

**RH**

# heat sink encased wirewound power resistors

5 W to 50 W  
at 25°C  
MIL-R 18546 D and 1C  
NF C 83-210  
(CECC 40 203)



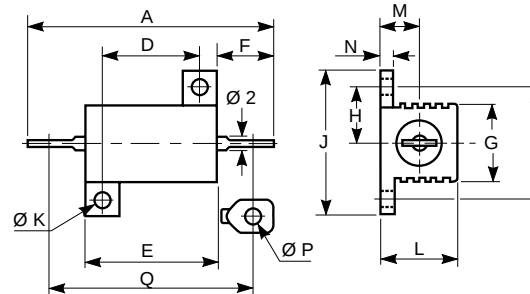
Encased in a compact and light heat sink offering complete environmental protection, great mechanical strength and easy mounting, the RH series features :

- high stability < 0,05 % year
- electrical insulation
- low temperature coefficient
- wide range of values.

Non inductive versions can be supplied under the RHNI designation (please indicate required specifications and frequency range upon ordering).

Table 1

| Series and styles | RH5       | RH10      | RH25      | RH50      |
|-------------------|-----------|-----------|-----------|-----------|
| A                 | 28,5 ±1,5 | 35 ±1,5   | 49 ±1,3   | 70,2 ±1,4 |
| B ±0,2            | 12,5      | 15,9      | 19,8      | 21,4      |
| D ±0,2            | 11,3      | 14        | 18,3      | 39,7      |
| E ±0,5            | 16,3      | 19        | 28        | 50        |
| F                 | 6,8 ±1,5  | 7,9 ±1,5  | 11,1 ±1,5 | 11 ±1,2   |
| G ±1              | 8,5       | 11        | 14        | 15,5      |
| H ±0,7            | 6,2       | 7,9       | 9,9       | 10,7      |
| J ±0,5            | 16,4      | 20,6      | 27,5      | 29,4      |
| Ø K ±0,1          | 2,4       | 2,4       | 3,2       | 3,2       |
| L max.            | 8,9       | 11        | 15        | 15        |
| M ±0,5            | 4,3       | 5,6       | 8         | 8         |
| N ±0,3            | 1,6       | 2         | 2,4       | 2,4       |
| Ø P min.          | 2,1       | 2,1       | 2,1       | 2,1       |
| Q                 | 25,3 ±1,5 | 30,6 ±1,5 | 44,6 ±1,3 | 66,5 ±1,4 |
| Weight in g       | 3         | 8,8       | 16,5      | 30,8      |



