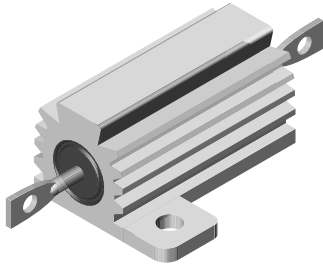


Pre-Charge and Discharge, Chassis Mount Wirewound Resistor



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

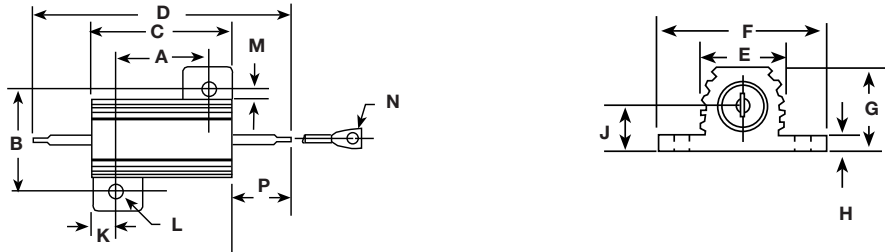
GLOBAL MODEL
RHA005
(see Standard Electrical Specifications Global Model column for options)

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.

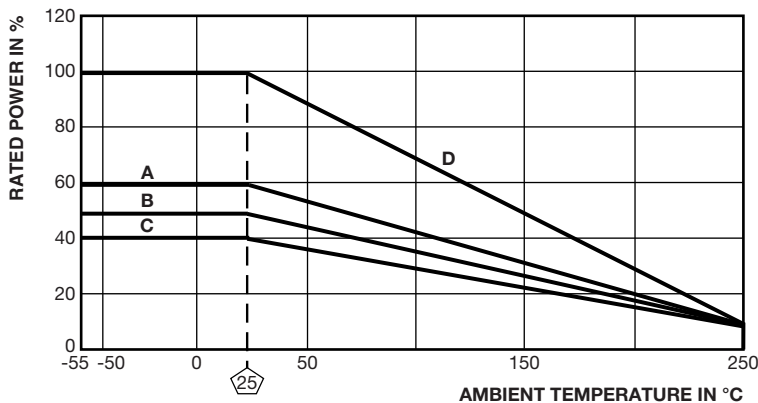
Curves **A**, **B**, **C** apply to operation of unmounted resistors. Curve **D** applies to all types when mounted to specified heat sink.

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



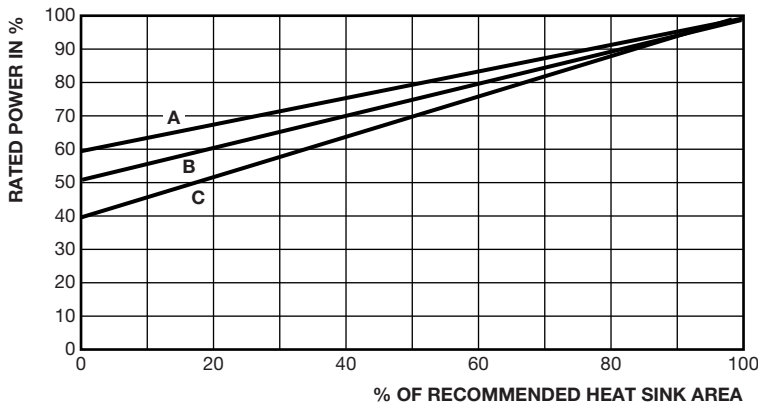
REDUCED HEAT SINK DERATING

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



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