# Thick Film Surface Mount Chip Resistors, Current Sensor, 4-Terminal 

## FEATURES



- 4-Terminal design allows extremely low resistance value ( $0.01 \Omega$ ) with tight tolerance (1 \%)
- High power to foot print size ratio
- Suitable for current sensing in power supplies and other applications
- Metal glaze on high quality ceramic
- Protective overglaze
- Lead (Pb)-free solder contacts on Ni barrier layer
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | CASE SIZE | POWER RATING <br> $\boldsymbol{P}_{70}{ }^{\circ} \mathrm{C}$ <br> $\mathbf{W}$ | TEMPERATURE <br> COEFFIIIENT <br> $\pm \mathbf{p p m} /{ }^{\circ} \mathbf{C}$ | RESISTANCE RANGE <br> $\Omega$ | TOLERANCE <br> $\pm \%$ |
| :--- | :---: | :---: | :---: | :---: | :---: |
| RCWK0306 | 0306 | 0.33 | 300 | 0.01 to 0.1 | 1.0 |

## Notes

- Power rating depends on the max. temperature at the solder point, the component placement density and the substrate material
- Part marking: reference "Surface Mount Resistor Marking" (www.vishay.com/doc?20020)
${ }^{(1)}$ Use E24 decade values for 5.0 \% and 1.0 \% tolerance parts and E96 decade values for $0.5 \%$ and $1.0 \%$. Refer to Standard Decade Table (www.vishay.com/doc?31001)


## GLOBAL PART NUMBER INFORMATION

Global Part Numbering example: RCWK030610LOFMEA (visit www.vishay.net Vishay Dale parts numbering manual for all options)


Note
${ }^{(1)}$ Use "L" for resistance values $<0.1 \Omega$

| TECHNICAL SPECIFICATIONS |  |  |
| :--- | :---: | :---: |
| PARAMETER | UNIT | RCWK0306 |
| Operating temperature range | ${ }^{\circ} \mathrm{C}$ | -55 to +155 |
| Maximum operating voltage | V | $(\mathrm{P} \times \mathrm{R})^{1 / 2}$ |
| Insulation voltage $U_{\text {ins }}(1$ min.) | V | $>100$ |
| Insulation resistance | $\Omega$ | $>10^{9}$ |
| Weight/1000 pieces (typical) | g | 3 |

DIMENSIONS in millimeters


| MODEL | $\mathbf{L}$ | $\mathbf{W}$ | $\mathbf{H}$ | B1 | B2 | B3 | B4 | B5 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| RCWK0306 | $0.85 \pm 0.1$ | $1.5 \pm 0.1$ | $0.45 \pm 0.1$ | $0.9 \pm 0.2$ | 0.3 (Ref.) | $0.3 \pm 0.1$ | $0.28 \pm 0.1$ | $0.3 \pm 0.2$ |

## SOLDER PAD DIMENSIONS in millimeters



- Surface-mount solder profile recommendations: www.vishay.com/doc?31052

| MODEL | $\mathbf{l}$ | $\mathbf{w}$ | b1 | b2 | b3 | b4 | b5 |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| RCWK0306 | 1.34 | 1.64 | 0.97 | 0.25 | 0.42 | 0.3 | 0.2 |

## DERATING



| PERFORMANCE |  |  |
| :---: | :---: | :---: |
| TEST | CONDITIONS OF TEST | TEST LIMITS |
| Thermal shock | MIL-STD-202, method $107,-55^{\circ} \mathrm{C}$ to $+125^{\circ} \mathrm{C}, 15 \mathrm{~min}$ at each extreme, 300 cycles | $\pm(1.0 \%+0.0005 \Omega)$ |
| Short time overload | $2.5 \times$ rated power; 5 s | $\pm(0.5 \%+0.0005 \Omega)$ |
| High temperature exposure | MIL-STD-202, method 108, 1000 h at $\mathrm{T}=155^{\circ} \mathrm{C}, 0 \%$ power | $\pm(2.0 \%+0.0005 \Omega)$ |
| Temperature cycling | JESD 22, method JA-104, 1000 cycles ( $-55^{\circ} \mathrm{C}$ to $+125^{\circ} \mathrm{C}$ ) | $\pm(2.0 \%+0.0005 \Omega)$ |
| Biased humidity | MIL-STD-202, method 103, $1000 \mathrm{~h} 85^{\circ} \mathrm{C} / 85 \% \mathrm{RH}, 10 \% \times(P \times R)^{1 / 2}$ | $\pm(2.0 \%+0.0005 \Omega)$ |
| Mechanical shock | MIL-STD-202, method 213, condition C, 10 g 's, 6 ms (half sine), 3 directions | $\pm(1.0 \%+0.0005 \Omega)$ |
| Vibration | MIL-STD-202, method 204, 5 g's, 20 min, 12 cycles, 3 directions, 10 Hz to 2000 Hz | $\pm(1.0 \%+0.0005 \Omega)$ |
| Operational life | MIL-STD-202, method 108, 1000 h at T $=125^{\circ} \mathrm{C}$ at rated power | $\pm(2.0 \%+0.0005 \Omega)$ |
| Resistance to solder heat | MIL-STD-202, method $210,+260^{\circ} \mathrm{C}$ solder, 10 s to 12 s dwell, $25 \mathrm{~mm} / \mathrm{s}$ emergence | $\pm(1.0 \%+0.0005 \Omega)$ |
| Moisture resistance | MIL-STD-202, method 106, 0 \% power, 7a and 7b not required | $\pm(2.0 \%+0.0005 \Omega)$ |


| PACKAGING |  |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| MODEL | TAPE WIDTH | DIAMETER | PITCH | PIECES/REEL | CODE |  |
|  | RCWK0306 | $8 \mathrm{~mm} /$ punched paper | $180 \mathrm{~mm} / 7^{\prime \prime}$ | 4 mm | 5000 |  |

## Notes

- Embossed carrier tape per EIA-481-1A
- Additional packaging details at: www.vishay.com/doc?31543


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