

## Overview

The OHD™ Series Thermal Guard is developed for thermal problem countermeasures and safety standard conformity, which are becoming increasingly important for electronic devices in recent years.

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## Applications

Typical applications include atmospheric temperature detection and overheating monitoring of power transistors, power modules, room heaters, hot gas heaters, PPCs, amplifiers, motors, HDDs, FDDs and other general appliances.

## Benefits

- Extremely simple circuit design
- High reliability for on/off operations
- Compatibility with extremely low (0.1 mW or lower) signals to high power (6 W) levels
- Compact, light and easy to handle
- Dust, explosion and corrosion-proof
- High-speed response
- Wide range of operating temperatures available in 5°C increments from +30°C to +120°C

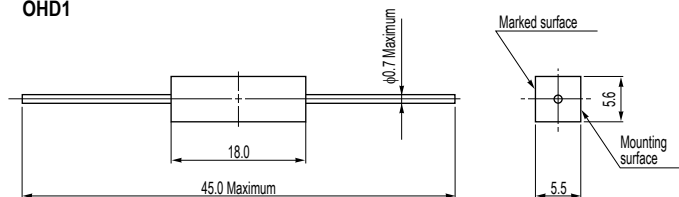


## Ordering Information

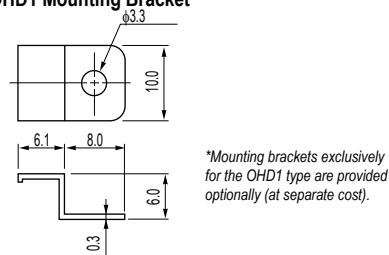
| OHD    | 1-           | 40                         |    |     | B                                                          |
|--------|--------------|----------------------------|----|-----|------------------------------------------------------------|
| Series | Model Number | Operating Temperature (°C) |    |     | Contact Type                                               |
| OHD    | 1            | 30                         | 65 | 95  | B = Break<br>M = Make<br>(OHD1 and<br>OHD3 Series<br>only) |
|        | 3            | 35                         | 70 | 100 |                                                            |
|        | 5R           | 40                         | 75 | 105 |                                                            |
|        |              | 45                         | 80 | 110 |                                                            |
|        |              | 50                         | 85 | 115 |                                                            |
|        |              | 55                         | 90 | 120 |                                                            |
|        |              | 60                         |    |     |                                                            |

## Dimensions in mm

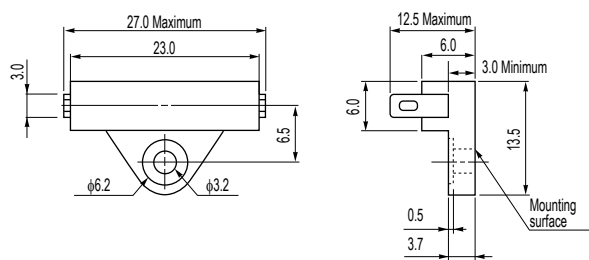
**OHD1**



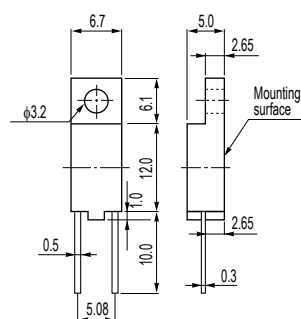
**OHD1 Mounting Bracket**



**OHD3**



**OHD5R**



## Environmental Compliance

All OHD sensors are RoHS compliant.

## Insulation Characteristics

| Series | Insulation Withstand Voltage <sup>1</sup>  | Minimum Insulation Resistance <sup>1</sup> |
|--------|--------------------------------------------|--------------------------------------------|
| OHD1   | 2,500 VAC/1 minute or 3,000 VAC/1 second   | 500 VDC to 100 MΩ                          |
| OHD3   | 2,500 VAC/1 minute or 3,000 VAC/1 second   | 500 VDC to 100 MΩ                          |
| OHD5R  | 1,500 VAC /1 minute or 1,800 VAC /1 second | 500 VDC to 100 MΩ                          |

