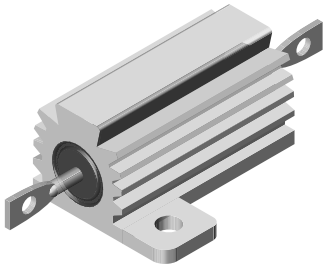
# Wirewound Resistors, Military, MIL-PRF-18546 Qualified, Type RE, Aluminum Housed, Chassis Mount



## 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 MODEL | VISHAY REFERENCE MODEL | POWER RATING $P_{25\ °C}$ W | RESISTANCE RANGE Ω | TOLERANCE ± % | WEIGHT (typical) 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 | ± 20 for 10 Ω and above; ± 50 for 1 Ω to 9.9 Ω; ± 100 for 0.1 Ω to 0.99 Ω |
| Maximum Working Voltage | V | $(P \times R)^{1/2}$ |
| Insulation Resistance | Ω | 10 000 MΩ minimum dry, 1000 MΩ minimum after moisture test |
| Solderability | - | MIL-PRF-18546 type - meets requirements of ANSI J-STD-002 |
| Operating Temperature Range | °C | - 55 to + 250 |

## MILITARY PART NUMBER INFORMATION

**Military Part Numbering example: RE77N1302J01**

| R | E | 7 | 7 | N | 1 | 3 | 0 | 2 | J | 0 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|

**MIL TYPE**
**RE60**
**RE65**
**RE70**
**RE75**
**RE77**
**RE80**

**CHARACTERISTIC**
**G** = Inductive
**N** = Non-inductive

**RESISTANCE VALUE**
3 digit significant figure, followed by a multiplier

**49R9** = 49.9 Ω
**1000** = 100 Ω
**1001** = 1000 Ω
**1302** = 13 000 Ω

**PACKAGING CODE**
**C02** = Card pack
**J01** = Skin pack

**Note**

- Only tolerance available for RE type is ± 1 %



For technical questions, contact: ww2bresistors@vishay.com

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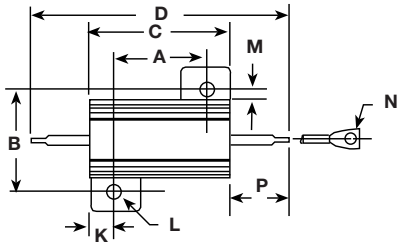
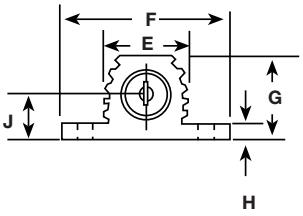
## DIMENSIONS in inches [millimeters]

