Metal Film Resistors, Military/Established Reliability, Hermetically-Sealed, MIL-PRF-55182 Qualified, Precision, Type RNR, Characteristics E and C



For the highest degree of reliability, stability and uniformity of construction, Vishay Angstrohm hermetically-sealed metal film resistors are unquestionably the first choice. The true glass-to-metal hermetic enclosure seals the resistor element in an inert gas atmosphere and protects it from virtually all adverse environmental influences. The glass enclosure will withstand in excess of 3000 psi external pressure without leakage. The reliability and stability of Vishay Angstrohm hermetically-sealed resistors have been established by their use in nearly every military, missile, aerospace and oceanography program having the most demanding applications and the most hostile environments.

FEATURES

- Qualified to MIL-PRF-55182 characteristics E and C (E only for RNR75)
- Performance exceeds the requirements of MIL-PRF-55182
- "S" level reliability
- Hermetic glass enclosure is impervious to harmful environments
- Inert gas filled
- Low noise (-40 dB)
- Temperature range -65 °C to +175 °C
- Standard lead on the RNR product is solderable and on the RNN is weldable
- MODEL RNC: for characteristics E and C (per MIL-PRF-55182) terminal model RNR shall be used as a substitute
- For MIL-PRF-55182 characteristics J, H, and K product, see Vishay Dale's ERC (Military RNC/RNR) datasheet (www.vishay.com/doc?31025)

STANDARD ELECTRICAL SPECIFICATIONS

VISHAY ANGSTROHM MODEL	MIL-PRF-55182 STYLE	MIL SPEC. SHEET	POWER RATING $P_{70\,°C}$ W	POWER RATING $P_{125\,°C}$ W	TOLERANCE ± %	MAXIMUM WORKING VOLTAGE [4] V	RESISTANCE RANGE [2] Ω ± 50 ppm/°C [1] (C)	RESISTANCE RANGE [2] Ω ± 25 ppm/°C [1] (E)	LIFE FAILURE RATE [3]
HDN55, HDN55..65 [5]	RNR55, RNN55	01	0.125	0.10	0.1, 0.5, 1	200	10 to 1.21M	10 to 1.21M	M, P, R, S
HDN57, HDN57..1 [5]	RNR57, RNN57	02	0.25	0.125	1	250	49.9 to 200K	49.9 to 200K	M, P, R, S
HDN60, HDN60..1 [5]	RNR60, RNN60	03	0.25	0.125	0.1, 0.5, 1	250	10 to 2.49M	10 to 2.49M	M, P, R, S
HDN65, HDN65..65 [5]	RNR65, RNN65	05	0.50	0.25	0.1, 0.5, 1	300	24.9 to 4.99M	24.9 to 4.99M	M, P
HDN70, HDN70..4 [5]	RNR70, RNN70	06	0.75	0.50	0.1, 0.5, 1	350	24.9 to 4.99M	24.9 to 4.99M	M, P
HDN75, HDN75..1 [5]	RNR75, RNN75	10	2.0	1.0	0.1, 0.5, 1	750	49.9 to 1.21M	49.9 to 1.21M	M

Notes

(1) Temperature characteristics E and C designate hermetically-sealed enclosure

(2) Standard resistance values should be selected from the Resistance-Tolerance Decade table. B tolerance available in all values

(3) Contact factory for current QPL failure rates

(4) Continuous working voltage shall be $\sqrt{P \times R}$ or maximum working voltage, whichever is less

(5) Hot solder dipped leads

For technical questions, contact: ff2aresistors@vishay.com

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GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: RNR55E49R9BSM76 (preferred part number format)

R	N	R	5	5	E	4	9	R	9	B	S	M	7	6			

MIL STYLE (1)	CHARACTERISTIC (2)	RESISTANCE VALUE	TOLERANCE CODE	FAILURE RATE	PACKAGING	SPECIAL
RNR = solderable only **RNN** = weldable only (see Standard Electrical Specifications table)	**E** = 25 ppm **C** = 50 ppm	3 digit significant figure, followed by a multiplier Use "R" for values < 100 Ω **10R0** = 10 Ω **49R9** = 49.9 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	**M76** = foil bag (55, 57, 60) **M77** = foil bag (65, 70, 75) **BSL** = foil bag, single lot date code **RJ7** = T/R (55, 57, 60) **RJ8** = T/R (65, 70, 75) **RSL** = T/R, single lot date code	Blank = standard (dash number) (up to 3 digits) from **1 to 999** as applicable **1** = hot solder dip (57's, 60's, 75's) **4** = hot solder dip (70's) **65** = hot solder dip (55's, 65's)

Historical Part Numbering: RNR55E49R9BS (will continue to be accepted)

RNR55	E	49R9	B	S
MIL STYLE	CHARACTERISTIC	RESISTANCE VALUE	TOLERANCE CODE	FAILURE RATE

Notes

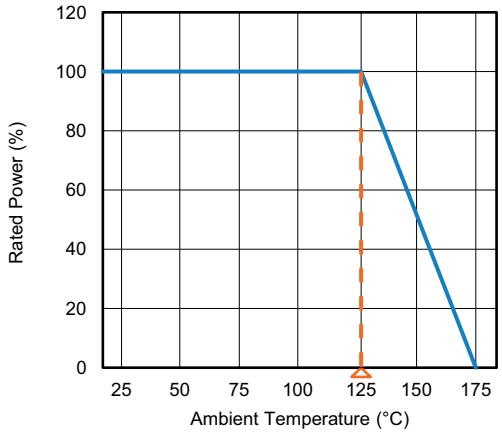
- For additional information on packaging, refer to the Through-Hole Resistor Packaging document (www.vishay.com/doc?31544)

