

## P4SMA SERIES

### SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

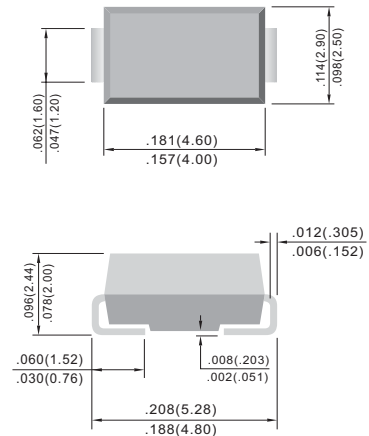
**VOLTAGE** 5.5 to 214 Volts **PEAK PULSE POWER** 400 Watts **SMA/DO-214AC** Unit: inch (mm)

#### 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-O
- 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 P4SMA6.8 thru types P4SMA250.  
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) | $P_{PPM}$      | 400         | Watts            |
| Peak Forward Surge Current per Fig.5 (Note 3)                                 | $I_{FSM}$      | 40          | Amps             |
| Peak Pulse Current on 10/1000s waveform (Note 1) Fig.2                        | $I_{PPM}$      | see Table 1 | Amps             |
| Steady State Power Dissipation (NOTE 4)                                       | $P_{M(AV)}$    | 1.0         | Watts            |
| 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 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.



