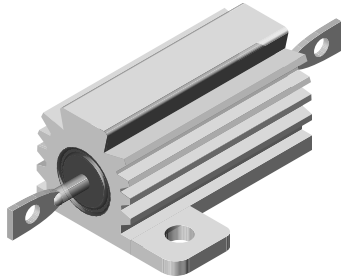


Wirewound Resistors, Military, MIL-PRF-18546 Qualified, Type RE, Aluminum Housed, Chassis Mount



FEATURES

- Molded construction for total environmental protection
- Complete welded construction
- Meets applicable requirements of MIL-PRF-18546
- Available in non-inductive styles (type NH) with Aryton-Perry winding for lowest reactive components
- Mounts on chassis to utilize heat-sink effect
- Excellent stability in operation

STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HISTORICAL MODEL | MIL-PRF-18546 TYPE | POWER RATING $P_{25^{\circ}\text{C}}$ W | | RESISTANCE RANGE MIL. RANGE SHOWN IN BOLD FACE Ω | | | | WEIGHT (Typical) g |
|--------------|------------------|--------------------|---|------------|---|-------------------|--------------------|-------------------------------------|-----------------------|
| | | | DALE | MILITARY | $\pm 0.05\%$, $\pm 0.1\%$ | $\pm 0.25\%$ | $\pm 0.5\%$ | $\pm 1\%$, $\pm 3\%$, $\pm 5\%$ | |
| RH005 | RH-5 | — RE60G | 7.5 (5) | 5 | 0.5 - 6.75k — | 0.1 - 8.6k — | 0.05 - 8.6k — | 0.02 - 24.5k 0.10 - 3.32k | 3 |
| NH005 | NH-5 | — RE60N | 7.5 (5) | 5 | 0.5 - 2.32k — | 0.1 - 3.27k — | 0.05 - 3.27k — | 0.05 - 12.75k 1.0 - 1.65k | 3.3 |
| RH010 | RH-10 | — RE65G | 12.5 (10) | 10 | 0.5 - 12.7k — | 0.1 - 16.69k — | 0.05 - 16.69k — | 0.01 - 47.1k 0.10 - 5.62k | 6 |
| NH010 | NH-10 | — RE65N | 12.5 (10) | 10 | 0.5 - 4.45k — | 0.1 - 5.54k — | 0.05 - 5.54k — | 0.05 - 23.5k 1.0 - 2.8k | 8.8 |
| RH025 | RH-25 | — RE70G | 25 | 20 | 0.5 - 25.7k — | 0.1 - 32.99k — | 0.05 - 32.99k — | 0.01 - 95.2k 0.10 - 12.1k | 13 |
| NH025 | NH-25 | — RE70N | 25 | 20 | 0.5 - 9.09k — | 0.1 - 12.8k — | 0.05 - 12.8k — | 0.05 - 47.6k 1.0 - 6.04k | 16.5 |
| RH050 | RH-50 | — RE75G | 50 | 30 | 0.5 - 73.4k — | 0.1 - 96k — | 0.05 - 96k — | 0.01 - 273k 0.10 - 39.2k | 28 |
| NH050 | NH-50 | — RE75N | 50 | 30 | 0.5 - 26k — | 0.1 - 36.7k — | 0.05 - 36.7k — | 0.05 - 136k 1.0 - 19.6k | 35 |
| RH100 | RH-100 | — RE77G | 100 | 75 | 0.5 - 90k — | 0.1 - 90k — | 0.05 - 90k — | 0.05 - 90k 0.05 - 29.4k | 350 |
| NH100 | NH-100 | — RE77N | 100 | 75 | 0.5 - 37.5k — | 0.1 - 37.5k — | 0.05 - 37.5k — | 0.05 - 37.5k 1.0 - 14.7k | 385 |
| RH250 | RH-250 | — RE80G | 250 | 120 | 0.5 - 116k — | 0.1 - 116k — | 0.05 - 116k — | 0.05 - 116k 0.10 - 35.7k | 630 |
| NH250 | NH-250 | — RE80N | 250 | 120 | 0.5 - 48.5k — | 0.1 - 48.5k — | 0.05 - 48.5k — | 0.05 - 48.5k 1.0 - 17.4k | 690 |

NOTE: Figures in parentheses on RH-5 and RH-10 indicate wattage printed on parts, new construction allows these resistors to be rated at higher wattage but will **only** be printed with the higher wattage on customer request.

