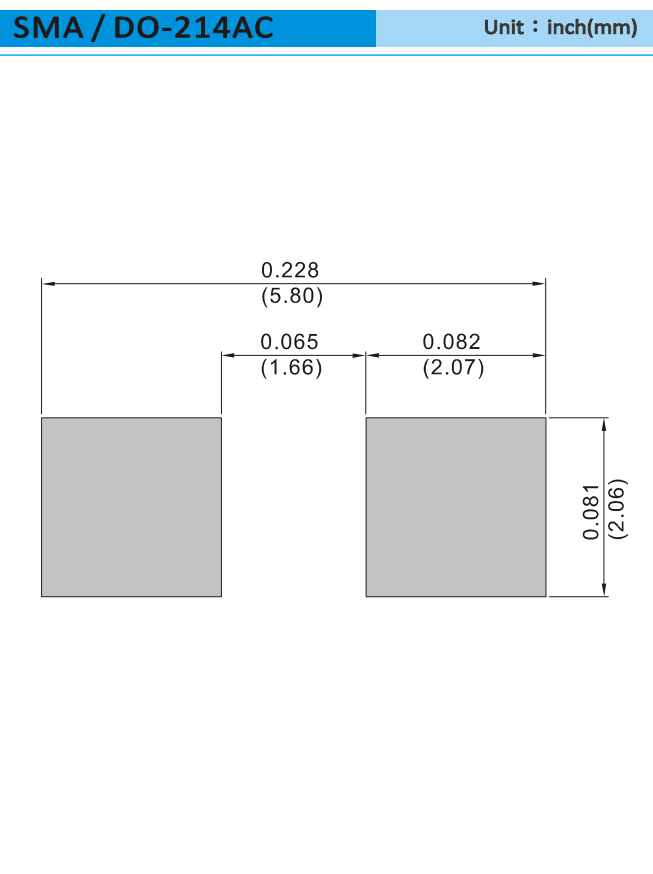


**Fig.4 Typical Capacitance**



## P4SMAJ SERIES

### MOUNTING PAD LAYOUT



### ORDER INFORMATION

- Packing information  
T/R - 7.5K per 13" plastic Reel  
T/R - 1.8K per 7" plastic Reel



## P4SMAJ SERIES

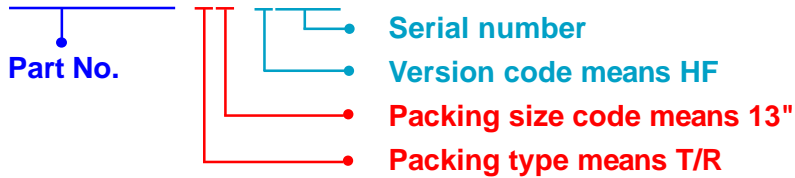
### Part No\_ packing code\_ Version

P4SMAJ5.0\_R1\_00001

P4SMAJ5.0\_R2\_00001

For example :

**RB500V-40\_R2\_00001**



| Packing Code <b>XX</b>               |                      |                                  |                      | Version Code <b>XXXXX</b> |                      |                                       |
|--------------------------------------|----------------------|----------------------------------|----------------------|---------------------------|----------------------|---------------------------------------|
| Packing type                         | 1 <sup>st</sup> Code | Packing size code                | 2 <sup>nd</sup> Code | HF or RoHS                | 1 <sup>st</sup> Code | 2 <sup>nd</sup> ~5 <sup>th</sup> Code |
| Tape and Ammunition Box (T/B)        | <b>A</b>             | N/A                              | <b>0</b>             | <b>HF</b>                 | <b>0</b>             | serial number                         |
| Tape and Reel (T/R)                  | <b>R</b>             | 7"                               | <b>1</b>             | <b>RoHS</b>               | <b>1</b>             | serial number                         |
| Bulk Packing (B/P)                   | <b>B</b>             | 13"                              | <b>2</b>             |                           |                      |                                       |
| Tube Packing (T/P)                   | <b>T</b>             | 26mm                             | <b>X</b>             |                           |                      |                                       |
| Tape and Reel (Right Oriented) (TRR) | <b>S</b>             | 52mm                             | <b>Y</b>             |                           |                      |                                       |
| Tape and Reel (Left Oriented) (TRL)  | <b>L</b>             | PANASERT T/B CATHODE UP (PBCU)   | <b>U</b>             |                           |                      |                                       |
| FORMING                              | <b>F</b>             | PANASERT T/B CATHODE DOWN (PBCD) | <b>D</b>             |                           |                      |                                       |



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