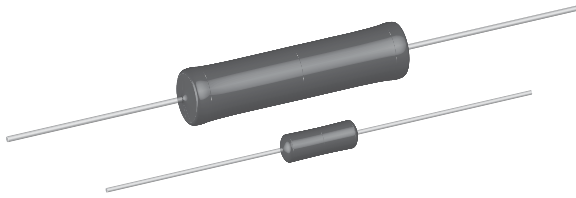


Wirewound Resistors, Military/Established Reliability MIL-PRF-39007 Qualified, Type RWR, R Level



FEATURES

- High temperature silicone coated
- Complete welded construction
- Qualified to MIL-PRF-39007
- Available in non-inductive styles (type N) with Aryton-Perry winding for lowest reactive components
- “S” level failure rate available

Note

- “Terminal Wire and Winding” type “W” and “Z” are not listed below but are available upon request. Please reference MIL-PRF-39007 QPL for approved “failure rate” and “resistance tolerance/ranges”

| STANDARD ELECTRICAL SPECIFICATIONS | | | | | |
|------------------------------------|------------------------|---|-------------------------------|--------------------------------------|-----------------------|
| MILITARY MODEL | VISHAY REFERENCE MODEL | POWER RATING <i>P</i> _{25 °C} W | RESISTANCE RANGE Ω ± 0.1 % | RESISTANCE RANGE Ω ± 0.5 %, ± 1 % | WEIGHT (typical) g |
| RWR81S | EGS-1-80 | 1 | 0.499 to 1K | 0.1 to 1K | 0.21 |
| RWR81N | EGN-1-80 | 1 | 0.499 to 499 | 0.1 to 499 | 0.21 |
| RWR82S | EGS-2 | 2 | 0.499 to 1.3K | 0.1 to 1.3K | 0.23 |
| RWR82N | EGN-2 | 2 | 0.499 to 649 | 0.1 to 649 | 0.23 |
| RWR80S | EGS-3-80 | 2 | 0.499 to 3.16K | 0.1 to 3.16K | 0.34 |
| RWR80N | EGN-3-80 | 2 | 0.499 to 1.58K | 0.1 to 1.58K | 0.34 |
| RWR71S | ESS-2A | 2 | 0.499 to 12.1K | 0.1 to 12.1K | 0.90 |
| RWR71N | ESN-2A | 2 | 0.499 to 6.04K | 0.1 to 6.04K | 0.90 |
| RWR89S | ESS-2B | 3 | 0.499 to 4.12K | 0.1 to 4.12K | 0.70 |
| RWR89N | ESN-2B | 3 | 0.499 to 2.05K | 0.1 to 2.05K | 0.70 |
| RWR74S | ESS-5 | 5 | 0.499 to 12.1K | 0.1 to 12.1K | 4.2 |
| RWR74N | ESN-5 | 5 | 0.499 to 6.04K | 0.1 to 6.04K | 4.2 |
| RWR84S | EGS-10-80 | 7 | 0.499 to 12.4K | 0.1 to 12.4K | 3.6 |
| RWR84N | EGN-10-80 | 7 | 0.499 to 6.19K | 0.1 to 6.19K | 3.6 |
| RWR78S | ESS-10 | 10 | 0.499 to 39.2K | 0.1 to 39.2K | 9.0 |
| RWR78N | ESN-10 | 10 | 0.499 to 19.6K | 0.1 to 19.6K | 9.0 |

