



## P4HE3.3A ~ P4HE64A Series

### SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

**Voltage**

**3.3~64 V**

**Power**

**400 W**

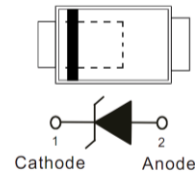
#### Features

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



## P4HE3.3A ~ P4HE64A Series

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

| Part Number                       | $V_{RWM}$ | $V_{BR}$ |      |       | $I_R@V_{RWM}$ | $V_C@I_{PP}$ |      | Marking Code |
|-----------------------------------|-----------|----------|------|-------|---------------|--------------|------|--------------|
|                                   |           | Min.     | Max. | $I_T$ |               | V            | A    |              |
|                                   | V         | V        | V    | mA    | $\mu\text{A}$ |              |      |              |
| 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                       | $V_{RWM}$ | $V_{BR}$ |      |       | $I_R@V_{RWM}$ | $V_C@I_{PP}$ |     | Marking Code |
|-----------------------------------|-----------|----------|------|-------|---------------|--------------|-----|--------------|
|                                   |           | Min.     | Max. | $I_T$ |               | V            | A   |              |
|                                   | V         | V        | V    | mA    | uA            |              |     |              |
| 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

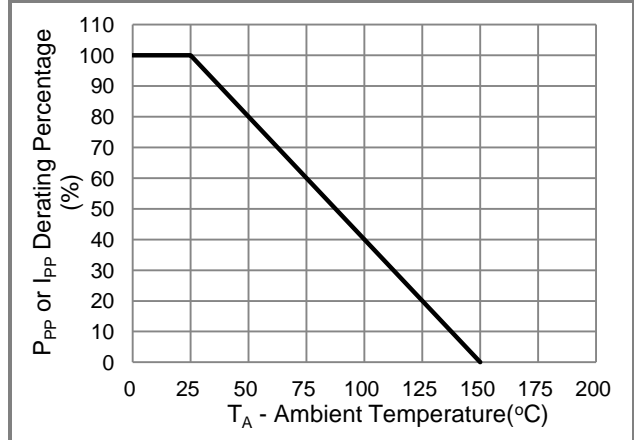


Fig.2 Derating Curve

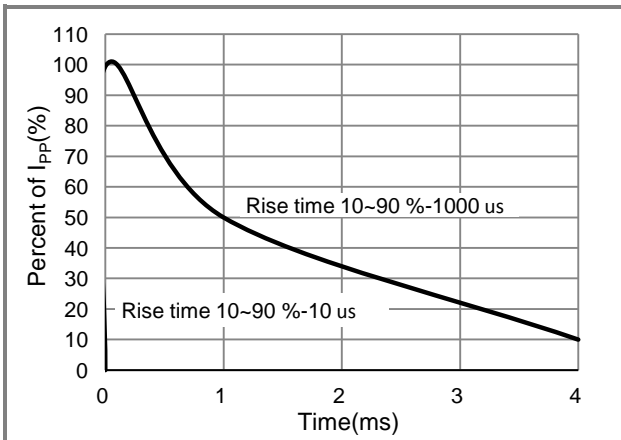


Fig.3 Pulse Waveform



Fig.4 Typical Capacitance

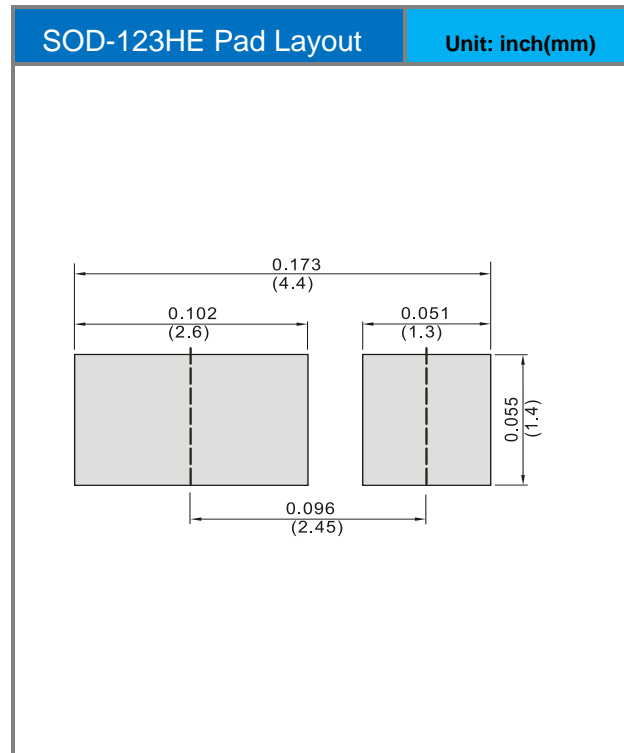
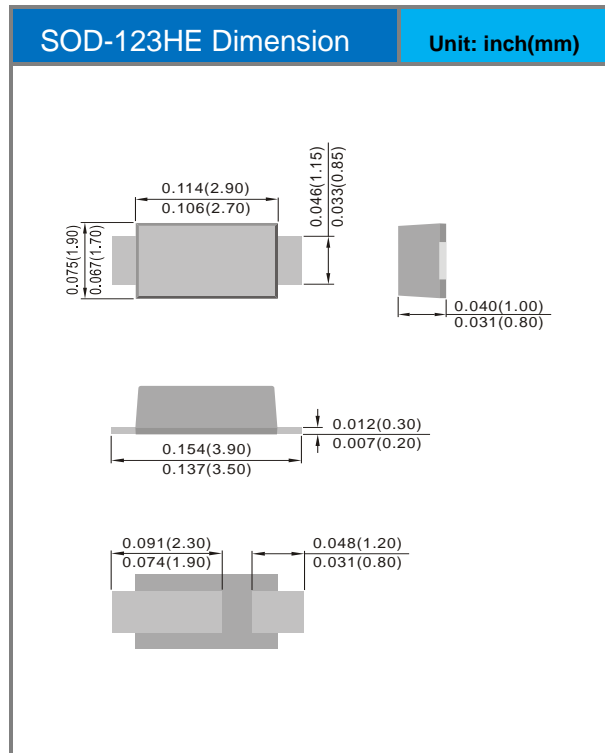


## P4HE3.3A ~ P4HE64A Series

### 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





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