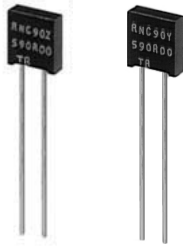


Bulk Metal[®] Foil Technology

RNC90Y and RNC90Z to MIL-PRF-55182/9



Product may not
be to scale

Vishay Military Established Reliability resistors are available in resistance values from 4.99 ohms through 121Kohms and for tolerances from $\pm 0.005\%$ to $\pm 1.0\%$. The same resistors are also available as a non-qualified product for customers desiring higher or lower resistance values and the same or better performance capabilities. (See Table 2.) Both the qualified and the non-qualified version are manufactured on the same production line facilities and are subjected to the same process, lot control, conditioning, and GRP A (100%) screening. Qualified versions receive additional MIL Group B and C testing.

FEATURES

- QPL product with established reliability.
- Best Load Life Stability: $\pm 0.05\% \Delta R$ for 2,000 hrs. @ $+ 125^\circ\text{C}$
- Best TCR: $\pm 2.0\text{ppm}/^\circ\text{C}$ ($- 55^\circ\text{C}$ to $+ 175^\circ\text{C}$)
- Best Shelf Life: 0.0025% (25ppm) for 1 year
- Best Thermal EMF: $0.1\mu\text{V}/^\circ\text{C}$
- Qualified Resistance Range: 4.99 Ω to 121K Ω [RNC90Y]
100 Ω to 121K Ω [RNC90Z]
- Resistance Tolerance: to $\pm 0.005\%$
- Specially conditioned non-QPL resistors available.
See data sheet "Improved Performance Tested."

TABLE 1 - SPECIFICATIONS COMPARISON

SPECIFICATION	RNC90Y (QUALIFIED) MIL-PRF-55182/9 CHARACTERISTIC Y LIMITS	RNC90Z (QUALIFIED) MIL-PRF-55182/9 CHARACTERISTIC Z LIMITS	S555 (NON-QUALIFIED) VISHAY PERFORMANCE LIMITS ⁶	Z555 (NON-QUALIFIED) VISHAY PERFORMANCE LIMITS ⁶
Temperature Coefficient of Resistance	$\pm 5\text{ppm}/^\circ\text{C}$ ($- 55^\circ\text{C}$ to $+ 125^\circ\text{C}$) $\pm 10\text{ppm}/^\circ\text{C}$ ($+ 125^\circ\text{C}$ to $+ 175^\circ\text{C}$)	$\pm 2\text{ppm}/^\circ\text{C}$ ($- 55^\circ\text{C}$ to $+ 175^\circ\text{C}$)	$\pm 5\text{ppm}/^\circ\text{C}$ ¹ ($- 55^\circ\text{C}$ to $+ 125^\circ\text{C}$)	$\pm 2\text{ppm}/^\circ\text{C}$ ¹ ($- 55^\circ\text{C}$ to $+ 125^\circ\text{C}$)
Resistance Range	4.99 Ω to 121K Ω	100 Ω to 121K Ω	1 Ω to 150K Ω	4.99 Ω to 121K Ω
Failure Rate	Level R	Level R	Not Specified	Not Specified
Load-Life Stability 0.3W @ $+125^\circ\text{C}$ at 2,000 Hours at 10,000 Hours	$\pm 0.05\%$ Maximum ΔR $\pm 0.5\%$ Maximum ΔR	$\pm 0.05\%$ Maximum ΔR $\pm 0.5\%$ Maximum ΔR	$\pm 0.015\%$ Maximum ΔR ² $\pm 0.05\%$ Maximum ΔR ²	$\pm 0.015\%$ Maximum ΔR ² $\pm 0.05\%$ Maximum ΔR ²
Current Noise	Not Specified	Not Specified	- 40dB Minimum	- 40dB Minimum
High-Frequency Operation Rise-Decay Time Inductance ³ (L)	Not Specified Not Specified	Not Specified Not Specified	1.0ns at 1K Ω 0.1 μH Maximum 0.08 μH Typical 1.0pF Maximum 0.5pF Typical < 1%	1.0ns at 1K Ω 0.1 μH Maximum 0.08 μH Typical 1.0pF Maximum 0.5pF Typical < 1%
Capacitance (C)	Not Specified	Not Specified		
Reactance	Not Specified	Not Specified		
Voltage Coefficient	0.0005%/V	0.0005%/V	0.0001%/V	0.0001%/V
Working Voltage ⁴	300 Volts Maximum	300 Volts Maximum	300 Volts Maximum	300 Volts Maximum
Thermal EMF ⁵	Not Specified	Not Specified	0.1 $\mu\text{V}/^\circ\text{C}$ Maximum 1 $\mu\text{V}/\text{watt}$ Maximum	0.1 $\mu\text{V}/^\circ\text{C}$ Maximum 1 $\mu\text{V}/\text{watt}$ Maximum

