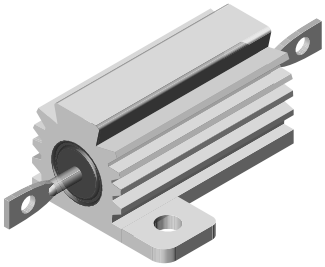
Wirewound Resistors, Military, MIL-PRF-18546 Qualified, Type RE, Aluminum Housed, Chassis Mount



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)

Pb-free Available

e4

RoHS*
COMPLIANT

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	HISTORICAL MODEL	MIL-PRF-18546 TYPE	POWER RATING $P_{25\,°C}$ W		RESISTANCE RANGE MIL. RANGE SHOWN IN BOLD FACE Ω				WEIGHT (typical) g
			DALE	MILITARY	± 0.05 %, ± 0.1 %	± 0.25 %	± 0.5 %	± 1 %, ± 2 %, ± 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 number format)

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

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

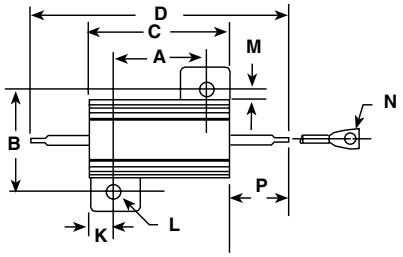
Historical Part Number Example: RH-5 4.125 Ω 1 % C02 (will continue to be accepted)

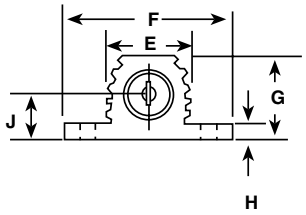
RH-5	4.125 Ω	1 %	C02
HISTORICAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING

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

DIMENSIONS in inches [millimeters]

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

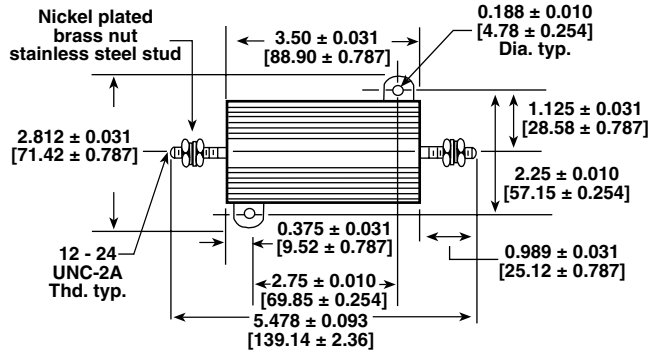


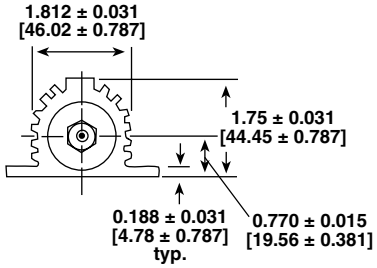


MODEL	DIMENSIONS in inches [millimeters]													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
RH-5 NH-5	0.444 ± 0.005 [11.28 ± 0.127]	0.490 ± 0.005 [12.45 ± 0.127]	0.600 ± 0.030 [15.24 ± 0.787]	1.125 ± 0.062 [28.58 ± 1.57]	0.334 ± 0.015 [8.48 ± 0.381]	0.646 ± 0.015 [16.41 ± 0.381]	0.320 ± 0.015 [8.13 ± 0.381]	0.065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

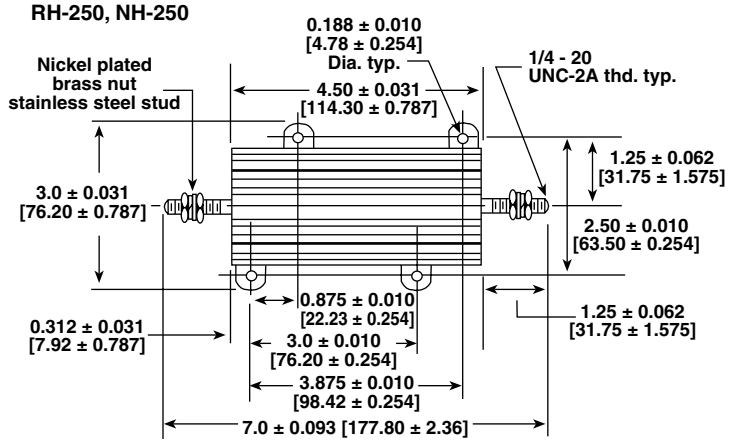
DIMENSIONS in inches [millimeters]

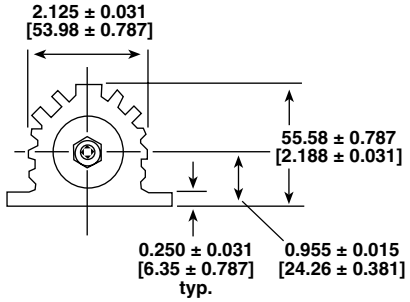
RH-100, NH-100





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_{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 × 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

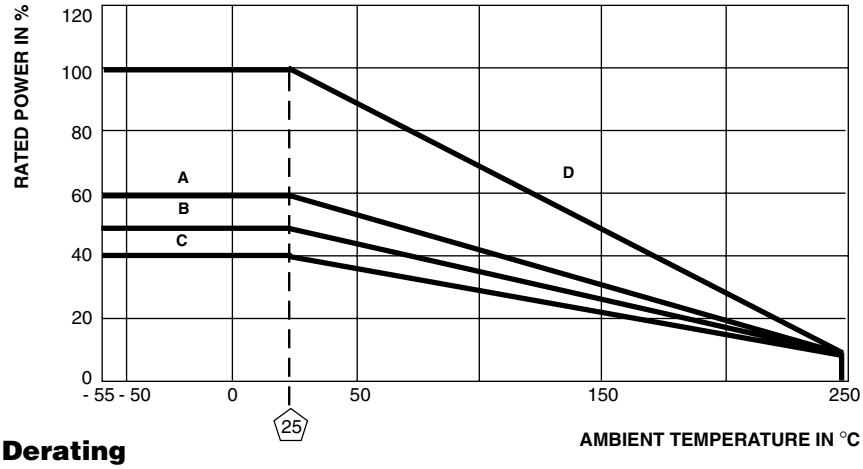
POWER RATING

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

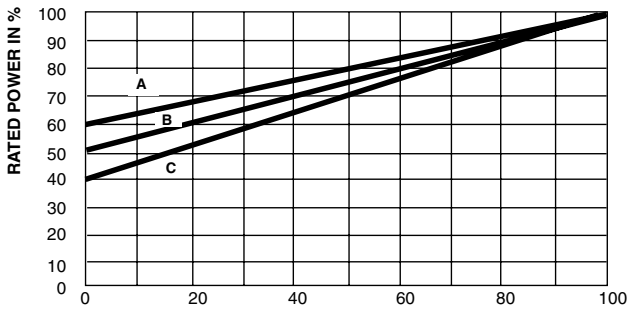
Derating is required for ambient temperatures above 25 °C, see the following graph.
Curves **A, B, C** apply to operation of unmounted resistors. Curve **D** applies to all types when mounted to specified heat sink.
A = RH-5 and RH-10 size resistor, unmounted
B = RH-25 size resistor, unmounted
C = RH-50, 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

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

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

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 min at - 55 °C	± (0.5 % + 0.05 Ω) ΔR
Short Time Overload	5 x rated power for 5 s	± (0.5 % + 0.05 Ω) ΔR
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	± (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 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 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 % + 0.05 Ω) ΔR

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