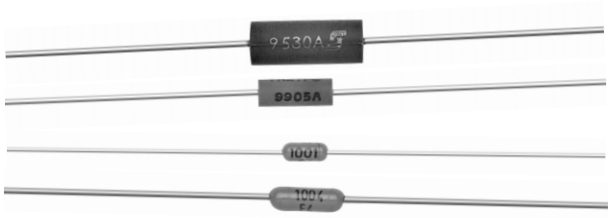
High Reliability Metal Film Resistors



Originally developed for space applications, these resistors are manufactured, selected and tested to ESA/SCC 4001 specification.

FEATURES

Two kinds of presentation are offered:

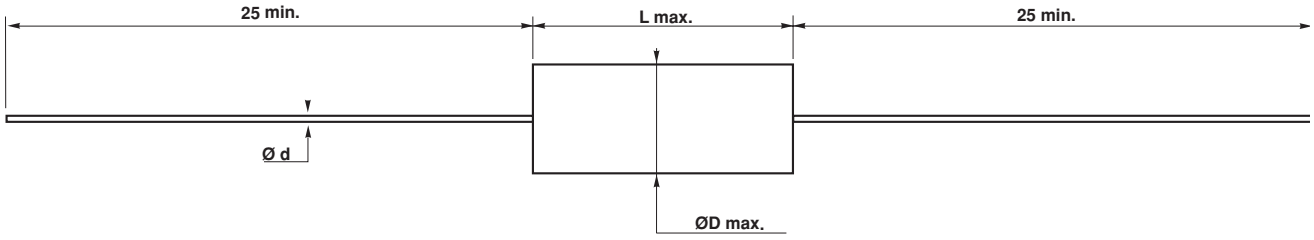
- epoxy coating for the 2 H version,
- molded for the 3 H version.

As defined in the ESA/SCC specification, two test levels are proposed:

- level B with serialized components,
- level C without serialization.
- ESA/SCC 4001

DIMENSIONS in millimeters

RLR / 2H **RNC / 3H**



SFERNICE DESIGNATION	Ø D MAX.	L MAX.	Ø d MAX.	MAX. WEIGHT IN g
2 H 3	1.8	4.3	0.55	0.25
2 H 4	2.49	7.14	0.69	0.3
2 H 5	4.09	10.57	0.86	0.5

SFERNICE DESIGNATION	Ø D MAX.	L MAX.	Ø d max.	MAX. WEIGHT IN g
3 H 3	2.03	4.32	0.46	0.2
3 H 4	3.56	7.14	0.69	0.3
3 H 5	4.2	11.1	0.69	0.5

ELECTRICAL SPECIFICATIONS

VISHAY SFERNICE DESIGNATION	2 H 3	2 H 4	2 H 5
ESA Designation	RLR 05	RLR 07	RLR 20
ESA Specification Applied	4001/005	4001/006	4001/007
Power Rating at + 70°C	0.125W	0.25W	0.5W
Limiting Element Voltage	200V	250V	350V
Temperature Coefficient	± 100ppm/°C		
Qualified Ohmic Range	1Ω to 1MΩ	1Ω to 4.7MΩ	4.22Ω to 4.7MΩ
Tolerance	± 1%; ± 2%		
Temperature Range	– 55°C to + 150°C		

