

Very High Precision and Stability Metal Foil Resistors, Bulk Metal[®] CECC Qualified

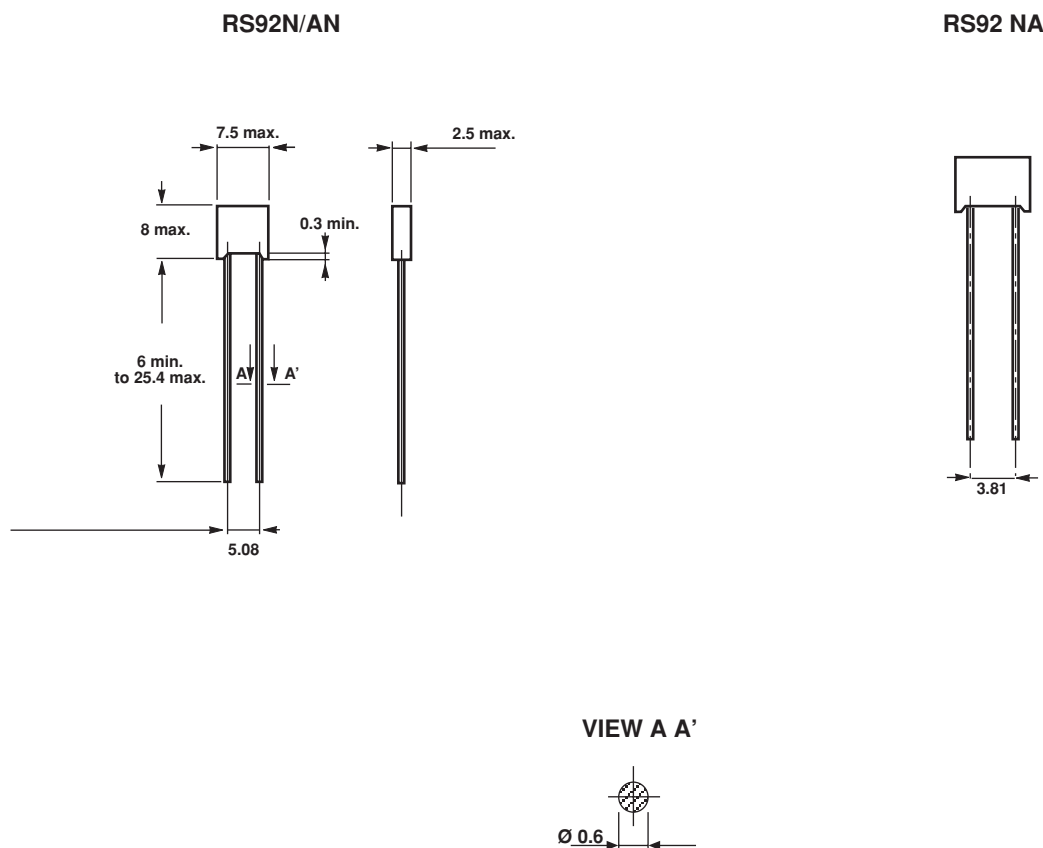


The ultra-high precision planar resistors of the RS92N/AN series are produced according to a special process. The technology used is unique and based on an etched nickel-chromium foil bonded on to an alumina substrate. The resistor's small size (thickness 2.5mm) enables compact side by side mounting on a 2.54mm PCB grid and their unmatched performances make them particularly well suited for all military and high performance applications.

FEATURES

- Very tight tolerance $\pm 0.01\%$ to $\pm 1\%$
Matching to 0.01%
- Very low temperature coefficient
+ 0.6ppm/°C (0°C to + 25°C, - 0.6ppm/°C (+ 25°C to 60°C), + 2.2ppm/°C (- 55°C to + 20°C), - 1.8ppm/°C (+ 20°C to + 125°C) tracking to 0.5ppm/°C
- Electrical insulation $> 10^6 \text{M}\Omega$
- Very high stability $< 25 \text{ppm/year}$ or $< 50 \text{ppm/3 years}$ (shelf life)
- Negligible rise time approx. $1 \cdot 10^{-9} \text{s}$.
- Climatic category
CECC: $- 55^\circ\text{C}/+ 155^\circ\text{C}/56 \text{ days}$

DIMENSIONS in millimeters



MECHANICAL SPECIFICATIONS

Mechanical Protection	Insulated case
Resistive Element	Nickel-chromium
Terminal Leads	Tinned copper weldable solderable type C MIL-STD 1276
Unit Weight	0.3 g

ENVIRONMENTAL SPECIFICATIONS

Temperature Limits	– 55°C + 175°C
Climatic Category	55 / 155 / 56

ELECTRICAL SPECIFICATIONS

Qualified Ohmic Range*	RS92N	80R6 to 120K
	AN	80R6 to 92K
Qualified Tolerances*		0.01% to 1%
Power Rating		0.5W @ 70°C 0.25W @ 125°C
Temperature Coefficient		See diagram
Dielectric Strength		750VRMS
Insulation Resistance		> 10 ⁶ M
Thermal EMF		< 0.5µV for 1°C of difference between leads
Noise		Non measurable (> - 32dB)
Thermal Resistance		0.14°C/mW

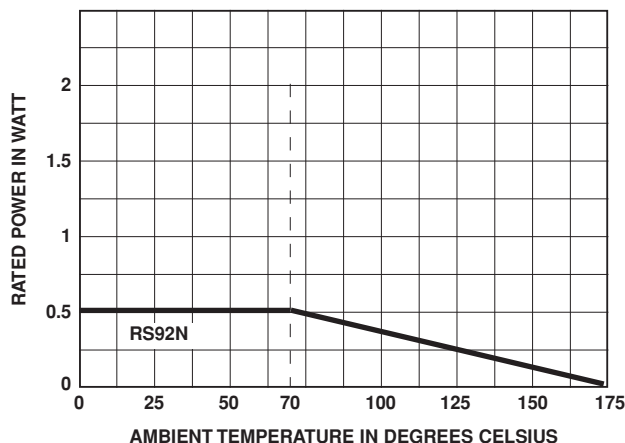
*For non qualified product, extended ohmic range and tighter tolerance, refer to S102 series in Bulk Metal Foil catalogue (VSD-DB0022)

