



# P4SMAJ SERIES

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

**VOLTAGE** 5.0 to 220 Volts **PEAK PULSE POWER** 400 Watts **SMA/DO-214AC** Unit: inch (mm)

### FEATURES

- For surface mounted applications in order to optimize board space.
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- High temperature soldering : 260°C /10 seconds at terminals
- In compliance with EU RoHS 2002/95/EC directives

### 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 positive end (cathode)
- Standard Packaging: 12mm tape (EIA-481)
- Weight: 0.002 ounce, 0.064 gram



### 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 <sub>PPM</sub>                 | 400         | Watts |
| Peak Forward Surge Current per Fig.5 (Note 3)                                 | I <sub>FSM</sub>                 | 40          | Amps  |
| Peak Pulse Current on 10/1000s waveform(Note 1)Fig.2                          | I <sub>PPM</sub>                 | see Table 1 | Amps  |
| Steady State Power Dissipation (NOTE 4)                                       | P <sub>M(AV)</sub>               | 1.0         | Watts |
| Operating Junction and Storage Temperature Range                              | T <sub>J</sub> ,T <sub>STG</sub> | -55 to +150 | °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 5.0mm<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 10/1000uS.



## P4SMAJ SERIES

| Part Number                              |             | Reverse Stand-off Voltage | Breakdown Voltage                |       | Test Current | Reverse Leakage                   |      | Max. Clamp Voltage | Peak Pulse Current | Marking Code |    |
|--|-------------|---------------------------|----------------------------------|-------|--------------|-----------------------------------|------|--------------------|--------------------|--------------|----|
|  |             |                           | V <sub>BR</sub> @ I <sub>T</sub> |       |              | I <sub>R</sub> @ V <sub>RWM</sub> |      |                    |                    |              |    |
|  |             |                           | Min.                             | Max.  |              | UNI                               | BI   |                    |                    |              |    |
| UNI                                      | BI          | V                         | V                                | V     | mA           | μA                                | μA   | V                  | A                  | UNI          | BI |
| <b>400W Transient Voltage Suppressor</b> |             |                           |                                  |       |              |                                   |      |                    |                    |              |    |
| 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                              | 7.25  | 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                             | 7.67  | 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                             | 8.3   | 10           | 500                               | 100  | 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                             | 8.95  | 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                             | 9.58  | 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                             | 10.23 | 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                             | 10.82 | 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                               | 11.5  | 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                             | 12.8  | 1            | 5                                 | 5    | 17                 | 23.5               | HX           | TX |
| P4SMAJ11                                 | P4SMAJ11C   | 11                        | 12.2                             | 15.4  | 1            | 5                                 | 5    | 20.1               | 20                 | HY           | TY |
| P4SMAJ11A                                | P4SMAJ11CA  | 11                        | 12.2                             | 14    | 1            | 5                                 | 5    | 18.2               | 22                 | HZ           | TZ |
| P4SMAJ12                                 | P4SMAJ12C   | 12                        | 13.3                             | 16.9  | 1            | 5                                 | 5    | 22                 | 18.1               | ID           | UD |
| P4SMAJ12A                                | P4SMAJ12CA  | 12                        | 13.3                             | 15.3  | 1            | 5                                 | 5    | 19.9               | 20.1               | IE           | UE |
| P4SMAJ13                                 | P4SMAJ13C   | 13                        | 14.4                             | 18.2  | 1            | 5                                 | 5    | 23.8               | 16.8               | IF           | UF |
| P4SMAJ13A                                | P4SMAJ13CA  | 13                        | 14.4                             | 16.5  | 1            | 5                                 | 5    | 21.5               | 18.6               | IG           | UG |
| P4SMAJ14                                 | P4SMAJ14C   | 14                        | 15.6                             | 19.8  | 1            | 5                                 | 5    | 25.8               | 15.5               | IH           | UH |
