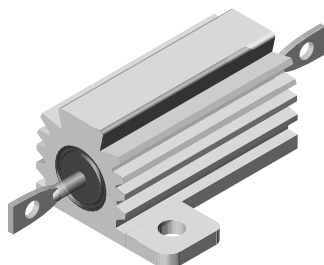


## Wirewound Resistors, Military, MIL-PRF-18546 Qualified, Type RE, Aluminum Housed, Chassis Mount



### 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 (< 1 % change in resistance)



**RoHS\***  
COMPLIANT

### 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 $\Omega$				WEIGHT (typical) g
			DALE	MILITARY	$\pm 0.05\%$ , $\pm 0.1\%$	$\pm 0.25\%$	$\pm 0.5\%$	$\pm 1\%$ , $\pm 2\%$ , $\pm 5\%$	
RH005	RH-5	RE60G	7.5 (5)	5	0.5 - 6.75K	0.1 - 8.6K	0.05 - 8.6K	0.02 - 24.5K <b>0.10 - 3.32K</b>	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 <b>1.0 - 1.65K</b>	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 <b>0.10 - 5.62K</b>	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 <b>1.0 - 2.8K</b>	8.8
RH025	RH-25	RE70G	25	20	0.5 - 25.7K	0.1 - 32.99K	0.05 - 32.99K	0.01 - 95.2K <b>0.10 - 12.1K</b>	13
NH025	NH-25	RE70N	25	20	0.5 - 9.09K	0.1 - 12.8K	0.05 - 12.8K	0.05 - 47.6K <b>1.0 - 6.04K</b>	16.5
RH050	RH-50	RE75G	50	30	0.5 - 73.4K	0.1 - 96K	0.05 - 96K	0.01 - 273K <b>0.10 - 39.2K</b>	28
NH050	NH-50	RE75N	50	30	0.5 - 26K	0.1 - 36.7K	0.05 - 36.7K	0.05 - 136K <b>1.0 - 19.6K</b>	35
RH100	RH-100	RE77G	100	75	0.5 - 90K	0.1 - 90K	0.05 - 90K	0.05 - 90K <b>0.05 - 29.4K</b>	350
NH100	NH-100	RE77N	100	75	0.5 - 37.5K	0.1 - 37.5K	0.05 - 37.5K	0.05 - 37.5K <b>1.0 - 14.7K</b>	385
RH250	RH-250	RE80G	250	120	0.5 - 116K	0.1 - 116K	0.05 - 116K	0.05 - 116K <b>0.10 - 35.7K</b>	630
NH250	NH-250	RE80N	250	120	0.5 - 48.5K	0.1 - 48.5K	0.05 - 48.5K	0.05 - 48.5K <b>1.0 - 17.4K</b>	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 number format)

R	H	0	0	5	4	R	1	2	5	F	C	0	2			
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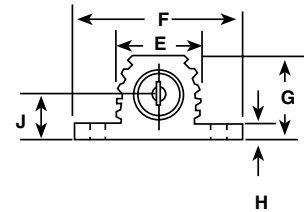
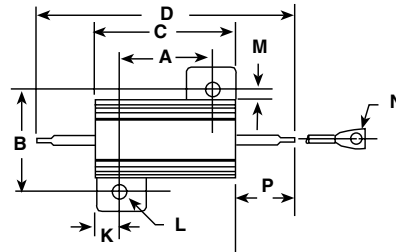
GLOBAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING	SPECIAL
<b>RH005</b> (See "Standard Electrical Specifications" table above for additional P/N's)	<b>L</b> = Milliohm <b>R</b> = Decimal <b>K</b> = Thousand <b>8L000</b> = 0.008 $\Omega$ <b>15R00</b> = 15 $\Omega$	<b>A</b> = 0.05 % <b>B</b> = 0.1 % <b>C</b> = 0.25 % <b>D</b> = 0.5 % <b>F</b> = 1.0 %	<b>E02</b> = Lead (Pb)-free, card pack (RH005 - RH050) <b>E01</b> = Lead (Pb)-free, skin pack (RH100 and RH250) <b>Lead (Pb)-free is not available on RE military type</b> <b>C02</b> = Tin/lead, card pack (RH005 - RH050) <b>J01</b> = Tin/lead, skin pack (RH100 and RH250)	(Dash Number) (up to 3 digits) From 1 - 999 as applicable

