

# Wirewound Resistors, Military, MIL-PRF-18546 Qualified, Type RE, Aluminum Housed, Chassis Mount

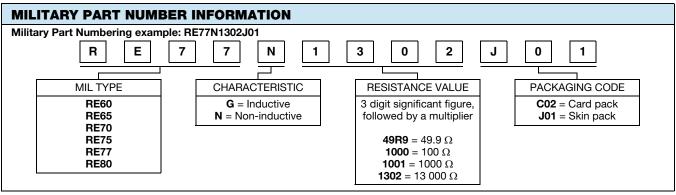


#### **FEATURES**

- Molded construction for total environmental protection
- Complete welded construction
- Qualified to MIL-PRF-18546
- Available in non-inductive styles (type N) with Aryton-Perry winding for lowest reactive components
- · Mounts on chassis to utilize heat-sink effect
- Excellent stability in operation (< 1 % change in resistance)

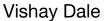
| STANDARD ELECTRICAL SPECIFICATIONS |                              |                                    |                       |                  |                          |  |  |  |
|------------------------------------|------------------------------|------------------------------------|-----------------------|------------------|--------------------------|--|--|--|
| MILITARY<br>MODEL                  | VISHAY<br>REFERENCE<br>MODEL | POWER RATING  P <sub>25 °C</sub> W | RESISTANCE RANGE<br>Ω | TOLERANCE<br>± % | WEIGHT<br>(typical)<br>g |  |  |  |
| RE60G                              | RH005                        | 5                                  | 0.10 to 3.32K         | 1                | 3                        |  |  |  |
| RE60N                              | NH005                        | 5                                  | 1.0 to 1.65K          | 1                | 3.3                      |  |  |  |
| RE65G                              | RH010                        | 10                                 | 0.10 to 5.62K         | 1                | 6                        |  |  |  |
| RE65N                              | NH010                        | 10                                 | 1.0 to 2.8K           | 1                | 8.8                      |  |  |  |
| RE70G                              | RH025                        | 20                                 | 0.10 to 12.1K         | 1                | 13                       |  |  |  |
| RE70N                              | NH025                        | 20                                 | 1.0 to 6.04K          | 1                | 16.5                     |  |  |  |
| RE75G                              | RH050                        | 30                                 | 0.10 to 39.2K         | 1                | 28                       |  |  |  |
| RE75N                              | NH050                        | 30                                 | 1.0 to 19.6K          | 1                | 35                       |  |  |  |
| RE77G                              | RH100                        | 75                                 | 0.05 to 29.4K         | 1                | 350                      |  |  |  |
| RE77N                              | NH100                        | 75                                 | 1.0 to 14.7K          | 1                | 385                      |  |  |  |
| RE80G                              | RH250                        | 120                                | 0.10 to 35.7K         | 1                | 630                      |  |  |  |
| RE80N                              | NH250                        | 120                                | 1.0 to 17.4K          | 1                | 690                      |  |  |  |

| TECHNICAL SPECIFICATIONS    |        |   |  |  |  |  |
|-----------------------------|--------|---|--|--|--|--|
| PARAMETER                   | UNIT   | RE RESISTOR CHARACTERISTICS   |  |  |  |  |
| Temperature Coefficient     | ppm/°C | $\pm$ 20 for 10 $\Omega$ and above; $\pm$ 50 for 1 $\Omega$ to 9.9 $\Omega$ ; $\pm$ 100 for 0.1 $\Omega$ to 0.99 $\Omega$ |  |  |  |  |
| Maximum Working Voltage     | V      | $(P \times R)^{1/2}$  |  |  |  |  |
| Insulation Resistance       | Ω      | 10 000 M $\Omega$ minimum dry, 1000 M $\Omega$ minimum after moisture test  |  |  |  |  |
| Solderability               | -      | MIL-PRF-18546 type - meets requirements of ANSI J-STD-002   |  |  |  |  |
| Operating Temperature Range | °C     | - 55 to + 250   |  |  |  |  |



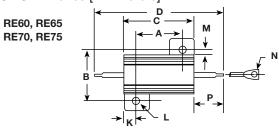
#### Note

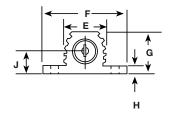
• Only tolerance available for RE type is  $\pm$  1 %





