

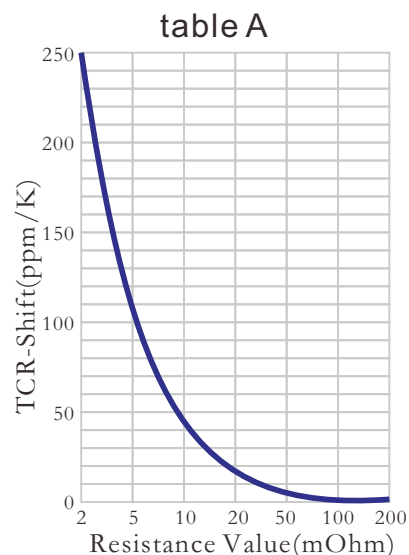
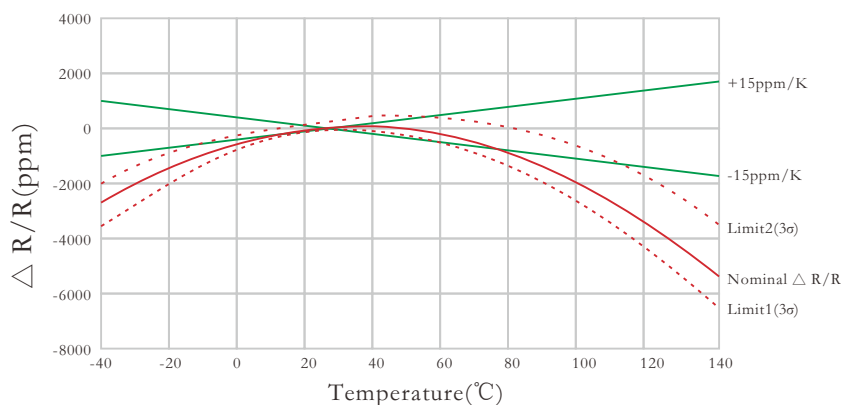
## ● Feature

- Resistance from 0.001 Ohm to 100 Ohms
- Power Rating to 50 Watts
- Resistance Tolerances to  $\pm 0.1\%$
- TCR to  $\pm 10\text{ppm/K}$
- Very Low Inductance

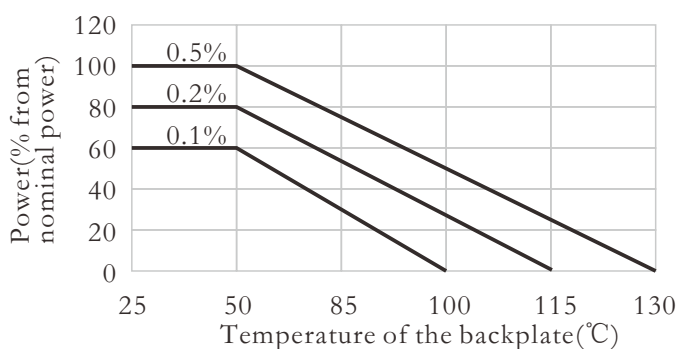
## ● Specifications

| Type   | WHR 2-3025/WHR 2-3818  | WHR 4-3825/WHR 4-3825/HWHR 4-4618   |
|--|--|---|
| Resistance Range   | 0.01 to 100 Ohms   | 0.001 to 100 Ohms   |
| Power Rating<br>free air 70°C<br>for 3825H<br>with heatsink      | 3 W<br>40 W  | 3 W<br>5 W<br>50 W  |
| Thermal Resistance Rthj-c  | 2.0 K/W  | 1.6 K/W   |
| Tolerances<br>from 0R001<br>from 0R005<br>from 0R01<br>from 0R02 | 0.5% / 1% / 2% / 5%<br>0.25% / 0.5% / 1% / 2% / 5%                             | 1% / 2% / 5%<br>0.5% / 1% / 2% / 5%<br>0.1% / 0.25% / 0.5% / 1% / 2% / 5%<br>0.1% / 0.25% / 0.5% / 1% / 2% / 5%   |
| Stability  | 0.1% / 0.2% / 0.5% (depends on stress)   |   |
| Temperature Coefficient<br>Standard<br>Option 1                  | $\pm 15\text{ppm/K}$ (20 to 60°C)<br>$R \leq 0R2$ TCR see Table A<br>next page | $\pm 15\text{ppm/K}$ (20 to 60°C)<br>$\pm 25\text{ppm/K}$ (20 to 60°C) for contact F<br><br>$\pm 10\text{ppm/K}$ (20 to 60°C)<br>(only contact A and K) |
| Max. Current   | 150 A / 200 A for contact F  |   |
| Voltage Proof  | 500 VDC  |   |
| Thermal EMF  | < 0.1 $\mu\text{V/K}$  |   |
| Operating Temperature Range                                      | -40 to 130°C   |   |
| Resistor Material  | CuNiMn-Foil  |   |
| Substrate  | anodized aluminum  |   |
| Housing  | Epoxy  |   |
| Connector Material   | Cu tinned  |   |
| Terminals  | 2  | 4   |
| Max. torque  | 1 Nm   |   |

