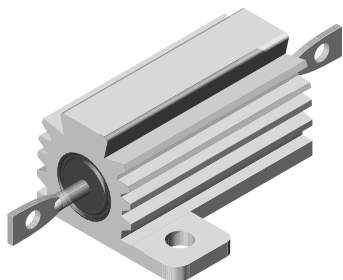


## Wirewound Resistors, Military, MIL-PRF-18546 Qualified, Type RE, Aluminum Housed, Chassis Mount



### FEATURES

- Molded construction for total environmental protection
- Complete welded construction
- Qualified to MIL-PRF-18546
- Available in non-inductive styles (type N) with Ayrton-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

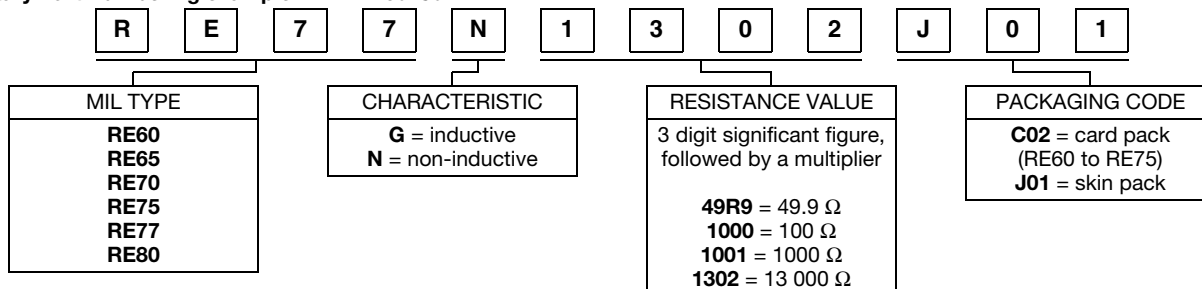
| MILITARY MODEL | VISHAY REFERENCE MODEL | POWER RATING<br>$P_{25^{\circ}\text{C}}$<br>W | RESISTANCE RANGE<br>$\Omega$ | TOLERANCE<br>$\pm \%$ | WEIGHT<br>(typical)<br>g |
|----------------|------------------------|-----------------------------------------------|------------------------------|-----------------------|--------------------------|
| 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/ $^{\circ}\text{C}$ | $\pm 20$ 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       | $\Omega$                | 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 | $^{\circ}\text{C}$      | -55 to +250                                                                                                               |

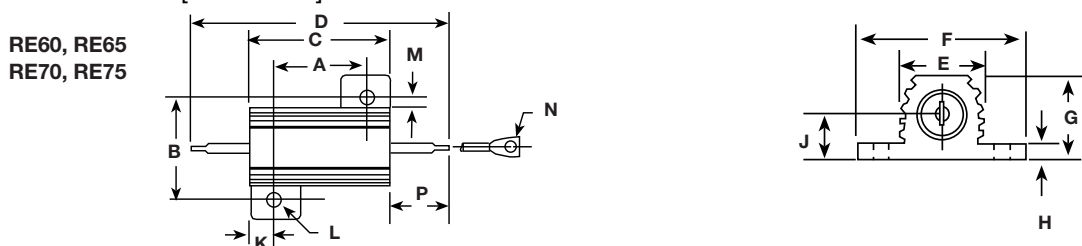
### MILITARY PART NUMBER INFORMATION

Military Part Numbering example: RE77N1302J01



#### Note

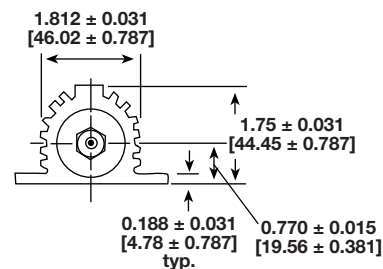
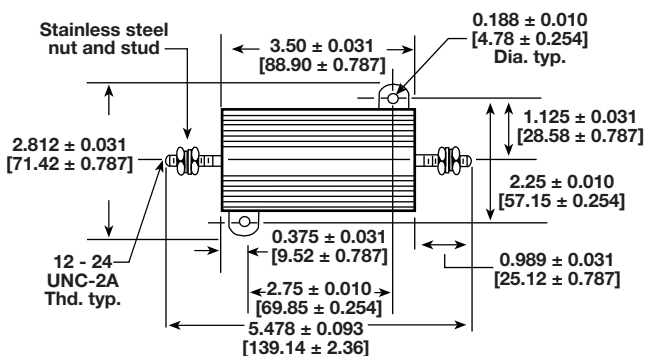
- Only tolerance available for RE type is  $\pm 1 \%$

**DIMENSIONS** in inches [millimeters]

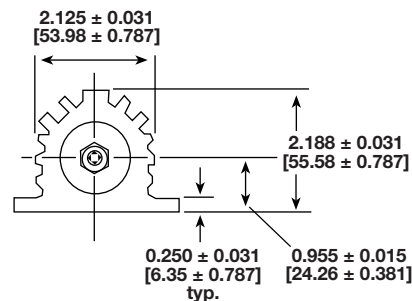
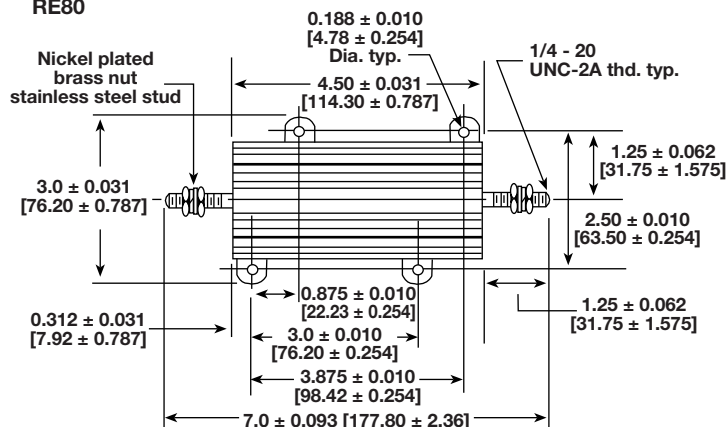
| MILITARY MODEL | DIMENSIONS in inches [millimeters] |         |         |         |         |         |         |         |         |         |         |         |         |         |
|----------------|------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---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

