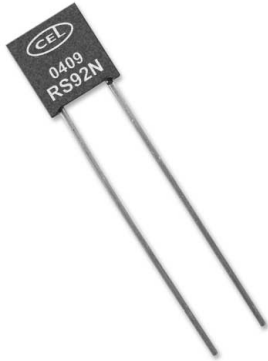


Very High Precision and Stability
Bulk Metal® Foil Resistors, CECC Qualified



INTRODUCTION

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 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. $1-10^{-9}\text{s}$

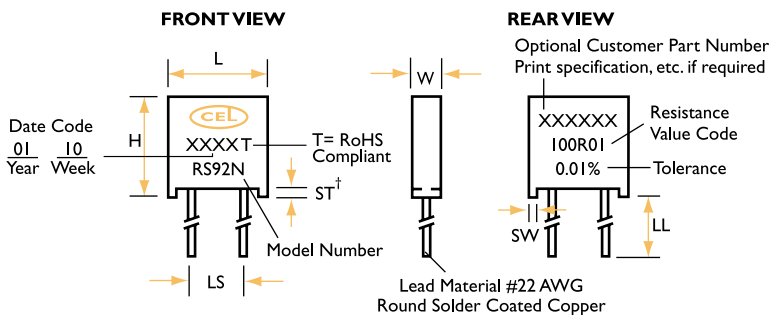
MECHANICAL SPECIFICATIONS

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

ENVIRONMENTAL SPECIFICATIONS

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

STANDARD IMPRINTING AND DIMENSIONS



†The standoffs shall be so located as to give a lead clearance of 0.25mm minimum between the resistor body and the printed circuit board when the standoffs are seated on the printed circuit board. This is to allow for proper cleaning of flux and other contaminants from the unit after all soldering processes.

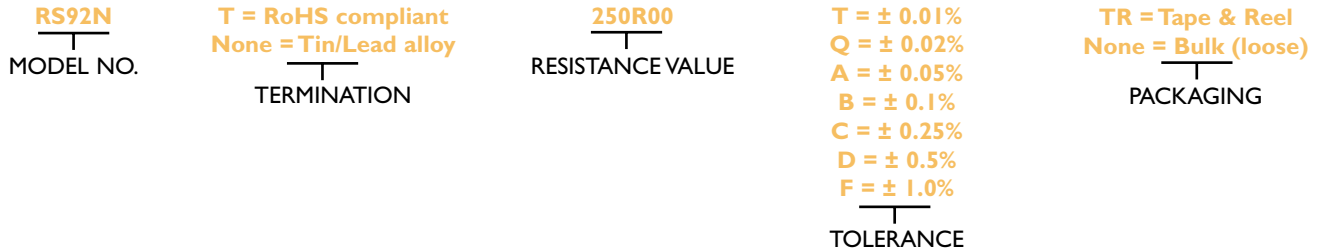
Model	Dim	LS	W	L	H	ST	SW	LL	Released to CECC 40302	Weight nominal
RS92NA	mm	3.81 ± 0.13	2.67 ± 0.25	7.62 ± 0.25	8.28 ± 0.25	0.254 min	1.02 ± 0.13	25.4 ± 3.18	- 001	0.6g
RS92N	mm	5.08 ± 0.13	2.49 max	7.49 max	8.00 max	0.254 min	1.02 ± 0.13	25.4 ± 3.18	- 001	0.6g
AN	mm	5.08 ± 0.13	2.49 max	7.49 max	8.00 max	0.254 min	1.02 ± 0.13	25.4 ± 3.18	- 004	0.6g

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ORDERING INFORMATION

Specify Charcraft CECC Series resistors as follows:

Example:



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 comma or decimal.

