



# P4SMA6.8~P4SMA250CA

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR POWER 400 Watt

**BREAK DOWN VOLTAGE**

**6.8 to 250 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 ± 30kV, Contact ± 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: 0.002 ounce, 0.068 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) | $P_{PP}$        | 400                  | Watts                       |
| ESD IEC-61000-4-2 (Air)<br>ESD IEC-61000-4-2 (Contact)                        | $V_{ESD}$       | $\pm 30$<br>$\pm 30$ | kV                          |
| 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                   | $^\circ\text{C} / \text{W}$ |
| 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.



## P4SMA6.8~P4SMA250CA

| 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  |
| <b>400W Transient Voltage Suppressor</b> |            |                           |                   |      |              |                 |         |                                       |                                       |              |     |
| 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            | 1               | 1       | 17.3                                  | 24                                    | MZN          | NZN |
| P4SMA12A                                 | P4SMA12CA  | 10.2                      | 11.4              | 12.6 | 1            | 1               | 1       | 16.7                                  | 25                                    | MZP          | NZP |
| P4SMA13                                  | P4SMA13C   | 10.5                      | 11.7              | 14.3 | 1            | 1               | 1       | 19                                    | 22                                    | MZQ          | NZQ |
| P4SMA13A                                 | P4SMA13CA  | 11.1                      | 12.4              | 13.7 | 1            | 1               | 1       | 18.2                                  | 23                                    | MZR          | NZR |
| P4SMA15                                  | P4SMA15C   | 12.1                      | 13.5              | 16.5 | 1            | 1               | 1       | 22                                    | 19                                    | MZS          | NZS |
| P4SMA15A                                 | P4SMA15CA  | 12.8                      | 14.3              | 15.8 | 1            | 1               | 1       | 21.2                                  | 20                                    | MZT          | NZT |
| P4SMA16                                  | P4SMA16C   | 12.9                      | 14.4              | 17.6 | 1            | 1               | 1       | 23.5                                  | 18                                    | MZU          | NZU |
| P4SMA16A                                 | P4SMA16CA  | 13.6                      | 15.2              | 16.8 | 1            | 1               | 1       | 22.5                                  | 19                                    | MZV          | NZV |
| P4SMA18                                  | P4SMA18C   | 14.5                      | 16.2              | 19.8 | 1            | 1               | 1       | 26.5                                  | 16                                    | MZW          | NZW |
| P4SMA18A                                 | P4SMA18CA  | 15.3                      | 17.1              | 18.9 | 1            | 1               | 1       | 25.2                                  | 17                                    | MZX          | NZX |
| P4SMA20                                  | P4SMA20C   | 16.2                      | 18                | 22   | 1            | 1               | 1       | 29.1                                  | 14                                    | MZY          | NZY |
| P4SMA20A                                 | P4SMA20CA  | 17.1                      | 19                | 21   | 1            | 1               | 1       | 27.7                                  | 15                                    | MZZ          | NZZ |
| P4SMA22                                  | P4SMA22C   | 17.8                      | 19.8              | 24.2 | 1            | 1               | 1       | 31.9                                  | 13                                    | MXA          | NXA |
| P4SMA22A                                 | P4SMA22CA  | 18.8                      | 20.9              | 23.1 | 1            | 1               | 1       | 30.6                                  | 14                                    | MXB          | NXB |
| P4SMA24                                  | P4SMA24C   | 19.4                      | 21.6              | 26.4 | 1            | 1               | 1       | 34.7                                  | 12                                    | MXC          | NXC |
| P4SMA24A                                 | P4SMA24CA  | 20.5                      | 22.8              | 25.2 | 1            | 1               | 1       | 33.2                                  | 13                                    | MXD          | NXD |
| P4SMA27                                  | P4SMA27C   | 21.8                      | 24.3              | 29.7 | 1            | 1               | 1       | 39.1                                  | 11                                    | MXE          | NXE |
| P4SMA27A                                 | P4SMA27CA  | 23.1                      | 25.7              | 28.4 | 1            | 1               | 1       | 37.5                                  | 11.2                                  | MXF          | NXF |
| P4SMA30                                  | P4SMA30C   | 24.3                      | 27                | 33   | 1            | 1               | 1       | 43.5                                  | 10                                    | MXG          | NXG |
| P4SMA30A                                 | P4SMA30CA  | 25.6                      | 28.5              | 31.5 | 1            | 1               | 1       | 41.4                                  | 10                                    | MXH          | NXH |
| P4SMA33                                  | P4SMA33C   | 26.8                      | 29.7              | 36.3 | 1            | 1               | 1       | 47.7                                  | 9                                     | MXJ          | NXJ |
| P4SMA33A                                 | P4SMA33CA  | 28.2                      | 31.4              | 34.7 | 1            | 1               | 1       | 45.7                                  | 9                                     | MXK          | NXK |
| P4SMA36                                  | P4SMA36C   | 29.1                      | 32.4              | 39.6 | 1            | 1               | 1       | 52                                    | 8                                     | MXL          | NXL |
| P4SMA36A                                 | P4SMA36CA  | 30.8                      | 34.2              | 37.8 | 1            | 1               | 1       | 49.9                                  | 8.4                                   | MXM          | NXM |
| P4SMA39                                  | P4SMA39C   | 31.6                      | 35.1              | 42.9 | 1            | 1               | 1       | 56.4                                  | 7.4                                   | MXN          | NXN |
| P4SMA39A                                 | P4SMA39CA  | 33.3                      | 37.1              | 41   | 1            | 1               | 1       | 53.9                                  | 7.8                                   | MXP          | NXP |
| P4SMA43                                  | P4SMA43C   | 34.8                      | 38.7              | 47.3 | 1            | 1               | 1       | 61.9                                  | 6.8                                   | MXQ          | NXQ |



