

## Thin Film 0510 Size Resistor on Alumina



Product may not be to scale

The CC4- series single-value resistor chips offer increased power in larger size, low shunt capacitance and solder pad option. The CC4- nichrome resistors material offers excellent stability.

The CC4- resistors are manufactured using Vishay Electro-Films (EFI) sophisticated thin film equipment and manufacturing technology. The CC4- resistors are 100 % electrically tested and visually inspected to MIL-STD-883, method 2032 class H or K.

### FEATURES

- Wire bondable
- Chip size: 0.050" x 0.100"
- Case: 0510
- Resistance range: 50  $\Omega$  to 400 k $\Omega$
- Alumina substrate
- Low stray capacitance: < 0.2 pF
- Resistor material: Nichrome
- Resistor passivation coat optional
- Tolerances to 0.05 %
- Solder pad optional
- 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

### APPLICATIONS

Vishay EFI CC4- chip resistors provide excellent high-frequency response and are ideally suited for prototyping. Typical application areas are:

- Amplifiers
- Oscillators
- Attenuators
- Couplers
- Filters

Recommended for hermetic environments where die is not exposed to moisture.



Pb-free  
Available

**RoHS\***  
Available

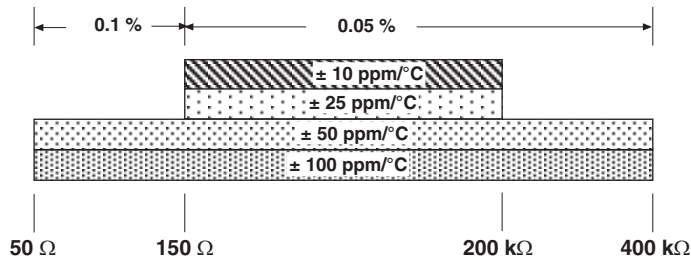
**HALOGEN**  
**FREE**  
Available

**GREEN**  
(5-2008)  
Available

### TEMPERATURE COEFFICIENT OF RESISTANCE, VALUES, AND TOLERANCES

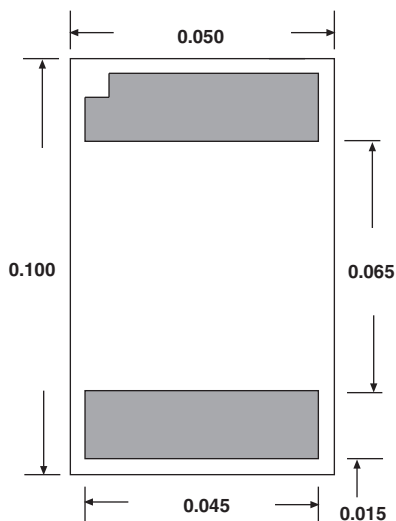
| PARAMETER        | VALUE                                      | UNIT              |
|------------------|--------------------------------------------|-------------------|
| Resistance range | 50 to 400K                                 | $\Omega$          |
| Tolerances       | $\pm 0.05$ , $\pm 0.1$                     | %                 |
| TCR              | $\pm 10$ , $\pm 25$ , $\pm 50$ , $\pm 100$ | ppm/ $^{\circ}$ C |

Tightest Standard Tolerance Available



### STANDARD ELECTRICAL SPECIFICATIONS

| PARAMETER                                                                   | VALUE                        | UNIT         |
|-----------------------------------------------------------------------------|------------------------------|--------------|
| Noise, MIL-STD-202, method 308                                              | -20 typ.                     | dB           |
| Moisture resistance, MIL-STD-202, method 106 - hermetic applications        | $\pm 0.2$ max. $\Delta R/R$  | %            |
| Stability, 1000 h, +125 $^{\circ}$ C, 175 mW                                | $\pm 0.1$ max. $\Delta R/R$  | %            |
| Operating temperature range                                                 | -55 to +125                  | $^{\circ}$ C |
| Thermal shock, MIL-STD-202, method 107, test condition F                    | $\pm 0.25$ max. $\Delta R/R$ | %            |
| High temperature exposure, +150 $^{\circ}$ C, 100 h                         | $\pm 0.1$ max. $\Delta R/R$  | %            |
| Dielectric voltage breakdown                                                | 400                          | V            |
| Insulation resistance                                                       | $10^{12}$ min.               | $\Omega$     |
| Operating voltage                                                           | 100 max.                     | V            |
| DC power rating at +125 $^{\circ}$ C (derated to zero at +150 $^{\circ}$ C) | 0.175 max.                   | W            |
| 5 x rated power short-time overload, +25 $^{\circ}$ C, 5 s                  | $\pm 0.25$ max. $\Delta R/R$ | %            |

**DIMENSIONS** in inches

**SCHEMATIC**

**MECHANICAL SPECIFICATIONS**

| PARAMETER               |                                                           |
|-------------------------|-----------------------------------------------------------|
| Chip size               | 0.050" x 0.100" $\pm$ 0.003" (1.27 mm x 2.54 $\pm$ 0.076) |
| Chip thickness          | 0.010" $\pm$ 0.002" (0.254 mm $\pm$ 0.05)                 |
| Chip substrate material | 99.6 % alumina, 2 to 4 microinch finish                   |
| Resistor material       | Nichrome                                                  |
| Bonding pad size        | 0.015" x 0.045" (0.381 mm x 1.143 mm) minimum             |
| Number of pads          | 2                                                         |
| Pad material            | 25 kÅ minimum gold standard                               |
| Backing                 | None                                                      |

**GLOBAL PART NUMBER INFORMATION**

Global Part Number: **CC4-12500KKSSNHWS**

Global Part Number Description: **CC4 1.25K 10 %, 100 ppm/°C, Std, SnPb, None, H, WS**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C | C | 4 | - | 1 | 2 | 5 | 0 | 0 | K | K | S | S | N | H | W | S |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| MODEL                                           | RESISTANCE                                           | RESISTANCE MULTIPLIER CODE                                                           | TOL. CODE (%)                                                                                                                                   | TCR (ppm/°C)                                                       | TRIM STYLE                                         | TERMINATION                                                                         | BACK METAL                       | VISUAL CLASS                             | PACKAGING CODE                                                                           |
|-------------------------------------------------|------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------|------------------------------------------|------------------------------------------------------------------------------------------|
| <b>CC4-</b><br>50 x 100 size<br>NiCr on alumina | First 4 digits are significant figures of resistance | <b>B</b> = 0.01<br><b>A</b> = 0.1<br><b>0</b> = 1<br><b>1</b> = 10<br><b>2</b> = 100 | <b>A</b> = 0.05<br><b>B</b> = 0.1<br><b>C</b> = 0.25<br><b>D</b> = 0.5<br><b>F</b> = 1.0<br><b>G</b> = 2.0<br><b>J</b> = 5.0<br><b>K</b> = 10.0 | <b>E</b> = $\pm$ 25<br><b>C</b> = $\pm$ 50<br><b>K</b> = $\pm$ 100 | <b>E</b> = edg<br><b>S</b> = std<br><b>U</b> = usr | <b>G</b> = Au<br><b>S</b> = SnPb<br><b>A</b> = Al<br><b>T</b> = lead (Pb)-free (e1) | <b>G</b> = Au<br><b>N</b> = none | <b>H</b> = class H<br><b>K</b> = class K | <b>WS</b> = waffle pack 100 min., 1 mult.<br><b>TS</b> = tape and reel 100 min., 1 mult. |



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