PERFORMANCE

TESTS	CONDITIONS	REQUIREMENTS		TYPICAL DRIFTS
		NF C 83-220 CECC 40300	MIL-R-55182J	
Overload	2.5un/5 s U max. < 2Un	± 0.01%	± 0.2%	± 0.002%
Temperature Cycling	- 55°C + 155°C 5 cycles CEI 68-2-14 Test Na	± 0.01%	± 0.05%	± 0.002%
Terminals Strength	CEI 68-2-21 Test Ua (pulling) Ub (bending) Uc (twisting)	± 0.01%	± 0.2%	± 0.002%
Resistance to Soldering Heat	260°C/10s CEI 68-2-20A Test Tb (met. 1A)	± 0.01%	± 0.1%	± 0.002%
Vibrations	10Hz to 500Hz 0.75mm or 10g 6h met. B4 CEI 68-2-6 Test Fc	± 0.01%	± 0.2%	± 0.002%
Climatic Sequence	- 55°C + 155°C 6 cycles 95% R.H. 85mbar CEI 68-1	± 0.05 % Insulation R > 10 ² MΩ	–	± 0.003% Insulation R > 10 ⁴ MΩ
Humidity (Steady State)	56 days 95% R.H. 40°C CEI 68-2-3	± 0.05% Insulation R > 10 ² MΩ	–	± 0.003% Insulation R > 10 ⁴ MΩ
Moisture Resistance	Method 106 MIL-STD-202	–	± 0.4% Insulation R > 10 ² M	± 0.02 % Insulation R > 10 ⁴ MΩ
Load Life	1000h Pr at 70°C 90'/30' cycle	± 0.05%	± 0.5%	± 0.05%
High Temperature Exposure	1000h/155°C CEI 68-2-20A Test B	± 0.05%	± 0.5%	± 0.01%



POWER RATING CHART



POWER RATING

In order to increase stability, it is recommended to reduce the nominal power (P_r) in relation with tolerance.

For $\pm 0.1\%$ to $\pm 0.05\%$ Power = $P_r \times 0.75$

For $\pm 0.02\%$ to $\pm 0.01\%$ Power = $P_r \times 0.5$

For $\pm 0.005\%$ Power = $P_r \times 0.25$.

NOISE

$< 0.025\mu\text{V/V RMS}$ ($> -32\text{dB}$).

HIGH FREQUENCY CHARACTERISTICS

Very low reactance.

Shunt capacitance is approximately 1pF

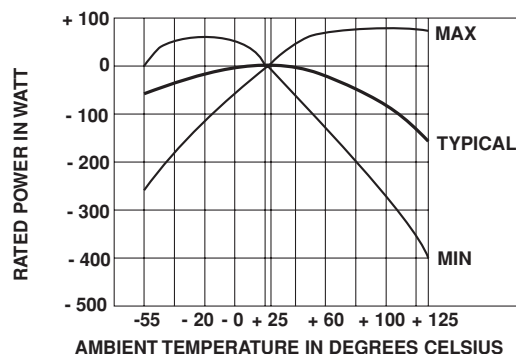
Total inductance is approximately 100 nH

RISE TIME

Approximately 1 nanosecond.

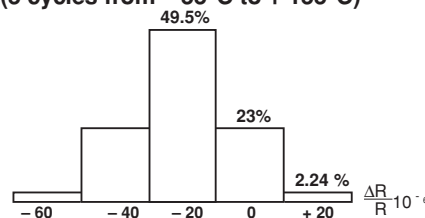
Allows very high performance in the field of very fast electronics (totally oscillation-free).

TEMPERATURE COEFFICIENTS

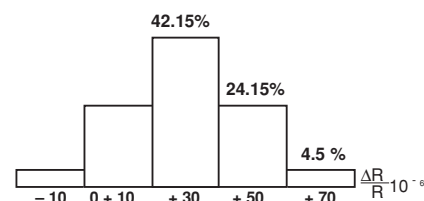


TYPICAL RESISTANCE DRIFT DIAGRAMS

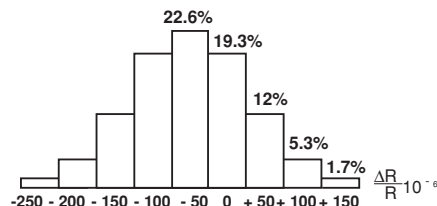
Temperature cycles
(5 cycles from -55°C to $+155^\circ\text{C}$)



Humidity
(56 days at 95% H.R. 40°C)



Load life
(0.33W at 125°C for 1000 hours)



MARKING

- Top Marking: Ω value with minimum 3 digits (R stated for Ω and K for Kohm)

- Side Marking:

Line 1: Tolerance

Line 2: Model

Line 3: 4 Digit date code (year and week) and SFERNICE trademark

GENERAL APPLICATIONS

Discrete components : any circuits requiring high precision and high stability, standard resistors, fast rise time applications, high stability applications even under severe temperature variations, circuits for analog computers, etc.

Resistor networks : ladder networks (R-2R), Kelvin-Varley dividers, current source networks, any type of voltage dividers, etc.

ORDERING INFORMATION

RS92
or
AN

N or NA
OPTION

32k
OHMIC VALUE

$\pm 0.01\%$
TOLERANCE



Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.