## P4SMA6.8~P4SMA250CA

| 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> |            |                           |                                  |      |              |                                   |    |                    |                    |              |     |
| P4SMA43A                                 | P4SMA43CA  | 36.8                      | 40.9                             | 45.2 | 1            | 1                                 | 1  | 59.3               | 7.1                | MXR          | NXR |
| P4SMA47                                  | P4SMA47C   | 38.1                      | 42.3                             | 51.7 | 1            | 1                                 | 1  | 67.8               | 6.2                | MXS          | NXS |
| P4SMA47A                                 | P4SMA47CA  | 40.2                      | 44.7                             | 49.4 | 1            | 1                                 | 1  | 64.8               | 5                  | MXT          | NXT |
| P4SMA51                                  | P4SMA51C   | 41.3                      | 45.9                             | 56.1 | 1            | 1                                 | 1  | 73.5               | 5.7                | MXU          | NXU |
| P4SMA51A                                 | P4SMA51CA  | 43.6                      | 48.5                             | 53.6 | 1            | 1                                 | 1  | 70.1               | 6                  | MXV          | NXV |
| P4SMA56                                  | P4SMA56C   | 45.6                      | 50.4                             | 61.6 | 1            | 1                                 | 1  | 80.5               | 5.2                | MXW          | NXW |
| P4SMA56A                                 | P4SMA56CA  | 47.8                      | 53.2                             | 58.8 | 1            | 1                                 | 1  | 77                 | 5.5                | MXX          | NXX |
| P4SMA62                                  | P4SMA62C   | 50.2                      | 55.8                             | 68.2 | 1            | 1                                 | 1  | 89                 | 4.7                | MYX          | NYX |
| P4SMA62A                                 | P4SMA62CA  | 53                        | 58.9                             | 65.1 | 1            | 1                                 | 1  | 85                 | 5                  | MXZ          | NXZ |
| P4SMA68                                  | P4SMA68C   | 55.1                      | 61.2                             | 74.8 | 1            | 1                                 | 1  | 98                 | 4.3                | MYA          | NYA |
| P4SMA68A                                 | P4SMA68CA  | 58.1                      | 64.6                             | 71.4 | 1            | 1                                 | 1  | 92                 | 4.6                | MYB          | NYB |
| P4SMA75                                  | P4SMA75C   | 60.7                      | 67.5                             | 82.5 | 1            | 1                                 | 1  | 108                | 3.9                | MYC          | NYC |
| P4SMA75A                                 | P4SMA75CA  | 64.1                      | 71.3                             | 78.8 | 1            | 1                                 | 1  | 103                | 4.1                | MYD          | NYD |
| P4SMA82                                  | P4SMA82C   | 66.4                      | 73.8                             | 90.2 | 1            | 1                                 | 1  | 118                | 3.6                | MYE          | NYE |
| P4SMA82A                                 | P4SMA82CA  | 70.1                      | 77.9                             | 86.1 | 1            | 1                                 | 1  | 113                | 3.7                | MYF          | NYF |
| P4SMA91                                  | P4SMA91C   | 73.7                      | 81.9                             | 100  | 1            | 1                                 | 1  | 131                | 3.2                | MYG          | NYG |
| P4SMA91A                                 | P4SMA91CA  | 77.8                      | 86.5                             | 95.5 | 1            | 1                                 | 1  | 125                | 3.4                | MYH          | NYH |
| P4SMA100                                 | P4SMA100C  | 81                        | 90                               | 110  | 1            | 1                                 | 1  | 144                | 2.9                | MYJ          | NYJ |
| P4SMA100A                                | P4SMA100CA | 85.5                      | 95                               | 105  | 1            | 1                                 | 1  | 137                | 3.1                | MYK          | NYK |