## Temperature Coefficient



## Derating



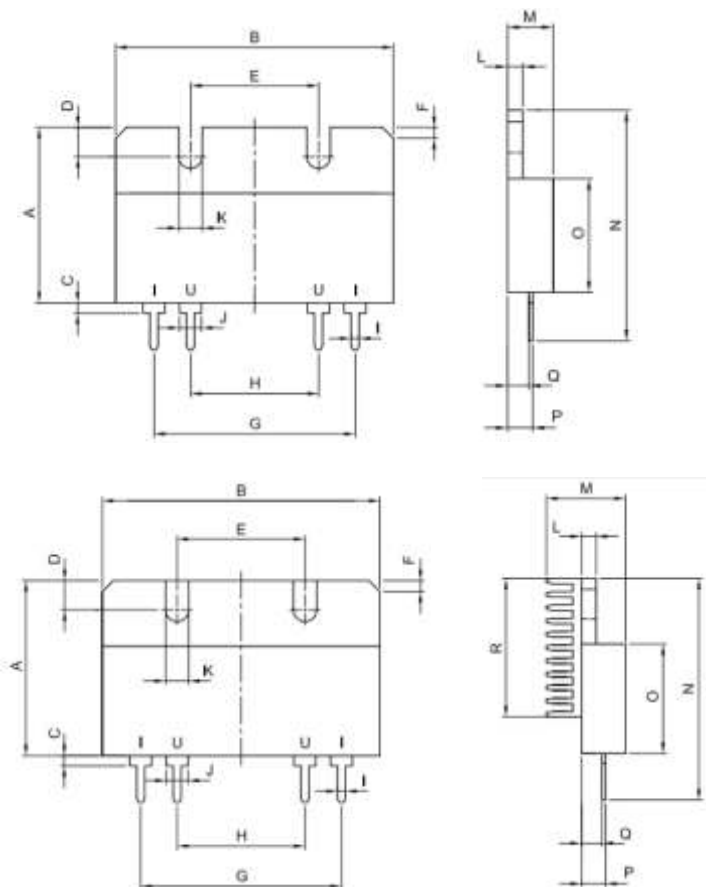
Power Rating Notes-  
the FHR series resistors must be attached to a suitable heat-sink,  
the maximum internal resistor temperature is 130°C.  
To specify an appropriate heatsink use the following formula:

$$R_{OH} = \frac{T_{MAX} - (P \times R_{OH}) - T_A}{P}$$

Where:  $R_{OH}$  = Thermal resistance of heatsink (K/W)  
 $R_{SH}$  = Thermal resistance of heatsink (K/W)  
 $T_{MAX}$  = Maximum temperature of resistor  
 $T_A$  = Ambient temperature of heatsink (°C)  
 $P$  = Power through resistor (W)

