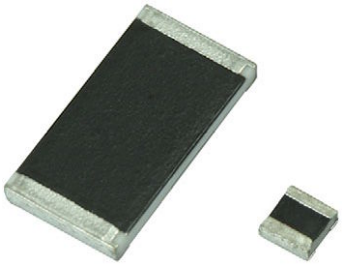
# Thick Film Chip Resistors, Non-Magnetic, Industrial / High Reliability



## 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

Pb Available

e3

RoHS* Available

HALOGEN FREE

**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

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

**STANDARD ELECTRICAL SPECIFICATIONS**

| GLOBAL MODEL | HISTORICAL MODEL | CASE SIZE | POWER RATING (1) $P_{70\,°C}$ W | MAXIMUM WORKING VOLTAGE (2) V | RESISTANCE RANGE Ω | TOLERANCE ± % | TEMPERATURE COEFFICIENT ± ppm/°C |
|---|---|---|---|---|---|---|---|
| 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 (3) | 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 |
| 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 |



For technical questions, contact: ff2aresistors@vishay.com

## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HISTORICAL MODEL | CASE SIZE | POWER RATING (1) $P_{70\,°C}$ W | MAXIMUM WORKING VOLTAGE (2) V | RESISTANCE RANGE Ω | TOLERANCE ± % | TEMPERATURE COEFFICIENT ± ppm/°C |
|---|---|---|---|---|---|---|---|
| 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

(1) Power rating depends on the maximum temperature at the solder point, the component placement density and the substrate material

(2) Continuous working voltage shall be $\sqrt{P \times R}$ or maximum working voltage, whichever is less

(3) 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)**

| R | C | W | P | 5 | 1 | 0 | 0 | 1 | 0 | K | 0 | G | M | W | B | 1 | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

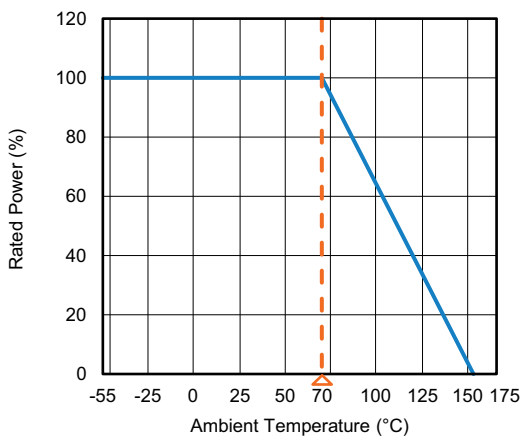
| GLOBAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | TEMPERATURE COEFFICIENT | PACKAGING CODE (1) | SPECIAL |
|---|---|---|---|---|---|
| (see Standard Electrical Specifications table) | R = Ω<br>K = kΩ<br>M = MΩ<br>**10R0** = 10 Ω<br>**1K30** = 1.3 kΩ<br>**1M00** = 1.0 MΩ<br>**0000** = 0 Ω jumper |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

**Notes**

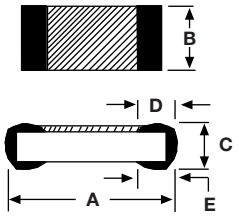
- For additional information on packaging, refer to the Surface Mount Resistor Packaging document (www.vishay.com/doc?31543)

(1) Tape and reel packaging with plastic tape standard for all case sizes except 1210. For the 1210 case size, 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) |
|---|---|---|---|---|---|
| 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) |

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