



# Thick Film Chip Resistors, Non-Magnetic, Industrial / High Reliability



MATERIAL SPECIFICATIONS	
Resistive element	Ruthenium oxide
Encapsulation	Epoxy
Substrate	96 % alumina
Termination	Solder-coated
Solder finish	Pure tin or tin / lead solder alloy

### FEATURES

- Manufactured using non-magnetic terminations
- Undergoes group A testing to MIL-PRF-55342 (precap visual inspection, thermal shock, DC resistance, 100 % visual inspection) prior to shipping
- Construction is sulfur impervious against a high sulfur environment (ASTM B 809-95 test method)
- Termination: tin / lead wraparound termination. Also available with lead (Pb)-free wraparound terminations
- Capability to develop specific reliability programs designed to customer requirements
- Size, value, packaging and materials can be customized for special customer requirements
- Operating temperature range: -65 °C to +155 °C
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### Note

\* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

STANDARD ELECTRICAL SPECIFICATIONS							
GLOBAL MODEL	HISTORICAL MODEL	CASE SIZE	POWER RATING <sup>(1)</sup> P <sub>70 °C</sub> W	MAXIMUM WORKING VOLTAGE <sup>(2)</sup> V	RESISTANCE RANGE Ω	TOLERANCE ± %	TEMPERATURE COEFFICIENT ± ppm/°C
RCWP0201..1C	RCWP-0201-102	0201	0.05	30	10 to 46	5, 10	300
					47 to 1M	1, 2, 5, 10	100, 200, 300
RCWP0502..1C	RCWP-0502-102	0502	0.05	40	1 to 9.1	2, 5, 10	200, 300
					10 to 22M	1, 2, 5, 10	100, 200, 300
					10 to 10M	0.5	100, 200, 300
RCWP0302..1C	RCWP-0302-102	0302	0.04	15	1 to 9.1	2, 5, 10	200, 300
					10 to 22M	1, 2, 5, 10	100, 200, 300
					10 to 10M	0.5	100, 200, 300
RCWP0402..1C	RCWP-0402-102	0402	0.05	30	1 to 9.1	2, 5, 10	200, 300
					10 to 22M	1, 2, 5, 10	100, 200, 300
					10 to 10M	0.5	100, 200, 300
RCWP0603..1C	RCWP-0603-102	0603	0.10	50	1 to 5.1	2, 5, 10	200, 300
					5.6 to 22M	1, 2, 5, 10	100, 200, 300
					5.62 to 10M	0.5	100, 200, 300
RCWP0540..1C	RCWP-540-102	0504	0.08	40	1 to 9.1	2, 5, 10	200, 300
					10 to 22M	1, 2, 5, 10	100, 200, 300
					10 to 10M	0.5	100, 200, 300
RCWP0550..1C	RCWP-550-102	0505	0.125	50	1 to 9.1	2, 5, 10	200, 300
					10 to 22M	1, 2, 5, 10	100, 200, 300
					10 to 10M	0.5	100, 200, 300
RCWP0575..1C	RCWP-575-102	0705 <sup>(3)</sup>	0.15	70	1 to 5.1	2, 5, 10	200, 300
					5.6 to 22M	1, 2, 5, 10	100, 200, 300
					5.62 to 10M	0.5	100, 200, 300
RCWP5100..1C	RCWP-5100-102	1005	0.20	100	1 to 5.1	2, 5, 10	200, 300
					5.6 to 22M	1, 2, 5, 10	100, 200, 300
					5.62 to 10M	0.5	100, 200, 300



