

Pre-Charge and Discharge, Chassis Mount Wirewound Resistor



LINKS TO ADDITIONAL RESOURCES



FEATURES

- AEC-Q200 qualified
- Molded construction for total environmental protection
- Complete welded construction
- Mounts on chassis to utilize heat-sink effect
- Excellent stability in operation (< 1 % change in resistance)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



Note

* This datasheet provides information about parts that are RoHS-compliant and /or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

STANDARD ELECTRICAL SPECIFICATIONS

GLOBAL MODEL	POWER RATING $P_{25^\circ\text{C}}$ W	RESISTANCE RANGE Ω	TOLERANCE $\pm \%$	WEIGHT (typical) g
RHA005	7.5	0.1 to 3.32K	1, 3, 5	3
RHA010	12.5	0.1 to 5.62K	1, 3, 5	5
RHA025	25	0.1 to 12.1K	1, 3, 5	12
RHA050	50	0.1 to 39.2K	1, 3, 5	28

TECHNICAL SPECIFICATIONS

PARAMETER	UNIT	RHA RESISTOR CHARACTERISTICS
Temperature Coefficient	ppm/°C	± 20 for 10 Ω and above; ± 50 for 1 Ω to 9.9 Ω , ± 100 for 0.1 Ω to 0.99 Ω
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
Solderability	-	Meets requirements of ANSI J-STD-002
Operating Temperature Range	°C	-55 to +250

GLOBAL PART NUMBER INFORMATION

Global Part Numbering Example: RHA0054R125FE02

R
H
A
0
0
5
4
R
1
2
5
F
E
0
2

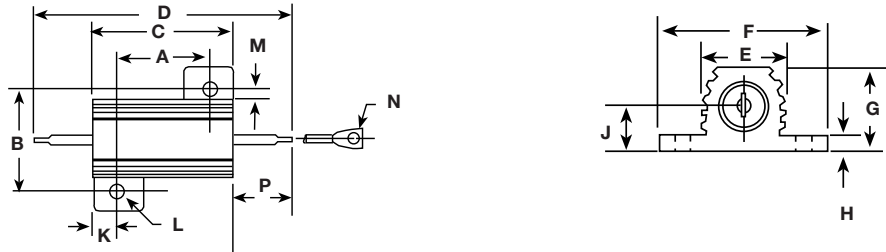
GLOBAL MODEL
RHA005
(see Standard Electrical Specifications Global Model column for options)

RESISTANCE VALUE
R = decimal
K = thousand
15R00 = 15 Ω
10K00 = 10 k Ω

TOLERANCE CODE
F = 1.0 %
H = 3.0 %
J = 5.0 %

PACKAGING
E02 = lead (Pb)-free, card pack

SPECIAL
(dash number)
(up to 2 digits)
from **1 to 99**
as applicable

DIMENSIONS in inches [millimeters]


GLOBAL MODEL	DIMENSIONS in inches [millimeters]													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
RHA005	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
	± 0.127]	± 0.127]	± 0.787]	± 1.57]	± 0.381]	± 0.381]	± 0.381]	± 0.254]	± 0.254]	± 0.254]	± 0.127]	± 0.381]	± 0.127]	± 1.57]
RHA010	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
	± 0.127]	± 0.127]	± 0.787]	± 1.57]	± 0.381]	± 0.381]	± 0.381]	± 0.254]	± 0.254]	± 0.254]	± 0.127]	± 0.381]	± 0.127]	± 1.57]
RHA025	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
	± 0.127]	± 0.127]	± 0.787]	± 1.57]	± 0.381]	± 0.381]	± 0.381]	± 0.254]	± 0.254]	± 0.254]	± 0.127]	± 0.381]	± 0.127]	± 1.57]
RHA050	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
	± 0.127]	± 0.127]	± 0.787]	± 1.57]	± 0.381]	± 0.381]	± 0.381]	± 0.254]	± 0.254]	± 0.254]	± 0.127]	± 0.381]	± 0.127]	± 1.57]

POWER RATING

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

RHA005 and RHA010: 4" x 6" x 2" x 0.040" thick aluminum chassis (129 sq. in. surface area)

