

Vishay Foil Resistors

 \cdot \ominus

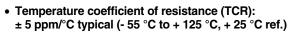
High Precision Bulk Metal[®] Foil with Tolerance of ± 0.005 % and Qualified to ESA Specification 4001/011



Due to the unique performance of the Bulk Metal[®] foil resistive elements, these resistors are very well adapted to high reliability applications.

Our application engineering department is available to advise and to make recommendations. For non-standard technical requirements and special applications, please contact us.

FEATURES



• Rated power: to 0.5 W at + 70 °C

• Tolerance: ± 0.005 %

Load life stability: to ± 0.005 % at 70 °C, 2000 h at rated power

• Resistance range: 33 Ω to 100 $k\Omega$

 Vishay Foil resistors are not restricted to standard values, we can supply specific "as required" values at no extra cost or delivery (e.g. 100K1234 vs 100K)

• Electrostatic discharge up to 25 kV

• Non inductive, non capacitive design

• Rise time: 1 ns effectively no ringing

• Current noise: < - 40 dB

Thermal EMF: 0.05 μV/°C typical

Voltage coefficient: < 0.1 ppm/V

• Low inductance: < 0.08 μH typical

• Non hot spot design

• Terminal finishes available: tin/lead alloy

 Matched sets are available per request (TCR Tracking: to 0.5 ppm/°C)

 For better TCR and PCR performances please review the RNC90Z and Z555 datasheets

Four variants are available, two reliability levels are proposed:

 Level B: part individualization and test measurements provided

 Level C: not part individualization and no test measurements provided

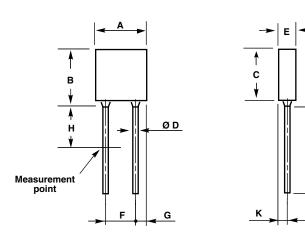
ESA/SCC 4001

• Lot acceptance test level 3 (LAT3): 10 additional parts needed

• Lot acceptance test level 2 (LAT2): 25 additional parts needed

• Lot acceptance test level 1 (LAT1): 31 additional parts needed

DIMENSIONS in millimeters



SERIES	RCK HR 02			
	VARIANTS	DIM. IN mm		
DIM.	VARIANTS	MIN.	MAX.	
Α	-	-	7.5	
В	-	-	8	
С	-	-	7.5	
ØD	03 - 04 - 07 - 08	0.55	0.65	
E	-	-	2.5	
F	03 - 07	4.8	5.35	
I I	04 - 08	3.55	4.1	
G	03 - 07	1	1.5	
G	04 - 08	1.6	2.1	
Н	-	4	6	
J	03 - 04	6	-	
J	07 - 08	20	-	
K	-	-	1.5	

RCK HR 02, 02A

Vishay Foil Resistors

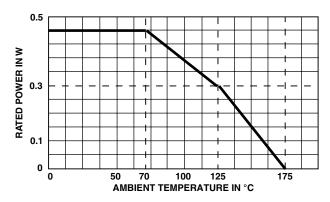
High Precision Bulk Metal® Foil with Tolerance of $\pm 0.005~\%$ and Qualified to ESA Specification 4001/011



ELECTRICAL SPECIFICATIONS				
VISHAY SFERNICE DESIGNATION	RCK HR			
Qualified Designation	RNC 90			
ESA Specification	4001/011			
Power Rating at + 70 °C	0.5 W			
Limiting Element Voltage	300 V			
Temperature Coefficient	± 5 ppm/°C (- 55 °C + 125 °C, + 25 °C ref.) ± 10 ppm/°C (+ 125 °C to + 175 °C)			
Ohmic Value Range 33 Ω to 100 kΩ available range 50 Ω to 100 kΩ qualified range				
Tolerance	\pm 0.005 % to \pm 1 % available range \pm 0.02 % to \pm 1 % qualified range			
Temperature Limits	- 55 °C to + 175 °C			
Dielectric Voltage	425 V _{RMS}			
Soldering Temperature	260 °C, immersion 10 s at a distance of no less than 1.6 mm from the device body			

TYPICAL PERFORMANCE SPECIFICATIONS						
TESTS	CONDITIONS	REQUIREMENTS ESA/SCC 4001/11	TYPICAL VALUES AND DRIFTS			
Short Time Overload	$U = \sqrt{2 \cdot R_n} / 5 \text{ s}$ $U \text{ max.} < 450 \text{ V}$	± (0.05 + (0.01 Ω x 100)) % R _n	± 0.002 %			
Rapid Temperature Change	- 55 °C/+ 175 °C 5 cycles IEC 60068-2-14 test Na	± (0.05 + (0.01 Ω x 100)) % R _n	± 0.002 %			
Terminal Strength	IEC 60068-2-21 test Ua, test U21 (tensile)	\pm (0.002 + (0.01 Ω x 100)) % R _n	± 0.001 %			
Soldering (Thermal Shock)	260 °C/10 s IEC 60068-2-20 A test Tb (met. 1A)	\pm (0.002 + (0.01 Ω x 100)) % R _n	± 0.002 %			
Vibration	10 Hz to 2000 Hz 1.5 mm or 20 g 6 h (met. B4) IEC 60068-2-6 test Fc	\pm (0.002 + (0.01 Ω x 100)) % R _n	± 0.002 %			
Humidity (Steady State)	56 days 95 % H.R. 40 °C IEC 60068-2-3	N/a	$\pm~0.003~\%$ Insulation resistance > $10^4~\text{M}\Omega$			
Climatic Sequence	IEC 60068-2-2/IEC 60068-2-30 IEC 60068-2-1/IEC 60068-2-13	± (0.05 + (0.01 Ω x 100)) % R _n	$\pm~0.003~\%$ Insulation resistance > $10^4~\text{M}\Omega$			
Load Life	1000 h P _n at + 70 °C 90'/30' cycle	$\pm (0.05 + (0.01 \Omega \times 100)) \% R_n$	± 0.005 %			
High Temperature Exposure	1000 h at + 175 °C IEC 60068-2-20A Test B	± (0.05 + (0.01 Ω x 100)) % R _n	± 0.01 %			

POWER RATING CHART





High Precision Bulk Metal® Foil with Tolerance of ± 0.005 % and Qualified to ESA Specification 4001/011

Vishay Foil Resistors

TOLERANCE CODE								
Tolerance ± %	0.005	0.01	0.02	0.05	0.1	0.2	0.5	1
Code SCC	E	L	Р	W	В	С	D	F

PACKAGING

Resistors are packed in sealed blisters, up to 10 resistors per blister pack.
The following information is printed on the blister pack:

- order reference
- date code
- ESA specification reference
- quality level
- review number

MARKING

Ohmic value is printed on the top side, 3 to 6 digits are used, R stands for Ω and K for $k\Omega$.

The front side is printed as follows:

- tolerance (letter code)
- ESA specification reference
- quality level
- variant
- manufacturing date (2 digits for the year, 2 digits for the
- a letter to differentiate manufacturing sequence.

ESA logo and serialization number are printed on the back

ORDERING INFORMATION						
RCK HR	02 - 03	10 k Ω	± 1 %	B1		
MODEL	VERSION - VARIANT	OHMIC VALUE	TOLERANCE	QUALITY LEVEL		
	02 - 03 02 - 07 02A - 04 02A - 08		± 0.005 % ± 0.01 % ± 0.02 % ± 0.05 % ± 0.1 % ± 0.2 % ± 0.5 % ± 1 %	B1 C1 B2 C2 B3 C3		



Vishay

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.

Revision: 18-Jul-08

Document Number: 91000 www.vishay.com