RE60, RE65
RE70, RE75

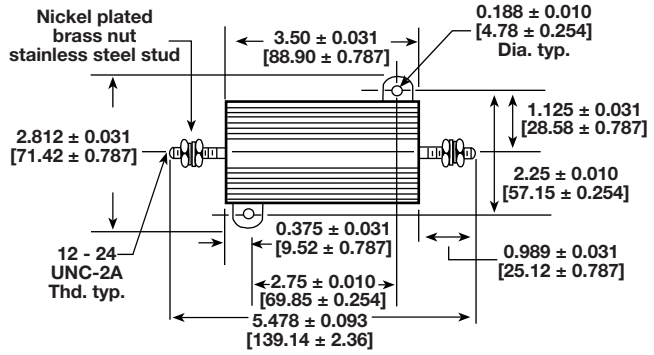


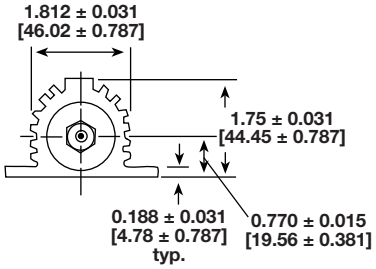




| MILITARY MODEL | DIMENSIONS in inches [millimeters] | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | J | K | L | M | N | P |
| RE60 | 0.444 ± 0.005 [11.28 ± 0.127] | 0.490 ± 0.005 [12.45 ± 0.127] | 0.600 ± 0.030 [15.24 ± 0.787] | 1.125 ± 0.062 [28.58 ± 1.57] | 0.334 ± 0.015 [8.48 ± 0.381] | 0.646 ± 0.015 [16.41 ± 0.381] | 0.320 ± 0.015 [8.13 ± 0.381] | 0.065 ± 0.010 [1.65 ± 0.254] | 0.133 ± 0.010 [3.38 ± 0.254] | 0.078 ± 0.010 [1.98 ± 0.254] | 0.093 ± 0.005 [2.36 ± 0.127] | 0.078 ± 0.015 [1.98 ± 0.381] | 0.050 ± 0.005 [1.27 ± 0.127] | 0.266 ± 0.062 [6.76 ± 1.57] |
| RE65 | 0.562 ± 0.005 [14.27 ± 0.127] | 0.625 ± 0.005 [15.88 ± 0.127] | 0.750 ± 0.031 [19.05 ± 0.787] | 1.375 ± 0.062 [34.93 ± 1.57] | 0.420 ± 0.015 [10.67 ± 0.381] | 0.800 ± 0.015 [20.32 ± 0.381] | 0.390 ± 0.015 [9.91 ± 0.381] | 0.075 ± 0.010 [1.91 ± 0.254] | 0.165 ± 0.010 [4.19 ± 0.254] | 0.093 ± 0.010 [2.36 ± 0.254] | 0.094 ± 0.005 [2.39 ± 0.127] | 0.102 ± 0.015 [2.59 ± 0.381] | 0.085 ± 0.005 [2.16 ± 0.127] | 0.312 ± 0.062 [7.92 ± 1.57] |
| RE70 | 0.719 ± 0.005 [18.26 ± 0.127] | 0.781 ± 0.005 [19.84 ± 0.127] | 1.062 ± 0.031 [26.97 ± 0.787] | 1.938 ± 0.062 [49.23 ± 1.57] | 0.550 ± 0.015 [13.97 ± 0.381] | 1.080 ± 0.015 [27.43 ± 0.381] | 0.546 ± 0.015 [13.87 ± 0.381] | 0.075 ± 0.010 [1.91 ± 0.254] | 0.231 ± 0.010 [5.87 ± 0.254] | 0.172 ± 0.010 [4.37 ± 0.254] | 0.125 ± 0.005 [3.18 ± 0.127] | 0.115 ± 0.015 [2.92 ± 0.381] | 0.085 ± 0.005 [2.16 ± 0.127] | 0.438 ± 0.062 [11.13 ± 1.57] |
| RE75 | 1.562 ± 0.005 [39.67 ± 0.127] | 0.844 ± 0.005 [21.44 ± 0.127] | 1.968 ± 0.031 [49.99 ± 0.787] | 2.781 ± 0.062 [70.64 ± 1.57] | 0.630 ± 0.015 [16.00 ± 0.381] | 1.140 ± 0.015 [28.96 ± 0.381] | 0.610 ± 0.015 [15.49 ± 0.381] | 0.088 ± 0.010 [2.24 ± 0.254] | 0.260 ± 0.010 [6.60 ± 0.254] | 0.196 ± 0.010 [4.98 ± 0.254] | 0.125 ± 0.005 [3.18 ± 0.127] | 0.107 ± 0.015 [2.72 ± 0.381] | 0.085 ± 0.005 [2.16 ± 0.127] | 0.438 ± 0.062 [11.13 ± 1.57] |

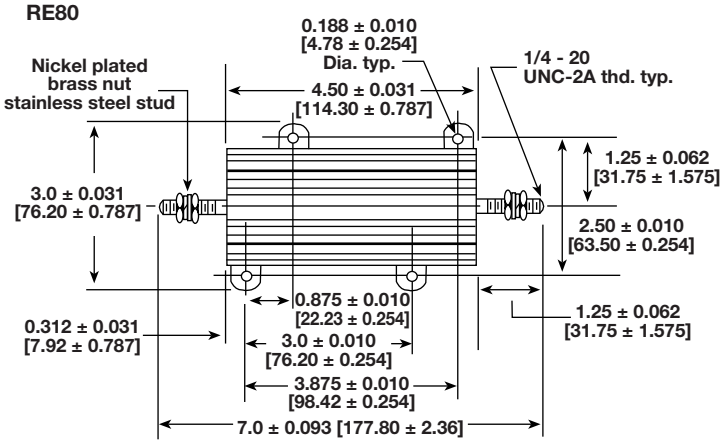
## DIMENSIONS in inches [millimeters]