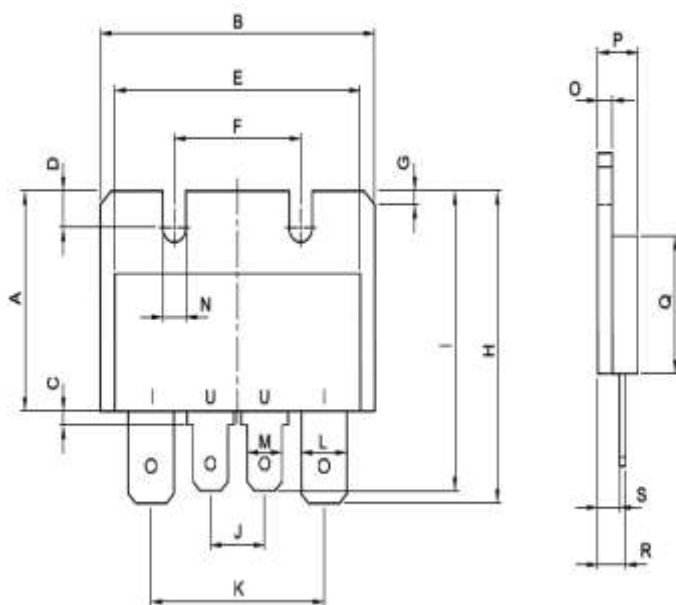
## Dimensions

WHR 4-3825/WHR 4-3825H



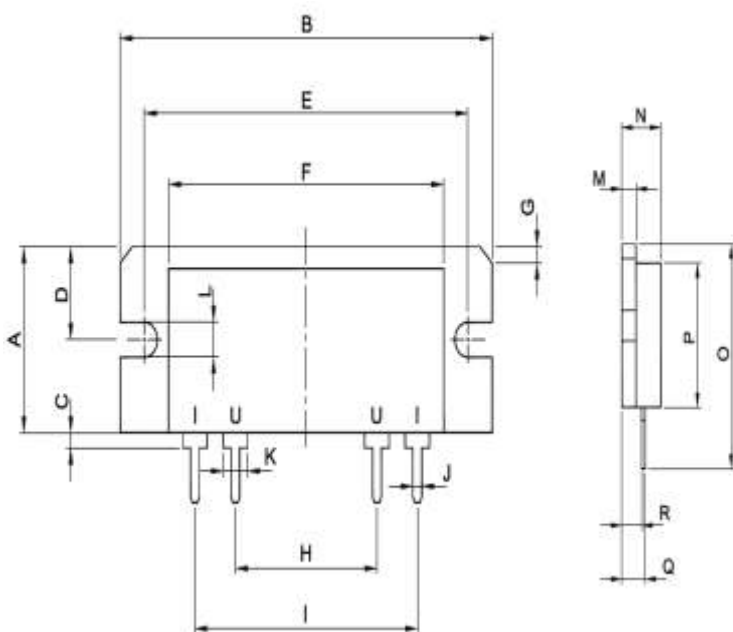
| Dimension     | mm     | tol. (± mm) | inches  | tol. (± inches) |
|---------------|--------|-------------|---------|-----------------|
| A             | 24.00  | 0.2         | 0.94    | 0.008           |
| B             | 38.00  | 0.3         | 1.50    | 0.012           |
| C             | 1.40   | 0.4         | 0.03    | 0.016           |
| D             | 4.00   | 0.1         | 0.16    | 0.004           |
| E             | 17.50  | 0.2         | 0.69    | 0.008           |
| F             | 1.5x45 | 0.1         | 0.06x45 | 0.004           |
| G             | 27.50  | 0.2         | 1.08    | 0.008           |
| H             | 17.50  | 0.2         | 0.69    | 0.008           |
| I(A-Contact)  | 1.50   | 0.1         | 0.06    | 0.004           |
| I(K-Contact)  | 1.10   | 0.1         | 0.04    | 0.004           |
| J             | 3.00   | 0.1         | 0.12    | 0.004           |
| K             | 3.20   | 0.1         | 0.13    | 0.004           |
| L             | 2.00   | 0.1         | 0.08    | 0.004           |
| M             | 6.00   | 0.2         | 0.25    | 0.008           |
| M(Variante H) | 10.8   | 0.2         | 0.43    | 0.008           |
| N             | 30.40  | 0.4         | 1.20    | 0.016           |
| O             | 15.00  | 0.2         | 0.59    | 0.008           |
| P(A-Contact)  | 3.60   | 0.1         | 0.14    | 0.004           |
| P(L-Contact)  | 3.30   | 0.1         | 0.13    | 0.004           |
| Q             | 2.80   | 0.1         | 0.11    | 0.004           |
| R             | 19.00  | 0.2         | 0.75    | 0.008           |

