

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

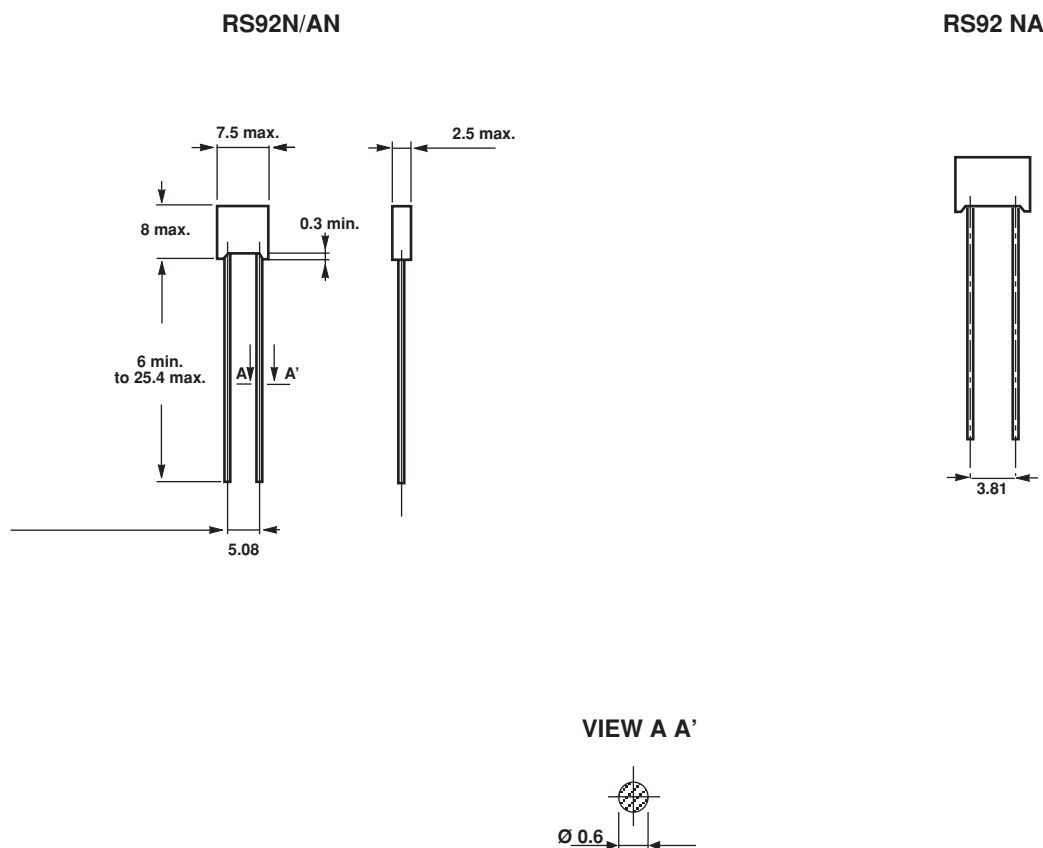


The ultra-high precision planar resistors of the RS92N/AN series are produced according to a special process. The technology used is unique and based on an etched nickel-chromium foil bonded on to an alumina substrate. The resistor's small size (thickness 2.5mm) enables compact side by side mounting 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 $> 10^6 M\Omega$
- 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 AN	80R6 to 120K 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

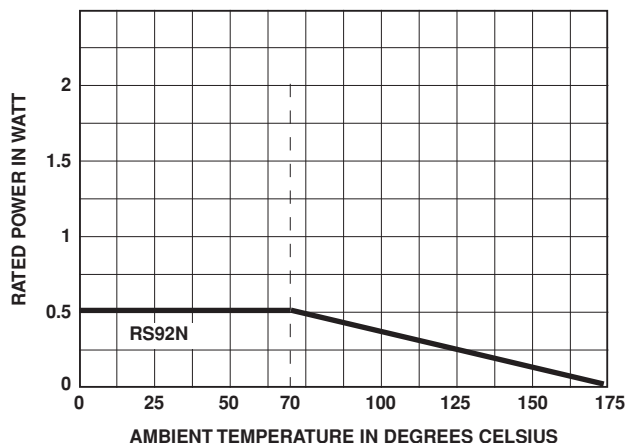
*For non qualified product, extended ohmic range and tighter tolerance, refer to S102 series in Bulk Metal Foil catalogue (VSD-DB0022)

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

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

HIGH FREQUENCY CHARACTERISTICS

Very low reactance.

Shunt capacitance is approximately 1pF

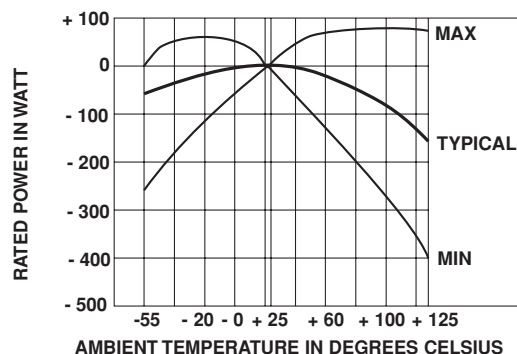
Total inductance is approximately 100 nH

RISE TIME

Approximately 1 nanosecond.

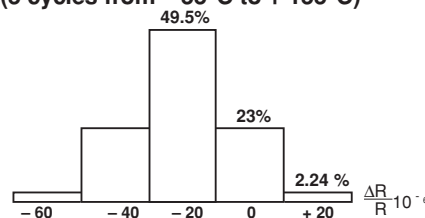
Allows very high performance in the field of very fast electronics (totally oscillation-free).

TEMPERATURE COEFFICIENTS

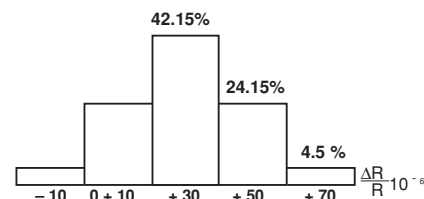


TYPICAL RESISTANCE DRIFT DIAGRAMS

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



Humidity
(56 days at 95% H.R. 40°C)



MARKING

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

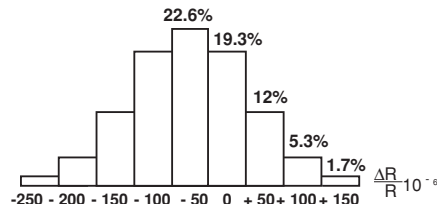
- Side Marking:

Line 1: Tolerance

Line 2: Model

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

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



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.

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