Dimensions in mm

Fig. 1

**SPECIFICATIONS**

Table 2

| SFERNICE SERIES AND STYLES                          |                                                       |                 | RH5  | RH10  | RH25  | RH50  |                   |
|-----------------------------------------------------|-------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------|
| NF C 83-210 (CECC 40 203)                           |                                                       |                 | RE4                                                                                     | RE1                                                                                        | RE2                                                                                        | RE3                                                                                        |                   |
| MIL-R-18546 D AND 1C                                |                                                       |                 | RE60                                                                                    | RE65                                                                                       | RE70                                                                                       | RE75                                                                                       |                   |
| POWER RATING                                        | CHASSIS MOUNTED RESISTORS                             | MIL limits      | 25°C                                                                                    | 5 W                                                                                        | 10 W                                                                                       | 20 W                                                                                       | 30 W              |
|                                                     |                                                       |                 | 70°C                                                                                    | 4 W                                                                                        | 8 W                                                                                        | 16 W                                                                                       | 24 W              |
|                                                     | 413 cm² for RH5 and RH10<br>536 cm² for RH25 and RH50 | SFERNICE limits | 25°C                                                                                    | 10 W                                                                                       | 12,5 W                                                                                     | 25 W                                                                                       | 50 W              |
|                                                     |                                                       |                 | 70°C                                                                                    | 8 W                                                                                        | 10 W                                                                                       | 20 W                                                                                       | 40 W              |
|                                                     | UNMOUNTED RESISTORS                                   | SFERNICE limits | 25°C                                                                                    | 4 W                                                                                        | 6 W                                                                                        | 9 W                                                                                        | 12 W              |
|                                                     |                                                       |                 | 70°C                                                                                    | 3,2 W                                                                                      | 4,8 W                                                                                      | 7,2 W                                                                                      | 9,6 W             |
| RATED MAXIMUM VOLTAGE V (RMS)                       |                                                       |                 | 160 W                                                                                   | 250 W                                                                                      | 550 W                                                                                      | 1285 W                                                                                     |                   |
| DIELECTRIC STRENGTH (RMS)                           |                                                       |                 | 1000 V                                                                                  | 1500 V                                                                                     | 2500 V                                                                                     | 2500 V                                                                                     |                   |
| OHMIC RANGE                                         |                                                       |                 | SFERNICE                                                                                | 0,01 Ω<br>12 kΩ                                                                            | 0,006 Ω<br>20 kΩ                                                                           | 0,006 Ω<br>62 kΩ                                                                           | 0,006 Ω<br>130 kΩ |
| QUALIFIED OHMIC RANGE                               |                                                       |                 | NF C 83-210                                                                             | 0,1 Ω<br>2,7 kΩ                                                                            | 0,1 Ω<br>4,99 kΩ                                                                           | 0,1 Ω<br>11,8 kΩ                                                                           | 0,1 Ω<br>33,2 kΩ  |
| MINIMUM OHMIC VALUES<br>IN RELATION<br>TO TOLERANCE | E 96                                                  | ±0,1 %          | 1 Ω                                                                                     |                                                                                            | 1 Ω                                                                                        |                                                                                            |                   |
|                                                     | E 96                                                  | ±0,5 %          | 0,1 Ω                                                                                   |                                                                                            | 0,1 Ω                                                                                      |                                                                                            |                   |
|                                                     | E 96                                                  | ±1 %            | 0,1 Ω                                                                                   |                                                                                            | 0,05 Ω                                                                                     |                                                                                            |                   |
|                                                     | E 48                                                  | ±2 %            | 0,01 Ω                                                                                  |                                                                                            | 0,01 Ω                                                                                     |                                                                                            |                   |
|                                                     | E 24                                                  | ±5 %            | 0,01 Ω                                                                                  |                                                                                            | 0,01 Ω                                                                                     |                                                                                            |                   |
|                                                     | E 12                                                  | ±10 %           | 0,01 Ω                                                                                  | 0,008 Ω                                                                                    | 0,006 Ω                                                                                    |                                                                                            |                   |

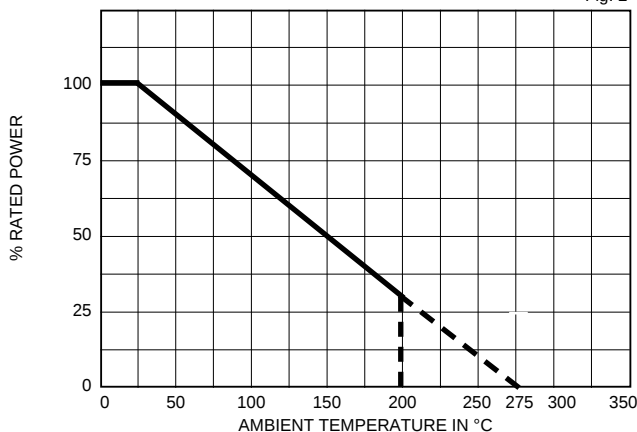
## PERFORMANCES

Table 3

| MIL-R-18546 D NF C 83-210          |                                                     |                                             | TYPICAL DRIFTS                         |
|------------------------------------|-----------------------------------------------------|---------------------------------------------|----------------------------------------|
| TESTS                              | CONDITIONS                                          | REQUIREMENTS                                |                                        |
| OPERATING TEMPERATURE RANGE        | -55°C +200°C                                        | —                                           | —                                      |
| MOMENTARY OVERLOAD                 | 5 Pr / 5 s                                          | ± (0,25 % +0,05 Ω)                          | ± (0,1 % +0,05 Ω)                      |
| CLIMATIC SEQUENCE                  | -55°C +200°C<br>5 cycles                            | ± (0,25 % +0,05 Ω)                          | ± (0,1 % +0,05 Ω)                      |
| LOAD LIFE TEST AT HIGH TEMPERATURE | 2 h at 20°C 56 days                                 | ± (1 % +0,05 Ω)<br>Ins. resistance ≥ 1 GΩ   | ± (0,1 % +0,05 Ω)                      |
| HUMIDITY (steady state)            | 56 days                                             | ± (1 % +0,05 Ω)<br>Ins. resistance ≥ 100 MΩ | ± (0,5 % +0,05 Ω)                      |
| RESISTANCE TO MOISTURE             | Climatic sequences test, with load and polarisation | ± (1 % +0,05 Ω)                             | ± (0,5 % +0,05 Ω)                      |
| TEMPERATURE COEFFICIENT            | 5 Ω to 10 Ω<br>> 10 Ω                               | ± 50 ppm/°C<br>± 25 ppm/°C                  | ±15 ppm/°C                             |
| LOAD LIFE AT MAXIMUM TEMPERATURE   | 1000 h 25°C Pn MIL<br>200°C 30% of Pn SFERNICE      | ± (1 % +0,05 Ω)<br>Ins. resistance ≥ 1 GΩ   | ± (0,1 % +0,05 Ω)<br>± (0,5 % +0,05 Ω) |