Historical Part Number Example: RH-5 4.125  $\Omega$  1 % C02 (will continue to be accepted)

<b>RH-5</b>	<b>4.125 <math>\Omega</math></b>	<b>1 %</b>	<b>C02</b>
HISTORICAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING

\* Pb containing terminations are not RoHS compliant, exemptions may apply

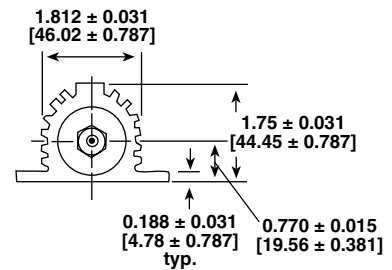
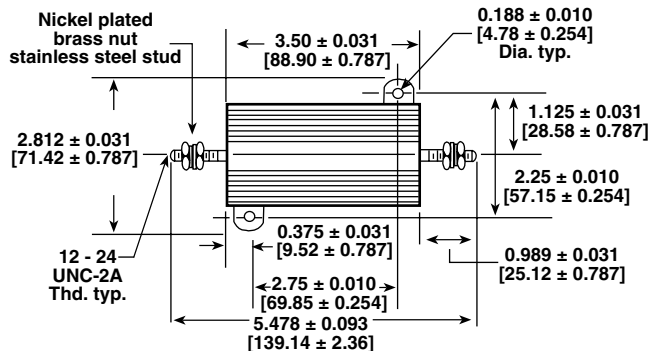
**DIMENSIONS** in inches [millimeters]

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


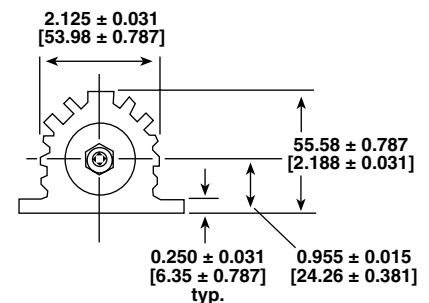
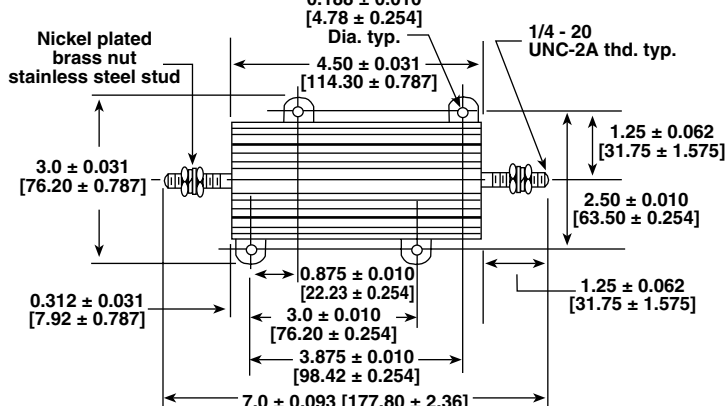
MODEL	DIMENSIONS in inches [millimeters]													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
RH-5 NH-5	0.444 ± 0.005 [11.28 ± 0.127]	0.490 ± 0.005 [12.45 ± 0.127]	0.600 ± 0.030 [15.24 ± 0.787]	1.125 ± 0.062 [28.58 ± 1.57]	0.334 ± 0.015 [8.48 ± 0.381]	0.646 ± 0.015 [16.41 ± 0.381]	0.320 ± 0.015 [8.13 ± 0.381]	0.065 ± 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]
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 ± 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]
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]