WHR 4-3825F



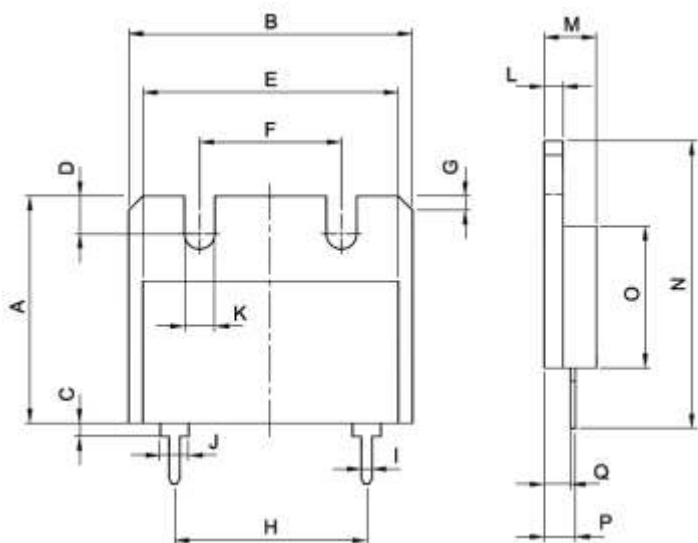
| Dimension | mm     | tol.<br>(± mm) | inches  | tol.<br>(± inches) |
|-----------|--------|----------------|---------|--------------------|
| A         | 24.00  | 0.2            | 0.94    | 0.008              |
| B         | 38.00  | 0.3            | 1.50    | 0.012              |
| C         | 1.50   | 0.2            | 0.06    | 0.008              |
| D         | 4.00   | 0.1            | 0.16    | 0.004              |
| E         | 34.00  | 0.3            | 1.34    | 0.012              |
| F         | 17.50  | 0.2            | 0.69    | 0.008              |
| G         | 1.5x45 | 0.1            | 0.06x45 | 0.004              |
| H         | 34.00  | 0.2            | 1.34    | 0.008              |
| I         | 32.70  | 0.2            | 1.29    | 0.008              |
| J         | 7.50   | 0.2            | 0.30    | 0.008              |
| K         | 24.00  | 0.2            | 0.94    | 0.008              |
| L         | 6.30   | 0.2            | 0.25    | 0.008              |
| M         | 4.80   | 0.1            | 0.19    | 0.004              |
| N         | 3.20   | 0.1            | 0.13    | 0.004              |
| O         | 2.00   | 0.1            | 0.08    | 0.004              |
| P         | 6.00   | 0.2            | 0.24    | 0.008              |
| Q         | 15.00  | 0.2            | 0.59    | 0.008              |
| R         | 4.10   | 0.7            | 0.16    | 0.028              |
| S         | 3.30   | 0.7            | 0.13    | 0.028              |

WHR 4-4618



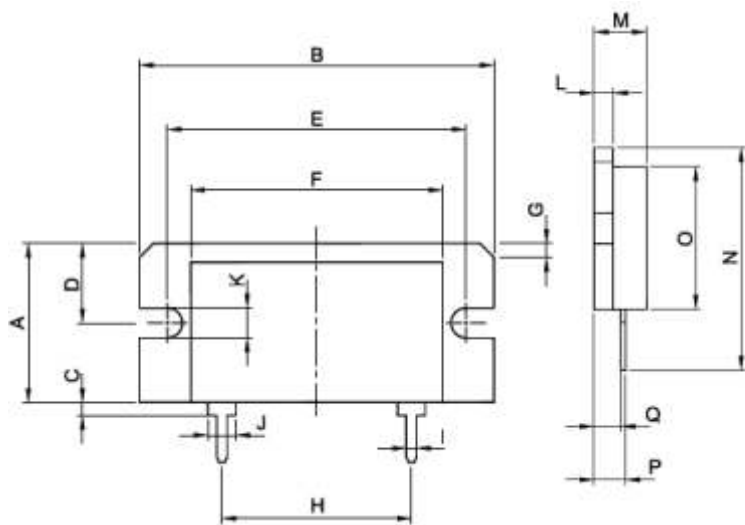
| Dimension    | mm      | tol.<br>(± mm) | inches   | tol.<br>(± inches) |
|--------------|---------|----------------|----------|--------------------|
| A            | 17.00   | 0.1            | 0.67     | 0.004              |
| B            | 46.00   | 0.3            | 1.81     | 0.012              |
| C            | 1.40    | 0.4            | 0.06     | 0.016              |
| D            | 8.50    | 0.2            | 0.33     | 0.008              |
| E            | 40.00   | 0.3            | 1.57     | 0.012              |
| F            | 34.00   | 0.3            | 1.34     | 0.012              |
| G            | 1.5x45  | 0.1            | 0.06x45  | 0.004              |
| H            | 17.50   | 0.2            | 0.69     | 0.008              |
| I            | 27.50   | 0.2            | 1.08     | 0.008              |
| J(A-Contact) | 1.50    | 0.1            | 0.06     | 0.004              |
| J(K-Contact) | 1.10    | 0.1            | 0.04     | 0.004              |
| K            | 3.00    | 0.1            | 0.12     | 0.004              |
| L            | 3.20    | 0.1            | 0.13     | 0.004              |
| M            | 2.00    | 0.1            | 0.08     | 0.004              |
| N            | max.5.5 | 0.2            | max.0.22 | 0.008              |
| O            | 23.40   | 0.4            | 0.92     | 0.016              |
| P            | 15.00   | 0.2            | 0.59     | 0.008              |
| Q(A-Contact) | 3.60    | 0.1            | 0.14     | 0.004              |
| Q(L-Contact) | 3.30    | 0.1            | 0.13     | 0.004              |
| R            | 2.80    | 0.2            | 0.11     | 0.008              |