| P4SMAJ14A                                | P4SMAJ14CA  | 14                        | 15.6                             | 17.9  | 1            | 5                                 | 5    | 23.2               | 17.2               | IK           | UK |
| P4SMAJ15                                 | P4SMAJ15C   | 15                        | 16.7                             | 21.1  | 1            | 5                                 | 5    | 26.9               | 14.8               | IL           | UL |
| P4SMAJ15A                                | P4SMAJ15CA  | 15                        | 16.7                             | 19.2  | 1            | 5                                 | 5    | 24.4               | 16.4               | IM           | UM |
| P4SMAJ16                                 | P4SMAJ16C   | 16                        | 17.8                             | 22.6  | 1            | 5                                 | 5    | 28.8               | 13.8               | IN           | UN |
| P4SMAJ16A                                | P4SMAJ16CA  | 16                        | 17.8                             | 20.5  | 1            | 5                                 | 5    | 26                 | 15.3               | IP           | UP |
| P4SMAJ17                                 | P4SMAJ17C   | 17                        | 18.9                             | 23.9  | 1            | 5                                 | 5    | 30.5               | 13.1               | IQ           | UQ |
| P4SMAJ17A                                | P4SMAJ17CA  | 17                        | 18.9                             | 21.7  | 1            | 5                                 | 5    | 27.6               | 14.5               | IR           | UR |
| P4SMAJ18                                 | P4SMAJ18C   | 18                        | 20                               | 25.3  | 1            | 5                                 | 5    | 32.2               | 12.4               | IS           | US |
| P4SMAJ18A                                | P4SMAJ18CA  | 18                        | 20                               | 23.3  | 1            | 5                                 | 5    | 29.2               | 13.7               | IT           | UT |
| P4SMAJ20                                 | P4SMAJ20C   | 20                        | 22.2                             | 28.1  | 1            | 5                                 | 5    | 35.8               | 11.1               | IU           | UU |
| P4SMAJ20A                                | P4SMAJ20CA  | 20                        | 22.2                             | 25.5  | 1            | 5                                 | 5    | 32.4               | 12.3               | IV           | UV |
| P4SMAJ22                                 | P4SMAJ22C   | 22                        | 24.4                             | 30.9  | 1            | 5                                 | 5    | 39.4               | 10.1               | IW           | UW |
| P4SMAJ22A                                | P4SMAJ22CA  | 22                        | 24.4                             | 28    | 1            | 5                                 | 5    | 35.5               | 11.2               | IX           | UX |
| P4SMAJ24                                 | P4SMAJ24C   | 24                        | 26.7                             | 33.8  | 1            | 5                                 | 5    | 43                 | 9.3                | IY           | UY |
| P4SMAJ24A                                | P4SMAJ24CA  | 24                        | 26.7                             | 30.7  | 1            | 5                                 | 5    | 38.9               | 10.3               | IZ           | UZ |
| P4SMAJ26                                 | P4SMAJ26C   | 26                        | 28.9                             | 36.6  | 1            | 5                                 | 5    | 46.6               | 8.6                | JD           | VD |
| P4SMAJ26A                                | P4SMAJ26CA  | 26                        | 28.9                             | 33.2  | 1            | 5                                 | 5    | 42.1               | 9.5                | JE           | VE |
| P4SMAJ28                                 | P4SMAJ28C   | 28                        | 31.1                             | 39.4  | 1            | 5                                 | 5    | 50                 | 8                  | JF           | VF |
| P4SMAJ28A                                | P4SMAJ28CA  | 28                        | 31.1                             | 35.8  | 1            | 5                                 | 5    | 45.4               | 8.8                | JG           | VG |
| P4SMAJ30                                 | P4SMAJ30C   | 30                        | 33.3                             | 42.2  | 1            | 5                                 | 5    | 53.5               | 7.5                | JH           | VH |
| P4SMAJ30A                                | P4SMAJ30CA  | 30                        | 33.3                             | 38.3  | 1            | 5                                 | 5    | 48.4               | 8.3                | JK           | VK |