**DIMENSIONS** in inches [millimeters]

RH-100, NH-100



RH-250, NH-250



TECHNICAL SPECIFICATIONS		
PARAMETER	UNIT	RH RESISTOR CHARACTERISTICS
Temperature Coefficient	ppm/°C	± 100 for 0.1 Ω to 0.99 Ω, ± 50 for 1 Ω to 9.9 Ω, ± 20 for 10 Ω and above
Dielectric Withstanding Voltage	V <sub>AC</sub>	1000 for RH/5, RH-10 and RH/25, 2000 for RH/50, 4500 for RH/100 and RH/250
Short Time Overload	-	5 × rated power for 5 s
Maximum Working Voltage	V	$(P \times R)^{1/2}$
Insulation Resistance	Ω	10 000 MΩ minimum dry, 1000 MΩ 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 to + 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.

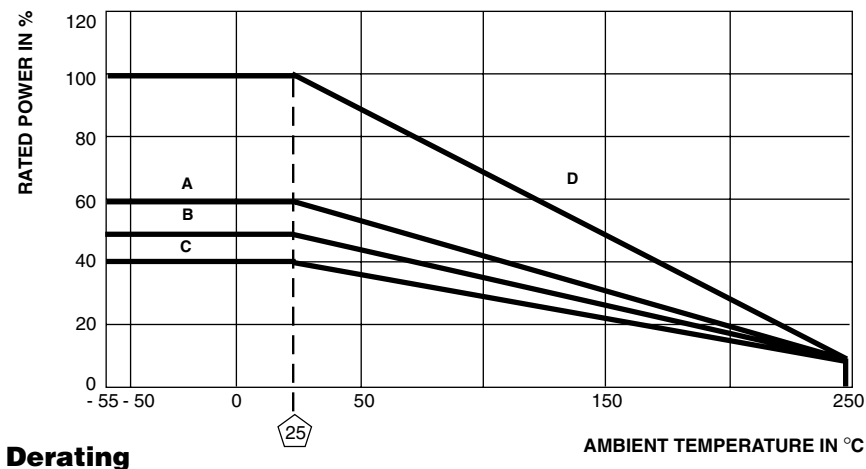
Curves **A**, **B**, **C** apply to operation of unmounted resistors. Curve **D** applies to all types when mounted to specified heat sink.

**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



Derating

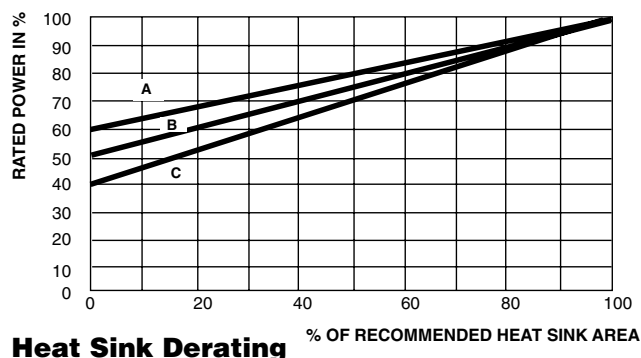
### REDUCED HEAT SINK DERATING:

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



Heat Sink Derating

**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 RH-5 through RH-50 size terminal finish - Tin/lead is 60/40 Sn/Pb w/Nickel underplate and Lead (Pb)-free is Ni/Pd/Au, finish is on copper clad steel core terminal. For RH-100 and RH-250 terminals are threaded stainless steel.

**Note:**

Military (RE) parts are only available with tin/lead finish

**Part Marking:** DALE, model, wattage, value, tolerance, date code

**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.

**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).

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 $V_{rms}$ for RH-5, RH-10 and RH-25; 2000 $V_{rms}$ for RH-50 4500 $V_{rms}$ for RH-100 and RH-250; 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 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 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	$\pm (0.2 \% + 0.05 \Omega) \Delta R$



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