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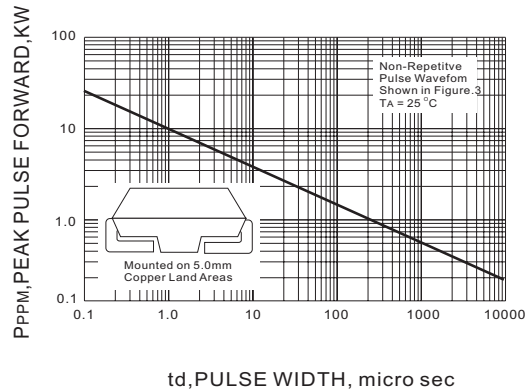
| Part Number                       |            | Reverse Stand-off Voltage | Breakdown Voltage |                                  | Test Current | Reverse Leakage |                                   | Max. Clamp Voltage               | Peak Pulse Current | Marking Code |     |
|-----------------------------------|------------|---------------------------|-------------------|----------------------------------|--------------|-----------------|-----------------------------------|----------------------------------|--------------------|--------------|-----|
|                                   |            |                           | V <sub>RWM</sub>  | V <sub>BR</sub> @ I <sub>T</sub> |              | I <sub>T</sub>  | I <sub>R</sub> @ V <sub>RWM</sub> |                                  |                    |              |     |
|                                   |            | Min.                      |                   | Max.                             | UNI          |                 | BI                                | V <sub>C</sub> @ I <sub>PP</sub> | I <sub>PP</sub>    |              |     |
| UNI                               | BI         | V                         | V                 | V                                | mA           | μA              | μA                                | V                                | A                  | UNI          | BI  |
| 400W Transient Voltage Suppressor |            |                           |                   |                                  |              |                 |                                   |                                  |                    |              |     |
| P4SMA6.8                          | P4SMA6.8C  | 5.5                       | 6.12              | 7.48                             | 10           | 1000            | 2000                              | 10.8                             | 38                 | MZA          | NZA |
| P4SMA6.8A                         | P4SMA6.8CA | 5.8                       | 6.45              | 7.14                             | 10           | 1000            | 2000                              | 10.5                             | 40                 | MZB          | NZB |
| P4SMA7.5                          | P4SMA7.5C  | 6.05                      | 6.75              | 8.25                             | 10           | 500             | 1000                              | 11.7                             | 36                 | MZC          | NZC |
| P4SMA7.5A                         | P4SMA7.5CA | 6.4                       | 7.13              | 7.88                             | 10           | 500             | 1000                              | 11.3                             | 37                 | MZD          | NZD |
| P4SMA8.2                          | P4SMA8.2C  | 6.63                      | 7.38              | 9.02                             | 10           | 200             | 400                               | 12.5                             | 33                 | MZE          | NZE |
| P4SMA8.2A                         | P4SMA8.2CA | 7.02                      | 7.79              | 8.61                             | 10           | 200             | 400                               | 12.1                             | 35                 | MZF          | NZF |
| P4SMA9.1                          | P4SMA9.1C  | 7.37                      | 8.19              | 10                               | 1            | 50              | 100                               | 13.8                             | 30                 | MZG          | NZG |
| P4SMA9.1A                         | P4SMA9.1CA | 7.78                      | 8.65              | 9.5                              | 1            | 50              | 100                               | 13.4                             | 31                 | MZH          | NZH |
| P4SMA10                           | P4SMA10C   | 8.1                       | 9                 | 11                               | 1            | 10              | 20                                | 15                               | 28                 | MZJ          | NZJ |
| P4SMA10A                          | P4SMA10CA  | 8.55                      | 9.5               | 10.5                             | 1            | 10              | 20                                | 14.5                             | 29                 | MZK          | NZK |
| P4SMA11                           | P4SMA11C   | 8.92                      | 9.9               | 12.1                             | 1            | 5               | 10                                | 16.2                             | 26                 | MZL          | NZL |
| P4SMA11A                          | P4SMA11CA  | 9.4                       | 10.5              | 11.6                             | 1            | 5               | 10                                | 15.6                             | 27                 | MZM          | NZM |
| P4SMA12                           | P4SMA12C   | 9.72                      | 10.8              | 13.2                             | 1            | 5               | 5                                 | 17.3                             | 24                 | MZN          | NZN |
| P4SMA12A                          | P4SMA12CA  | 10.2                      | 11.4              | 12.6                             | 1            | 5               | 5                                 | 16.7                             | 25                 | MZP          | NZP |
| P4SMA13                           | P4SMA13C   | 10.5                      | 11.7              | 14.3                             | 1            | 5               | 5                                 | 19                               | 22                 | MZQ          | NZQ |
| P4SMA13A                          | P4SMA13CA  | 11.1                      | 12.4              | 13.7                             | 1            | 5               | 5                                 | 18.2                             | 23                 | MZR          | NZR |
| P4SMA15                           | P4SMA15C   | 12.1                      | 13.5              | 16.5                             | 1            | 5               | 5                                 | 22                               | 19                 | MZS          | NZS |
| P4SMA15A                          | P4SMA15CA  | 12.8                      | 14.3              | 15.8                             | 1            | 5               | 5                                 | 21.2                             | 20                 | MZT          | NZT |
| P4SMA16                           | P4SMA16C   | 12.9                      | 14.4              | 17.6                             | 1            | 5               | 5                                 | 23.5                             | 18                 | MZU          | NZU |
| P4SMA16A                          | P4SMA16CA  | 13.6                      | 15.2              | 16.8                             | 1            | 5               | 5                                 | 22.5                             | 19                 | MZV          | NZV |
| P4SMA18                           | P4SMA18C   | 14.5                      | 16.2              | 19.8                             | 1            | 5               | 5                                 | 26.5                             | 16                 | MZW          | NZW |
| P4SMA18A                          | P4SMA18CA  | 15.3                      | 17.1              | 18.9                             | 1            | 5               | 5                                 | 25.2                             | 17                 | MZX          | NZX |
| P4SMA20                           | P4SMA20C   | 16.2                      | 18                | 22                               | 1            | 5               | 5                                 | 29.1                             | 14                 | MZY          | NZY |
| PSMA20A                           | P4SMA20CA  | 17.1                      | 19                | 21                               | 1            | 5               | 5                                 | 27.7                             | 15                 | MZZ          | NZZ |
| P4SMA22                           | P4SMA22C   | 17.8                      | 19.8              | 24.2                             | 1            | 5               | 5                                 | 31.9                             | 13                 | MXA          | NXA |
| P4SMA22A                          | P4SMA22CA  | 18.8                      | 20.9              | 23.1                             | 1            | 5               | 5                                 | 30.6                             | 14                 | MXB          | NXB |
| P4SMA24                           | PSMA24C    | 19.4                      | 21.6              | 26.4                             | 1            | 5               | 5                                 | 34.7                             | 12                 | MXC          | NXC |
| P4SMA24A                          | P4SMA24CA  | 20.5                      | 22.8              | 25.2                             | 1            | 5               | 5                                 | 33.2                             | 13                 | MXD          | NXD |
| P4SMA27                           | P4SMA27C   | 21.8                      | 24.3              | 29.7                             | 1            | 5               | 5                                 | 39.1                             | 11                 | MXE          | NXE |
| P4SMA27A                          | P4SMA27CA  | 23.1                      | 25.7              | 28.4                             | 1            | 5               | 5                                 | 37.5                             | 11.2               | MXF          | NXF |
| P4SMA30                           | P4SMA30C   | 24.3                      | 27                | 33                               | 1            | 5               | 5                                 | 43.5                             | 10                 | MXG          | NXG |
| P4SMA30A                          | P4SMA30CA  | 25.6                      | 28.5              | 31.5                             | 1            | 5               | 5                                 | 41.4                             | 10                 | MXH          | NXH |
| P4SMA33                           | P4SMA33C   | 26.8                      | 29.7              | 36.3                             | 1            | 5               | 5                                 | 47.7                             | 9                  | MXJ          | NXJ |
| P4SMA33A                          | P4SMA33CA  | 28.2                      | 31.4              | 34.7                             | 1            | 5               | 5                                 | 45.7                             | 9                  | MXK          | NXK |
| P4SMA36                           | P4SMA36C   | 29.1                      | 32.4              | 39.6                             | 1            | 5               | 5                                 | 52                               | 8                  | MXL          | NXL |
| P4SMA36A                          | P4SMA36CA  | 30.8                      | 34.2              | 37.8                             | 1            | 5               | 5                                 | 49.9                             | 8.4                | MXM          | NXM |
| P4SMA39                           | P4SMA39C   | 31.6                      | 35.1              | 42.9                             | 1            | 5               | 5                                 | 56.4                             | 7.4                | MXN          | NXN |
| P4SMA39A                          | P4SMA39CA  | 33.3                      | 37.1              | 41                               | 1            | 5               | 5                                 | 53.9                             | 7.8                | MXP          | NXP |
| P4SMA43                           | P4SMA43C   | 34.8                      | 38.7              | 47.3                             | 1            | 5               | 5                                 | 61.9                             | 6.8                | MXQ          | NXQ |



