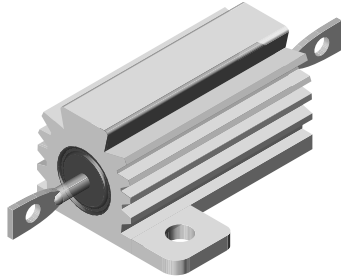


## Wirewound Resistors, Military/Established Reliability MIL-PRF-39009 Qualified, Type RER, R Level


**FEATURES**

- Aluminum heat sink housing
- Molded construction for total environmental protection
- Qualified to MIL-PRF-39009
- Complete welded construction
- Non-inductive styles manufactured with Ayrton-Perry winding for lowest reactive components
- Mounts on chassis to utilize heat-sink effect

**STANDARD ELECTRICAL SPECIFICATIONS**

| MILITARY MODEL | VISHAY REFERENCE MODEL | POWER RATING<br>$P_{25\text{ }^\circ\text{C}}$<br>W | RESISTANCE RANGE<br>$\Omega$ | TOLERANCE<br>$\pm \%$ | WEIGHT<br>(typical)<br>g |
|----------------|------------------------|---|------------------------------|-----------------------|--------------------------|
| RER40          | ENH05                  | 5   | 1 to 1.65K                   | 1                     | 3.3                      |
| RER45          | ENH10                  | 10  | 1 to 2.8K                    | 1                     | 8.8                      |
| RER50          | ENH25                  | 20  | 1 to 6.04K                   | 1                     | 16.5                     |
| RER55          | ENH50                  | 30  | 1 to 4.99K                   | 1                     | 35                       |
| RER60          | ERH05                  | 5   | 0.10 to 3.32K                | 1                     | 3                        |
| RER65          | ERH10                  | 10  | 0.10 to 5.62K                | 1                     | 6                        |
| RER70          | ERH25                  | 20  | 0.10 to 12.1K                | 1                     | 13                       |
| RER75          | ERH50                  | 30  | 0.10 to 39.2K                | 1                     | 28                       |

**TECHNICAL SPECIFICATIONS**

| PARAMETER                      | UNIT     | RER40/RER60  | RER45/RER65 | RER50/RER70 | RER55/RER75 |
|--------------------------------|----------|--|-------------|-------------|-------------|
| Free Air Power Rating at 25 °C | W        | 3  | 6           | 8           | 10          |
| Temperature Coefficient        | ppm/°C   | $\pm 20$ for 20 $\Omega$ and above; $\pm 50$ for 1 $\Omega$ to 19.9 $\Omega$ ; $\pm 100$ for 0.1 $\Omega$ to 0.99 $\Omega$ |             |             |             |
| Maximum Working Voltage        | V        | $(P \times R)^{1/2}$   |             |             |             |
| Insulation Resistance          | $\Omega$ | 10 000 M $\Omega$ minimum dry, 1000 M $\Omega$ minimum after moisture test   |             |             |             |
| Solderability                  | -        | Meets requirements of ANSI J-STD-002   |             |             |             |
| Operating Temperature Range    | °C       | -55 to +250  |             |             |             |

**MILITARY PART NUMBER INFORMATION**

Military Part Numbering example: RER65F1001RC02

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

| MIL TYPE   | TOLERANCE CODE   | RESISTANCE VALUE   | FAILURE RATE  | PACKAGING CODE  |
|--|------------------|--|---|---|
| RER40<br>RER45<br>RER50<br>RER55<br>RER60<br>RER65<br>RER70<br>RER75 | F = $\pm 1.0 \%$ | 3 digit significant figure,<br>followed by a multiplier<br><br>49R9 = 49.9 $\Omega$<br>1000 = 100 $\Omega$<br>1001 = 1000 $\Omega$ | M = 1.0 %/1000 h<br>P = 0.1 %/1000 h<br>R = 0.01 %/1000 h | C02 = tin/lead, card pack<br>CSL = tin/lead, card pack,<br>single lot date code |

