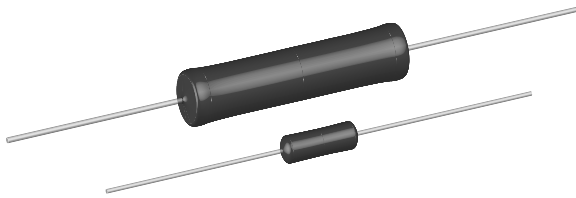


Wirewound Resistors, Military/Established Reliability MIL-PRF-39007 Qualified, Type RWR, R Level



FEATURES

- High temperature silicone coated
- Complete welded construction
- Qualified to MIL-PRF-39007
- Available in non-inductive styles (types ESN and EGN) 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 | | | | | |
|------------------------------------|--------------------|--|------------------------------------|---------------------------|-----------------------|
| MODEL | MIL-PRF-39007 TYPE | POWER RATING $P_{25^{\circ}\text{C}}$ W | MILITARY RESISTANCE RANGE Ω | | WEIGHT (typical) g |
| | | | $\pm 0.1\%$ | $\pm 0.5\%$ and $\pm 1\%$ | |
| EGS-1-80 | RWR81S | 1 | 0.499 - 1K | 0.1 - 1K | 0.21 |
| EGN-1-80 | RWR81N | 1 | 0.499 - 499 | 0.1 - 499 | 0.21 |
| EGS-2 | RWR82S | 2 | 0.499 - 1.3K | 0.1 - 1.3K | 0.23 |
| EGN-2 | RWR82N | 2 | 0.499 - 649 | 0.1 - 649 | 0.23 |
| EGS-3-80 | RWR80S | 2 | 0.499 - 3.16K | 0.1 - 3.16K | 0.34 |
| EGN-3-80 | RWR80N | 2 | 0.499 - 1.58K | 0.1 - 1.58K | 0.34 |
| ESS-2A | RWR71S | 2 | 0.499 - 12.1K | 0.1 - 12.1K | 0.90 |
| ESN-2A | RWR71N | 2 | 0.499 - 6.04K | 0.1 - 6.04K | 0.90 |
| ESS-2B | RWR89S | 3 | 0.499 - 4.12K | 0.1 - 4.12K | 0.70 |
| ESN-2B | RWR89N | 3 | 0.499 - 2.05K | 0.1 - 2.05K | 0.70 |
| ESS-5 | RWR74S | 5 | 0.499 - 12.1K | 0.1 - 12.1K | 4.2 |
| ESN-5 | RWR74N | 5 | 0.499 - 6.04K | 0.1 - 6.04K | 4.2 |
| EGS-10-80 | RWR84S | 7 | 0.499 - 12.4K | 0.1 - 12.4K | 3.6 |
| EGN-10-80 | RWR84N | 7 | 0.499 - 6.19K | 0.1 - 6.19K | 3.6 |
| ESS-10 | RWR78S | 10 | 0.499 - 39.2K | 0.1 - 39.2K | 9.0 |
| ESN-10 | RWR78N | 10 | 0.499 - 19.6K | 0.1 - 19.6K | 9.0 |

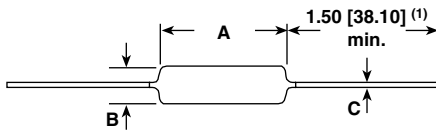
| GLOBAL PART NUMBER INFORMATION | | | | | | |
|--|--|---|---|---|---|--|
| Global/Military Part Numbering: RWR74S49R9FSB12 | | | | | | |
| <div style="display: flex; justify-content: space-around; font-weight: bold; font-size: 1.2em;"> RWR74S49R9FSB12 </div> | | | | | | |
| MIL TYPE | TERMINAL WIRE AND WINDING | RESISTANCE VALUE | TOLERANCE CODE | FAILURE RATE | PACKAGING CODE | |
| RWR71 RWR74 RWR78 RWR80 RWR81 RWR82 RWR84 RWR89 | S = Solderable, inductive N = Solderable, noninductive W = Weldable, inductive ⁽¹⁾ Z = Weldable, noninductive ⁽¹⁾ | 3 digit significant figure, followed by a multiplier 49R9 = 49.9 Ω 1000 = 100 Ω 1001 = 1000 Ω | B = $\pm 0.1\%$ D = $\pm 0.5\%$ F = $\pm 1.0\%$ | 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]



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

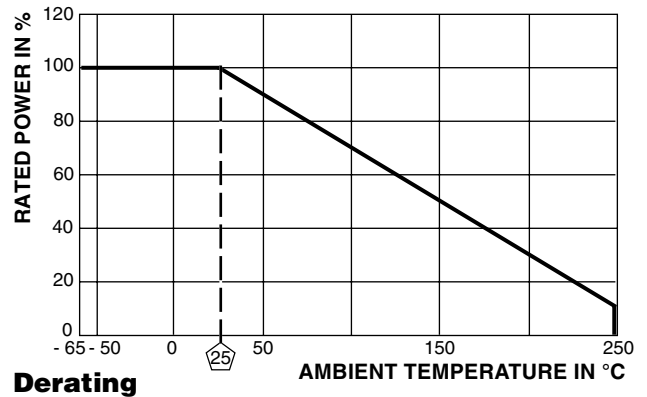
End Caps: Stainless steel

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

APPLICABLE MIL-SPECIFICATION

MIL-PRF-39007: This is the military specification covering axial lead established reliability power wirewound resistors. Vishay Dale ESS, ESW, EGS, EGW, ESN and EGN resistors meet or exceed the electrical, environmental and dimensional requirements of this specification.

| MIL-PRF-39007 | DIMENSIONS in inches [millimeters] | | |
|---------------|------------------------------------|---|-----------------------------------|
| MODEL | 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] |



| TECHNICAL SPECIFICATIONS | | |
|---------------------------------|-----------------|---|
| PARAMETER | UNIT | RWR RESISTOR CHARACTERISTICS |
| Temperature Coefficient | ppm/°C | ± 650 for 0.1 Ω to 0.499 Ω, ± 400 for 0.505 Ω to 1 Ω, ± 50 for 1.1 Ω to 10 Ω, ± 20 for 10 Ω and above |
| 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 | (P x R) ^{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 |

| 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, 80, 81, 89, 82), 10 x rated power (RWR74, 78, 84) for 5 s | ± (0.2 % + 0.005 Ω) ΔR |
| Dielectric Withstanding Voltage | 500 V _{rms} (RWR80, 81, 82), 1000 V _{rms} (RWR71, 74, 78, 84, 89), 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 |
| 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, 81, 82), 10 pound (RWR71, 74, 78, 84, 89) | ± (0.1 % + 0.005 Ω) ΔR |

Note

• For resistance values above 100 Ω, test limit is ± 1.0 %



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