STANDARD ELECTRICAL SPECIFICATIONS							
GLOBAL MODEL	HISTORICAL MODEL	CASE SIZE	POWER RATING <sup>(1)</sup> <i>P</i> <sub>70 °C</sub> W	MAXIMUM WORKING VOLTAGE <sup>(2)</sup> V	RESISTANCE RANGE Ω	TOLERANCE ± %	TEMPERATURE COEFFICIENT ± ppm/°C
RCWP1206..1C	RCWP-1206-102	1206	0.25	100	1 to 5.1	2, 5, 10	200, 300
					5.6 to 22M	1, 2, 5, 10	100, 200, 300
					5.62 to 10M	0.5	100, 200, 300
RCWP5150..1C	RCWP-5150-102	1505	0.35	125	1 to 5.1	2, 5, 10	200, 300
					5.6 to 22M	1, 2, 5, 10	100, 200, 300
					5.62 to 10M	0.5	100, 200, 300
RCWP1100..1C	RCWP-1100-102	1010	0.50	100	1 to 5.1	2, 5, 10	200, 300
					5.6 to 22M	1, 2, 5, 10	100, 200, 300
					5.62 to 10M	0.5	100, 200, 300
RCWP1210..1C	RCWP-1210-102	1210	0.50	200	1 to 5.1	2, 5, 10	200, 300
					5.6 to 22M	1, 2, 5, 10	100, 200, 300
					5.62 to 10M	0.5	100, 200, 300
RCWP7225..1C	RCWP-7225-102	2208	0.60	200	1 to 5.1	2, 5, 10	200, 300
					5.6 to 22M	1, 2, 5, 10	100, 200, 300
					5.62 to 10M	0.5	100, 200, 300
RCWP2010..1C	RCWP-2010-102	2010	0.80	200	1 to 5.1	2, 5, 10	200, 300
					5.6 to 22M	1, 2, 5, 10	100, 200, 300
					5.62 to 10M	0.5	100, 200, 300
RCWP2512..1C	RCWP-2512-102	2512	1.0	200	1 to 5.1	2, 5, 10	200, 300
					5.6 to 22M	1, 2, 5, 10	100, 200, 300
					5.62 to 10M	0.5	100, 200, 300

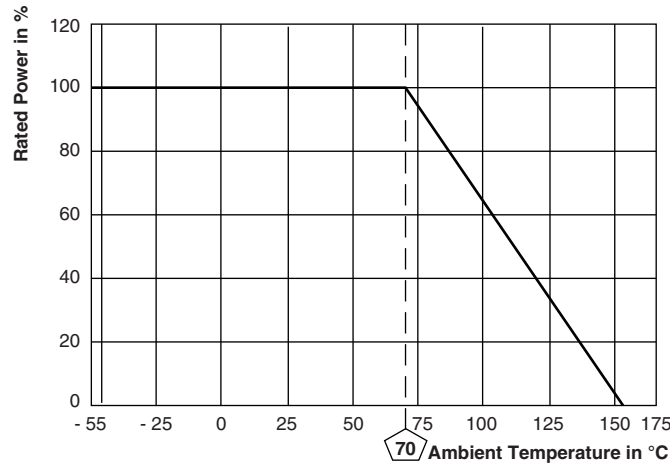
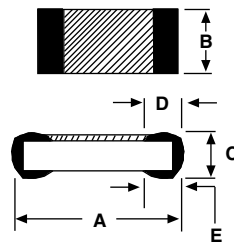
**Notes**

- Consult factory for extended resistance range
- <sup>(1)</sup> Power rating depends on the maximum temperature at the solder point, the component placement density and the substrate material
- <sup>(2)</sup> Continuous working voltage shall be  $\sqrt{P \times R}$  or maximum working voltage, whichever is less
- <sup>(3)</sup> MIL case size 0705 and EIA case size 0805 are dimensionally the same

GLOBAL PART NUMBER INFORMATION																	
New Global Part Numbering: RCWP510010K0GMWB1C (preferred part numbering format)																	
<b>R</b>	<b>C</b>	<b>W</b>	<b>P</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>K</b>	<b>0</b>	<b>G</b>	<b>M</b>	<b>W</b>	<b>B</b>	<b>1</b>	<b>C</b>
GLOBAL MODEL	RESISTANCE VALUE		TOLERANCE CODE		TEMPERATURE COEFFICIENT		PACKAGING CODE <sup>(1)</sup>					SPECIAL					
(see Standard Electrical Specifications table)	R = Ω K = kΩ M = MΩ 10R0 = 10 Ω 1K30 = 1.3 kΩ 1M00 = 1.0 MΩ 0000 = 0 Ω jumper		D = ± 0.5 % F = ± 1 % G = ± 2 % J = ± 5 % K = ± 10 % Z = 0 Ω jumper		K = 100 ppm N = 200 ppm M = 300 ppm S = special, 0 Ω jumper		<b>TP</b> = tin / lead, T/R, plastic tape (full reel; all except 0201 and 1210) <b>S3</b> = tin / lead, T/R, plastic tape (1000 pieces; all except 0201 and 1210) <b>WB</b> = tin / lead, waffle tray <b>S2</b> = tin / lead, T/R, plastic tape (500 pieces; all except 0201 and 1210) <b>S6</b> = tin / lead, T/R, plastic tape (300 pieces; all except 0201 and 1210) <b>UA</b> = tin / lead, T/R, paper tape (full reel; 0201 and 1210 only) <b>UD</b> = tin / lead, T/R, paper tape (1000 pieces; 0201 and 1210 only) <b>UC</b> = tin / lead, T/R, paper tape (500 pieces; 0201 and 1210 only) <b>UB</b> = tin / lead, T/R, paper tape (300 pieces; 0201 and 1210 only)  <b>EA</b> = lead (Pb)-free, T/R (full) <b>EB</b> = lead (Pb)-free, T/R (1000 pieces) <b>ET</b> = lead (Pb)-free, waffle tray <b>EC</b> = lead (Pb)-free, T/R (500 pieces) <b>ED</b> = lead (Pb)-free, T/R (300 pieces)					<b>1C</b> = non-magnetic (-102)					