| P4SMAJ33                                 | P4SMAJ33C   | 33                        | 36.7                             | 46.5  | 1            | 5                                 | 5    | 59                 | 6.8                | JL           | VL |
| P4SMAJ33A                                | P4SMAJ33CA  | 33                        | 36.7                             | 42.2  | 1            | 5                                 | 5    | 53.3               | 7.5                | JM           | VM |
| P4SMAJ36                                 | P4SMAJ36C   | 36                        | 40                               | 50.7  | 1            | 5                                 | 5    | 64.3               | 6.2                | JN           | VN |
| P4SMAJ36A                                | P4SMAJ36CA  | 36                        | 40                               | 46    | 1            | 5                                 | 5    | 58.1               | 6.9                | JP           | VP |
| P4SMAJ40                                 | P4SMAJ40C   | 40                        | 44.4                             | 56.3  | 1            | 5                                 | 5    | 71.4               | 5.6                | JQ           | VQ |
| P4SMAJ40A                                | P4SMAJ40CA  | 40                        | 44.4                             | 51.1  | 1            | 5                                 | 5    | 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 | Peak Pulse Current | Marking Code |    |    |
|--|-------------|---------------------------|-------------------|----------------------------------|--------------|------------------------------------|---|--------------------|--------------------|--------------|----|----|
|  |             |                           | V <sub>VRWM</sub> | V <sub>BR</sub> @ I <sub>T</sub> |              | I <sub>R</sub> @ V <sub>VRWM</sub> |   |                    |                    |              |    |    |
|  |             | UNI                       |                   | BI                               | V            | V                                  | V | mA                 | μA                 |              |    | μA |
| <b>400W Transient Voltage Suppressor</b> |             |                           |                   |                                  |              |                                    |   |                    |                    |              |    |    |
| P4SMAJ43                                 | P4SMAJ43C   | 43                        | 47.8              | 60.5                             | 1            | 5                                  | 5 | 76.7               | 5.2                | JS           | VS |    |
| P4SMAJ43A                                | P4SMAJ43CA  | 43                        | 47.8              | 54.9                             | 1            | 5                                  | 5 | 69.4               | 5.7                | JT           | VT |    |
| P4SMAJ45                                 | P4SMAJ45C   | 45                        | 50                | 63.3                             | 1            | 5                                  | 5 | 80.3               | 5                  | JU           | VU |    |
| P4SMAJ45A                                | P4SMAJ45CA  | 45                        | 50                | 57.5                             | 1            | 5                                  | 5 | 72.7               | 5.5                | JV           | VV |    |
| P4SMAJ48                                 | P4SMAJ48C   | 48                        | 53.3              | 67.5                             | 1            | 5                                  | 5 | 85.5               | 4.7                | JW           | VW |    |
| P4SMAJ48A                                | P4SMAJ48CA  | 48                        | 53.3              | 61.3                             | 1            | 5                                  | 5 | 77.4               | 5.2                | JX           | VX |    |
| P4SMAJ51                                 | P4SMAJ51C   | 51                        | 56.7              | 71.8                             | 1            | 5                                  | 5 | 91.1               | 4.4                | JY           | VY |    |
| P4SMAJ51A                                | P4SMAJ51CA  | 51                        | 56.7              | 65.2                             | 1            | 5                                  | 5 | 82.4               | 4.9                | JZ           | VZ |    |
| P4SMAJ54                                 | P4SMAJ54C   | 54                        | 60                | 76                               | 1            | 5                                  | 5 | 96.3               | 4.2                | RD           | WD |    |
| P4SMAJ54A                                | P4SMAJ54CA  | 54                        | 60                | 69                               | 1            | 5                                  | 5 | 87.1               | 4.6                | RE           | WE |    |
| P4SMAJ58                                 | P4SMAJ58C   | 58                        | 64.4              | 81.6                             | 1            | 5                                  | 5 | 103                | 3.9                | RF           | WF |    |