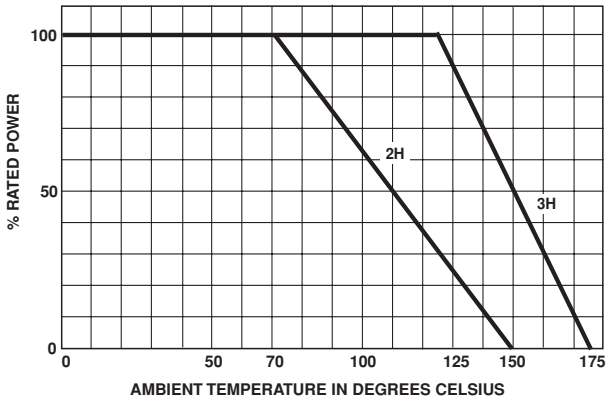
ELECTRICAL SPECIFICATIONS

VISHAY SFERNICE DESIGNATION		3 H 3	3 H 4	3 H 5
ESA Designation		RNC 50	RNC 55	RNC 60
ESA Specification Applied		4001/009	4001/001	4001/002
Power Rating at + 125°C		0.05W	0.1W	0.125W
Limiting Element Voltage		200V	200V	250V
Ohmic Values Versus Temperature Coefficient	± 25ppm/°C	49.9Ω to 1MΩ	10Ω to 1MΩ	10Ω to 1MΩ
	± 50ppm/°C	1Ω to 1MΩ	1Ω to 4.7MΩ	1Ω to 4.7MΩ
Tolerance		± 0.5%; ± 1%		
Temperature Range		– 55°C to + 175°C		

PERFORMANCE

TESTS	CONDITIONS RLR / 2 H	CONDITIONS RNC / 3H	LIMIT DRIFTS RLR / 2H	LIMIT DRIFTS RNC / 3H
Soldering (Thermal Shock)	+ 260°C during 10"	+ 260°C during 10"	$\pm (0.5 + \frac{0.05 \times 100}{R})\%$	$\pm (0.1 + \frac{0.01 \times 100}{R})\%$
Terminal Strength	Pulling test CEI 68 - 2 - 21 test Ua		$\pm (0.5 + \frac{0.05 \times 100}{R})\%$	$\pm (0.25 + \frac{0.05 \times 100}{R})\%$
Rapid Temperature Change	– 55°C + 150°C 5 cycles CEI 68-2-14 test Na	– 55°C + 175°C 5 cycles CEI 68-2-14 test Na	$\pm (0.5 \frac{0.05 \times 100}{R})\%$	$\pm (0.25 + \frac{0.05 \times 100}{R})\%$
Vibration	Frequency range 10 to 2000Hz amplitude 1.5mm or 20g CEI 68-2-6 tests Fc, B4		$\pm (0.5 + \frac{0.05 \times 100}{R})\%$	$\pm (0.25 + \frac{0.05 \times 100}{R})\%$
Climatic Sequence	Phase A : dry heat - Phase B : damp heat 1 cycle Phase C : cold – 55°C - Phase D : low air pressure - Phase E : damp heat 5 cycles - Phase F : DC load		$\pm (1 + \frac{0.05 \times 100}{R})\%$ Insulation res.: > 100MΩ	$\pm (0.5 + \frac{0.05 \times 100}{R})\%$ Insulation res.: > 100MΩ
Load Life	2000 h at rated power at + 70°C, 90'/ 30' cycle	2000 h at rated power at + 125°C, 90'/30' cycle	$\pm (2 + \frac{0.05 \times 100}{R})\%$	$\pm (0.5 + \frac{0.05 \times 100}{R})\%$
High Temperature Exposure	2000 h no load at + 150°C	2000 h no load at + 175°C	Insulation resistance: > 1000MΩ	Insulation resistance: > 1000MΩ

POWER RATING CHART



TERMINATIONS

Standard terminations are in tinned copper.

MARKING

The SCC component number is print marked and includes:

- The number of the detail specification which refers to the generic specification of the resistor.
- The testing level: B or C.
- The ohmic value: 4 digits for tolerance < ± 1% and values series E48, 3 digits code for tolerance ± 2%.
- The tolerance letter code : D: ± 0.5 %, F: ± 1%, G: ± 2%.
- The temperature coefficient (1digit): 2 for ± 25ppm/°C, 3 for ± 50ppm/°C and 4 for ± 100ppm/°C.

PACKAGING

Resistors are packaged in transparent blister pack.
For component level B, 10 resistors per blister.
For component level C, 20 resistors per blister.
On the blister, information printed is: ESA designation, SFERNICE designation, ESA/ SCC detail specification, quality level, ohmic value, tolerance and manufacturing date code (4 digits), two for the year and two for the week.

ORDERING INFORMATION

3 H 4		B1		100kΩ	± 1%	± 100ppm/°C
MODEL		QUALITY LEVEL		OHMIC VALUE	TOLERANCE	TEMPERATURE COEFFICIENT
2 H 3	3 H 3	B1	C1			
2 H 4	3 H 4	B2	C2			
2 H 5	3 H 5	B3	C3			