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: RH0054R125FC02 (preferred part numbering format)

R H 0 0 5 4 R 1 2 5 F C 0 2

| GLOBAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING | SPECIAL |
|--------------|---|---|--|--|
| RH005 | L = Milliohm R = Decimal K = Thousand 8L000 = 0.008Ω 15R00 = 15Ω 10K00 = 10KΩ | A = $\pm 0.05\%$ B = $\pm 0.1\%$ C = $\pm 0.25\%$ D = $\pm 0.5\%$ F = $\pm 1.0\%$ J = $\pm 5.0\%$ | *E02 = Lead Free, Card Pack (RH005 – RH050) *E01 = Lead Free, Skin Pack (RH100 & RH250) Lead Free is not available on RE military type *(Lead Free parts to be released Q1 2005) C02 = Tin/Lead, Card Pack (RH005 – RH050) J01 = Tin/Lead, Skin Pack (RH100 & RH250) | (Dash Number) (up to 3 digits) From 1-999 as applicable |

Historical Part Number example: RH-5 4.125 Ω 1% C02 (will continue to be accepted)

| | | | |
|------------------|------------------|----------------|-----------|
| RH-5 | 4.125 Ω | 1% | C02 |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

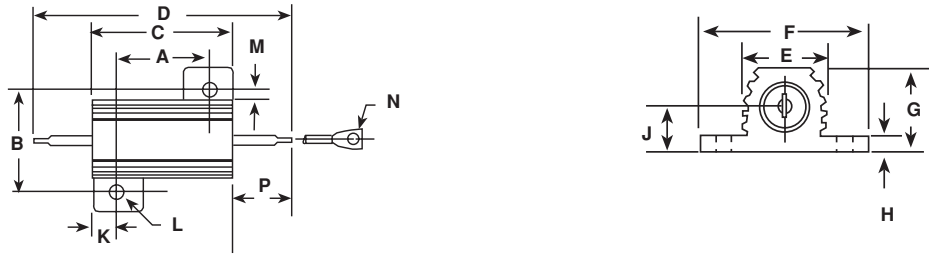


Wirewound Resistors, Military, MIL-PRF-18546 Qualified,
Type RE, Aluminum Housed, Chassis Mount

Vishay Dale

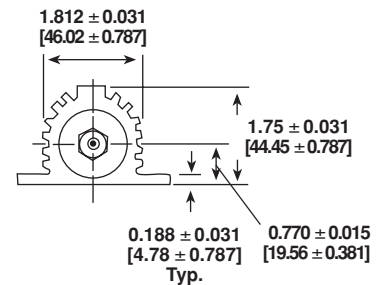
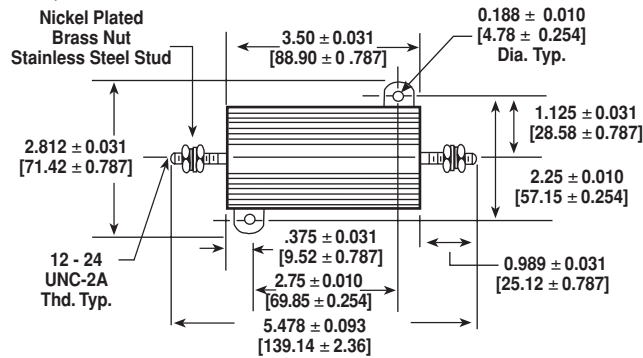
DIMENSIONS

RH-5, -10, -25, -50
NH-5, -10, -25, -50

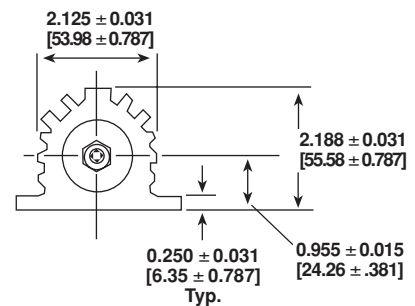
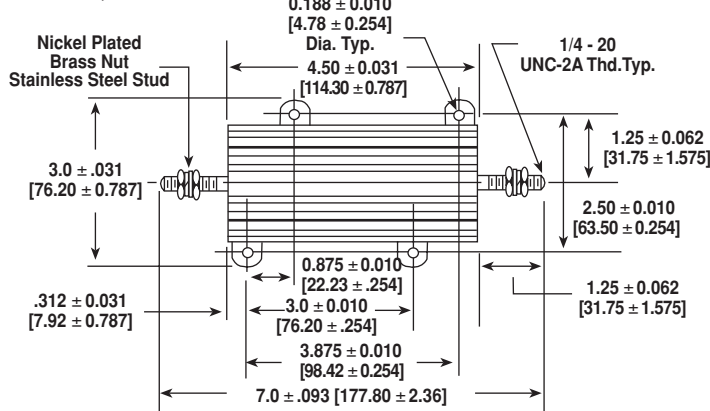


