

Wirewound Resistors, Military/Established Reliability MIL-PRF-39009 Qualified, Type RER, R Level



FEATURES

- Aluminum heat sink housing
- Molded construction for total environmental protection
- Qualified to MIL-PRF-39009
- Complete welded construction
- Available in non-inductive styles (type ENH) with Aryton-Perry winding for lowest reactive components
- Mounts on chassis to utilize heat-sink effect

STANDARD ELECTRICAL SPECIFICATIONS

| MODEL | MIL-PRF-39009 TYPE | POWER RATING $P_{25\text{ }^\circ\text{C}}$ W | | MILITARY RESISTANCE RANGE $\pm 1\%$ Ω | WEIGHT (typical) g |
|--------|--------------------|---|----------|--|-----------------------|
| | | MOUNTED | FREE AIR | | |
| ENH-5 | RER40 | 5 | 3 | 1 - 1.65K | 3.3 |
| ENH-10 | RER45 | 10 | 6 | 1 - 2.8K | 8.8 |
| ENH-25 | RER50 | 20 | 8 | 1 - 6.04K | 16.5 |
| ENH-50 | RER55 | 30 | 10 | 1 - 4.99K | 35 |
| ERH-5 | RER60 | 5 | 3 | 0.10 - 3.32K | 3 |
| ERH-10 | RER65 | 10 | 6 | 0.10 - 5.62K | 6 |
| ERH-25 | RER70 | 20 | 8 | 0.10 - 12.1K | 13 |
| ERH-50 | RER75 | 30 | 10 | 0.10 - 39.2K | 28 |

TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | ERH, ENH RESISTOR CHARACTERISTICS |
|---------------------------------|-----------------------|--|
| Temperature Coefficient | ppm/ $^\circ\text{C}$ | ± 100 for $0.1\ \Omega$ to $0.99\ \Omega$, ± 50 for $1\ \Omega$ to $19.9\ \Omega$, ± 20 for $20\ \Omega$ and above |
| Dielectric Withstanding Voltage | V_{AC} | 1000 for ERH-5, ERH-10 and ERH-25, 2000 for ERH-50 |
| Short Time Overload | - | 5 x rated power for 5 s |
| 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 pull for ERH-5 and ERH-10, 10 pull for ERH-25 and ERH-50 |
| Solderability | - | Meets requirements of ANSI J-STD-002 |
| Operating Temperature Range | $^\circ\text{C}$ | - 55 to + 250 |

GLOBAL PART NUMBER INFORMATION

Global/Military Part Numbering: RER65F1001RC02

R
E
R
6
5
F
1
0
0
1
R
C
0
2

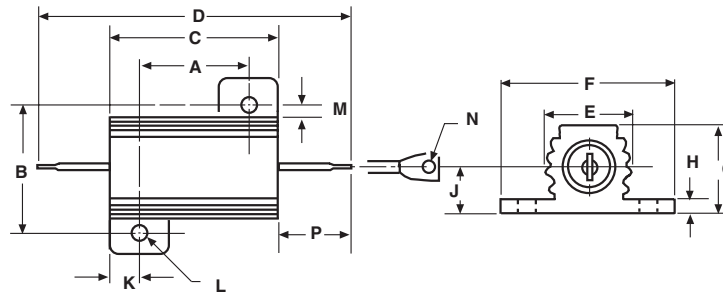
| MIL TYPE |
|--|
| RER40 RER45 RER50 RER55 RER60 RER65 RER70 RER75 |

| TOLERANCE CODE |
|-----------------------------------|
| F = $\pm 1.0\%$ |

| RESISTANCE VALUE |
|---|
| 3 digit significant figure, followed by a multiplier 49R9 = 49.9 Ω 1000 = 100 Ω 1001 = 1000 Ω |

| FAILURE RATE |
|--|
| M = 1.0 %/1000 h P = 0.1 %/1000 h R = 0.01 %/1000 h |

| PACKAGING CODE |
|--|
| C02 = Tin/lead, card pack CSL = Tin/lead, card pack, single lot date code |

