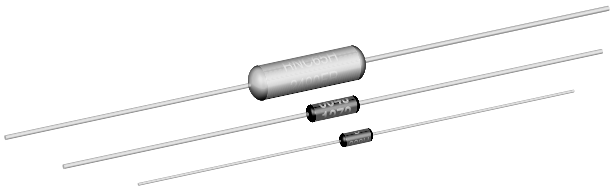
# Metal Film Resistors, Military/Established Reliability, MIL-PRF-55182 Qualified, Precision, Type RNC, Characteristics J, H, K



## FEATURES

- Meets requirements of MIL-PRF-55182
- Very low noise (- 40 dB)
- Verified failure rate (contact factory for current level)
- 100 % stabilization and screening tests. Group A testing, if desired, to customer requirements
- Controlled temperature coefficient
- Epoxy coating provides superior moisture protection
- Standard lead on RNC product is solderable and weldable
- Traceability of materials and processing
- Monthly acceptance testing
- Vishay Dale has complete capability to develop specific reliability programs designed to customer requirements
- Extensive stocking program at distributors and factory on RNC50, RNC55, RNC60 and RNC65
- For MIL-PRF-55182 characteristics E and C product, see Vishay Angstrohm's HDN (Military RNR/RNN) datasheet

## STANDARD ELECTRICAL SPECIFICATIONS

| VISHAY DALE MODEL | MIL-PRF-55182 STYLE | MIL SPEC. SHEET | POWER RATING | | TOLERANCE (4) ± % | MAXIMUM WORKING VOLTAGE (2) V | RESISTANCE RANGE Ω | | | LIFE FAILURE RATE (1) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | $P_{70\ °C}$ W | $P_{125\ °C}$ W | | | ± 100 ppm/°C (K) | ± 50 ppm/°C (H) | ± 25 ppm/°C (J) | |
| ERC50, ERC50..31 (3) | RNC50, RNR50 | 07 | 0.10 | 0.05 | 0.1, 0.5, 1 | 200 | 10 to 796K | | | M, P, R, S |
| ERC55, ERC55..65 (3) | RNC55, RNR55 | 01 | 0.125 | 0.10 | 0.1, 0.5, 1 | 200 | 10 to 2M | | | M, P, R, S |
| ERC55..200, ERC55..201 (3) | RNC60, RNR60 | 03 | 0.25 | 0.125 | 0.1, 0.5, 1 | 250 | 10 to 2M | | | M, P, R, S |
| | | | | | | | 2.01M to 3.01M | | | M |
| ERC65, ERC65..65 (3) | RNC65, RNR65 | 05 | 0.50 | 0.25 | 0.1, 0.5, 1 | 300 | 10 to 3.01M | | | M, P, R |
| ERC70 ERC70..4 (3) | RNC70, RNR70 | 06 | 0.75 | 0.50 | 0.1, 0.5, 1 | 350 | 10 to 3.01M | | | M, P, R |

**Notes**

(1) Consult factory for current QPL failure rates.
(2) Continuous working voltage shall be $\sqrt{P \times R}$ or maximum working voltage, whichever is less.
(3) Hot solder dipped leads
(4) Standard resistance tolerances: ± 0.1 % (B), ± 0.5 % (D) and ± 1 % (F). ± 0.1 % not applicable to characteristic K.

## TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | CONDITION |
|---|---|---|
| Voltage Coefficient, max. | ppm/V | 5/V when measured between 10 % and full rated voltage |
| Dielectric Strength | $V_{AC}$ | RNC50, RNC55 and RNC60 = 450; RNC65 and RNC70 = 900 |
| Insulations Resistance | Ω | ≥ $10^{11}$ dry; ≥ $10^{9}$ after moisture test |
| Operating Temperature Range | °C | - 65 to + 175 |
| Terminal Strength | lb | 2 lb pull test on RNC50, RNC55, RNC60 and RNC65; 4.5 lb pull test on RNC70 |
| Solderability | | Continuous satisfactory coverage when tested in accordance with MIL-STD-202, Method 208 |
| Weight | g | RNC50 = 0.11; RNC55 = 0.35; RNC60 = 0.35; RNC65 = 0.84; RNC70 = 1.60 |