| MODEL | DIMENSIONS in inches [millimeters] | | | | | | | | | | | | | |
|----------------|--|--|--|---------------------------------------|--|--|--|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| | A | B | C | D | E | F | G | H | J | K | L | M | N | P |
| RH-5 NH-5 | 0.444 ± 0.005 [11.28 ± 0.127] | 0.490 ± 0.005 [12.45 ± 0.127] | 0.600 ± 0.031 [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 ± .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 ± .381] | 0.050 ± 0.005 [1.27 ± 0.127] | 0.266 ± 0.062 [6.76 ± 1.57] |
| RH-10 NH-10 | 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] |
| RH-25 NH-25 | 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 ± .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] |
| RH-50 NH-50 | 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] |

RH-100, NH-100



RH-250, NH-250



| TECHNICAL SPECIFICATIONS | | |
|---------------------------------|-----------------|--|
| PARAMETER | UNIT | RH RESISTOR CHARACTERISTICS |
| Temperature Coefficient | ppm/°C | ± 100 for 0.1Ω to 0.99Ω, ± 50 for 1Ω to 9.9Ω, ± 20 for 10Ω and above |
| Dielectric Withstanding Voltage | V _{AC} | 1000 for RH-5, RH-10 and RH-25, 2000 for RH-50, 4500 for RH-100 and RH-250 |
| Short Time Overload | - | 5 x rated power for 5 seconds |
| Maximum Working Voltage | V | (P X R) ^{1/2} |
| Insulation Resistance | Ω | 10,000 Megohm minimum dry, 1000 Megohm minimum after moisture test |
| Terminal Strength | lb | 5 minimum for RH-5 and RH-10, 10 minimum for all others |
| Solderability | - | MIL-PRF-18546 Type - Meets requirements of ANSI J-STD-002 |
| Operating Temperature Range | °C | - 55/+ 250 |

POWER RATING

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

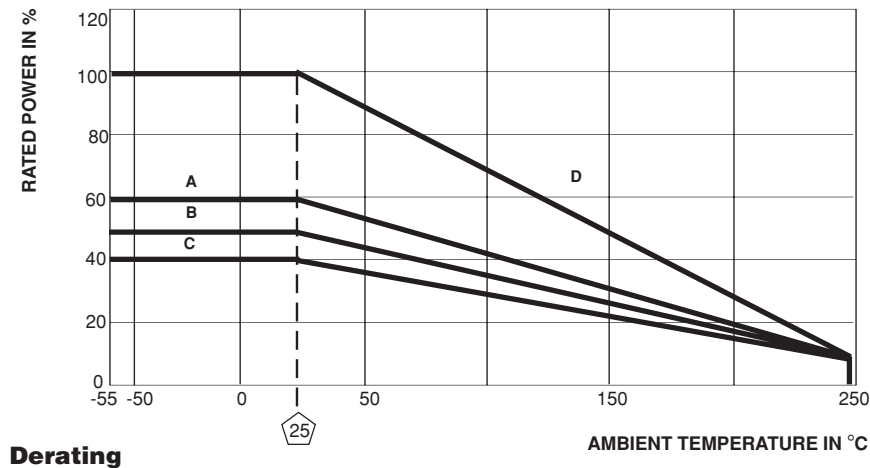
- RH-5 and RH-10: 4" x 6" x 2" x 0.040" thick aluminum chassis (129 sq. in. surface area)
- RH-25: 5" x 7" x 2" x 0.040" thick aluminum chassis (167 sq. in. surface area)
- RH-50: 12" x 12" x 0.059" thick aluminum panel (291 sq. in. surface area)
- RH-100 and RH-250: 12" x 12" x 0.125" thick aluminum panel (294 sq. in. surface area)

AMBIENT TEMPERATURE DERATING

Derating is required for ambient temperatures above 25°C, see the following graph.