**DIMENSIONS**


| MILITARY MODEL | DIMENSIONS in inches [millimeters]      |   |   |   |   |   |   |  |  |  |  |  |  |   |
|----------------|---|---|---|---|---|---|---|--|--|--|--|--|--|---|
|                | A                                       | B                                       | C                                       | D                                       | E                                       | F                                       | G                                       | H                                      | J                                      | K                                      | L                                      | M                                      | N                                      | P                                       |
| RER40<br>RER60 | 0.444<br>± 0.005<br>[11.280<br>± 0.127] | 0.490<br>± 0.005<br>[12.450<br>± 0.127] | 0.600<br>± 0.031<br>[15.240<br>± 0.787] | 1.125<br>± 0.062<br>[28.580<br>± 1.570] | 0.334<br>± 0.015<br>[8.480<br>± 0.381]  | 0.646<br>± 0.015<br>[16.410<br>± 0.381] | 0.320<br>± 0.015<br>[8.130<br>± 0.381]  | 0.065<br>± 0.010<br>[1.650<br>± 0.254] | 0.133<br>± 0.010<br>[3.380<br>± 0.254] | 0.078<br>± 0.010<br>[1.980<br>± 0.254] | 0.093<br>± 0.005<br>[2.360<br>± 0.127] | 0.078<br>± 0.015<br>[1.980<br>± 0.381] | 0.050<br>± 0.005<br>[1.270<br>± 0.127] | 0.266<br>± 0.062<br>[6.760<br>± 1.570]  |
| RER45<br>RER65 | 0.562<br>± 0.005<br>[14.270<br>± 0.127] | 0.625<br>± 0.005<br>[15.880<br>± 0.127] | 0.750<br>± 0.031<br>[19.050<br>± 0.787] | 1.375<br>± 0.062<br>[34.930<br>± 1.570] | 0.420<br>± 0.015<br>[10.670<br>± 0.381] | 0.800<br>± 0.015<br>[20.320<br>± 0.381] | 0.390<br>± 0.015<br>[9.910<br>± 0.381]  | 0.075<br>± 0.010<br>[1.900<br>± 0.254] | 0.165<br>± 0.010<br>[4.190<br>± 0.254] | 0.093<br>± 0.010<br>[2.360<br>± 0.254] | 0.094<br>± 0.005<br>[2.390<br>± 0.127] | 0.102<br>± 0.015<br>[2.590<br>± 0.381] | 0.085<br>± 0.005<br>[2.160<br>± 0.127] | 0.312<br>± 0.062<br>[7.920<br>± 1.570]  |
| RER50<br>RER70 | 0.719<br>± 0.005<br>[18.260<br>± 0.127] | 0.781<br>± 0.005<br>[19.840<br>± 0.127] | 1.062<br>± 0.031<br>[26.970<br>± 0.787] | 1.938<br>± 0.062<br>[49.230<br>± 1.570] | 0.550<br>± 0.015<br>[13.970<br>± 0.381] | 1.080<br>± 0.015<br>[27.430<br>± 0.381] | 0.546<br>± 0.015<br>[13.870<br>± 0.381] | 0.075<br>± 0.010<br>[1.900<br>± 0.254] | 0.231<br>± 0.010<br>[5.870<br>± 0.254] | 0.172<br>± 0.010<br>[4.370<br>± 0.254] | 0.125<br>± 0.005<br>[3.180<br>± 0.127] | 0.115<br>± 0.015<br>[2.920<br>± 0.381] | 0.085<br>± 0.005<br>[2.160<br>± 0.127] | 0.438<br>± 0.062<br>[11.130<br>± 1.570] |
| RER55<br>RER75 | 1.562<br>± 0.005<br>[39.670<br>± 0.127] | 0.844<br>± 0.005<br>[21.440<br>± 0.127] | 1.968<br>± 0.031<br>[49.990<br>± 0.787] | 2.781<br>± 0.062<br>[70.640<br>± 1.570] | 0.630<br>± 0.015<br>[16.000<br>± 0.381] | 1.140<br>± 0.015<br>[28.960<br>± 0.381] | 0.610<br>± 0.015<br>[15.490<br>± 0.381] | 0.088<br>± 0.010<br>[2.240<br>± 0.254] | 0.260<br>± 0.010<br>[6.600<br>± 0.254] | 0.196<br>± 0.010<br>[4.980<br>± 0.254] | 0.125<br>± 0.005<br>[3.180<br>± 0.127] | 0.107<br>± 0.015<br>[2.720<br>± 0.381] | 0.085<br>± 0.005<br>[2.160<br>± 0.127] | 0.438<br>± 0.062<br>[11.130<br>± 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®

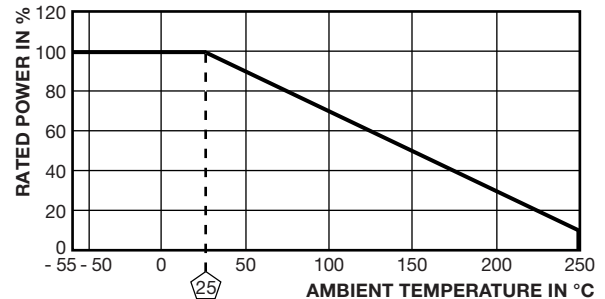
**Part Marking:** source code, JAN, military PIN, date/lot code

**POWER RATING**

Vishay RER resistor wattage ratings are based on mounting to the proper heat sink.

RER40, RER45, RER60, RER65: 4" x 6" x 2" x 0.040" thick aluminum chassis

RER50, RER55, RER70, RER75: 5" x 7" x 2" x 0.040" thick aluminum chassis

**DERATING**


| 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 min 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 <sub>RMS</sub> (RER40, RER45, RER50, RER60, RER65, RER70),<br>2000 V <sub>RMS</sub> (RER55 and RER75), 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 I   | ± (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<br>5 pound (RER40, RER45, RER60, RER65),<br>10 pound (RER50, RER55, RER70, RER75)       | ± (0.2 % + 0.01 Ω) ΔR |



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