## **DIMENSIONS** in inches [millimeters]

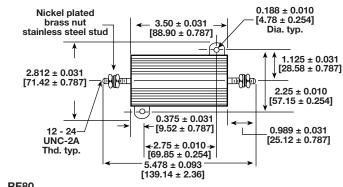


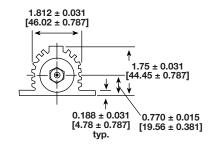


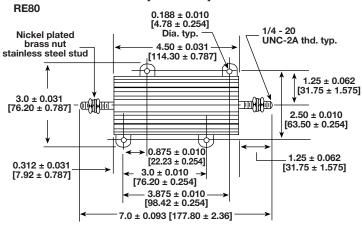
| MILITARY | DIMENSIONS in inches [millimeters]     |  |  |                                       |  |  |  |       |                                       |                                       |                                       |                                       |                                       |                                       |
|----------|--|--|--|---------------------------------------|--|--|--|-------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| MODEL    | Α                                      | В                                      | С                                      | D                                     | E                                      | F                                      | G                                      | Н     | J                                     | K                                     | L                                     | М                                     | N                                     | Р                                     |
| RE60     | 0.444<br>± 0.005<br>[11.28<br>± 0.127] | 0.490<br>± 0.005<br>[12.45<br>± 0.127] | 0.600<br>± 0.030<br>[15.24<br>± 0.787] | 1.125<br>± 0.062<br>[28.58<br>± 1.57] | 0.334<br>± 0.015<br>[8.48<br>± 0.381]  | 0.646<br>± 0.015<br>[16.41<br>± 0.381] | 0.320<br>± 0.015<br>[8.13<br>± 0.381]  | [1.65 | 0.133<br>± 0.010<br>[3.38<br>± 0.254] | [1.98                                 | 0.093<br>± 0.005<br>[2.36<br>± 0.127] | 0.078<br>± 0.015<br>[1.98<br>± 0.381] | 0.050<br>± 0.005<br>[1.27<br>± 0.127] | 0.266<br>± 0.062<br>[6.76<br>± 1.57]  |
| RE65     | 0.562<br>± 0.005<br>[14.27<br>± 0.127] | 0.625<br>± 0.005<br>[15.88<br>± 0.127] | [19.05                                 | 1.375<br>± 0.062<br>[34.93<br>± 1.57] | 0.420<br>± 0.015<br>[10.67<br>± 0.381] | 0.800<br>± 0.015<br>[20.32<br>± 0.381] | [9.91                                  | [1.91 | 0.165<br>± 0.010<br>[4.19<br>± 0.254] | [2.36                                 | 0.094<br>± 0.005<br>[2.39<br>± 0.127] | [2.59                                 | [2.16                                 | 0.312<br>± 0.062<br>[7.92<br>± 1.57]  |
| RE70     | 0.719<br>± 0.005<br>[18.26<br>± 0.127] | 0.781<br>± 0.005<br>[19.84<br>± 0.127] | 1.062<br>± 0.031<br>[26.97<br>± 0.787] | 1.938<br>± 0.062<br>[49.23<br>± 1.57] | [13.97                                 | 1.080<br>± 0.015<br>[27.43<br>± 0.381] | [13.87                                 | [1.91 | [5.87                                 | 0.172<br>± 0.010<br>[4.37<br>± 0.254] | 0.125<br>± 0.005<br>[3.18<br>± 0.127] | 0.115<br>± 0.015<br>[2.92<br>± 0.381] | [2.16                                 | 0.438<br>± 0.062<br>[11.13<br>± 1.57] |
| RE75     | 1.562<br>± 0.005<br>[39.67<br>± 0.127] | 0.844<br>± 0.005<br>[21.44<br>± 0.127] | 1.968<br>± 0.031<br>[49.99<br>± 0.787] | 2.781<br>± 0.062<br>[70.64<br>± 1.57] | 0.630<br>± 0.015<br>[16.00<br>± 0.381] | [28.96                                 | 0.610<br>± 0.015<br>[15.49<br>± 0.381] | [2.24 | 0.260<br>± 0.010<br>[6.60<br>± 0.254] | [4.98                                 | 0.125<br>± 0.005<br>[3.18<br>± 0.127] | 0.107<br>± 0.015<br>[2.72<br>± 0.381] | [2.16                                 | 0.438<br>± 0.062<br>[11.13<br>± 1.57] |

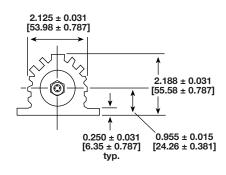
#### **DIMENSIONS** in inches [millimeters]

**RE77** 











#### **POWER RATING**

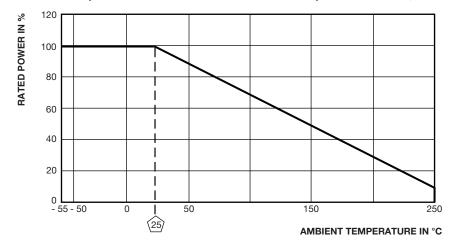
Vishay RE resistor wattage ratings are based on mounting to the following heat sink:

