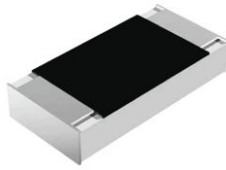


## Standard Thick Film Chip Resistors



### FEATURES

- Very small standard size (0.4 mm x 0.2 mm)
- Low tolerance (1 %)
- Material categorization:  
For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



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| STANDARD ELECTRICAL SPECIFICATIONS  |                       |                     |                               |  |                                     |                |                                 |          |
|---|-----------------------|---------------------|-------------------------------|--|-------------------------------------|----------------|---------------------------------|----------|
| TYPE  | CASE SIZE<br>IMPERIAL | CASE SIZE<br>METRIC | POWER RATING<br>$P_{70}$<br>W | LIMITING<br>ELEMENT<br>VOLTAGE<br>$U_{max.}$<br>AC <sub>RMS</sub> /DC<br>V | TEMPERATURE<br>COEFFICIENT<br>ppm/K | TOLERANCE<br>% | RESISTANCE<br>RANGE<br>$\Omega$ | SERIES   |
| CRCW01005   | 01005                 | RR0402M             | 0.031                         | 15   | ± 250                               | ± 1            | 10.0 to 1M                      | E24; E96 |
|   |                       |                     |                               |  |                                     | ± 2, ± 5       |                                 | E24      |
|   |                       |                     |                               |  | -200/+600                           | ± 1            | 1.0 to 9.76                     | E24; E96 |
|   |                       |                     |                               |  |                                     | ± 2, ± 5       | 1.0 to 9.1                      | E24      |
| Zero-Ohm-Resistor: $R_{max.} = 50 \text{ m}\Omega$ , $I_{max.} = 0.5 \text{ A}$ |                       |                     |                               |  |                                     |                |                                 |          |

### Notes

- These resistors do not feature a limited lifetime when operated within the permissible limits. However, resistance value drift increasing over operating time may result in exceeding a limit acceptable to the specific application, thereby establishing a functional lifetime.
- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material.

| TECHNICAL SPECIFICATIONS                           |          |                   |
|--|----------|-------------------|
| PARAMETER  | UNIT     | CRCW01005         |
| Rated Dissipation $P_{70}$ <sup>(1)</sup>          | W        | 0.031             |
| Operating Voltage $U_{max.}$ AC <sub>RMS</sub> /DC | V        | 15                |
| Insulation Voltage $U_{ins}$ (1 min)               | V        | 30                |
| Insulation Resistance                              | $\Omega$ | > 10 <sup>9</sup> |
| Operating Temperature Range                        | °C       | -55 to +125       |
| Mass   | mg       | 0.07              |

### Note

- <sup>(1)</sup> The power dissipation on the resistor generates a temperature rise against the local ambient, depending on the heat flow support of the printed-circuit board (thermal resistance). The rated dissipation applies only if the permitted film temperature of 125 °C is not exceeded.





| TEST PROCEDURES AND REQUIREMENTS |                                  |  |   |  |
|----------------------------------|----------------------------------|--|---|--|
| EN 60115-1<br>CLAUSE             | IEC<br>60068-2<br>TEST<br>METHOD | TEST                                       | PROCEDURE   | REQUIREMENTS<br>PERMISSIBLE CHANGE ( $\Delta R$ )                                      |
|                                  |                                  |  | STABILITY CLASS 1 OR BETTER   |  |
|                                  |                                  |  | CRCW01005 e3  |  |
| 4.5                              | -                                | Resistance                                 | -   | $1 \Omega$ to $1 M\Omega$<br>$\pm 1 \%$ ; $\pm 2 \%$ ; $\pm 5 \%$                      |
| 4.13                             | -                                | Short time overload                        | $U = 2.5 \times \sqrt{P_{70} \times R} \leq 2 \times U_{max.}$ ;<br>duration according to style     | $\pm (2 \% R + 0.1 \Omega)$  |
| 4.17.2                           | 58 (Td)                          | Solderability                              | Solder bath method;<br>Sn60Pb40<br>non activated flux;<br>(235 $\pm$ 5) °C<br>(2 $\pm$ 0.2) s       | Good tinning ( $\geq 95 \%$ covered)<br>no visible damage                              |
|                                  |                                  |  | Solder bath method;<br>Sn96.5Ag3Cu0.5<br>non-activated flux;<br>(235 $\pm$ 3) °C<br>(2 $\pm$ 0.5) s | Good tinning ( $\geq 95 \%$ covered)<br>no visible damage                              |
| 4.8.4.2                          | -                                | Temperature coefficient                    | (20/-55/20) °C and<br>(20/125/20) °C  | - 200 ppm/K/+600 ppm/K,<br>$\pm 250$ ppm/K   |
| 4.33                             | 21 (Uu <sub>1</sub> )            | Substrate bending                          | Depth 3 mm; 1 time  | No visible damage,<br>no open circuit in bent position<br>$\pm (1 \% R + 0.05 \Omega)$ |
| 4.19                             | 14 (Na)                          | Rapid change<br>of temperature             | 15 min. at -55 °C;<br>15 min. at 125 °C;<br>300 cycles  | $\pm (2 \% R + 0.1 \Omega)$  |
| 4.25.1                           | -                                | Endurance at 70 °C                         | $U = \sqrt{P_{70} \times R} \leq U_{max.}$ ;<br>1.5 h on; 0.5 h off;<br>70 °C; 1000 h               | $\pm (5 \% R + 0.1 \Omega)$  |
| 4.18.2                           | 58 (Td)                          | Resistance to<br>soldering heat            | Solder bath method<br>(260 $\pm$ 5) °C; (10 $\pm$ 1) s  | $\pm (2 \% R + 0.1 \Omega)$  |
| 4.24                             | 78 (Cab)                         | Damp heat, steady state                    | (40 $\pm$ 2) °C; (90 to 95) % RH;<br>1000 h   | $\pm (5 \% R + 0.1 \Omega)$  |
| 4.25.3                           | -                                | Endurance at upper<br>category temperature | 125 °C, 1000 h  | $\pm (2 \% R + 0.1 \Omega)$  |
| 4.29                             | 45 (XA)                          | Component<br>solvent resistance            | Isopropyl alcohol;<br>(20 to 25) °C; (5 $\pm$ 0.5) min  | No visible damage  |

All tests are carried out in accordance with the following specifications:

- EN 60115-1, generic specification
- EN 140400, sectional specification
- EN 140401-802, detail specification
- IEC 60068-2-x, environmental test procedures

Packaging of components is done in paper tapes according to IEC 60286-3.



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