# Thick Film Chip Resistors, Industrial, Low Value

## FEATURES

HALOGEN FREE

- Manufactured to the DLA L&M/DSCC drawings for military low value chip resistor products
- Group A and B screening to MIL-PRF-55342
- Extremely low resistance values (0.0499 Ω to 0.999 Ω)
- Termination: tin/lead wraparound termination over nickel barrier
- Operating temperature range: -65 °C to +155 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | DLA L&M/DSCC DRAWING NUMBER | CASE SIZE | POWER RATING (1) $P_{70\,°C}$ W | MAXIMUM WORKING VOLTAGE (2) V | RESISTANCE RANGE Ω | TOLERANCE ± % | TEMPERATURE COEFFICIENT ± ppm/°C |
|---|---|---|---|---|---|---|---|
| RCWP0402..1A | 12012 | 0402 | 0.05 | 0.224 | 0.0499 to 0.196 | 1, 2, 5, 10 | 200, 300 |
| | | | | | 0.200 to 0.999 | 1, 2, 5, 10 | 100, 200, 300 |
| RCWP0502..1A | 12003 | 0502 | 0.05 | 0.224 | 0.0499 to 0.200 | 1, 2, 5, 10 | 200, 300 |
| | | | | | 0.205 to 0.999 | 1, 2, 5, 10 | 100, 200, 300 |
| RCWP0603..1A | 03022 | 0603 | 0.07 | 0.265 | 0.0499 to 0.100 | 1, 2, 5, 10 | 200, 300 |
| | | | | | 0.102 to 0.999 | 1, 2, 5, 10 | 100, 200, 300 |
| RCWP0550..1A | 12004 | 0505 | 0.125 | 0.354 | 0.0499 to 0.0976 | 1, 2, 5, 10 | 200, 300 |
| | | | | | 0.100 to 0.999 | 1, 2, 5, 10 | 100, 200, 300 |
| RCWP0575..1A | 12008 | 0705 (3) | 0.15 | 0.388 | 0.0499 to 0.999 | 1, 2, 5, 10 | 100, 200, 300 |
| RCWP5100..1A | 12005 | 1005 | 0.20 | 0.448 | 0.0499 to 0.999 | 1, 2, 5, 10 | 100, 200, 300 |
| RCWP1206..1A | 02010 | 1206 | 0.25 | 0.50 | 0.0499 to 0.999 | 1, 2, 5, 10 | 100, 200, 300 |
| RCWP5150..1A | 12006 | 1505 | 0.15 | 0.388 | 0.0499 to 0.999 | 1, 2, 5, 10 | 100, 200, 300 |
| RCWP1100..1A | 12011 | 1010 | 0.50 | 0.708 | 0.0499 to 0.999 | 1, 2, 5, 10 | 100, 200, 300 |
| RCWP7225..1A | 12007 | 2208 | 0.225 | 0.475 | 0.0499 to 0.999 | 1, 2, 5, 10 | 100, 200, 300 |
| RCWP2010..1A | 12009 | 2010 | 0.80 | 0.895 | 0.0499 to 0.999 | 1, 2, 5, 10 | 100, 200, 300 |
| RCWP2512..1A | 12010 | 2512 | 1.0 | 1.0 | 0.0499 to 0.999 | 1, 2, 5, 10 | 100, 200, 300 |

