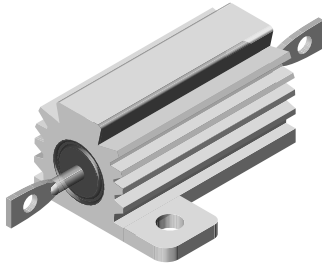


Wirewound Resistors, Military, MIL-PRF-18546 Qualified, Type RE, Aluminum Housed, Chassis Mount



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 °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			
---	---	---	---	---	---	---	---	---	---	---	---	---	---	--	--	--

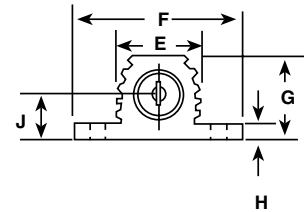
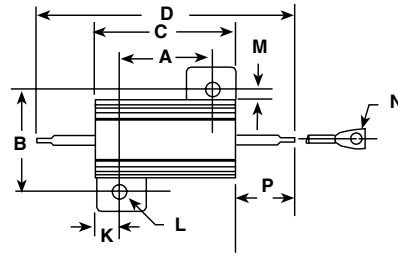
GLOBAL MODEL	RESISTANCE VALUE	TOLERANCE CODE	PACKAGING	SPECIAL
RH005 (See "Standard Electrical Specifications" table above for additional P/N's)	L = Milliohm R = Decimal K = Thousand 8L000 = 0.008 Ω 15R00 = 15 Ω	A = 0.05 % B = 0.1 % C = 0.25 % D = 0.5 % F = 1.0 %	E02 = Lead (Pb)-free, Card Pack (RH005 - RH050) E01 = Lead (Pb)-free, Skin Pack (RH100 & RH250) Lead (Pb)-free is not available on RE military type 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

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

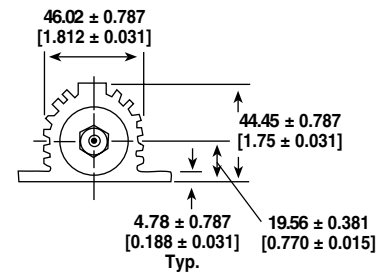
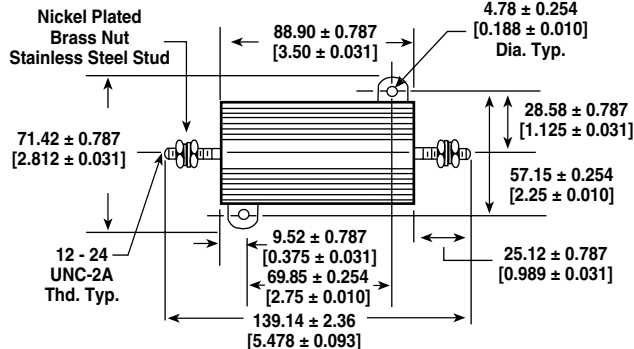
DIMENSIONS

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


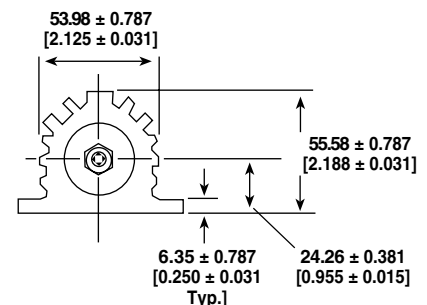
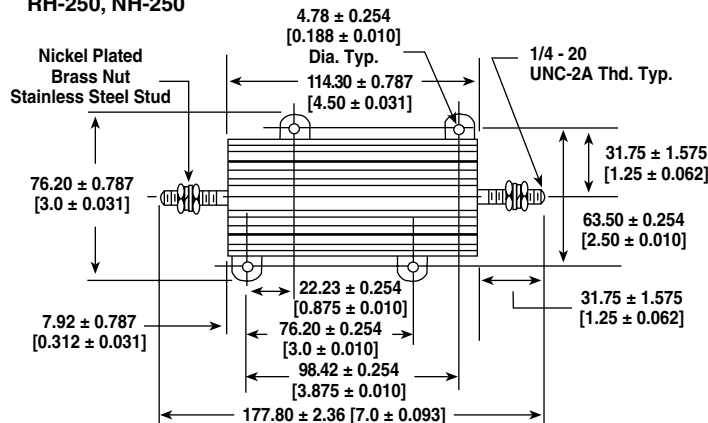
MODEL	DIMENSIONS in millimeters [inches]													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
RH-5 NH-5	11.28 ± 0.127 [0.444 ± 0.005]	12.45 ± 0.127 [0.490 ± 0.005]	15.24 ± 0.787 [0.600 ± 0.03]	28.58 ± 1.57 [1.125 ± 0.062]	8.48 ± 0.381 [0.334 ± 0.015]	16.41 ± 0.381 [0.646 ± 0.015]	8.13 ± 0.381 [0.320 ± 0.015]	1.65 ± 0.254 [0.065 ± 0.010]	3.38 ± 0.254 [0.133 ± 0.010]	1.98 ± 0.254 [0.078 ± 0.010]	2.36 ± 0.127 [0.093 ± 0.005]	1.98 ± 0.381 [0.078 ± 0.015]	1.27 ± 0.127 [0.050 ± 0.005]	6.76 ± 1.57 [0.266 ± 0.062]
RH-10 NH-10	14.27 ± 0.127 [0.562 ± 0.005]	15.88 ± 0.127 [0.625 ± 0.005]	19.05 ± 0.787 [0.750 ± 0.031]	34.93 ± 1.57 [1.375 ± 0.062]	10.67 ± 0.381 [0.420 ± 0.015]	20.32 ± 0.381 [0.800 ± 0.015]	9.91 ± 0.381 [0.390 ± 0.015]	1.91 ± 0.254 [0.075 ± 0.010]	4.19 ± 0.254 [0.165 ± 0.010]	2.36 ± 0.254 [0.093 ± 0.010]	2.39 ± 0.127 [0.094 ± 0.005]	2.59 ± 0.381 [0.102 ± 0.015]	2.16 ± 0.127 [0.085 ± 0.005]	7.92 ± 1.57 [0.312 ± 0.062]
RH-25 NH-25	18.26 ± 0.127 [0.719 ± 0.005]	19.84 ± 0.127 [0.781 ± 0.005]	26.97 ± 0.787 [1.062 ± 0.031]	49.23 ± 1.57 [1.938 ± 0.062]	13.97 ± 0.381 [0.550 ± 0.015]	27.43 ± 0.381 [1.080 ± 0.015]	13.87 ± 0.381 [0.546 ± 0.015]	1.91 ± 0.254 [0.075 ± 0.010]	5.87 ± 0.254 [0.231 ± 0.010]	4.37 ± 0.254 [0.172 ± 0.010]	3.18 ± 0.127 [0.125 ± 0.005]	2.92 ± 0.381 [0.115 ± 0.015]	2.16 ± 0.127 [0.085 ± 0.005]	11.13 ± 1.57 [0.438 ± 0.062]
RH-50 NH-50	39.67 ± 0.127 [1.562 ± 0.005]	21.44 ± 0.127 [0.844 ± 0.005]	49.99 ± 0.787 [1.968 ± 0.031]	70.64 ± 1.57 [2.781 ± 0.062]	16.00 ± 0.381 [0.630 ± 0.015]	28.96 ± 0.381 [1.140 ± 0.015]	15.49 ± 0.381 [0.610 ± 0.015]	2.24 ± 0.254 [0.088 ± 0.010]	6.60 ± 0.254 [0.260 ± 0.010]	4.98 ± 0.254 [0.196 ± 0.010]	3.18 ± 0.127 [0.125 ± 0.005]	2.72 ± 0.381 [0.107 ± 0.015]	2.16 ± 0.127 [0.085 ± 0.005]	11.13 ± 1.57 [0.438 ± 0.062]

