

## P4HE3.3A ~ P4HE64A Series

### SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

**Voltage**

**3.3~64 V**

**Power**

**400 W**

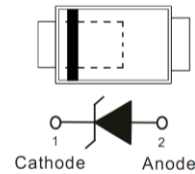
#### Features

- Ultra thin profile package for space constrained utilization.
- High temperature soldering: 260 °C/10 seconds at terminals
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

#### Mechanical Data

- Case: Molded plastic, SOD-123HE
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color Band denotes cathode end
- Approx. Weight: 0.0006 ounces, 0.0184 grams

SOD-123HE



### Maximum Ratings and Thermal Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| PARAMETER                                                                   | SYMBOL                | LIMIT       | UNITS              |
|-----------------------------------------------------------------------------|-----------------------|-------------|--------------------|
| Peak Pulse Power Dissipation( $t_p = 10/1000\text{ us}$ )                   | $P_{PP}^{(1,2)}$      | 400         | W                  |
| Peak Pulse Current on $t_p = 10/1000\text{ us}$ waveform <sup>(Fig.2)</sup> | $I_{PPM}^{(1)}$       | See table 1 | A                  |
| ESD IEC61000-4-2(Air)                                                       | $V_{ESD}$             | $\pm 30$    | kV                 |
| ESD IEC61000-4-2(Contact)                                                   |                       | $\pm 30$    |                    |
| Typical Thermal Resistance Junction to Ambient                              | $R_{\theta JA}^{(3)}$ | 185         | $^\circ\text{C/W}$ |
| Operating Junction Temperature Range                                        | $T_J$                 | -55~150     | $^\circ\text{C}$   |
| Storage Temperature Range                                                   | $T_{STG}$             | -65~150     | $^\circ\text{C}$   |



## P4HE3.3A ~ P4HE64A Series

**Electrical Characteristics** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

| Part Number                       | V <sub>RWM</sub> | V <sub>BR</sub> |      |                | I <sub>R</sub> @V <sub>RWM</sub> | V <sub>C</sub> @I <sub>PP</sub> |      | Marking Code |
|-----------------------------------|------------------|-----------------|------|----------------|----------------------------------|---------------------------------|------|--------------|
|                                   |                  | Min.            | Max. | I <sub>T</sub> |                                  |                                 |      |              |
|                                   | V                | V               | V    | mA             | uA                               | V                               | A    |              |
| 400W Transient Voltage Suppressor |                  |                 |      |                |                                  |                                 |      |              |
| P4HE3.3A                          | 3.3              | 5.2             | 6    | 10             | 100                              | 8.5                             | 47   | 4F1          |
| P4HE5.0A                          | 5                | 6.4             | 7    | 10             | 50                               | 9.2                             | 43.5 | 4F2          |
| P4HE6.0A                          | 6                | 6.67            | 7.37 | 10             | 50                               | 10.3                            | 38.8 | 4F3          |
| P4HE6.5A                          | 6.5              | 7.22            | 7.98 | 10             | 40                               | 11.2                            | 35.7 | 4F4          |
| P4HE7.0A                          | 7                | 7.78            | 8.6  | 10             | 40                               | 12                              | 33.3 | 4F5          |
| P4HE7.5A                          | 7.5              | 8.33            | 9.21 | 1              | 30                               | 12.9                            | 31   | 4F6          |
| P4HE8.0A                          | 8                | 8.89            | 9.83 | 1              | 5                                | 13.6                            | 29.4 | 4F7          |
| P4HE8.5A                          | 8.5              | 9.44            | 10.4 | 1              | 5                                | 14.4                            | 27.8 | 4F8          |
| P4HE9.0A                          | 9                | 10              | 11.1 | 1              | 0.5                              | 15.4                            | 26   | 4F9          |
| P4HE10A                           | 10               | 11.1            | 12.3 | 1              | 0.5                              | 17                              | 23.5 | 4FA          |
| P4HE11A                           | 11               | 12.2            | 13.5 | 1              | 0.5                              | 18.2                            | 22   | 4FB          |
| P4HE12A                           | 12               | 13.3            | 14.7 | 1              | 0.5                              | 19.9                            | 20.1 | 4FC          |
| P4HE13A                           | 13               | 14.4            | 15.9 | 1              | 0.1                              | 21.5                            | 18.6 | 4FD          |
| P4HE14A                           | 14               | 15.6            | 17.2 | 1              | 0.1                              | 23.2                            | 17.2 | 4FE          |
| P4HE15A                           | 15               | 16.7            | 18.5 | 1              | 0.1                              | 24.4                            | 16.4 | 4FF          |
| P4HE16A                           | 16               | 17.8            | 19.7 | 1              | 0.1                              | 26                              | 15.4 | 4FH          |
| P4HE17A                           | 17               | 18.9            | 20.9 | 1              | 0.1                              | 27.6                            | 14.5 | 4FJ          |
| P4HE18A                           | 18               | 20              | 22.1 | 1              | 0.1                              | 29.2                            | 13.7 | 4FK          |
| P4HE20A                           | 20               | 22.2            | 24.5 | 1              | 0.1                              | 32.4                            | 12.3 | 4FL          |
| P4HE22A                           | 22               | 24.4            | 26.9 | 1              | 0.1                              | 35.5                            | 11.3 | 4FM          |
| P4HE24A                           | 24               | 26.7            | 29.5 | 1              | 0.1                              | 38.9                            | 10.3 | 4FN          |
| P4HE26A                           | 26               | 28.9            | 31.9 | 1              | 0.1                              | 42.1                            | 9.5  | 4FP          |
| P4HE28A                           | 28               | 31.1            | 34.4 | 1              | 0.1                              | 45.4                            | 8.8  | 4FR          |
| P4HE30A                           | 30               | 33.3            | 36.8 | 1              | 0.1                              | 48.4                            | 8.3  | 4FT          |
| P4HE33A                           | 33               | 36.7            | 40.6 | 1              | 0.1                              | 53.3                            | 7.5  | 4FU          |
| P4HE36A                           | 36               | 40              | 44.2 | 1              | 0.1                              | 58.1                            | 6.9  | 4FV          |
| P4HE40A                           | 40               | 44.4            | 49.1 | 1              | 0.1                              | 64.5                            | 6.2  | 4FW          |
| P4HE43A                           | 43               | 47.8            | 52.8 | 1              | 0.1                              | 69.4                            | 5.8  | 4FX          |
| P4HE45A                           | 45               | 50              | 55.3 | 1              | 0.1                              | 72.7                            | 5.5  | 4FY          |
| P4HE48A                           | 48               | 53.3            | 58.9 | 1              | 0.1                              | 77.4                            | 5.2  | 4FZ          |
| P4HE51A                           | 51               | 56.7            | 62.7 | 1              | 0.1                              | 82.4                            | 4.9  | 4H1          |