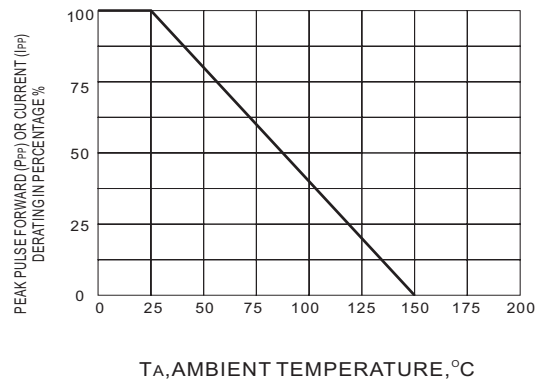
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| Part Number                       |            | Reverse<br>Stand-off<br>Voltage | Breakdown<br>Voltage |                                  | Test<br>Current | Reverse<br>Leakage                |     | Max.<br>Clamp<br>Voltage | Peak<br>Pulse<br>Current         | Marking<br>Code |     |
|-----------------------------------|------------|---------------------------------|----------------------|----------------------------------|-----------------|-----------------------------------|-----|--------------------------|----------------------------------|-----------------|-----|
|                                   |            |                                 | V <sub>RWM</sub>     | V <sub>BR</sub> @ I <sub>T</sub> |                 | I <sub>R</sub> @ V <sub>RWM</sub> |     |                          |                                  |                 |     |
|                                   |            | Min.                            |                      | Max.                             | I <sub>T</sub>  |                                   | UNI | BI                       | V <sub>C</sub> @ I <sub>PP</sub> |                 |     |
| UNI                               | BI         | V                               | V                    | V                                | mA              | μA                                | μA  | V                        | A                                | UNI             | BI  |
| 400W Transient Voltage Suppressor |            |                                 |                      |                                  |                 |                                   |     |                          |                                  |                 |     |
| P4SMA43A                          | P4SMA43CA  | 36.8                            | 40.9                 | 45.2                             | 1               | 5                                 | 5   | 59.3                     | 7.1                              | MXR             | NXR |
| P4SMA47                           | P4SMA47C   | 38.1                            | 42.3                 | 51.7                             | 1               | 5                                 | 5   | 67.8                     | 6.2                              | MXS             | NXS |
| P4SMA47A                          | P4SMA47CA  | 40.2                            | 44.7                 | 49.4                             | 1               | 5                                 | 5   | 64.8                     | 5                                | MXT             | NXT |
| P4SMA51                           | P4SMA51C   | 41.3                            | 45.9                 | 56.1                             | 1               | 5                                 | 5   | 73.5                     | 5.7                              | MXU             | NXU |
| P4SMA51A                          | P4SMA51CA  | 43.6                            | 48.5                 | 53.6                             | 1               | 5                                 | 5   | 70.1                     | 6                                | MXV             | NXV |
| P4SMA56                           | P4SMA56C   | 45.6                            | 50.4                 | 61.6                             | 1               | 5                                 | 5   | 80.5                     | 5.2                              | MXW             | NXW |
| P4SMA56A                          | P4SMA56CA  | 47.8                            | 53.2                 | 58.8                             | 1               | 5                                 | 5   | 77                       | 5.5                              | MXX             | NXX |
| P4SMA62                           | P4SMA62C   | 50.2                            | 55.8                 | 68.2                             | 1               | 5                                 | 5   | 89                       | 4.7                              | MXY             | NXY |
| P4SMA62A                          | P4SMA62CA  | 53                              | 58.9                 | 65.1                             | 1               | 5                                 | 5   | 85                       | 5                                | MXZ             | NXZ |
| P4SMA68                           | P4SMA68C   | 55.1                            | 61.2                 | 74.8                             | 1               | 5                                 | 5   | 98                       | 4.3                              | MYA             | NYA |
| P4SMA68A                          | P4SMA68CA  | 58.1                            | 64.6                 | 71.4                             | 1               | 5                                 | 5   | 92                       | 4.6                              | MYB             | NYB |
| P4SMA75                           | P4SMA75C   | 60.7                            | 67.5                 | 82.5                             | 1               | 5                                 | 5   | 108                      | 3.9                              | MYC             | NYC |
| P4SMA75A                          | P4SMA75CA  | 64.1                            | 71.3                 | 78.8                             | 1               | 5                                 | 5   | 103                      | 4.1                              | MYD             | NYD |
| P4SMA82                           | P4SMA82C   | 66.4                            | 73.8                 | 90.2                             | 1               | 5                                 | 5   | 118                      | 3.6                              | MYE             | NYE |
| P4SMA82A                          | P4SMA82CA  | 70.1                            | 77.9                 | 86.1                             | 1               | 5                                 | 5   | 113                      | 3.7                              | MYF             | NYF |
| P4SMA91                           | P4SMA91C   | 73.7                            | 81.9                 | 100                              | 1               | 5                                 | 5   | 131                      | 3.2                              | MYG             | NYG |
| P4SMA91A                          | P4SMA91CA  | 77.8                            | 86.5                 | 95.5                             | 1               | 5                                 | 5   | 125                      | 3.4                              | MYH             | NYH |
| P4SMA100                          | P4SMA100C  | 81                              | 90                   | 110                              | 1               | 5                                 | 5   | 144                      | 2.9                              | MYJ             | NYJ |
| P4SMA100A                         | P4SMA100CA | 85.5                            | 95                   | 105                              | 1               | 5                                 | 5   | 137                      | 3.1                              | MYK             | NYK |
| P4SMA110                          | P4SMA110C  | 89.2                            | 99                   | 121                              | 1               | 5                                 | 5   | 158                      | 2.7                              | MYL             | NYL |
| P4SMA110A                         | P4SMA110CA | 94                              | 105                  | 116                              | 1               | 5                                 | 5   | 152                      | 2.8                              | MYM             | NYM |
| P4SMA120                          | P4SMA120C  | 97.2                            | 108                  | 132                              | 1               | 5                                 | 5   | 173                      | 2.4                              | MYN             | NYN |
| P4SMA120A                         | P4SMA120CA | 102                             | 114                  | 126                              | 1               | 5                                 | 5   | 165                      | 2.5                              | MYP             | NYP |
| P4SMA130                          | P4SMA130C  | 105                             | 117                  | 143                              | 1               | 5                                 | 5   | 187                      | 2.2                              | MYQ             | NYQ |
| P4SMA130A                         | P4SMA130CA | 111                             | 124                  | 137                              | 1               | 5                                 | 5   | 179                      | 2.3                              | MYR             | NYR |
| P4SMA150                          | P4SMA150C  | 121                             | 135                  | 165                              | 1               | 5                                 | 5   | 215                      | 2                                | MYS             | NYS |
| P4SMA150A                         | P4SMA150CA | 128                             | 143                  | 158                              | 1               | 5                                 | 5   | 207                      | 2                                | MYT             | NYT |
| P4SMA160                          | P4SMA160C  | 130                             | 144                  | 176                              | 1               | 5                                 | 5   | 230                      | 1.8                              | MYU             | NYU |
| P4SMA160A                         | P4SMA160CA | 136                             | 152                  | 168                              | 1               | 5                                 | 5   | 219                      | 1.9                              | MYV             | NYV |
| P4SMA170                          | P4SMA170C  | 138                             | 153                  | 187                              | 1               | 5                                 | 5   | 244                      | 1.7                              | MYW             | NYW |
| P4SMA170A                         | P4SMA170CA | 145                             | 162                  | 179                              | 1               | 5                                 | 5   | 234                      | 1.8                              | MYX             | NYX |
| P4SMA180                          | P4SMA180A  | 146                             | 162                  | 198                              | 1               | 5                                 | 5   | 258                      | 1.6                              | MYY             | NYY |
| P4SMA180A                         | P4SMA180CA | 154                             | 171                  | 189                              | 1               | 5                                 | 5   | 246                      | 1.7                              | MYZ             | NYZ |
| P4SMA200                          | P4SMA200A  | 162                             | 180                  | 220                              | 1               | 5                                 | 5   | 287                      | 1.5                              | MWA             | NWA |
| P4SMA200A                         | P4SMA200CA | 171                             | 190                  | 210                              | 1               | 5                                 | 5   | 274                      | 1.5                              | MWB             | NWB |
| P4SMA220                          | P4SMA220A  | 175                             | 198                  | 242                              | 1               | 5                                 | 5   | 344                      | 1.2                              | MWC             | NWC |
| P4SMA220A                         | P4SMA220CA | 185                             | 209                  | 231                              | 1               | 5                                 | 5   | 328                      | 1.2                              | MWD             | NWD |
| P4SMA250                          | P4SMA250C  | 202                             | 225                  | 275                              | 1               | 5                                 | 5   | 360                      | 1.1                              | MWE             | NWE |
| P4SMA250A                         | P4SMA250CA | 214                             | 237                  | 263                              | 1               | 5                                 | 5   | 344                      | 1.2                              | MWF             | NWF |