| TECHNICAL SPECIFICATIONS | | |
|---------------------------------|-----------------|---|
| PARAMETER | UNIT | RWR RESISTOR CHARACTERISTICS |
| Temperature Coefficient | ppm/°C | ± 20 for 10 Ω and above; ± 50 for 1.1 Ω to 10 Ω; ± 400 for 0.505 Ω to 1 Ω; ± 650 for 0.1 Ω to 0.499 Ω |
| Dielectric Withstanding Voltage | V _{AC} | 500 minimum for 2 W and smaller, 1000 minimum for 3 W and larger |
| Short Time Overload | - | 5 x rated power for 5 s for 3 W size and smaller, 10 x rated power for 5 s for 5 W size and greater |
| Maximum Working Voltage | V | (<i>P</i> × <i>R</i>) ^{1/2} |
| Insulation Resistance | - | 1000 MΩ minimum dry, 100 MΩ minimum after moisture test |
| Terminal Strength | lb | 5 minimum for 2 W and smaller, 10 minimum for 3 W and larger |
| Solderability | - | Meets requirements of ANSI J-STD-002 |
| Operating Temperature Range | °C | - 65 to + 250 |

GLOBAL PART NUMBER INFORMATION

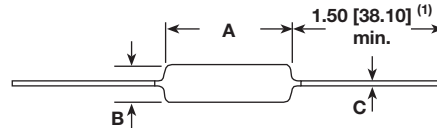
Global Part Numbering example: **RWR74S49R9FSB12**

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| R | W | R | 7 | 4 | S | 4 | 9 | R | 9 | F | S | B | 1 | 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| MIL TYPE | TERMINAL WIRE AND WINDING | RESISTANCE VALUE | TOLERANCE CODE | FAILURE RATE | PACKAGING CODE |
|--|--|--|---|---|---|
| RWR71 RWR74 RWR78 RWR80 RWR81 RWR82 RWR84 RWR89 | S = Solderable, inductive N = Solderable, non-inductive W = Weldable, inductive ⁽¹⁾ Z = Weldable, non-inductive ⁽¹⁾ | 3 digit significant figure, followed by a multiplier 49R9 = 49.9 Ω 1000 = 100 Ω 1001 = 1000 Ω | B = ± 0.1 % D = ± 0.5 % F = ± 1.0 % | M = 1.0 %/1000 h P = 0.1 %/1000 h R = 0.01 %/1000 h S = 0.001 %/1000 h | B12 = Bulk pack S70 = Tape/reel (smaller than 5 W) S73 = Tape/reel (5 W and higher) BSL = Bulk pack, single lot date code RSL = Tape/reel, single lot date code |

Note

⁽¹⁾ Note that “W” and “Z” are not listed above but are available, see MIL-PRF-39007 QPL for available resistance values.

DIMENSIONS in inches [millimeters]


| MILITARY MODEL | DIMENSIONS in inches [millimeters] | | |
|----------------|------------------------------------|--|--------------------------------|
| | A | B | C |
| RWR81 | 0.250 ± 0.031 [6.35 ± 0.787] | 0.085 ± 0.020 [2.16 ± 0.508] | 0.020 ± 0.0015 [0.508 ± 0.038] |
| RWR82 | 0.312 ± 0.016 [7.92 ± 0.406] | 0.078 + 0.016 - 0.031 [1.98 + 0.406 - 0.787] | 0.020 ± 0.0015 [0.508 ± 0.038] |
| RWR80 | 0.406 ± 0.031 [10.31 ± 0.787] | 0.094 ± 0.031 [2.39 ± 0.787] | 0.020 ± 0.0015 [0.508 ± 0.038] |
| RWR71 | 0.812 ± 0.062 [20.62 ± 1.58] | 0.187 ± 0.031 [4.75 ± 0.787] | 0.032 ± 0.002 [0.813 ± 0.051] |
| RWR89 | 0.560 ± 0.062 [14.22 ± 1.58] | 0.187 ± 0.031 [4.75 ± 0.787] | 0.032 ± 0.002 [0.813 ± 0.051] |
| RWR74 | 0.875 ± 0.062 [22.23 ± 1.58] | 0.312 ± 0.031 [7.92 ± 0.787] | 0.040 ± 0.002 [1.02 ± 0.051] |
| RWR84 | 0.875 ± 0.062 [22.23 ± 1.58] | 0.312 ± 0.031 [7.92 ± 0.787] | 0.040 ± 0.002 [1.02 ± 0.051] |
| RWR78 | 1.780 ± 0.062 [45.21 ± 1.58] | 0.312 ± 0.031 [7.92 ± 0.787] | 0.040 ± 0.002 [1.02 ± 0.051] |

Note

(1) On some standard reel pack methods, the leads may be trimmed to a shorter length than shown.