## GLOBAL PART NUMBER INFORMATION

**New Global Part Numbering: RNC55H2152FRR36 (preferred part numbering format)**

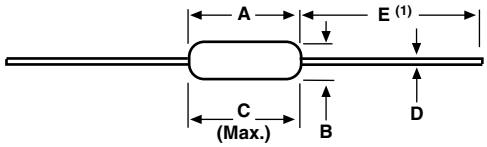
| R | N | C | 5 | 5 | H | 2 | 1 | 5 | 2 | F | R | R | 3 | 6 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| MIL STYLE | CHARACTERISTICS | RESISTANCE VALUE | TOLERANCE CODE | FAILURE RATE | PACKAGING | SPECIAL |
|---|---|---|---|---|---|---|
| **RNC** = Solderable/ weldable<br>**RNR** = Solderable only<br>(see Standard Electrical Specifications table) | **J** = ± 25 ppm<br>**H** = ± 50 ppm<br>**K** = ± 100 ppm | 3 digit significant figure, followed by a multiplier<br>Use "R" for values < 100 Ω<br>**10R0** = 10 Ω<br>**2152** = 21.5 kΩ<br>**3014** = 3.01 MΩ | **B** = ± 0.1 %<br>**D** = ± 0.5 %<br>**F** = ± 1 % | **M** = 1.0 %/1000 h<br>**P** = 0.1 %/1000 h<br>**R** = 0.01 %/1000 h<br>**S** = 0.001 %/1000 h | **B14** = Tin/lead, bulk<br>**BSL** = Tin/lead, bulk, single lot date code<br>**R36** = Tin/lead, T/R (full; 50, 55, 60)<br>**R64** = Tin/lead, T/R (full; 65, 70)<br>**RE6** = Tin/lead, T/R (1000 pieces)<br>**RSL** = Tin/lead, T/R, single lot date code | Blank = Standard (Dash number) (Up to 3 digits) From **1 to 999** as applicable<br>**4** = Hot solder dip (70's)<br>**31** = Hot solder dip (50's)<br>**65** = Hot solder dip (55's, 65's)<br>**201** = Hot solder dip (60's) |

**Historical Part Number example: RNC55H2152FR R36 (will continue to be accepted)**

| RNC55 | H | 2152 | F | R | R36 |
|---|---|---|---|---|---|
| MIL STYLE | CHARACTERISTIC | RESISTANCE VALUE | TOLERANCE CODE | FAILURE RATE | PACKAGING |

## DIMENSIONS in inches (millimeters)




**Note**
(1) 1.08 ± 0.125 (27.43 ± 3.18) if tape and reel

| VISHAY DALE MODEL | MIL-PRF-55182 STYLE | A | B | C (Max.) | D | E |
|---|---|---|---|---|---|---|
| ERC50 | RNC50, RNR50 | 0.150 ± 0.020 (3.81 ± 0.51) | 0.070 ± 0.010 (1.78 ± 0.25) | 0.187 (4.75) | 0.016 ± 0.002 (0.41 ± 0.05) | 1.25 ± 0.266 (31.75 ± 6.76) |
| ERC55 | RNC55, RNR55 | 0.250 + 0.031 - 0.046 (6.35 + 0.79 - 1.17) | 0.094 ± 0.012 (2.39 ± 0.30) | 0.300 (7.62) | 0.025 ± 0.002 (0.64 ± 0.05) | 1.50 ± 0.125 (38.1 ± 3.18) |
| ERC55..200 | RNC60, RNR60 | 0.280 ± 0.020 (7.11 ± 0.51) | 0.097 ± 0.012 (2.46 ± 0.30) | 0.350 (8.89) | 0.025 ± 0.002 (0.64 ± 0.05) | 1.50 ± 0.125 (38.1 ± 3.18) |
| ERC65 | RNC65, RNR65 | 0.562 ± 0.031 (14.27 ± 0.79) | 0.180 ± 0.015 (4.57 ± 0.38) | 0.687 (17.45) | 0.025 ± 0.002 (0.64 ± 0.05) | 1.50 ± 0.125 (38.1 ± 3.18) |
| ERC70 | RNC70, RNR70 | 0.562 ± 0.031 (14.27 ± 0.79) | 0.180 ± 0.015 (4.57 ± 0.38) | 0.687 (17.45) | 0.032 ± 0.002 (0.81 ± 0.05) | 1.50 ± 0.125 (38.1 ± 3.18) |