DIMENSIONS


| MODEL | DIMENSIONS in inches [millimeters] | | | | | | | | | | | | | |
|------------------|---|---|---|---|---|---|---|--|--|--|--|--|--|---|
| | A | B | C | D | E | F | G | H | J | K | L | M | N | P |
| ERH-5 ENH-5 | 0.444 ± 0.005 [11.280 ± 0.127] | 0.490 ± 0.005 [12.450 ± 0.127] | 0.600 ± 0.031 [15.240 ± 0.787] | 1.125 ± 0.062 [28.580 ± 1.570] | 0.334 ± 0.015 [8.480 ± 0.381] | 0.646 ± 0.015 [16.410 ± 0.381] | 0.320 ± 0.015 [8.130 ± 0.381] | 0.065 ± 0.010 [1.650 ± 0.254] | 0.133 ± 0.010 [3.380 ± 0.254] | 0.078 ± 0.010 [1.980 ± 0.254] | 0.093 ± 0.005 [2.360 ± 0.127] | 0.078 ± 0.015 [1.980 ± 0.381] | 0.050 ± 0.005 [1.270 ± 0.127] | 0.266 ± 0.062 [6.760 ± 1.570] |
| ERH-10 ENH-10 | 0.562 ± 0.005 [14.270 ± 0.127] | 0.625 ± 0.005 [15.880 ± 0.127] | 0.750 ± 0.031 [19.050 ± 0.787] | 1.375 ± 0.062 [34.930 ± 1.570] | 0.420 ± 0.015 [10.670 ± 0.381] | 0.800 ± 0.015 [20.320 ± 0.381] | 0.390 ± 0.015 [9.910 ± 0.381] | 0.075 ± 0.010 [1.900 ± 0.254] | 0.165 ± 0.010 [4.190 ± 0.254] | 0.093 ± 0.010 [2.360 ± 0.254] | 0.094 ± 0.005 [2.390 ± 0.127] | 0.102 ± 0.015 [2.590 ± 0.381] | 0.085 ± 0.005 [2.160 ± 0.127] | 0.312 ± 0.062 [7.920 ± 1.570] |
| ERH-25 ENH-25 | 0.719 ± 0.005 [18.260 ± 0.127] | 0.781 ± 0.005 [19.840 ± 0.127] | 1.062 ± 0.031 [26.970 ± 0.787] | 1.938 ± 0.062 [49.230 ± 1.570] | 0.550 ± 0.015 [13.970 ± 0.381] | 1.080 ± 0.015 [27.430 ± 0.381] | 0.546 ± 0.015 [13.870 ± 0.381] | 0.075 ± 0.010 [1.900 ± 0.254] | 0.231 ± 0.010 [5.870 ± 0.254] | 0.172 ± 0.010 [4.370 ± 0.254] | 0.125 ± 0.005 [3.180 ± 0.127] | 0.115 ± 0.015 [2.920 ± 0.381] | 0.085 ± 0.005 [2.160 ± 0.127] | 0.438 ± 0.062 [11.130 ± 1.570] |
| ERH-50 ENH-50 | 1.562 ± 0.005 [39.670 ± 0.127] | 0.844 ± 0.005 [21.440 ± 0.127] | 1.968 ± 0.031 [49.990 ± 0.787] | 2.781 ± 0.062 [70.640 ± 1.570] | 0.630 ± 0.015 [16.000 ± 0.381] | 1.140 ± 0.015 [28.960 ± 0.381] | 0.610 ± 0.015 [15.490 ± 0.381] | 0.088 ± 0.010 [2.240 ± 0.254] | 0.260 ± 0.010 [6.600 ± 0.254] | 0.196 ± 0.010 [4.980 ± 0.254] | 0.125 ± 0.005 [3.180 ± 0.127] | 0.107 ± 0.015 [2.720 ± 0.381] | 0.085 ± 0.005 [2.160 ± 0.127] | 0.438 ± 0.062 [11.130 ± 1.570] |

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: Tinned Copperweld®

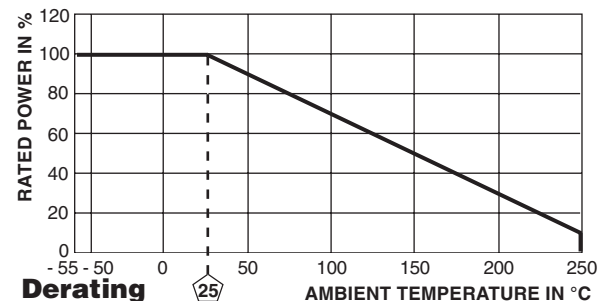
Part Marking: Source code, JAN, military PIN, date/lot code

POWER RATING

Vishay ERH and ENH resistor wattage ratings are based on mounting to the proper heat sink.

ERH-5 and ERH-10: 4" x 6" x 2" x 0.040" thick aluminum chassis

ERH-25 and ERH-50: 5" x 7" x 2" x 0.040" thick aluminum chassis


APPLICABLE MIL SPECIFICATION

MIL-PRF-39009: This is the military specification covering housed chassis mount established reliability power wirewound resistors. Vishay ERH and ENH resistors are listed as qualified on the MIL-PRF-39009 QPL.

| PERFORMANCE | | |
|---------------------------------|--|-----------------------|
| TEST | CONDITIONS OF TEST | TEST LIMITS |
| Low Temperature Operation | Apply rated power until thermal stability, remove power subject to air temperature of - 55 °C for 15 to 30 min | ± (0.5 % + 0.01 Ω) ΔR |
| Short Time Overload | 5 x rated power for 5 s | ± (0.3 % + 0.01 Ω) ΔR |
| Dielectric Withstanding Voltage | 1000 V _{rms} (RER 40, 45, 50, 60, 65, 70), 2000 V _{rms} (RER55 and 75), 1 min duration | ± (0.2 % + 0.01 Ω) ΔR |
| Low Temperature Storage | - 55 °C for 24 h | ± (0.3 % + 0.01 Ω) ΔR |
| High Temperature Exposure | 250 °C for 2000 h | ± (1.0 % + 0.01 Ω) ΔR |
| Moisture Resistance | MIL-STD-202, Method 106 | ± (0.5 % + 0.01 Ω) ΔR |
| Shock, Specified Pulse | MIL-STD-202, Method 213, condition 1 | ± (0.2 % + 0.01 Ω) ΔR |
| Vibration, High Frequency | MIL-STD-202, Method 204, condition D | ± (0.2 % + 0.01 Ω) ΔR |
| Load Life | 2000 h at rated power, + 25 °C, 1.5 h "ON", 0.5 h "OFF" | ± (1.0 % + 0.01 Ω) ΔR |
| Extended Life | 10 000 h at rated power, + 25 °C, 1.5 h "ON", 0.5 h "OFF" | ± (2.0 % + 0.01 Ω) ΔR |
| Terminal Strength | MIL-STD-202, Method 211, condition A 5 pound (RER40, 45, 60, 65), 10 pound (RER50, 55, 70, 75) | ± (0.2 % + 0.01 Ω) ΔR |



Disclaimer

All product specifications and data are subject to change without notice.

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 herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

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.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.