MATERIAL SPECIFICATIONS
Element: Copper-nickel alloy or nickel-chrome alloy, depending on resistance value

Core: Ceramic, beryllium oxide, steatite or alumina, depending on power requirement

Coating: Special high temperature silicone

Terminal and Winding: The terminal and the winding are identified by a letter symbol in the military type designation.

Military symbol:

S = Solderable, inductively wound

W = Weldable, inductively wound

N = Solderable, non-inductively wound

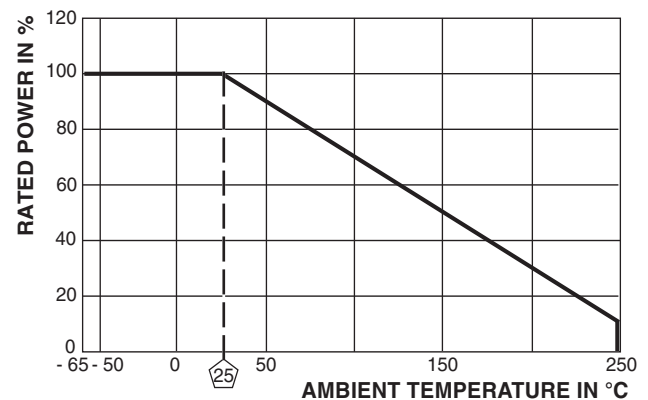
Z = Weldable, non-inductively wound

Terminals: Solderable - Tinned Copperweld®

Weldable - bare nickel per MIL-STD-1276, Type N-1

End Caps: Stainless steel

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

DERATING


| PERFORMANCE | | |
|---------------------------------|--|----------------------------|
| TEST | CONDITIONS OF TEST | TEST LIMITS |
| Thermal Shock | MIL-STD-2.2, method 303 | ± (0.2 % + 0.005 Ω) ΔR |
| Short Time Overload | 5 x rated power (RWR71, RWR80, RWR81, RWR89, RWR82), 10 x rated power (RWR74, RWR78, RWR84) for 5 s | ± (0.2 % + 0.005 Ω) ΔR |
| Dielectric Withstanding Voltage | 500 V _{rms} (RWR80, RWR81, RWR82), 1000 V _{rms} (RWR71, RWR74, RWR78, RWR84, RWR89), 1 min duration | ± (0.1 % + 0.005 Ω) ΔR |
| Low Temperature Storage | - 65 °C for 24 h | ± (0.1 % + 0.005 Ω) ΔR |
| High Temperature Exposure | 250 °C for 2000 h | ± (1.0 % + 0.005 Ω) ΔR (2) |
| Moisture Resistance | MIL-STD-202, method 106 | ± (0.2 % + 0.005 Ω) ΔR |
| Shock, Specified Pulse | MIL-STD-202, method 205, condition C | ± (0.1 % + 0.005 Ω) ΔR |
| Vibration, High Frequency | MIL-STD-202, method 204, condition D | ± (0.1 % + 0.005 Ω) ΔR |
| Load Life | 2000 h at rated power, + 25 °C, 1.5 h "ON", 0.5 h "OFF" | ± (0.5 % + 0.005 Ω) ΔR |
| Extended Life | 10 000 h at rated power, + 25 °C, 1.5 h "ON", 0.5 h "OFF" | ± (1.0 % + 0.005 Ω) ΔR |
| Terminal Strength | MIL-STD-202, method 211, condition A and C 5 pound (RWR80, RWR81, RWR82), 10 pound (RWR71, RWR74, RWR78, RWR84, RWR89) | ± (0.1 % + 0.005 Ω) ΔR |

Note

(2) For resistance values above 100 Ω, test limit is ± 1.0 %.



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