## MATERIAL SPECIFICATIONS

| | |
|---|---|
| **Element** | Vacuum-deposited nickel-chrome alloy |
| **Core** | Fire-cleaned high purity ceramic |
| **Encapsulation** | Specially formulated epoxy compound |
| **Termination** | Standard lead material is solder-coated copper Solderable and weldable per MIL-STD-1276, Type C |

## POWER RATING

Power ratings are based on the following two conditions:
1. ± 2.0 % maximum $\Delta R$ in 10 000 h load life
2. + 175 °C maximum operating temperature

## APPLICABLE MIL-SPECIFICATIONS

**MIL-PRF-55182:**

The ERC series meets the electrical, environmental and dimensional requirements of MIL-PRF-55182.

**MIL-R-10509:**

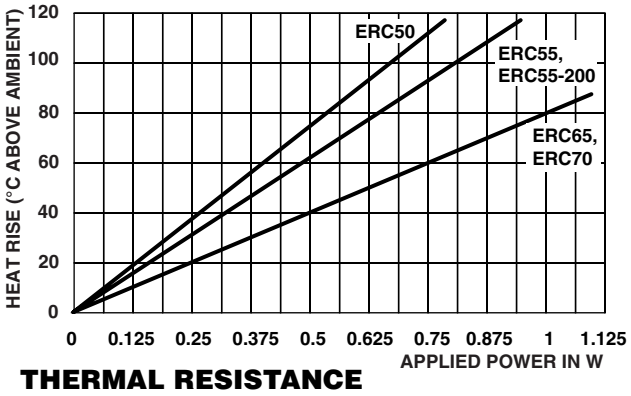
MIL-PRF-55182 supercedes MIL-R-10509 on new designs. The ERC series meets or exceeds MIL-R-10509 requirements.

**Documentation:**

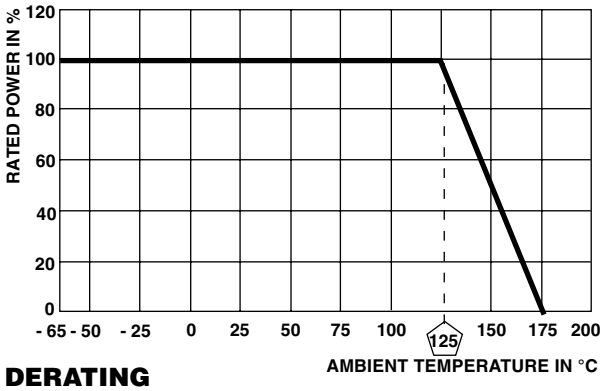
Qualification and failure rate verification test data is maintained by Vishay Dale and is available upon request. Lot traceability and identification data is maintained by Vishay Dale for five years.

**CAGE CODE: 91637**

Vishay Dale ERC resistors have an operating temperature range of - 65 °C to + 175 °C. They must be derated according to the following curve:




**THERMAL RESISTANCE**




**DERATING**

| MARKING |
| --- |
| - Per MIL-PRF-55182 |

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