RESISTANCE RANGE	LETTER DESIGNATOR	MULTIPLIER FACTOR	EXAMPLE
10Ω to <1KΩ	R	x 1	100R01 = 100.01Ω
1KΩ to 100KΩ	K	x 10 ³	5K2310 = 5,231Ω

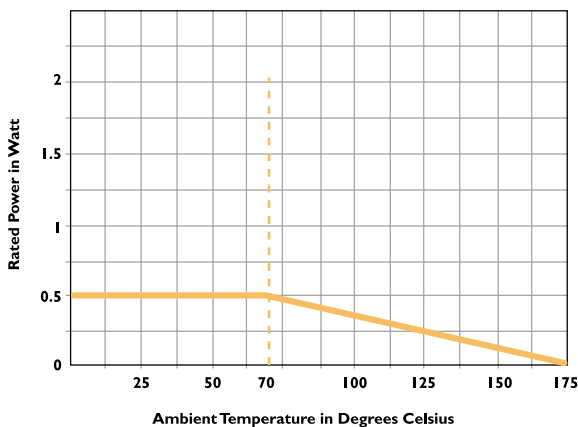
For example: RS92N T 250R00 T - Model: RS92N Version, Termination: RoHS compliant; Value: 250 Ω, Tolerance: 0.01 % Packaging: Bulk

ELECTRICAL SPECIFICATIONS

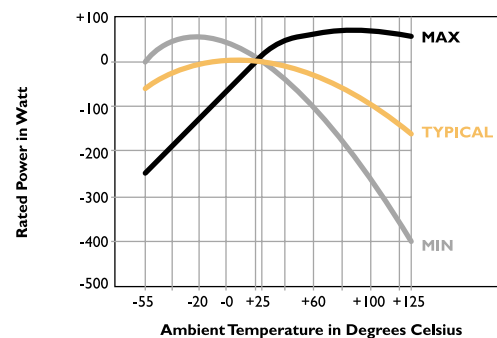
Qualified Ohmic Range*	RS92N	80R to 120K
	AN	80R to 92K
Qualified Tolerances*		0.01% to 1%
Power Rating		0.5W @ 70°C 0.25W @ 125°C
Temperature Coefficient		See diagram
Dielectric Strength		750VRMS
Insulation Resistance		> 10 ⁶ M
Thermal EMF		< 0.5μV for 1°C of difference between leads
Noise		Non measurable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

*For non qualified product, extended ohmic range and tighter tolerance, refer to S102 series.

POWER RATING CHART



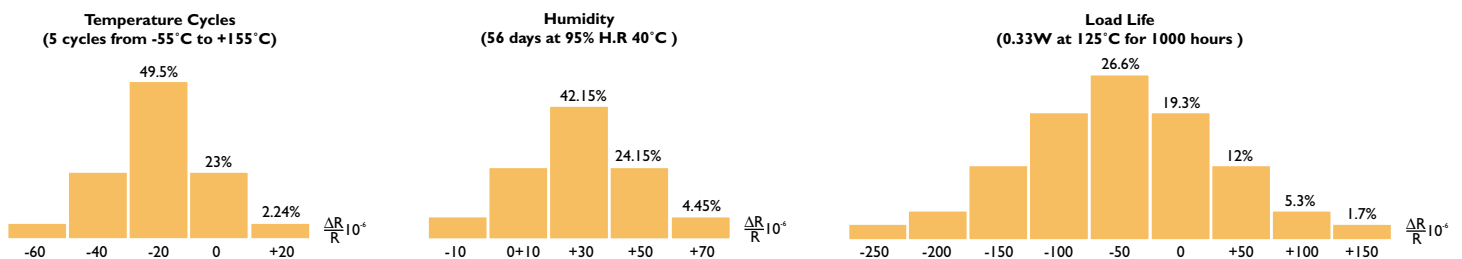
TEMPERATURE COEFFICIENTS



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PERFORMANCE				
TEST	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%

TYPICAL RESISTANCE DRIFT DIAGRAMS



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.

POWER RATING

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

For ± 0.1% to ±0.05% Power = Pr x 0.75

For ± 0.02% to ±0.01% Power = Pr x 0.5

For ± 0.005% Power = Pr x 0.25.

NOISE

< 0.025µV/V RMS (> - 32dB).

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).