(1) MODEL RNC: For characteristics C and E (per MIL-PRF-55182) terminal model RNR shall be used as a substitute

MATERIAL SPECIFICATIONS

Element	Vacuum-deposited nickel-chrome alloy
Core	Fire-cleaned high purity ceramic
Encapsulation	Specially hermetic enclosure
Termination	Standard lead material is gold-plated nickel. Solderable and weldable options per MIL-STD-1276, type N22

POWER DERATING



CAGE CODE: 91637

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MARKING (per MIL-PRF-55182)

Characteristics: C = 50 ppm, E = 25 ppm
Tolerance: F = 1 %, D = 0.5 %, B = 0.1 %
Value: Three significant figures and multipliers
J = JAN (Joint Army - Navy) brand

RNR/RNN55, RNR/RNN57: (4 lines)

A	Manufacturer's code
205C	3 digit date code and characteristic
1002	Value
FSRJ	Tolerance, failure rate, lead material and JAN

RNR/RNN60, RNR/RNN65, RNR/RNN70, RNR/RNN75: (5 lines)

91637	CAGE code
1205J	4 digit date code and JAN
RNR60E	Style and characteristic
2501FS	Value, tolerance and failure rate
1203A	Production lot code

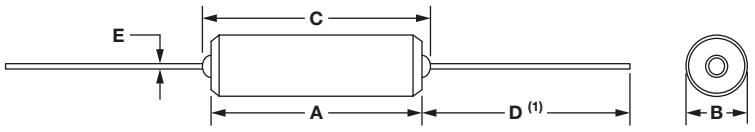
COMPARISON OF VISHAY ANGSTROHM CHARACTERISTICS TO MIL SPECIFICATION LIMIT (1)

MILITARY STYLE (RNR/RNN)	LOAD LIFE LIMIT ± 2.0 %	MOISTURE LIMIT (2) ± 0.2 %	SHOCK LIMIT ± 0.2 %	VIBRATION LIMIT ± 0.2 %	HIGH TEMPERATURE EXPOSURE LIMIT ± 2.0 %	LOW TEMPERATURE OPERATION LIMIT ± 0.15 %	RESISTANCE TO SOLDERING HEAT LIMIT ± 0.1 %
55	< 0.2 %	< 0.03 %	< 0.02 %	< 0.02 %	< 0.4 %	< 0.004 %	< 0.02 %
57	< 0.3 %	< 0.02 %	< 0.01 %	< 0.01 %	< 0.3 %	< 0.005 %	< 0.01 %
60	< 0.3 %	< 0.03 %	< 0.01 %	< 0.01 %	< 0.4 %	< 0.004 %	< 0.02 %
65	< 0.5 %	< 0.03 %	< 0.01 %	< 0.01 %	< 0.4 %	< 0.003 %	< 0.01 %
70	< 0.6 %	< 0.01 %	< 0.01 %	< 0.01 %	< 0.4 %	< 0.006 %	< 0.01 %
75	< 0.5 %	< 0.02 %	< 0.01 %	< 0.01 %	< 0.3 %	< 0.010 %	< 0.01 %

Notes

(1) This typical data is taken from the average resistance shifts from numerous values. The actual shifts are dependent on the value
(2) Any shift during moisture testing is due to the "load" (mini-load life) portion of the test and not due to the effect of moisture

DIMENSIONS PER MIL-PRF-55182 in inches (millimeters)



VISHAY ANGSTROHM MODEL	MIL-PRF-55182 STYLE	A LENGTH	B DIAMETER	C CL TO CL (MAX.)	D LENGTH ± 0.125 (± 3.18)	E DIAMETER ± 0.002 (± 0.051)	APPROX. WEIGHT (g)
HDN55	RNR55, RNN55	0.250 + 0.031 - 0.046 (6.35 + 0.78 - 1.17)	0.109 ± 0.031 (2.77 ± 0.78)	0.379 (9.63)	1.50 (38.10)	0.025 (0.635)	0.337
HDN57	RNR57, RNN57	0.281 ± 0.062 (7.14 ± 1.57)	0.155 ± 0.015 (3.94 ± 0.38)	0.467 (11.86)	1.25 (31.75)	0.025 (0.635)	0.405
HDN60	RNR60, RNN60	0.375 + 0.062 - 0.115 (9.53 + 1.57 - 2.92)	0.125 ± 0.040 (3.18 ± 1.02)	0.561 (14.25)	1.50 (38.10)	0.025 (0.635)	0.450
HDN65	RNR65, RNN65	0.625 + 0.031 - 0.094 (15.8 + 0.787 - 2.39)	0.188 + 0.062 - 0.031 (4.78 + 1.57 - 0.787)	0.780 (19.81)	1.50 (38.10)	0.025 (0.635)	1.30
HDN70	RNR70, RNN70	0.750 + 0.125 - 0.250 (19.05 + 3.18 - 6.35)	0.250 + 0.078 - 0.090 (6.35 + 1.98 - 2.29)	0.939 (23.85)	1.50 (38.10)	0.032 (0.813)	1.44
HDN75	RNR75, RNN75	1.062 ± 0.062 (26.98 ± 1.58)	0.375 + 0.062 - 0.150 (9.53 + 1.57 - 3.81)	1.186 (30.12)	1.50 (38.10)	0.032 (0.813)	2.500

Note

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

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