NOTES:

1. Maximum TCR spread from nominal (Vishay maximum TCR): spread is defined as the 3σ (99.73% of a production lot) limit of a nominal Gaussian distribution which is within a band centered on the nominal curve. TCR is somewhat higher for resistance values < 80ohms, consult Vishay Applications Engineering.
2. Load life ΔR Maximum can be reduced by 80% through a screening procedure. Consult Vishay Applications Engineering for details.
3. Inductance (L) due mainly to the leads.
4. Not to exceed power rating of resistor.
5. $\mu\text{V}/^\circ\text{C}$ relates to EMF due to lead temperature differences and $\mu\text{V}/\text{watt}$ due to power applied to the resistor.
6. Maximum is 1.0% A.Q.L. standard for all specifications except TCR. Typical is a designers reference which represents that 85% of the units supplied, over a long period of time, will be at least the figure shown or better.

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FIGURE 1 - COMPARISON OF RNC90Y TO RNC90Z TEMPERATURE COEFFICIENT OF RESISTANCE

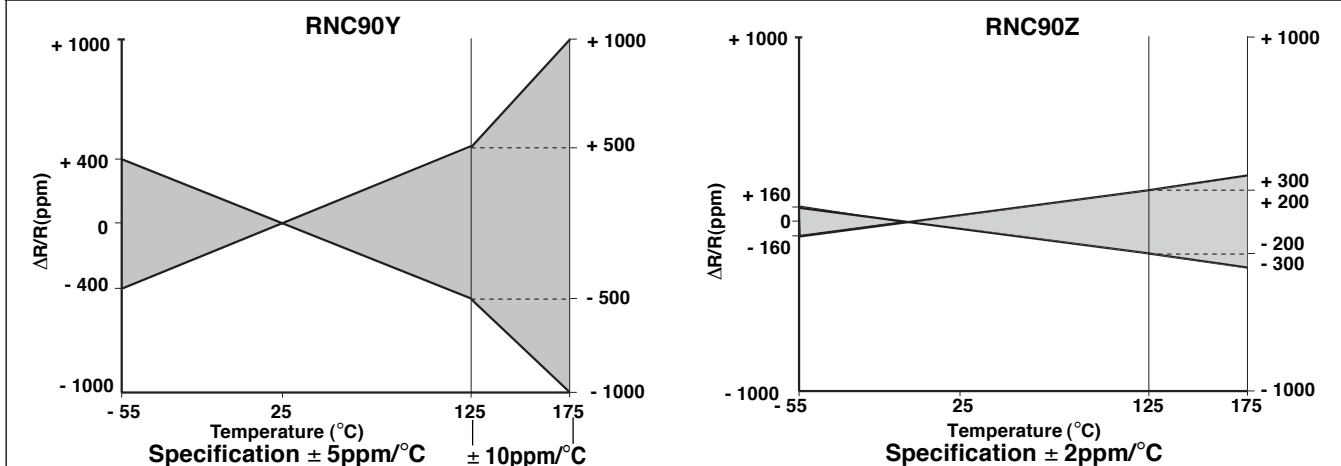


FIGURE 2 - POWER DERATING CURVE

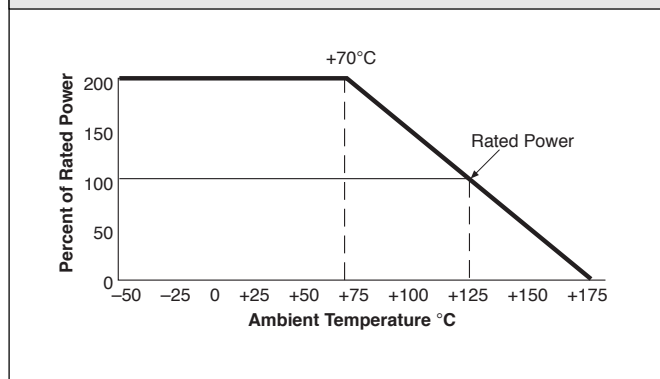


FIGURE 3 - IMPRINTING AND DIMENSIONS

RNC90Y and RNC90Z Military Approved Resistors

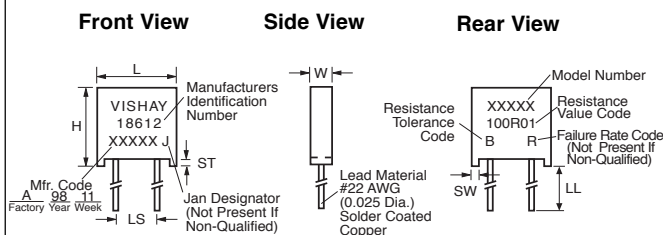


TABLE 2 - MODEL SELECTION

MODEL NUMBER	RESISTANCE RANGE (Ω)	STANDARD RESISTANCE TOLERANCE		FAILURE RATE	AMBIENT POWER RATING		AVERAGE WEIGHT IN GRAMS	DIMENSIONS	
		TIGHTEST %	LOOSEST %		@ + 70°C	@ + 125°C		inches	mm
RNC90Y	30.1 to 121K 16.2 to 30.0 4.99 to 16.0	± 0.005 ± 0.05 ± 0.1	± 1.0 ± 1.0 ± 1.0	See Table 5	0.6 Watts	0.3 Watts	0.6		
RNC90Z	100 TO 121K	± 0.01	± 1.0	See Table 5	0.6 Watts	0.3 Watts	0.6		
S555 (NON QPL)	30.1 to 121K	± 0.005	± 1.0	—	0.6 Watts	0.3 Watts	0.6	W: 0.105 ± 0.010	2.67 ± 0.25
	20 to < 30.1	± 0.01	± 1.0					L: 0.300 ± 0.010	7.62 ± 0.25
	5 to < 20	± 0.05	± 1.0					H: 0.326 ± 0.010	8.28 ± 0.25