| P4SMAJ58A                                | P4SMAJ58CA  | 58                        | 64.4              | 74.1                             | 1            | 5                                  | 5 | 93.6               | 4.3                | RG           | WG |    |
| P4SMAJ60                                 | P4SMAJ60C   | 60                        | 66.7              | 84.5                             | 1            | 5                                  | 5 | 107                | 3.7                | RH           | WH |    |
| P4SMAJ60A                                | P4SMAJ60CA  | 60                        | 66.7              | 76.7                             | 1            | 5                                  | 5 | 96.8               | 4.1                | RK           | WK |    |
| P4SMAJ64                                 | P4SMAJ64C   | 64                        | 71.1              | 90.1                             | 1            | 5                                  | 5 | 114                | 3.5                | RL           | WL |    |
| P4SMAJ64A                                | P4SMAJ64CA  | 64                        | 71.1              | 81.8                             | 1            | 5                                  | 5 | 103                | 3.9                | RM           | WM |    |
| P4SMAJ70                                 | P4SMAJ70C   | 70                        | 77.8              | 98.6                             | 1            | 5                                  | 5 | 125                | 3.2                | RN           | WN |    |
| P4SMAJ70A                                | P4SMAJ70CA  | 70                        | 77.8              | 89.5                             | 1            | 5                                  | 5 | 113                | 3.5                | RP           | WP |    |
| P4SMAJ75                                 | P4SMAJ75C   | 75                        | 83.3              | 105.7                            | 1            | 5                                  | 5 | 134                | 3                  | RQ           | WQ |    |
| P4SMAJ75A                                | P4SMAJ75CA  | 75                        | 83.3              | 95.8                             | 1            | 5                                  | 5 | 121                | 3.3                | RR           | WR |    |
| P4SMAJ78                                 | P4SMAJ78C   | 78                        | 86.7              | 109.8                            | 1            | 5                                  | 5 | 139                | 2.9                | RS           | WS |    |
| P4SMAJ78A                                | P4SMAJ78CA  | 78                        | 86.7              | 99.7                             | 1            | 5                                  | 5 | 126                | 2.2                | RT           | WT |    |
| P4SMAJ85                                 | P4SMAJ85C   | 85                        | 94.4              | 119.2                            | 1            | 5                                  | 5 | 151                | 2.6                | RU           | WU |    |
| P4SMAJ85A                                | P4SMAJ85CA  | 85                        | 94.4              | 108.2                            | 1            | 5                                  | 5 | 137                | 2.9                | RV           | WV |    |
| P4SMAJ90                                 | P4SMAJ90C   | 90                        | 100               | 126.5                            | 1            | 5                                  | 5 | 160                | 2.5                | RW           | WW |    |
| P4SMAJ90A                                | P4SMAJ90CA  | 90                        | 100               | 115.5                            | 1            | 5                                  | 5 | 146                | 2.7                | RX           | WX |    |
| P4SMAJ100                                | P4SMAJ100C  | 100                       | 111               | 141                              | 1            | 5                                  | 5 | 179                | 2.2                | RY           | WY |    |
| P4SMAJ100A                               | P4SMAJ100CA | 100                       | 111               | 128                              | 1            | 5                                  | 5 | 162                | 2.5                | RZ           | WZ |    |
| P4SMAJ110                                | P4SMAJ110C  | 110                       | 122               | 154.5                            | 1            | 5                                  | 5 | 196                | 2                  | SD           | XD |    |
| P4SMAJ110A                               | P4SMAJ110CA | 110                       | 122               | 140.5                            | 1            | 5                                  | 5 | 177                | 2.3                | SE           | XE |    |
| P4SMAJ120                                | P4SMAJ120C  | 120                       | 133               | 169                              | 1            | 5                                  | 5 | 214                | 1.9                | SF           | XF |    |
| P4SMAJ120A                               | P4SMAJ120CA | 120                       | 133               | 153                              | 1            | 5                                  | 5 | 193                | 2                  | SG           | XG |    |
