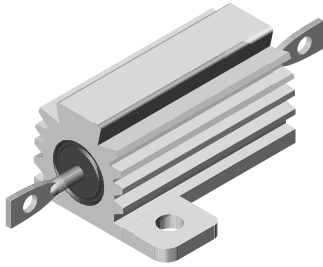


Pre-Charge and Discharge, Chassis Mount Wirewound Resistor



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/ $^{\circ}\text{C}$	± 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	$^{\circ}\text{C}$	-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

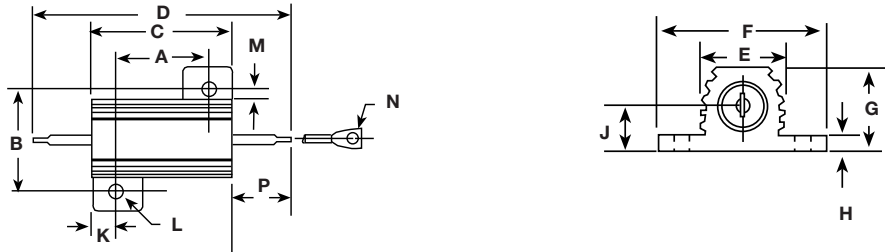
GLOBAL MODEL
RHA005
(see Standard Electrical Specifications Global Model column for options)

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.

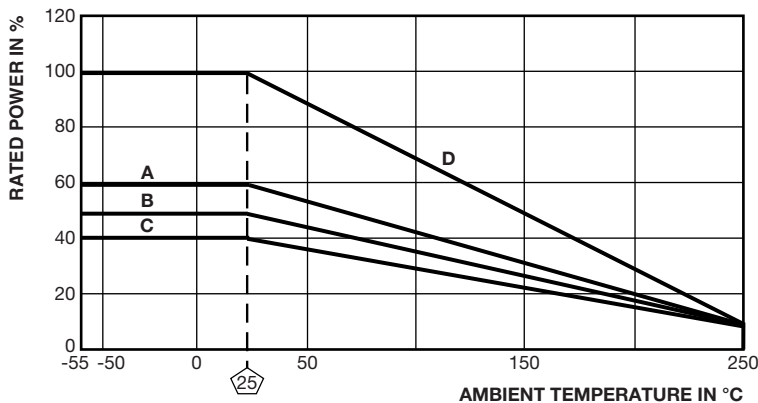
Curves **A**, **B**, **C** apply to operation of unmounted resistors. Curve **D** applies to all types when mounted to specified heat sink.

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



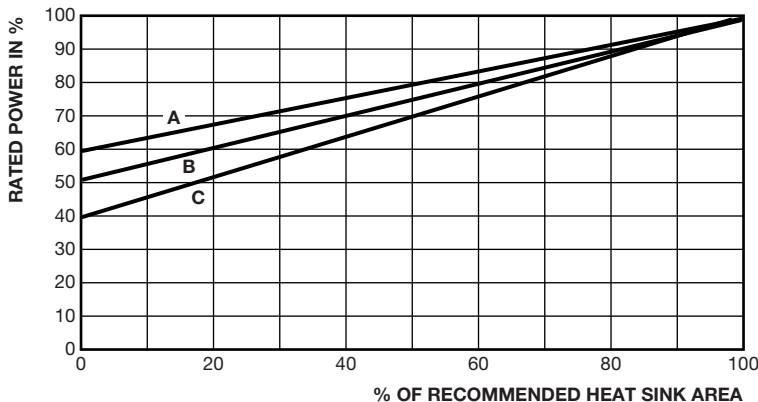
REDUCED HEAT SINK DERATING

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



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.