



**THE DATASHEET OF
RNC50J1002BSB14**



Metal Film Resistors, Axial, 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 Angstrom's HDN (Military RNR/RNN) datasheet (www.vishay.com/doc?66001)

| STANDARD ELECTRICAL SPECIFICATIONS | | | | | | | | | |
|--|---------------------|-----------------|---|--|---------------------------------|---|-----------------------|-------------------------------------|----------------------------------|
| GLOBAL MODEL | MIL-PRF-55182 STYLE | MIL SPEC. SHEET | POWER RATING $P_{70^{\circ}\text{C}}$ W | POWER RATING $P_{125^{\circ}\text{C}}$ W | TOLERANCE ⁽⁴⁾ ± % | MAXIMUM WORKING VOLTAGE ⁽²⁾ V | RESISTANCE RANGE Ω | TEMPERATURE COEFFICIENT ± ppm/°C | LIFE FAILURE RATE ⁽¹⁾ |
| ERC50, ERC50..31 ⁽³⁾ | RNC50, RNR50 | 07 | 0.10 | 0.05 | 0.1, 0.5, 1 | 200 | 10 to 796K | 100 (K), 50 (H), 25 (J) | M, P, R, S |
| ERC55, ERC55..65 ⁽³⁾ | RNC55, RNR55 | 01 | 0.125 | 0.10 | 0.1, 0.5, 1 | 200 | 10 to 2M | 100 (K), 50 (H), 25 (J) | 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 | 100 (K), 50 (H), 25 (J) | M, P, R, S |
| | | | | | | | 2.01M to 3.01M | 100 (K), 50 (H), 25 (J) | M |
| ERC65, ERC65..65 ⁽³⁾ | RNC65, RNR65 | 05 | 0.50 | 0.25 | 0.1, 0.5, 1 | 300 | 10 to 3.01M | 100 (K), 50 (H), 25 (J) | M, P, R |
| ERC70 ERC70..4 ⁽³⁾ | RNC70, RNR70 | 06 | 0.75 | 0.50 | 0.1, 0.5, 1 | 350 | 10 to 3.01M | 100 (K), 50 (H), 25 (J) | 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) Tolerance of ± 0.1 % is not applicable to characteristics 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 = 1.06 |

| 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 RNR = solderable only (see Standard Electrical Specifications table) | J = ± 25 ppm H = ± 50 ppm K = ± 100 ppm | 3 digit significant figure, followed by a multiplier Use "R" for values < 100 Ω 10R0 = 10 Ω 2152 = 21.5 kΩ 3014 = 3.01 MΩ | B = ± 0.1 % D = ± 0.5 % F = ± 1 % | M = 1.0 % / 1000 h P = 0.1 % / 1000 h R = 0.01 % / 1000 h S = 0.001 % / 1000 h | B14 = tin / lead, bulk BSL = tin / lead, bulk, single lot date code R36 = tin / lead, T/R (full; 50, 55, 60) R64 = tin / lead, T/R (full; 65, 70) RE6 = tin / lead, T/R (1000 pieces) RSL = tin / lead, T/R, single lot date code | Blank = standard (Dash number) (Up to 3 digits) From 1 to 999 as applicable 4 = hot solder dip (70's) 31 = hot solder dip (50's) 65 = hot solder dip (55's, 65's) 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 | | | | | | | | | | | | |

Note

- For additional information on packaging, refer to the Through Hole Resistor Packaging document (www.vishay.com/doc?31544)

DIMENSIONS in inches (millimeters)



Note

(1) Lead length for product in bulk pack. For product supplied in tape and reel, the actual lead length would be based on the body size, tape spacing, and lead trim

| 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) | 0.379 (9.62) | 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:

- ± 2.0 % maximum ΔR in 10 000 h load life
- +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 supersedes 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:



| MARKING (per MIL-PRF-55182) | |
|---|---|
| Characteristics: K = 100 ppm, H = 50 ppm, J = 25 ppm | |
| Tolerance: F = 1 %, D = 0.5 %, B = 0.1 % | |
| Value = three significant figures and multiplier | |
| J = JAN (Joint Army - Navy) brand | |
| RNC/RNR50, 55 (4 lines) | RNC/RNR60, 65, 70 (5 lines) |
| D Manufacturer's code | 91637 CAGE code |
| 210H 3 digit date code and characteristic | 1213J 4 digit date code and JAN |
| 1003 Value | RNC60J Style and characteristic |
| FSCJ Tolerance, failure rate, lead material and JAN | 1211FS Value, tolerance, and failure rate |
| | 1209A Production lot code |



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