## P4HE3.3A ~ P4HE64A Series

### Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Part Number                       | V <sub>RWM</sub> | V <sub>BR</sub> |      |                | I <sub>R</sub> @V <sub>RWM</sub> | V <sub>C</sub> @I <sub>PP</sub> |     | Marking Code |
|-----------------------------------|------------------|-----------------|------|----------------|----------------------------------|---------------------------------|-----|--------------|
|                                   |                  | Min.            | Max. | I <sub>T</sub> |                                  |                                 |     |              |
|                                   | V                | V               | V    | mA             | uA                               | V                               | A   |              |
| 400W Transient Voltage Suppressor |                  |                 |      |                |                                  |                                 |     |              |
| P4HE54A                           | 54               | 60              | 66.3 | 1              | 0.1                              | 87.1                            | 4.6 | 4H2          |
| P4HE58A                           | 58               | 64.4            | 71.2 | 1              | 0.1                              | 93.6                            | 4.3 | 4H3          |
| P4HE60A                           | 60               | 66.7            | 73.7 | 1              | 0.1                              | 96.8                            | 4.1 | 4H4          |
| P4HE64A                           | 64               | 71.1            | 78.6 | 1              | 0.1                              | 103                             | 3.9 | 4H5          |

#### NOTES:

1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A = 25^\circ\text{C}$  per Fig.2
2. Mounted on  $5\text{mm}^2$  copper pads to each terminal
3. Mounted on a FR4 PCB, single-sided copper, mini pad
4. TVS is a transient protection device, it is strongly recommended not to use as a Zener.