| P4SMAJ130                                | P4SMAJ130C  | 130                       | 144               | 182.5                            | 1            | 5                                  | 5 | 231                | 1.7                | SH           | XH |    |
| P4SMAJ130A                               | P4SMAJ130CA | 130                       | 144               | 165.5                            | 1            | 5                                  | 5 | 209                | 1.9                | SK           | XK |    |
| P4SMAJ150                                | P4SMAJ150C  | 150                       | 167               | 211.5                            | 1            | 5                                  | 5 | 268                | 1.5                | SL           | XL |    |
| P4SMAJ150A                               | P4SMAJ150CA | 150                       | 167               | 192.5                            | 1            | 5                                  | 5 | 243                | 1.6                | SM           | XM |    |
| P4SMAJ160                                | P4SMAJ160C  | 160                       | 178               | 226                              | 1            | 5                                  | 5 | 287                | 1.4                | SN           | XN |    |
| P4SMAJ160A                               | P4SMAJ160CA | 160                       | 178               | 205                              | 1            | 5                                  | 5 | 259                | 1.5                | SP           | XP |    |
| P4SMAJ170                                | P4SMAJ170C  | 170                       | 189               | 239.5                            | 1            | 5                                  | 5 | 304                | 1.3                | SQ           | XQ |    |
| P4SMAJ170A                               | P4SMAJ170CA | 170                       | 189               | 217.5                            | 1            | 5                                  | 5 | 275                | 1.4                | SR           | XR |    |
| P4SMAJ180                                | P4SMAJ180C  | 180                       | 198               | 253.8                            | 1            | 5                                  | 5 | 322                | 1.2                | SS           | YS |    |
| P4SMAJ180A                               | P4SMAJ180CA | 180                       | 198               | 230.4                            | 1            | 5                                  | 5 | 292                | 1.3                | ST           | YT |    |
| P4SMAJ190                                | P4SMAJ190C  | 190                       | 209               | 267.9                            | 1            | 5                                  | 5 | 340                | 1.2                | SU           | YU |    |
| P4SMAJ190A                               | P4SMAJ190CA | 190                       | 209               | 243.2                            | 1            | 5                                  | 5 | 308                | 1.3                | SV           | YV |    |
| P4SMAJ200                                | P4SMAJ200C  | 200                       | 220               | 282                              | 1            | 5                                  | 5 | 358                | 1.1                | SW           | YW |    |
| P4SMAJ200A                               | P4SMAJ200CA | 200                       | 220               | 256                              | 1            | 5                                  | 5 | 324                | 1.2                | SX           | YX |    |
| P4SMAJ210                                | P4SMAJ210C  | 210                       | 231               | 296.1                            | 1            | 5                                  | 5 | 376                | 1.1                | SY           | YY |    |
| P4SMAJ210A                               | P4SMAJ210CA | 210                       | 231               | 268.8                            | 1            | 5                                  | 5 | 340                | 1.2                | SZ           | YZ |    |
| P4SMAJ220                                | P4SMAJ220C  | 220                       | 242               | 310.2                            | 1            | 5                                  | 5 | 394                | 1                  | GD           | ZD |    |
| P4SMAJ220A                               | P4SMAJ220CA | 220                       | 242               | 281.6                            | 1            | 5                                  | 5 | 356                | 1.1                | GE           | ZE |    |



## P4SMAJ SERIES



**Fig.1 PEAK PULSE POWER RATING CURVE**



**Fig.2 DERATING CURVE**



**Fig.3 PULSE WAVEFORM**



**Fig.4 TYPICAL JUNCTION CAPACITANCE**



**Fig.5 MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT**

PLEASE REFER THE TVS APPLICATION NOTE IN PANJIT WEBSITE

<http://www.panjit.com/protection-transient-voltage-suppressors.html>

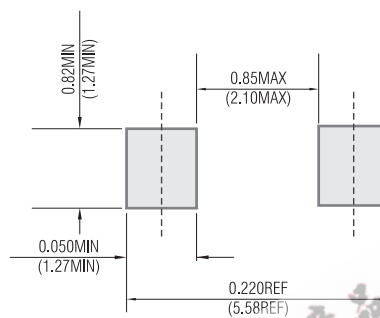


## P4SMAJ SERIES

### MOUNTING PAD LAYOUT

SMA/DO-214AC

Unit: inch ( mm )



### ORDER INFORMATION

- Packing information

T/R - 7.5K per 13" plastic Reel

T/R - 1.8Kper 7" plastic Reel

### LEGAL STATEMENT

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