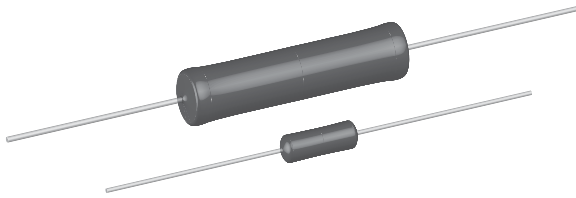




Wirewound Resistors, Military/Established Reliability, MIL-PRF-39007 Qualified, Type RWR, Up to S Level, Axial Lead



DESIGN SUPPORT TOOLS

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FEATURES

- High temperature silicone coated
- Complete welded construction
- Qualified to MIL-PRF-39007
- Available in non-inductive styles (type N) with Ayrton-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 $P_{25^{\circ}\text{C}}$ W | RESISTANCE RANGE Ω $\pm 0.1\%$ | RESISTANCE RANGE Ω $\pm 0.5\%, \pm 1\%$ | 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 | 1.5 | 0.499 to 1.3K | 0.1 to 1.3K | 0.23 |
| RWR82N | EGN-2 | 1.5 | 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 |

Note

- RWR82S and RWR82N: Core consists of beryllium oxide ceramic

| GLOBAL PART NUMBER INFORMATION | | | | | |
|--|--|---|---|---|---|
| Global Part Numbering example: RWR74S49R9FSB12 | | | | | |
| MIL TYPE (5 digits) | TERMINAL WIRE AND WINDING (1 digit) | RESISTANCE VALUE (4 digits) | TOLERANCE CODE (1 digit) | FAILURE RATE (1 digit) | PACKAGING CODE (3 digits) |
| 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 = $\pm 0.1\%$ 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 (500 pieces) BSL ⁽²⁾ = bulk pack, single lot date code RSL ⁽²⁾ = tape/reel, single lot date code |

Notes

- (1) Note that “W” and “Z” are not listed above but are available, see MIL-PRF-39007 QPL for available resistance values
- (2) Maximum order sizes apply for single lot date code package codes, please see table below

| MAXIMUM ORDER SIZE FOR SINGLE LOT DATE CODE PACKAGE CODES | |
|---|-----------------------------|
| MODEL | MAXIMUM ORDER SIZE (PIECES) |
| RWR81 | 1000 |
| RWR82 | 1000 |
| RWR80 | 1000 |
| RWR71 | 500 |
| RWR89 | 1000 |
| RWR74 | 500 |
| RWR84 | 300 |
| RWR78 | 300 |

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] | 0.375 ± 0.031 [9.525 ± 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

| TECHNICAL SPECIFICATIONS | | |
|---------------------------------|-----------------|---|
| PARAMETER | UNIT | RWR RESISTOR CHARACTERISTICS |
| Dielectric Withstanding Voltage | V _{AC} | 500 minimum for 2 W and smaller, 1000 minimum for 3 W and larger |
| Short Time Overload | - | 5x rated power for 5 s for 3 W size and smaller, 10x rated power for 5 s for 5 W size and greater |
| Maximum Working Voltage | V | (P × 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 | -55 to +250 |

| RESISTANCE TEMPERATURE COEFFICIENT | | | | | | | | |
|------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| TEMPERATURE COEFFICIENT (ppm/°C) | RWR71 | RWR74 | RWR78 | RWR80 | RWR81 | RWR82 | RWR84 | RWR89 |
| | RESISTANCE RANGE (Ω) | RESISTANCE RANGE (Ω) | RESISTANCE RANGE (Ω) | RESISTANCE RANGE (Ω) | RESISTANCE RANGE (Ω) | RESISTANCE RANGE (Ω) | RESISTANCE RANGE (Ω) | RESISTANCE RANGE (Ω) |
| +650 max. | 0.1 to 0.499 | 0.1 to 0.499 | 0.1 to 0.499 | 0.1 to 0.499 | 0.1 to 0.499 | 0.1 to 0.499 | 0.1 to 0.499 | 0.1 to 0.499 |
| +400 max. | 0.505 to 1.0 | 0.505 to 1.0 | 0.505 to 1.0 | 0.505 to 1.0 | 0.505 to 1.0 | 0.505 to 1.0 | 0.505 to 1.0 | 0.505 to 1.0 |
| ± 50 | 1.01 to 10 | 1.01 to 10 | 1.01 to 10 | 1.01 to 10 | 1.01 to 10 | 1.01 to 10 | 1.01 to 10 | 1.01 to 10 |
| ± 30 | 10.1 to 73.2 | 10.1 to 158 | 10.1 to 453 | - | - | - | 10.1 to 158 | 10.1 to 42.2 |
| ± 20 | 74.1 and above | 160 and above | 459 and above | 10.1 and above | 10.1 and above | 10.1 and above | 160 and above | 42.7 and above |



MATERIAL SPECIFICATIONS

Element: copper-nickel alloy or nickel-chrome alloy, depending on resistance value

Core: ceramic, beryllium oxide (1), 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

Note

(1) RWR82S and RWR82N: Core consists of beryllium oxide ceramic

DERATING

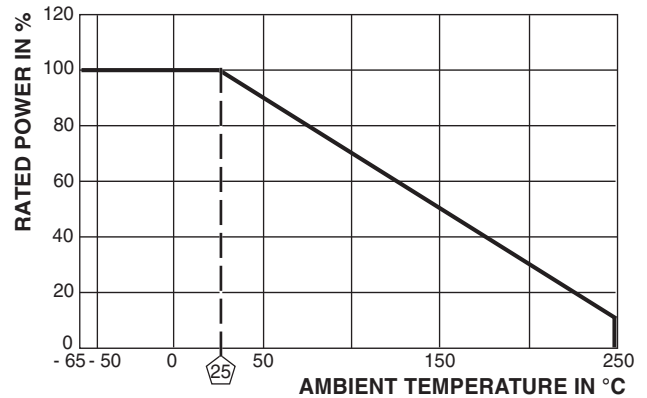


Table with 3 columns: TEST, CONDITIONS OF TEST, TEST LIMITS. Rows include Thermal Shock, Short Time Overload, Dielectric Withstanding Voltage, Low Temperature Storage, High Temperature Exposure, Moisture Resistance, Shock, Specified Pulse, Vibration, High Frequency, Load Life, Extended Life, Terminal Strength.

Note

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



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