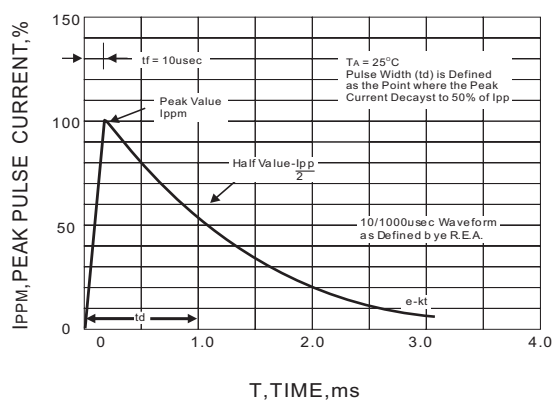
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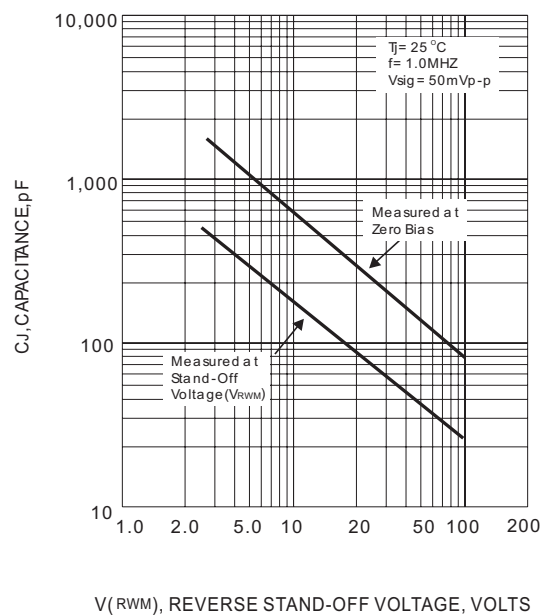
**Fig.1 PEAK PULSE POWER RATING CURVE**