RHA025: 5" x 7" x 2" x 0.040" thick aluminum chassis (167 sq. in. surface area)

RHA050: 12" x 12" x 0.059" thick aluminum panel (291 sq. in. surface area)

FREE AIR POWER RATING				
GLOBAL MODEL	RHA005	RHA010	RHA025	RHA050
W at 25 °C	4.5	7.5	12.5	20



AMBIENT TEMPERATURE DERATING

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

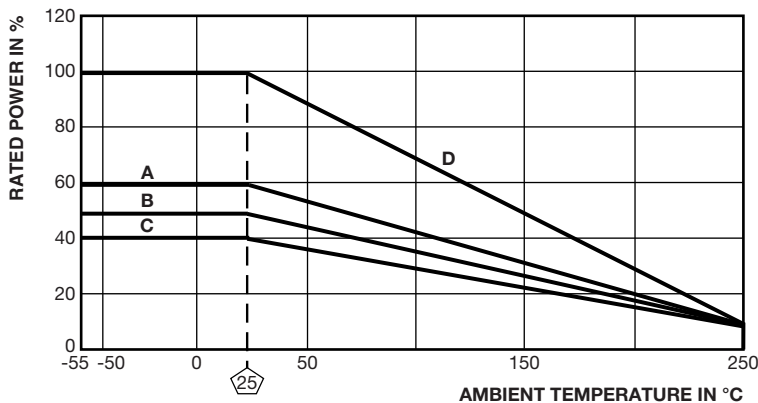
Curves **A**, **B**, **C** apply to operation of unmounted resistors. Curve **D** applies to all types when mounted to specified heat sink.

A = RHA005 and RHA010 size resistor, unmounted

B = RHA025 size resistor, unmounted

C = RHA050 size resistor, unmounted

D = All types mounted to recommended aluminum heat sink



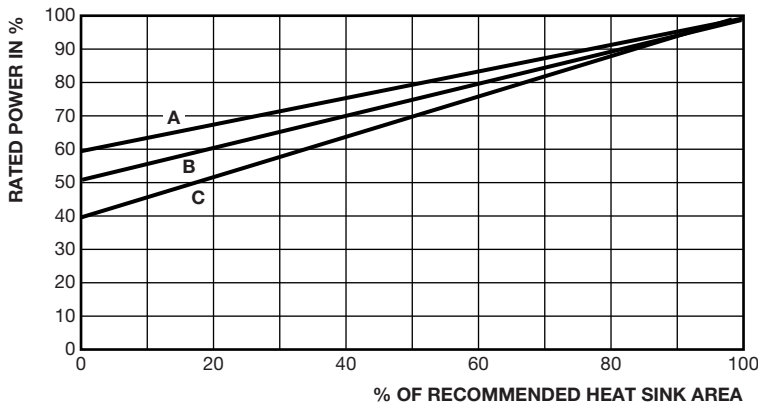
REDUCED HEAT SINK DERATING

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

A = RHA005 and RHA010 size resistor

B = RHA025 size resistor

C = RHA050 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: For RHA005 through RHA050 size terminal finish - lead (Pb)-free is Ni/Pd/Au, finish is on copper clad steel core terminal

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

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 RHA005, RHA010, and RHA025; 2000 V _{RMS} for RHA050	± (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 Hz 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 RHA005 and RHA010, 10 pound pull test for other sizes	± (0.2 % + 0.05 Ω) ΔR

SHORT TERM ENERGY CAPABILITIES VS. RESISTANCE				
RESISTANCE VALUE (Ω)	SHORT TERM (< 100 ms) ENERGY CAPABILITY (J)			
	RHA005	RHA010	RHA025	RHA050
1	4.15	14.5	14.5	17.4
10	2.59	6.53	17	67.6
25	1.56	4.25	10.2	42.5
50	1.97	3.11	8.5	32.65
100	1.42	3.93	6.22	25.9
1000	0.59	1.44	3.93	14.2

Note

- Contact factory for energy capability of resistance values not listed



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