## WHR 2-3025



| Dimension    | mm      | tol.<br>(± mm) | inches   | tol.<br>(± inches) |
|--------------|---------|----------------|----------|--------------------|
| A            | 24.00   | 0.2            | 0.94     | 0.008              |
| B            | 30.00   | 0.2            | 1.18     | 0.008              |
| C            | 1.40    | 0.4            | 0.06     | 0.016              |
| D            | 4.00    | 0.1            | 0.16     | 0.004              |
| E            | 27.00   | 0.2            | 1.06     | 0.008              |
| F            | 15.00   | 0.2            | 0.59     | 0.008              |
| G            | 1.5x45  | 0.1            | 0.06x45  | 0.004              |
| H            | 20.32   | 0.2            | 0.80     | 0.008              |
| I(A-Contact) | 1.50    | 0.1            | 0.06     | 0.004              |
| I(K-Contact) | 1.10    | 0.1            | 0.04     | 0.004              |
| J            | 1.10    | 0.1            | 0.04     | 0.004              |
| K            | 3.20    | 0.1            | 0.13     | 0.004              |
| L            | 2.00    | 0.1            | 0.08     | 0.004              |
| M            | max.5.5 | 0.2            | max.0.22 | 0.008              |
| N            | 30.40   | 0.4            | 1.20     | 0.016              |
| O            | 15.00   | 0.2            | 0.59     | 0.008              |
| P(A-Contact) | 3.60    | 0.1            | 0.14     | 0.004              |
| P(L-Contact) | 3.30    | 0.1            | 0.13     | 0.004              |
| Q            | 2.80    | 0.2            | 0.11     | 0.008              |

## WHR 2-3818



| Dimension    | mm      | tol.<br>(± mm) | inches   | tol.<br>(± inches) |
|--------------|---------|----------------|----------|--------------------|
| A            | 17.00   | 0.2            | 0.67     | 0.008              |
| B            | 38.00   | 0.3            | 1.50     | 0.012              |
| C            | 1.40    | 0.4            | 0.06     | 0.016              |
| D            | 8.50    | 0.2            | 0.33     | 0.008              |
| E            | 32.00   | 0.3            | 1.26     | 0.012              |
| F            | 27.00   | 0.2            | 1.06     | 0.008              |
| G            | 1.5x45  | 0.1            | 0.06x45  | 0.004              |
| H            | 20.32   | 0.2            | 0.80     | 0.008              |
| I(A-Contact) | 1.50    | 0.1            | 0.06     | 0.004              |
| I(K-Contact) | 1.10    | 0.1            | 0.04     | 0.004              |
| J            | 1.10    | 0.1            | 0.04     | 0.004              |
| K            | 3.20    | 0.1            | 0.13     | 0.004              |
| L            | 2.00    | 0.1            | 0.08     | 0.004              |
| M            | max.5.5 | 0.2            | max.0.22 | 0.008              |
| N            | 23.40   | 0.4            | 0.92     | 0.016              |
| O            | 15.00   | 0.2            | 0.59     | 0.008              |
| P(A-Contact) | 3.60    | 0.1            | 0.14     | 0.004              |
| P(L-Contact) | 3.30    | 0.1            | 0.13     | 0.004              |
| Q            | 2.80    | 0.2            | 0.11     | 0.008              |

## Type Composition

Example

| Type      | Resistance(Ω) | Tolerance                                      | T.C.R                                      | Packing |
|-----------|---------------|--|--|---------|
| WHR2-3025 | 0R001         | F  | C5   | Boxes   |
|           | 0R001=0.001Ω  | F±1%<br>D±0.5%<br>B±0.1%<br>W±0.05%<br>P±0.02% | C8±3ppm<br>C7±5ppm<br>C6±10ppm<br>C5±15ppm |         |