**Notes**

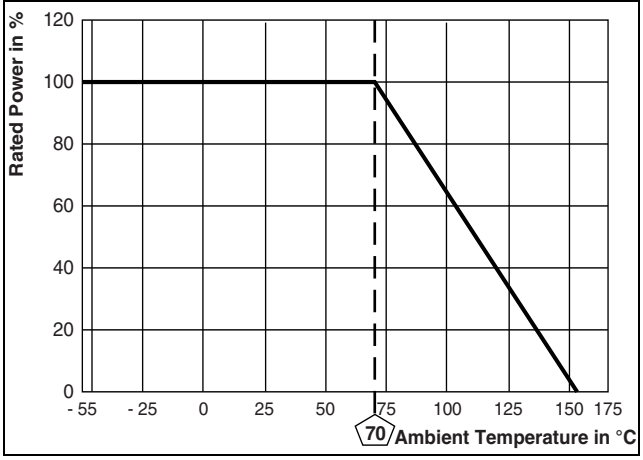
- These drawings can be viewed at: www.landandmaritime.dla.mil/Programs/MilSpec/ListDwgs.aspx?DocTYPE=DSCCdwg

(1) Power rating depends on max. temperature at the solder joint, 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

## DERATING CURVE




## MATERIAL SPECIFICATIONS

| | |
|---|---|
| Resistive element | Ruthenium oxide |
| Encapsulation | Epoxy |
| Substrate | 96 % alumina |
| Termination | Solder-coated nickel barrier |
| Solder finish | Tin / lead solder alloy |

## GLOBAL PART NUMBER INFORMATION

**Global Part Numbering: RCWP0502R100FKWB1A (preferred part numbering format)**

| R | C | W | P | 0 | 5 | 0 | 2 | R | 1 | 0 | 0 | F | K | W | B | 1 | A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| GLOBAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | TEMPERATURE COEFFICIENT | PACKAGING CODE | SPECIAL |
|---|---|---|---|---|---|
| (see Standard Electrical Specifications table) | **L** = mΩ (1)<br>**R** = Ω<br>**R249** = 0.249 Ω<br>**33L2** = 0.0332 Ω<br>**97L6** = 0.0976 Ω | **F** = ± 1 %<br>**G** = ± 2 %<br>**J** = ± 5 %<br>**K** = ± 10 % | **K** = 100 ppm<br>**N** = 200 ppm<br>**M** = 300 ppm | **TP** = tin / lead, T/R (full)<br>**S3** = tin / lead, T/R (1000 pieces)<br>**WB** = tin / lead, waffle tray<br>**S2** = tin / lead, T/R (500 pieces)<br>**S6** = tin / lead, T/R (300 pieces) | (dash number)<br>**1A** = low value (- 100) |

**DLA L&M/DSCC Part Numbering: 12003-KR1000FB**

| 1 | 2 | 0 | 0 | 3 | - | K | R | 1 | 0 | 0 | 0 | F | B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

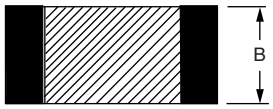
| DRAWING NUMBER | CHARACTERISTIC | RESISTANCE VALUE | TOLERANCE CODE | TERMINATION MATERIAL |
|---|---|---|---|---|
| (see Standard Electrical Specifications table) | **K** = 100 ppm<br>**L** = 200 ppm<br>**M** = 300 ppm | **R** = Ω<br>**R2490** = 0.249 Ω<br>**R0332** = 0.0332 Ω<br>**R0976** = 0.0976 Ω | **F** = ± 1 %<br>**G** = ± 2 %<br>**J** = ± 5 %<br>**K** = ± 10 % | **B** = pre-tinned nickel barrier, wraparound |

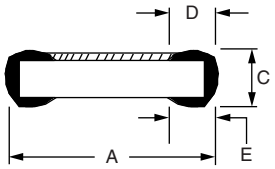
**Notes**

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

(1) Use "L" for resistance values < 0.1 Ω

## DIMENSIONS in inches (millimeters)




| GLOBAL MODEL | A (LENGTH) | B (WIDTH) | C (HEIGHT) | D (TOP TERM) | E (BOTTOM TERM) |
|---|---|---|---|---|---|
| RCWP0402..1A | 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..1A | 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) |
| RCWP0550..1A | 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..1A | 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..1A | 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..1A | 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..1A | 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) |
| RCWP2010..1A | 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..1A | 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..1A | 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..1A | 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..1A | 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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