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### TYPICAL CHARACTERISTIC CURVES



Fig.1 Pulse Power Rating Curve



Fig.2 Derating Curve

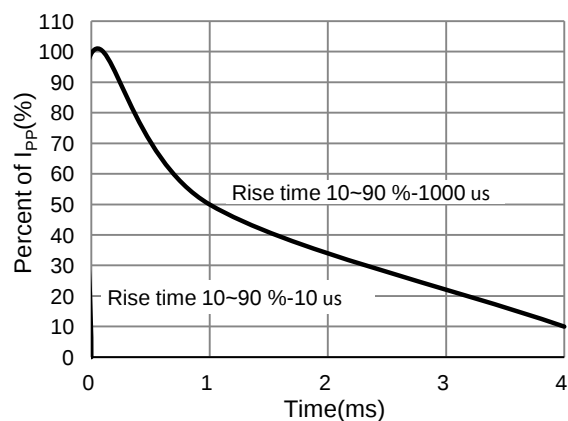


Fig.3 Pulse Waveform



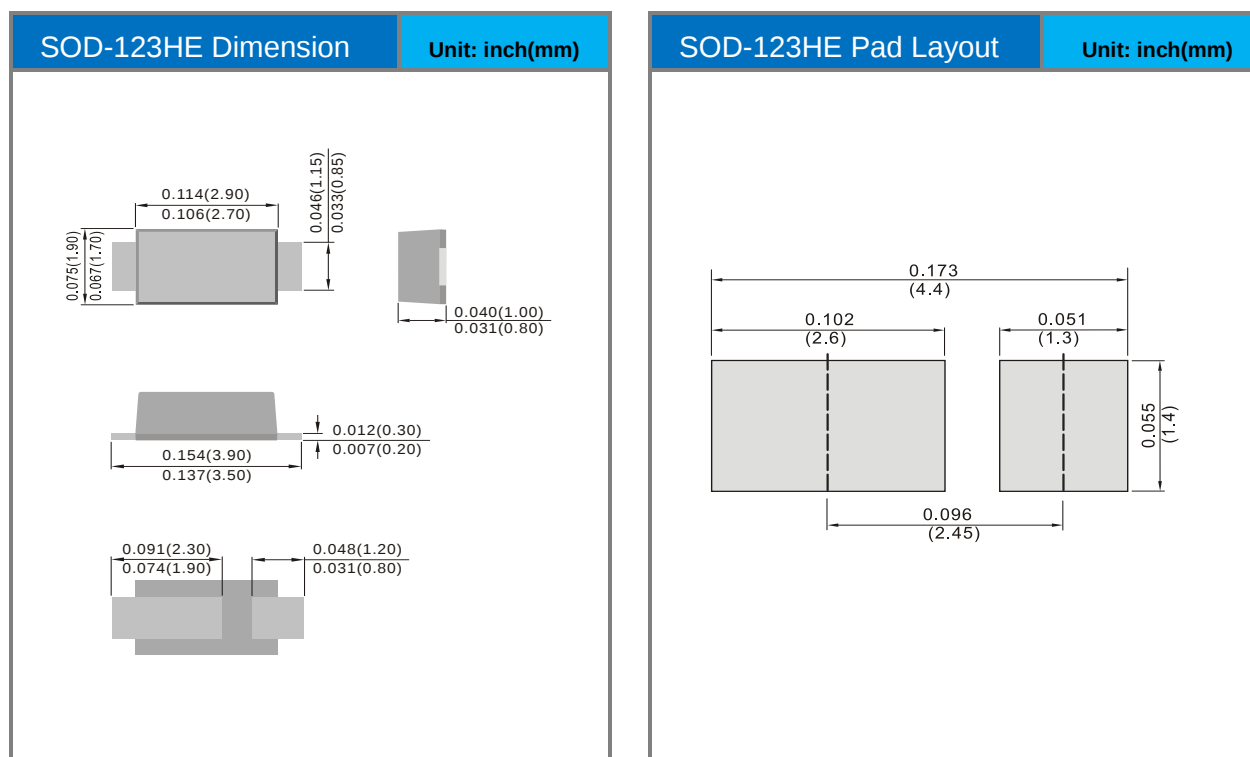
Fig.4 Typical Capacitance

## P4HE3.3A ~ P4HE64A Series

### Part No Packing Code Version

| Part No Packing Code | Package Type | Packing Type     | Marking   | Version      |
|----------------------|--------------|------------------|-----------|--------------|
| P4HExxxA_R1_00001    | SOD-123HE    | 3K pcs / 7" reel | See Table | Halogen free |

### Packaging Information & Mounting Pad Layout





## P4HE3.3A ~ P4HE64A Series

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