DIMENSIONS

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	-	$5 \times$ rated power for 5 seconds
Maximum Working Voltage	V	$(P \times R)^{1/2}$
Insulation Resistance	Ω	10 000 M Ω minimum dry, 1000 M Ω 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.

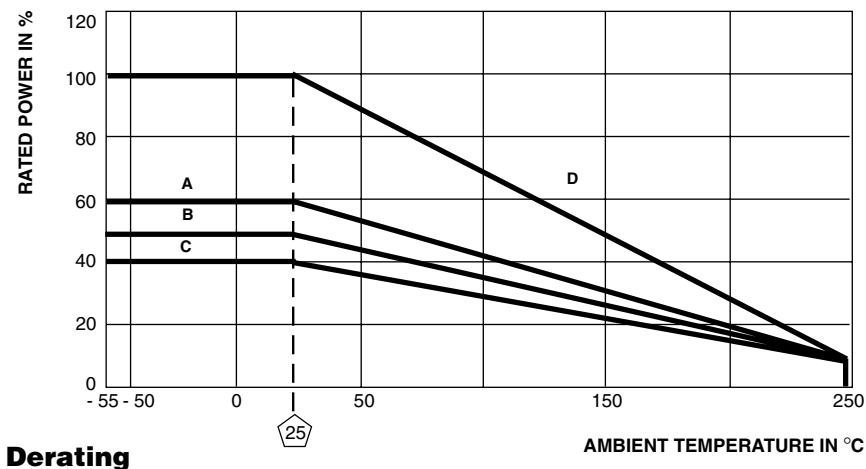
Curves **A**, **B**, **C** apply to operation of unmounted resistors. Curve **D** applies to all types when mounted to specified heat sink.

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



Derating

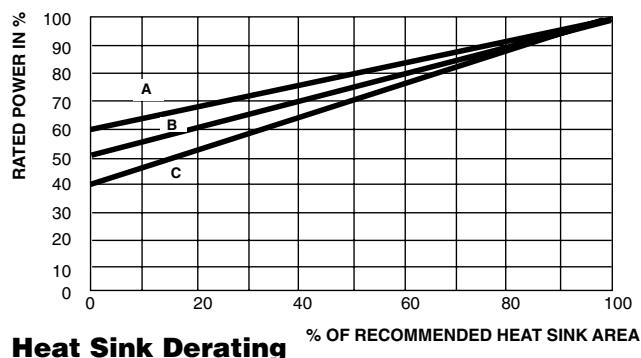
REDUCED HEAT SINK DERATING:

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 & Lead (Pb)-free is Ni/Pd/Au, finish is on copper clad steel core terminal. For RH-100 & 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 minutes at - 55 °C	$\pm (0.5 \% + 0.05 \Omega) \Delta R$
Short Time Overload	5 × rated power for 5 seconds	$\pm (0.5 \% + 0.05 \Omega) \Delta R$
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 one minute	$\pm (0.2 \% + 0.05 \Omega) \Delta R$
Temperature	250 °C for 2 hours	$\pm (0.5 \% + 0.05 \Omega) \Delta R$
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 hours each	$\pm (0.2 \% + 0.05 \Omega) \Delta R$
Load Life	1000 hours at rated power, + 25 °C, 1.5 hours "ON", 0.5 hours "OFF"	$\pm (1.0 \% + 0.05 \Omega) \Delta R$
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	$\pm (0.2 \% + 0.05 \Omega) \Delta R$