| P4SMA110                                 | P4SMA110C  | 89.2                      | 99                               | 121  | 1            | 1                                 | 1  | 158                | 2.7                | MYL          | NYL |
| P4SMA110A                                | P4SMA110CA | 94                        | 105                              | 116  | 1            | 1                                 | 1  | 152                | 2.8                | MYM          | NYM |
| P4SMA120                                 | P4SMA120C  | 97.2                      | 108                              | 132  | 1            | 1                                 | 1  | 173                | 2.4                | MYN          | NYN |
| P4SMA120A                                | P4SMA120CA | 102                       | 114                              | 126  | 1            | 1                                 | 1  | 165                | 2.5                | MYP          | NYP |
| P4SMA130                                 | P4SMA130C  | 105                       | 117                              | 143  | 1            | 1                                 | 1  | 187                | 2.2                | MYQ          | NYQ |
| P4SMA130A                                | P4SMA130CA | 111                       | 124                              | 137  | 1            | 1                                 | 1  | 179                | 2.3                | MYR          | NYR |
| P4SMA150                                 | P4SMA150C  | 121                       | 135                              | 165  | 1            | 1                                 | 1  | 215                | 2                  | MYS          | NYS |
| P4SMA150A                                | P4SMA150CA | 128                       | 143                              | 158  | 1            | 1                                 | 1  | 207                | 2                  | MYT          | NYT |
| P4SMA160                                 | P4SMA160C  | 130                       | 144                              | 176  | 1            | 1                                 | 1  | 230                | 1.8                | MYU          | NYU |
| P4SMA160A                                | P4SMA160CA | 136                       | 152                              | 168  | 1            | 1                                 | 1  | 219                | 1.9                | MYV          | NYV |
| P4SMA170                                 | P4SMA170C  | 138                       | 153                              | 187  | 1            | 1                                 | 1  | 244                | 1.7                | MYW          | NYW |
| P4SMA170A                                | P4SMA170CA | 145                       | 162                              | 179  | 1            | 1                                 | 1  | 234                | 1.8                | MYX          | NYX |
| P4SMA180                                 | P4SMA180C  | 146                       | 162                              | 198  | 1            | 1                                 | 1  | 258                | 1.6                | MYY          | NYY |
| P4SMA180A                                | P4SMA180CA | 154                       | 171                              | 189  | 1            | 1                                 | 1  | 246                | 1.7                | MYZ          | NYZ |
| P4SMA200                                 | P4SMA200C  | 162                       | 180                              | 220  | 1            | 1                                 | 1  | 287                | 1.5                | MWA          | NWA |
| P4SMA200A                                | P4SMA200CA | 171                       | 190                              | 210  | 1            | 1                                 | 1  | 274                | 1.5                | MWB          | NWB |
| P4SMA220                                 | P4SMA220C  | 175                       | 198                              | 242  | 1            | 1                                 | 1  | 344                | 1.2                | MWC          | NWC |
| P4SMA220A                                | P4SMA220CA | 185                       | 209                              | 231  | 1            | 1                                 | 1  | 328                | 1.2                | MWD          | NWD |
| P4SMA250                                 | P4SMA250C  | 202                       | 225                              | 275  | 1            | 1                                 | 1  | 360                | 1.1                | MWE          | NWE |
| P4SMA250A                                | P4SMA250CA | 214                       | 237                              | 263  | 1            | 1                                 | 1  | 344                | 1.2                | MWF          | NWF |