	2 to < 5	± 0.1	± 1.0					ST: 0.015 ± 0.005	0.381 ± 0.13
Z555 (NON QPL)	1 to < 2	± 0.5	± 1.0	—	0.4 Watts	0.2 Watts	0.6	SW: 0.040 ± 0.005	1.02 ± 0.13
	> 121K to 150K	± 0.005	± 1.0					LL: 1.000 ± 0.125	25.4 ± 3.18
	30.1 to 121K	± 0.005	± 1.0					LS: 0.150 ± 0.005	3.81 ± 0.13
	20 to < 30.1	± 0.01	± 1.0						
	4.99 to < 20R	± 0.05	± 1.0						

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Military Established Reliability

Vishay Foil Resistors

Bulk Metal[®] Foil Technology
RNC90Y and RNC90Z to MIL-PRF-55182/9



THROUGH HOLE

TABLE 3 - ORDERING INFORMATION RNC90Y/RNC90Z SERIES

Please specify Vishay RNC90Y and RNC90Z Series Resistors as follows: (See Table 2, 4 and 5 for further details.)

Example:

RNC90Y
OR
RNC90Z
 MODEL NO.

100R01
 RESISTANCE VALUE

B
 TOLERANCE CODE

R
 LIFE FAILURE RATE CODE
 (QUALIFIED VERSIONS ONLY)

Resistance value, in ohms, is expressed by a series of 6 characters, 5 of which represent significant digits while the 6th is a dual purpose letter that designates both the multiplier and the location of the decimal point.

For Military approved resistors with improved performance testing a unique 3XXXXX part number will be assigned.

RESISTANCE RANGE	LETTER DESIGNATOR	MULTIPLIER FACTOR	EXAMPLE
1Ω to < 1KΩ	R	x 1	100R01 = 100.01Ω
1KΩ to 121KΩ	K	x 10 ³	15K231 = 15,231Ω

Note: The S555 and Z555 non-qualified versions are ordered by specifying model RNC90Y or RNC90Z without specifying a failure rate code

TABLE 4 - STANDARD RESISTANCE TOLERANCE AND SYMBOLS FOR RNC90Y AND RNC90Z

TOLERANCE	SYMBOL
± 0.005%	V
± 0.01%	T
± 0.05%	A
± 0.1%	B
± 0.5% *	D
± 1.0% *	F

*± 0.5% and ± 1.0% resistors available only in standard values per MIL-PRF-55182

TABLE 5 - LIFE FAILURE RATE (LFR)

MODEL		FAILURE RATE
RNC90Y		M, P, R
RNC90Z		M, P, R
Failure rate code:	SYMBOL	LFR
	M	1.0%
	P	0.1%
	R	0.01%

CAGE #18612

"Commercial and Government Entity"
Formerly "FSCM".

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