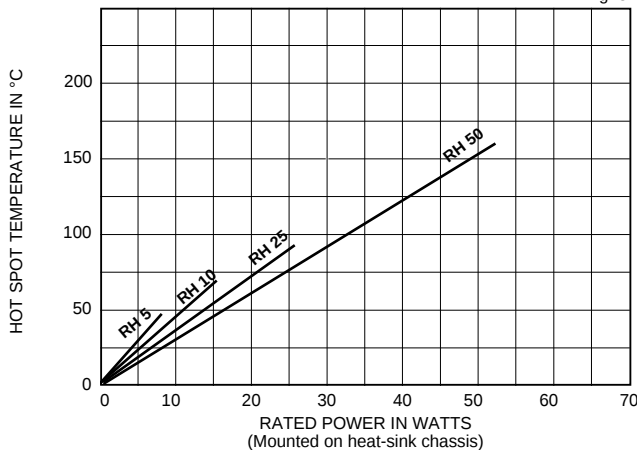
## POWER RATING CHART

Fig. 2



## TEMPERATURE RISE

Fig. 3



## MARKING

SFERNICE trademark, series, style, CECC style (if applicable) nominal resistance (in Ω), tolerance (in %), manufacturing date.

## ORDERING PROCEDURE

| SERIES    | STYLE     | NON INDUCTIVE WINDING | SPECIAL DESIGN            | OHMIC VALUE                                                                                      | TOLERANCE    |
|-----------|-----------|-----------------------|---------------------------|--------------------------------------------------------------------------------------------------|--------------|
| <b>RH</b> | <b>25</b> | <b>NI</b><br>Optional | <b>Method N° Optional</b> | <b>150 kΩ</b><br>Custom items are subject to extra-charge and min. order. Please see price list. | <b>± 5 %</b> |

## MOMENTARY OVERLOAD

### 1. Momentary overload (> 2 s)

See example in Table 4. In any case, it should be understood that : the 12 Pn overload applies only to ohmic values ≥ 0,1 Ω.

The overload voltage shall not be higher than that used for the dielectric strength test (see Table 2).

### 2. Short time overload (< 2 s)

For times shorter than 2 seconds, higher overloads can be sustained in some cases. Consult SFERNICE.

See example in Table 4. The following should be taken into consideration : the 12 Pn overload applies on to ohmic value ≥ 0,1 Ω.

The overload voltage should not be greater than that used for the dielectric strength test (see Table 2).

Table 4

| Power loading | Duration |
|---------------|----------|
| 2,5 Pn        | 10 s     |
| 5 Pn          | 5 s      |
| 12 Pn         | 2 s      |

## DETERMINATION OF THE INTERNAL TEMPERATURE RELATED THE USING CONDITIONS :

$$\text{Chassis mounted resistors : } P = \frac{\Delta T}{R_{TH1} + R_{TH2}}$$

$$\text{Resistors unmounted on chassis : } P = \frac{\Delta T}{R_{TH3}}$$

P = Power dissipation in watt

ΔT = Temperature difference in °C between the wounded wire and the ambient

R<sub>TH1</sub> = Thermal resistance between the wounded wire and the bottom of the box in °C/W

R<sub>TH2</sub> = Thermal resistance of the chassis in °C/W

R<sub>TH3</sub> = Thermal resistance between the wounded wire and the ambient in °C/W

R<sub>TH3</sub> = (R<sub>TH1</sub> + R<sub>TH2</sub>)

Table 5

|                  | RH5 | RH10 | RH25 | RH50 |
|------------------|-----|------|------|------|
| R <sub>TH1</sub> | 8,5 | 11   | 4,5  | 2    |
| R <sub>TH3</sub> | 47  | 41   | 22,5 | 14   |