**Notes**

- For additional information on packaging, refer to the Surface Mount Resistor Packaging document ([www.vishay.com/doc?31543](http://www.vishay.com/doc?31543))
- <sup>(1)</sup> Tape and reel packaging with plastic tape standard for all case sizes except 0201 and 1210. For the 0201 and 1210 case sizes, the product is only offered in tape and reel packaging with paper tape

**DERATING CURVE**

**DIMENSIONS** in inches (millimeters)


GLOBAL MODEL	A (LENGTH)	B (WIDTH)	C (HEIGHT)	D (TOP TERM)	E (BOTTOM TERM)
RCWP0201..1C	0.024 ± 0.002 (0.61 ± 0.05)	0.012 ± 0.002 (0.30 ± 0.05)	0.009 ± 0.002 (0.23 ± 0.05)	0.006 ± 0.003 (0.15 ± 0.08)	0.006 + 0.002 - 0.004 (0.15 + 0.05 - 0.10)
RCWP0302..1C	0.034 ± 0.004 (0.86 ± 0.10)	0.021 ± 0.003 (0.53 ± 0.08)	0.013 ± 0.003 (0.33 ± 0.08)	0.007 ± 0.005 (0.18 ± 0.13)	0.008 ± 0.005 (0.20 ± 0.13)
RCWP0402..1C	0.039 ± 0.003 (0.99 ± 0.08)	0.020 ± 0.003 (0.51 ± 0.08)	0.013 ± 0.003 (0.33 ± 0.08)	0.010 ± 0.005 (0.25 ± 0.13)	0.010 ± 0.005 (0.25 ± 0.13)
RCWP0502..1C	0.055 ± 0.005 (1.40 ± 0.13)	0.023 ± 0.003 (0.58 ± 0.08)	0.015 ± 0.003 (0.38 ± 0.08)	0.010 ± 0.005 (0.25 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCWP0540..1C	0.055 ± 0.005 (1.40 ± 0.13)	0.040 ± 0.005 (1.02 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.010 ± 0.005 (0.25 ± 0.13)	0.010 ± 0.005 (0.25 ± 0.13)
RCWP0550..1C	0.055 ± 0.005 (1.40 ± 0.13)	0.050 ± 0.005 (1.27 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.010 ± 0.005 (0.25 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCWP0575..1C	0.080 ± 0.005 (2.03 ± 0.13)	0.050 ± 0.005 (1.27 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.016 ± 0.008 (0.41 ± 0.20)	0.015 ± 0.005 (0.38 ± 0.13)
RCWP0603..1C	0.063 ± 0.005 (1.60 ± 0.13)	0.032 ± 0.005 (0.81 ± 0.13)	0.018 ± 0.005 (0.46 ± 0.13)	0.012 ± 0.005 (0.30 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCWP1100..1C	0.105 ± 0.005 (2.67 ± 0.13)	0.100 ± 0.005 (2.54 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCWP1206..1C	0.125 ± 0.005 (3.18 ± 0.13)	0.063 ± 0.005 (1.60 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCWP1210..1C	0.126 ± 0.008 (3.20 ± 0.20)	0.098 ± 0.008 (2.50 ± 0.20)	0.022 ± 0.002 (0.55 ± 0.05)	0.016 ± 0.008 (0.40 ± 0.20)	0.018 ± 0.008 (0.45 ± 0.20)
RCWP2010..1C	0.197 ± 0.006 (5.00 ± 0.15)	0.098 ± 0.005 (2.49 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)
RCWP2512..1C	0.250 ± 0.006 (6.35 ± 0.15)	0.124 ± 0.005 (3.15 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)
RCWP5100..1C	0.105 ± 0.005 (2.67 ± 0.13)	0.050 ± 0.005 (1.27 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCWP5150..1C	0.155 ± 0.005 (3.94 ± 0.13)	0.050 ± 0.005 (1.27 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)	0.015 ± 0.005 (0.38 ± 0.13)
RCWP7225..1C	0.230 ± 0.005 (5.84 ± 0.13)	0.075 ± 0.005 (1.91 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)	0.020 ± 0.005 (0.51 ± 0.13)



## **Disclaimer**

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

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 in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

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