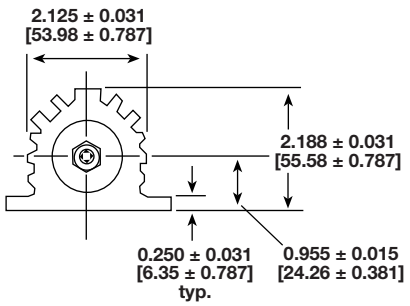
RE77




RE80



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## POWER RATING

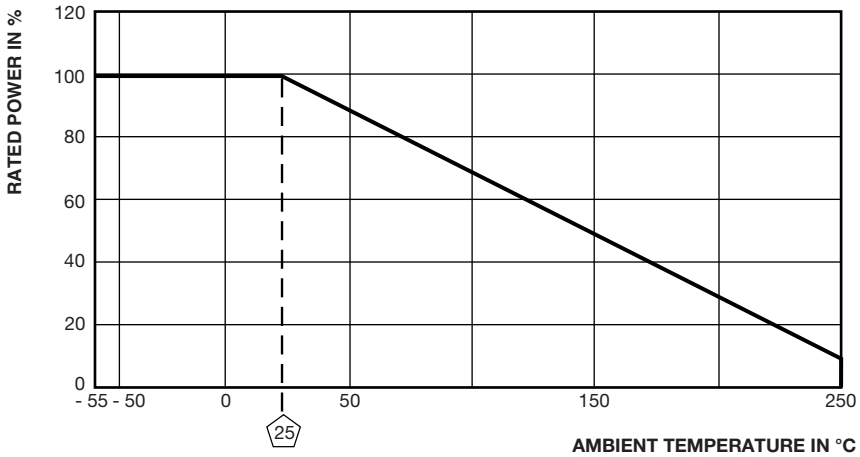
Vishay RE resistor wattage ratings are based on mounting to the following heat sink:

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

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

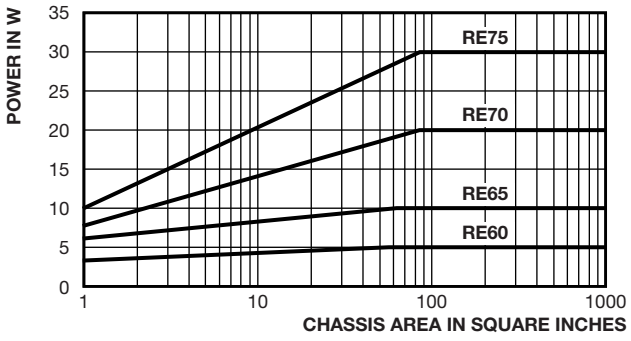
## AMBIENT TEMPERATURE DERATING

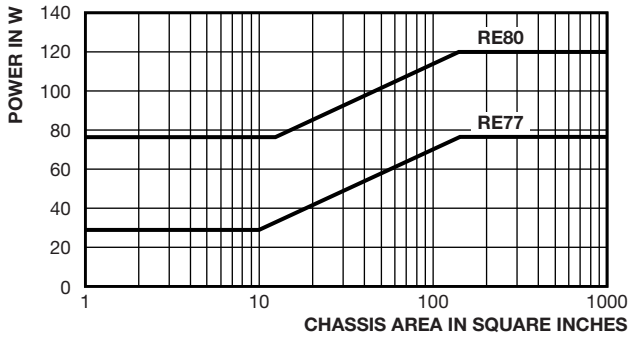
Derating is required for ambient temperatures above 25 °C when mounted to specified heat sink, see the following graph.




## REDUCED HEAT SINK DERATING

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



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## 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) $\Delta R$ |
| Short Time Overload | 5 x rated power for 5 s | ± (0.5 % + 0.05 Ω) $\Delta R$ |
| 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) $\Delta R$ |
| Temperature | 250 °C for 2 h | ± (0.5 % + 0.05 Ω) $\Delta R$ |
| Moisture Resistance | MIL-STD-202 Method 106, 7b not applicable | ± (1.0 % + 0.05 Ω) $\Delta R$ |
| Shock, Specified Pulse | MIL-STD-202 Method 213, 100 *g*'s for 6 ms, 10 shocks | ± (0.2 % + 0.05 Ω) $\Delta R$ |
| Vibration, High Frequency | Frequency varied 10 Hz to 2000 Hz, 20 *g* peak, 2 directions 6 h each | ± (0.2 % + 0.05 Ω) $\Delta R$ |
| Load Life | 1000 h at rated power, + 25 °C, 1.5 h "ON", 0.5 h "OFF" | ± (1.0 % + 0.05 Ω) $\Delta R$ |
| Terminal Strength | 30 s, 5 pound pull test for RE60 and RE65, 10 pound pull test for other sizes; torque test - 24 pound inch for RE77 and 32 pound inch for RE80 | ± (0.2 % + 0.05 Ω) $\Delta R$ |



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