Curves **A**, **B**, **C** apply to operation of unmounted resistors. Curve **D** applies to all types when mounted to specified heat sink.

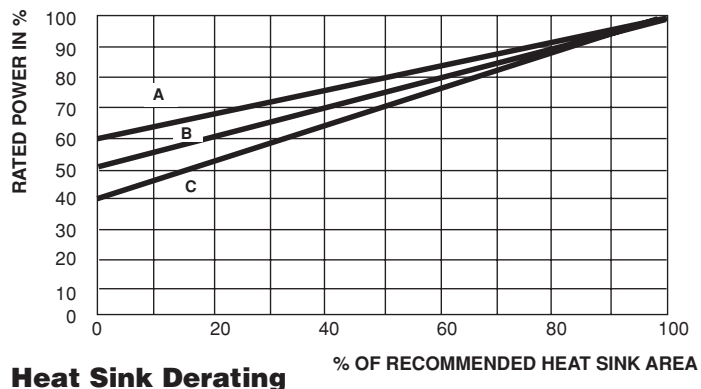
- A** = RH-5 and RH-10 size resistor, unmounted
- B** = RH-25 size resistor, unmounted
- C** = RH-50, RH-100 and RH-250 size resistor, unmounted
- D** = All types mounted to recommended aluminum heat sink



REDUCED HEAT SINK DERATING:

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

- A** = RH-5 and RH-10 size resistor
- B** = RH-25 size resistor
- C** = RH-50, RH-100 and RH-250 size resistor





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: 100% Sn, w/Nickel underplate, or 60/40 Sn/Pb, w/Nickel underplate, coated Copperweld® on RH-5 through RH-50 size. Threaded stainless steel terminals on RH-100 and RH-250.

NOTE: Military (RE) parts are only available with 60/40 Sn/Pb finish.

Part Marking: DALE, Model, Wattage, Value, Tolerance, Date Code

NH NON-INDUCTIVE

Models of equivalent physical and electrical specifications are available with non-inductive (Aryton-Perry) winding. They are identified by substituting the letter N for R in the model number (NH-5, for example).

SPECIAL MODIFICATIONS

A number of special modifications to the aluminum housed resistor style are available upon request. Special modifications include:

- Terminal configurations and materials
- Resistance values and tolerances
- Low resistance temperature coefficient (RTC)
- Housing configuration
- Threaded mounting holes
- Preconditioning and other additional testing

APPLICABLE MIL SPECIFICATIONS

MIL-PRF-18546 is the military specification covering aluminum housed, chassis mount, power resistors. VISHAY RH and NH resistors are listed as qualified on the MIL-PRF-18546 QPL.

| PERFORMANCE | | |
|---------------------------------|--|---------------------|
| TEST | CONDITIONS OF TEST | TEST LIMITS |
| Thermal Shock | Rated power applied until thermally stable, then a minimum of 15 minutes at - 55°C | ± (0.5% + 0.05Ω) ΔR |
| Short Time Overload | 5 x rated power for 5 seconds | ± (0.5% + 0.05Ω) ΔR |
| Dielectric Withstanding Voltage | 1000Vrms for RH-5, RH-10 and RH-25; 2000Vrms for RH-50 4500Vrms for RH-100 and RH-250; duration one minute | ± (0.2% + 0.05Ω) ΔR |
| Temperature | 250°C for 2 hours | ± (0.5% + 0.05Ω) ΔR |
| Moisture Resistance | MIL-STD-202 Method 106, 7b not applicable | ± (1.0% + 0.05Ω) ΔR |
| Shock, Specified Pulse | MIL-STD-202 Method 213, 100g's for 6 milliseconds, 10 shocks | ± (0.2% + 0.05Ω) ΔR |
| Vibration, High Frequency | Frequency varied 10 to 2000Hz, 20g peak, 2 directions 6 hours each | ± (0.2% + 0.05Ω) ΔR |
| Load Life | 1000 hours at rated power, + 25°C, 1.5 hours "ON", 0.5 hours "OFF" | ± (1.0% + 0.05Ω) ΔR |
| Terminal Strength | 30 second, 5 pound pull test for RH-5 and RH-10, 10 pound pull test for other sizes, torque test - 24 pound inch for RH-100 and 32 pound inch for RH-250 | ± (0.2% + 0.05Ω) ΔR |