**DIMENSIONS** in inches [millimeters]

## RE77



## RE80



**POWER RATING**

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

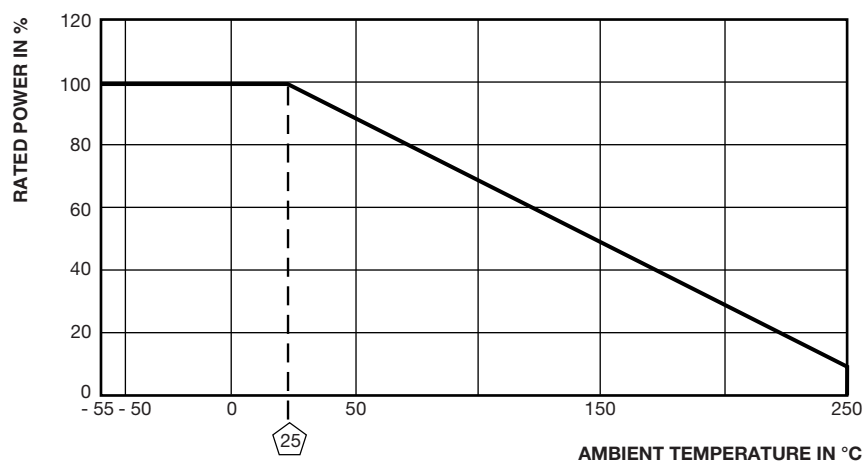
|                |                                              |
|----------------|----------------------------------------------|
| RE60 and RE65: | 4" x 6" x 2" x 0.040" thick aluminum chassis |
| RE70 and RE75: | 5" x 7" x 2" x 0.040" thick aluminum chassis |
| RE77 and RE80: | 7" x 9" x 2" x 0.060"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

**FREE AIR POWER RATING**

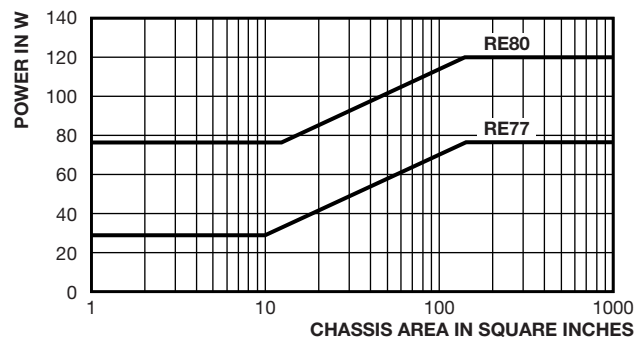
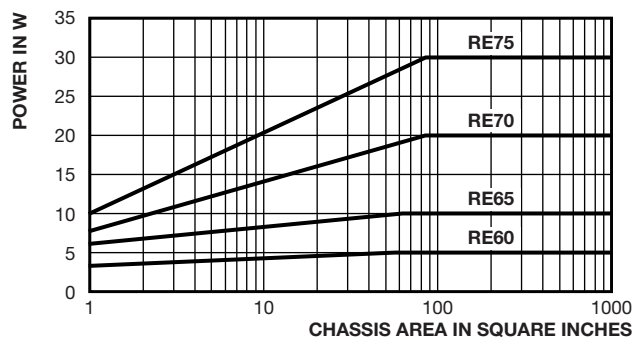
| MILITARY MODEL | RE60 | RE65 | RE70 | RE75 | RE77 | RE80 |
|----------------|------|------|------|------|------|------|
| W at 25 °C     | 3    | 6    | 8    | 10   | 30   | 75   |

**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.



**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 (Ayrton-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                                                                 | $\pm (0.5 \% + 0.05 \Omega) \Delta R$ |
| Short Time Overload             | 5 x rated power for 5 s                                                                                                                        | $\pm (0.5 \% + 0.05 \Omega) \Delta R$ |
| Dielectric Withstanding Voltage | 1000 V <sub>RMS</sub> for RE60, RE65 and RE70; 2000 V <sub>RMS</sub> for RE75; 4500 V <sub>RMS</sub> for RE77 and RE80; duration 1 min         | $\pm (0.2 \% + 0.05 \Omega) \Delta R$ |
| Temperature                     | 250 °C for 2 h                                                                                                                                 | $\pm (0.5 \% + 0.05 \Omega) \Delta R$ |
| Moisture Resistance             | MIL-STD-202 method 106, 7b not applicable                                                                                                      | $\pm (1.0 \% + 0.05 \Omega) \Delta R$ |
| Shock, Specified Pulse          | MIL-STD-202 method 213, 100 g's for 6 ms, 10 shocks                                                                                            | $\pm (0.2 \% + 0.05 \Omega) \Delta R$ |
| Vibration, High Frequency       | Frequency varied 10 Hz to 2000 Hz, 20 g peak, 2 directions 6 h each                                                                            | $\pm (0.2 \% + 0.05 \Omega) \Delta R$ |
| Load Life                       | 1000 h at rated power, +25 °C, 1.5 h "ON", 0.5 h "OFF"                                                                                         | $\pm (1.0 \% + 0.05 \Omega) \Delta R$ |
| 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 | $\pm (0.2 \% + 0.05 \Omega) \Delta R$ |



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