RE60 and RE65:  $4" \times 6" \times 2" \times 0.040"$  thick aluminum chassis RE70 and RE75:  $5" \times 7" \times 2" \times 0.040"$  thick aluminum chassis RE77 and RE80:  $7" \times 9" \times 2" \times 0.060"$  thick aluminum chassis

| FREE AIR POWER RATING |      |      |      |      |      |      |  |  |
|-----------------------|------|------|------|------|------|------|--|--|
| MILITARY<br>MODEL     | RE60 | RE65 | RE70 | RE75 | RE77 | RE80 |  |  |
| W at 25 °C            | 3    | 6    | 8    | 10   | 30   | 75   |  |  |

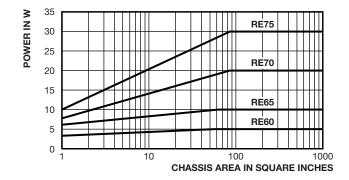
### AMBIENT TEMPERATURE DERATING

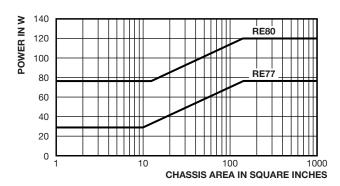
Derating is required for ambient temperatures above 25 °C when mounted to specified heat sink, see the following graph.



## REDUCED HEAT SINK DERATING

Derating is also required when recommended heat sink area is reduced.







Vishay Dale

#### **MATERIAL SPECIFICATIONS**

**Element:** Copper-nickel alloy or nickel-chrome alloy, depending on resistance value

Core: Ceramic, steatite or alumina, depending on physical

size

**Encapsulant:** Silicone molded construction **Housing:** Aluminum with hard anodic coating

End Caps: Stainless steel

**Standard Terminals:** For RE77 and RE80 terminals are threaded stainless steel. All others are 60/40 tin/lead (Sn/Pb) w/Nickel underplate on copper clad steel core terminal.

Part Marking: Dale, model, wattage, value, tolerance, date

code

## **NON-INDUCTIVE (TYPE N)**

Models of equivalent physical and electrical specifications are available with non-inductive (Aryton-Perry) winding. They are identified by substituting the letter N for G in the model number (RE60N, for example).

| PERFORMANCE                     |  |                           |  |  |  |  |
|---------------------------------|--|---------------------------|--|--|--|--|
| TEST                            | CONDITIONS OF TEST   | TEST LIMITS               |  |  |  |  |
| Thermal Shock                   | Rated power applied until thermally stable, then a minimum of 15 min at - 55 °C  | ± (0.5 % + 0.05 Ω) ΔR     |  |  |  |  |
| Short Time Overload             | 5 x rated power for 5 s  | $\pm$ (0.5 % + 0.05 Ω) ΔR |  |  |  |  |
| Dielectric Withstanding Voltage | 1000 $V_{rms}$ for RE60, RE65 and RE70; 2000 $V_{rms}$ for RE75; 4500 $V_{rms}$ for RE77 and RE80; duration 1 min                                    | ± (0.2 % + 0.05 Ω) ΔR     |  |  |  |  |
| Temperature                     | 250 °C for 2 h   | ± (0.5 % + 0.05 Ω) ΔR     |  |  |  |  |
| Moisture Resistance             | MIL-STD-202 Method 106, 7b not applicable  | ± (1.0 % + 0.05 Ω) ΔR     |  |  |  |  |
| Shock, Specified Pulse          | MIL-STD-202 Method 213, 100 g's for 6 ms, 10 shocks  | ± (0.2 % + 0.05 Ω) ΔR     |  |  |  |  |
| Vibration, High Frequency       | Frequency varied 10 Hz to 2000 Hz, 20 $g$ peak, 2 directions 6 h each  | ± (0.2 % + 0.05 Ω) ΔR     |  |  |  |  |
| Load Life                       | 1000 h at rated power, + 25 °C, 1.5 h "ON", 0.5 h "OFF"  | ± (1.0 % + 0.05 Ω) ΔR     |  |  |  |  |
| Terminal Strength               | 30 s, 5 pound pull test for RE60 and RE65,<br>10 pound pull test for other sizes;<br>torque test - 24 pound inch for RE77 and 32 pound inch for RE80 | ± (0.2 % + 0.05 Ω) ΔR     |  |  |  |  |



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#### Наши контакты:

Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург,

Промышленная ул, дом № 19, литера Н,

помещение 100-Н Офис 331