RJ712

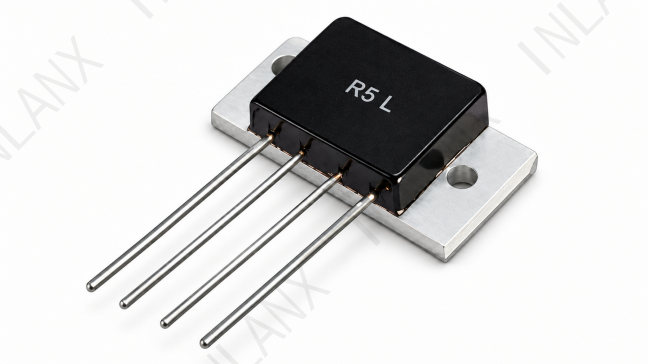
High-Precision, Stable and Reliable Metal-Foil Sampling Resistors

Product Introduction

RN-2 power resistors. Employ resistance strain and compensation principles, semiconductor processing and a planar non-inductive structure. High precision and good stability. Low temperature coefficient over a wide temperature range, achievable to ±5PPM. Widely used in stable measurement systems, reference sources, metrological verification and instrument-transformer calibration. Resistance range: 0.001R-1MR. Accuracy: ±1%-±0.005%. Terminals and external dimensions can be customized to customer requirements.

Product Features

- Resistance range: 0.01Ω to 80KΩ
- Rated power: up to 100W
- Resistance accuracy: ±0.01%
- Temperature coefficient: ±2 ppm/K
- Non-inductive design
- Load-life stability: 0.02%



Dimensions

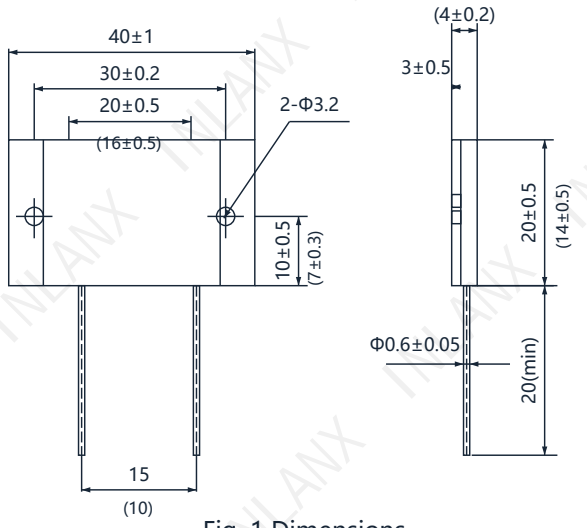


Fig. 1 Dimensions

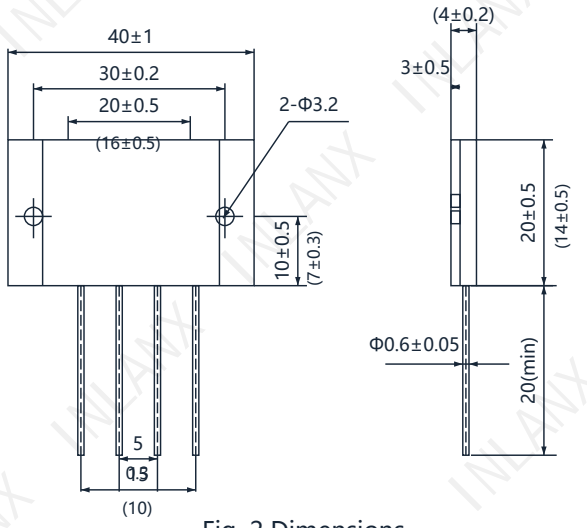


Fig. 2 Dimensions

(Parenthesized dimensions in the drawings are for RN-1.)

Rated power	Dimensions	
	H	L
10	40	20
20	40	20
50	60	40
100	120	40

Circuit Diagram

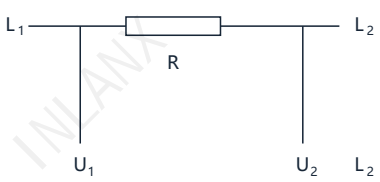
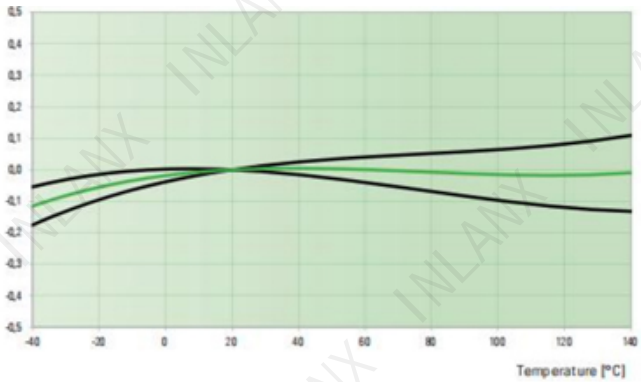


Table 1 • Parameters

Model		RNG4020
Resistance range		0.005R to 80 KR
Rated power	Without heatsink, 70°C	3W
	With heatsink	10W
Accuracy		0.01% / 0.02% / 0.05% / 0.1%
Thermal resistance		1.6 KW
Stability (2000h)		0.02% (maximum change)
Temperature coefficient	Manganin alloy (0.005R-0.05R)	±10 ppm/K (20 to 60°C)
		±5 ppm/K (20 to 60°C)
	Nickel-chromium alloy (0.05-80 KR)	±2 ppm/K (20 to 60°C)
Maximum operating voltage		350 V
Maximum operating current		45A
Thermal EMF		< 1 μV/K
Operating temperature range		-40 to 130 °C
Resistive material		Manganin alloy, nickel-chromium alloy foil
Substrate		Aluminium oxide
Protective layer		Epoxy resin
Electrode material		Tin-plated copper
Pin count		4
Maximum torque		1 N m

Note: The current-terminal lead diameter Φ depends on the current magnitude.

Temperature Variation Curves



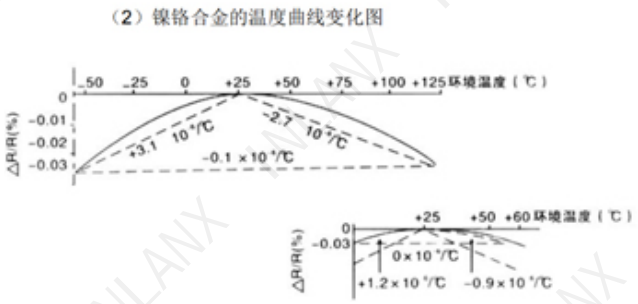
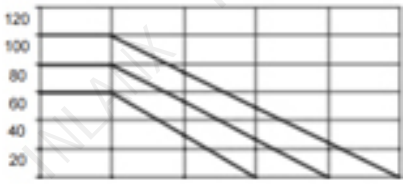


Fig. 3 • Power Derating and Heatsink Calculation



RNG4020 resistors are used with a suitable heatsink. The maximum internal resistor temperature is 130 °C. Use the following formula to determine a suitable heatsink:

$$R\theta_H = \frac{TMAX - (P \times R\theta_R) - TA}{-}$$

Source figures retained: some curve coefficients and axis labels are unclear; the heatsink formula denominator is missing and awaits source verification.