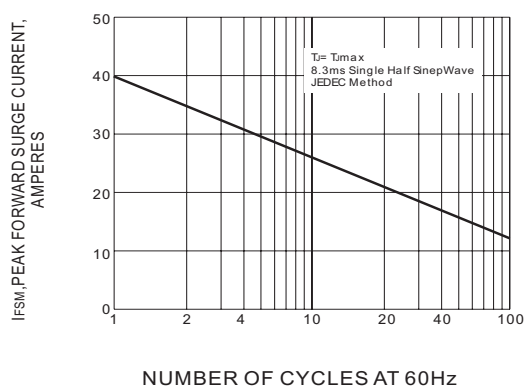
**Fig.2 DERATING CURVE**



**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

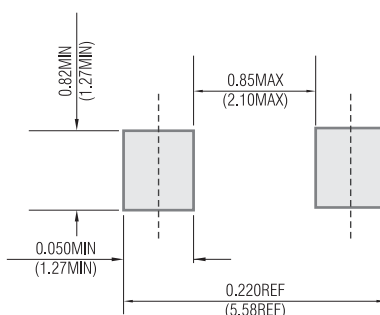
<http://www.panjit.com/protection-transient-voltage-suppressors.html>

## P4SMA SERIES

### MOUNTING PAD LAYOUT

SMA/DO-214AC

Unit: inch ( mm )



### ORDER INFORMATION

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

### LEGAL STATEMENT

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