<sup>1</sup> Between terminals and mounting resin surface

**Table 1 – Ratings & Part Number Reference**

| Part Number | Operating Temp. (°C)       | Contact Type | Maximum Opening/<br>Closing Voltage (V) | Maximum Opening/<br>Closing Current (A) | Maximum Opening/<br>Closing Power (W) | Minimum Opening/<br>Closing Current | Maximum Contact Resistance (mΩ) |
|-------------|----------------------------|--------------|-----------------------------------------|-----------------------------------------|---------------------------------------|-------------------------------------|---------------------------------|
| OHD1-40M    | 40                         | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-45M    | 45                         | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-50M    | 50                         | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-55M    | 55                         | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-60M    | 60                         | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-65M    | 65                         | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-70M    | 70                         | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-75M    | 75                         | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-80M    | 80                         | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-85M    | 85                         | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-90M    | 90                         | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-95M    | 95                         | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-100M   | 100                        | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-105M   | 105                        | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-110M   | 110                        | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-115M   | 115                        | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-120M   | 120                        | Make         | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-30B    | 30                         | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-35B    | 35                         | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-40B    | 40                         | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-45B    | 45                         | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-50B    | 50                         | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-55B    | 55                         | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-60B    | 60                         | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-65B    | 65                         | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-70B    | 70                         | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-75B    | 75                         | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-80B    | 80                         | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-85B    | 85                         | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-90B    | 90                         | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-95B    | 95                         | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-100B   | 100                        | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-105B   | 105                        | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-110B   | 110                        | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-115B   | 115                        | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD1-120B   | 120                        | Break        | 110 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-40M    | 40                         | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-45M    | 45                         | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-50M    | 50                         | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-55M    | 55                         | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-60M    | 60                         | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-65M    | 65                         | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-70M    | 70                         | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-75M    | 75                         | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-80M    | 80                         | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-85M    | 85                         | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-90M    | 90                         | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-95M    | 95                         | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-100M   | 100                        | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-105M   | 105                        | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-110M   | 110                        | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-115M   | 115                        | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-120M   | 120                        | Make         | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-30B    | 30                         | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-35B    | 35                         | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-40B    | 40                         | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-45B    | 45                         | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-50B    | 50                         | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-55B    | 55                         | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| Part Number | Operating Temperature (°C) | Contact Type | Maximum Opening/<br>Closing Voltage (V) | Maximum Opening/<br>Closing Current (A) | Maximum Opening/<br>Closing Power (W) | Minimum Opening/<br>Closing Current | Maximum Contact Resistance (mΩ) |

Table 1 – Ratings &amp; Part Number Reference cont'd

| Part Number | Operating Temp. (°C)       | Contact Type | Maximum Opening/<br>Closing Voltage (V) | Maximum Opening/<br>Closing Current (A) | Maximum Opening/<br>Closing Power (W) | Minimum Opening/<br>Closing Current | Maximum Contact Resistance (mΩ) |
|-------------|----------------------------|--------------|-----------------------------------------|-----------------------------------------|---------------------------------------|-------------------------------------|---------------------------------|
| OHD3-60B    | 60                         | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-65B    | 65                         | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-70B    | 70                         | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-75B    | 75                         | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-80B    | 80                         | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-85B    | 85                         | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-90B    | 90                         | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-95B    | 95                         | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-100B   | 100                        | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-105B   | 105                        | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-110B   | 110                        | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-115B   | 115                        | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD3-120B   | 120                        | Break        | 100 AC/DC                               | 0.3 AC/DC                               | 6 AC/DC                               | 0.1 mA / 1 VDC                      | 150                             |
| OHD5R-60B   | 60                         | Break        | 30 DC                                   | 0.1 DC                                  | 1 DC                                  | 0.1 mA / 1 VDC                      | 300                             |
| OHD5R-65B   | 65                         | Break        | 30 DC                                   | 0.1 DC                                  | 1 DC                                  | 0.1 mA / 1 VDC                      | 300                             |
| OHD5R-70B   | 70                         | Break        | 30 DC                                   | 0.1 DC                                  | 1 DC                                  | 0.1 mA / 1 VDC                      | 300                             |
| OHD5R-75B   | 75                         | Break        | 30 DC                                   | 0.1 DC                                  | 1 DC                                  | 0.1 mA / 1 VDC                      | 300                             |
| OHD5R-80B   | 80                         | Break        | 30 DC                                   | 0.1 DC                                  | 1 DC                                  | 0.1 mA / 1 VDC                      | 300                             |
| OHD5R-85B   | 85                         | Break        | 30 DC                                   | 0.1 DC                                  | 1 DC                                  | 0.1 mA / 1 VDC                      | 300                             |
| OHD5R-90B   | 90                         | Break        | 30 DC                                   | 0.1 DC                                  | 1 DC                                  | 0.1 mA / 1 VDC                      | 300                             |
| OHD5R-95B   | 95                         | Break        | 30 DC                                   | 0.1 DC                                  | 1 DC                                  | 0.1 mA / 1 VDC                      | 300                             |
| OHD5R-100B  | 100                        | Break        | 30 DC                                   | 0.1 DC                                  | 1 DC                                  | 0.1 mA / 1 VDC                      | 300                             |
| OHD5R-105B  | 105                        | Break        | 30 DC                                   | 0.1 DC                                  | 1 DC                                  | 0.1 mA / 1 VDC                      | 300                             |
| OHD5R-110B  | 110                        | Break        | 30 DC                                   | 0.1 DC                                  | 1 DC                                  | 0.1 mA / 1 VDC                      | 300                             |
| OHD5R-115B  | 115                        | Break        | 30 DC                                   | 0.1 DC                                  | 1 DC                                  | 0.1 mA / 1 VDC                      | 300                             |
| OHD5R-120B  | 120                        | Break        | 30 DC                                   | 0.1 DC                                  | 1 DC                                  | 0.1 mA / 1 VDC                      | 300                             |
| Part Number | Operating Temperature (°C) | Contact Type | Maximum Opening/<br>Closing Voltage (V) | Maximum Opening/<br>Closing Current (A) | Maximum Opening/<br>Closing Power (W) | Minimum Opening/<br>Closing Current | Maximum Contact Resistance (mΩ) |

## Precautions

### Before Using Thermal Guard

- Please read specifications and check the content thoroughly before the actual use.
- Do NOT use product under mechanical weight load.
- Do NOT use with a greater load than specified.
- Do NOT use in close proximity to strong magnetic parts and avoid exposure to a magnetic field.
- Do NOT use if dropped or severely shocked.
- The OHD1 and OHD5R are designed for printed circuit board insertion. The OHD3 is a reed wire soldered type.

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