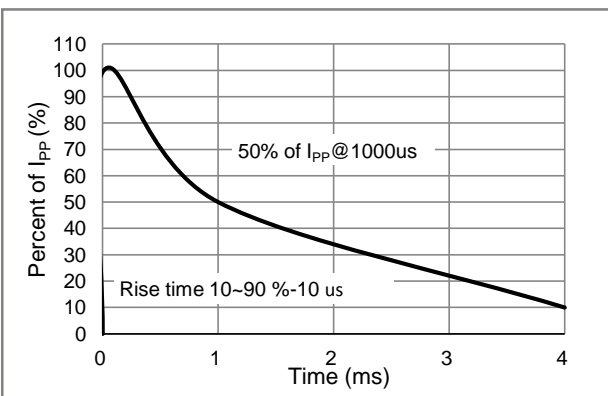
## P4SMA6.8~P4SMA250CA



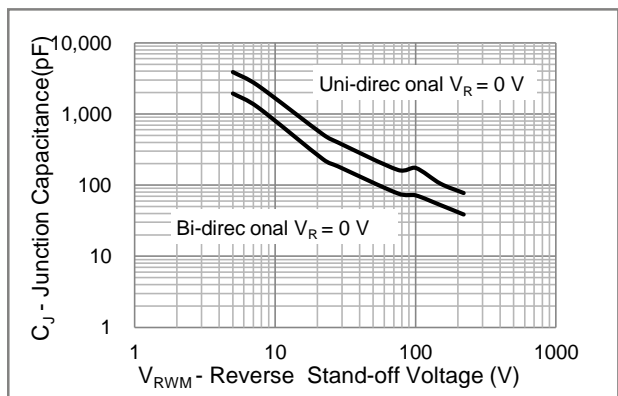
**Fig.1 Pulse Power Rating Curve**



**Fig.2 Derating Curve**



**Fig.3 10/1000us Pulse Waveform**



**Fig.4 Typical Capacitance**

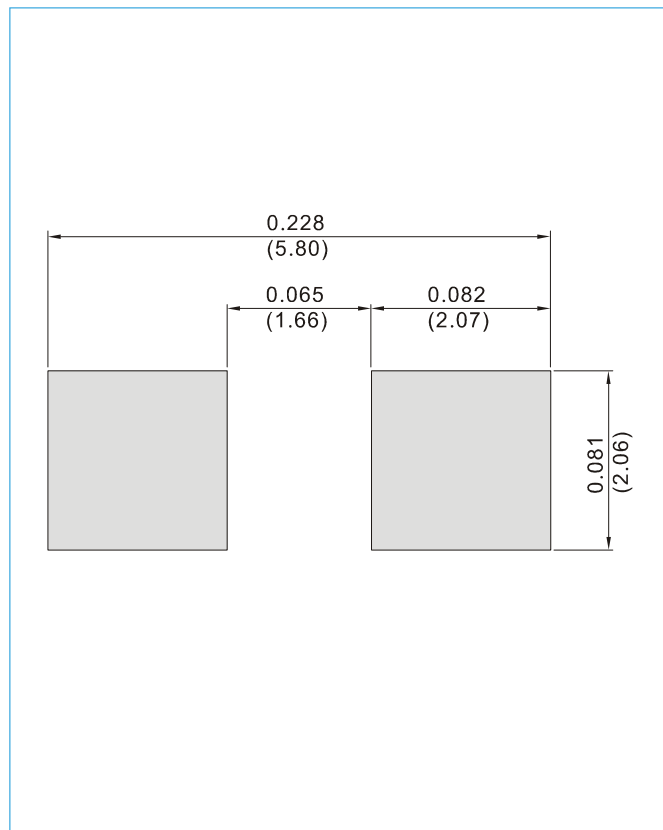


## P4SMA6.8~P4SMA250CA

### 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



## P4SMA6.8~P4SMA250CA

### Part No\_packing code\_Version

P4SMA6.8\_R1\_00001

P4SMA6.8\_R2\_00001

For example :

**RB500V-40\_R2\_00001**

Part No.



| 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>             |                           |                      |                                       |



## P4SMA6.8~P4SMA250CA

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