

## 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 Angstrohm'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 <sub>70</sub> ∘c W	POWER RATING P <sub>125 °C</sub> W	TOLERANCE <sup>(4)</sup> ± %	MAXIMUM WORKING VOLTAGE <sup>(2)</sup> V	RESISTANCE RANGE Ω	TEMPERATURE COEFFICIENT ± ppm/°C	LIFE FAILURE RATE <sup>(1)</sup>
ERC50, ERC5031 <sup>(3)</sup>	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, ERC5565 <sup>(3)</sup>	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
ERC55200, ERC55201 <sup>(3)</sup>	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
LH033201 (*)				2.01M to 3.01M	100 (K), 50 (H), 25 (J)	М			
ERC65, ERC6565 <sup>(3)</sup>	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 ERC704 <sup>(3)</sup>	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

<sup>(1)</sup> Consult factory for current QPL failure rates.

<sup>(2)</sup> Continuous working voltage shall be  $\sqrt{P \times R}$  or maximum working voltage, whichever is less.

<sup>(3)</sup> Hot solder dipped leads.

<sup>(4)</sup> Tolerance of  $\pm$  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 <sub>AC</sub>	RNC50, RNC55 and RNC60 = 450; RNC65 and RNC70 = 900				
Insulations Resistance	Ω	$\geq 10^{11}$ dry; $\geq 10^9$ 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				

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# **ERC (Military RNC/RNR)**



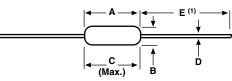
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GLOBAL PAR	GLOBAL PART NUMBER INFORMATION						
New Global Part N	New Global Part Numbering: RNC55H2152FRR36 (preferred part numbering format)						
R N C 5 5 H 2 1 5 2 F R R 3 6							
MIL STYLE	CHARACTERISTICS	RESISTANCE VALUE	TOLERANCE CODE	FAILURE RATE	PACKAGING	SPECIAL	
RNC = solderable / weldable RNR = solderable only (see Standard Electrical Specifications table)	J = ± 25 ppm H = ± 50 ppm K = ± 100 ppm	$\begin{array}{c} 3 \text{ digit} \\ \text{significant} \\ \text{figure,} \\ \text{followed by} \\ a \text{ multiplier} \\ \text{Use "R" for} \\ \text{values} < 100 \ \Omega \\ \textbf{10R0} = 10 \ \Omega \\ \textbf{2152} = 21.5 \ \text{k}\Omega \\ \textbf{3014} = 3.01 \ \text{M}\Omega \end{array}$	$B = \pm 0.1 \%$ D = ± 0.5 % F = ± 1 %			(Dash number) (Up to 3 digits) From <b>1 to 999</b> as applicable <b>4</b> = hot solder dip (70's) <b>31</b> = hot solder dip (50's) <b>65</b> = hot colder	
Historical Part Number Example: RNC55H2152FR R36 (will continue to be accepted)							
RNC55	н	215	2	F	R	R36	
MIL STYLE	CHARACTERISTIC		E 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

<sup>(1)</sup> 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	Α	В	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)	$\begin{array}{c} 0.016 \pm 0.002 \\ (0.41 \pm 0.05) \end{array}$	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)	$\begin{array}{c} 0.025 \pm 0.002 \\ (0.64 \pm 0.05) \end{array}$	1.50 ± 0.125 (38.1 ± 3.18)
ERC55200	RNC60, RNR60	0.280 ± 0.020 (7.11 ± 0.51)	0.097 ± 0.012 (2.46 ± 0.30)	0.350 (8.89)	$\begin{array}{c} 0.025 \pm 0.002 \\ (0.64 \pm 0.05) \end{array}$	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)	$\begin{array}{c} 0.025 \pm 0.002 \\ (0.64 \pm 0.05) \end{array}$	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 a					
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.  $\pm$  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 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

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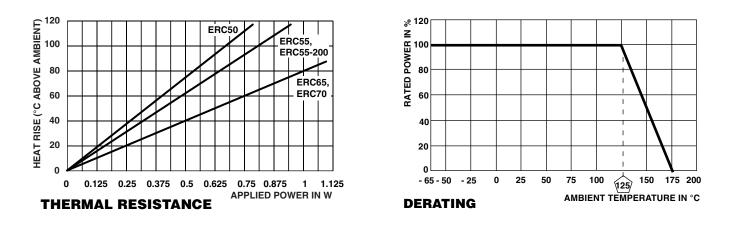
Document Number: 31025



## **ERC (Military RNC/RNR)**

## Vishay Dale

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



MARK	ING (per MIL-PRF-55182)					
	Characteristics: K = 100 p	cs: K = 100 ppm, H = 50 ppm, J = 25 ppm				
	Tolerance: $F = 1$ %, $D = 0$	Tolerance: F = 1 %, D = 0.5 %, B = 0.1 %				
	Value = three significant f	ficant figures and multiplier				
	J = JAN (Joint Army - Na	vy) brand				
RNC/RNI	R50, 55 (4 lines)	RNC/RNR60, 65, 70 (5 lines)				
D 210H 1003 FSCJ	Manufacturer's code 3 digit date code and characteristic Value Tolerance, failure rate, lead material and JAN	91637 1213J RNC60J 1211FS 1209A	CAGE code 4 digit date code and JAN Style and characteristic Value, tolerance, and failure rate Production lot code			



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