

# Metal Film Resistors, Industrial, $\pm 1\%$ and $\pm 5\%$ Tolerance



## FEATURES

- 0.33 W power rating
- $\pm 100$  ppm/ $^{\circ}\text{C}$  standard,  $\pm 50$  ppm/ $^{\circ}\text{C}$  available upon request
- Superior electrical performance
- Flame retardant epoxy conformal coating
- Standard 4 or 5 band color code marking for ease of identification after mounting
- Tape and reel packaging for automatic insertion (52.4 mm inside tape spacing per EIA-296-E)
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS\***  
COMPLIANT

## Note

\* Lead (Pb)-containing terminations are not RoHS-compliant. Exemptions may apply.

## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HISTORICAL MODEL | POWER RATING<br>$P_{70^{\circ}\text{C}}$<br>W | MAXIMUM WORKING VOLTAGE<br>V <sup>(2)</sup> | TEMPERATURE COEFF. <sup>(1)</sup><br>$\pm$ ppm/ $^{\circ}\text{C}$ | TOLERANCE<br>$\pm$ % | RESISTANCE RANGE<br>$\Omega$ | E-SERIES                 |
|--------------|------------------|-----------------------------------------------|---------------------------------------------|--------------------------------------------------------------------|----------------------|------------------------------|--------------------------|
| CCF50        | CCF-50           | 0.33                                          | 200                                         | 100                                                                | 1, 5                 | 10 to 1M                     | 96 for 1 %<br>24 for 5 % |

## Notes

<sup>(1)</sup> 50 ppm/ $^{\circ}\text{C}$  on request

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

## TECHNICAL SPECIFICATIONS

| PARAMETER                                  | UNIT               | CCF50          |
|--------------------------------------------|--------------------|----------------|
| Rated Dissipation at 70 $^{\circ}\text{C}$ | W                  | 0.33           |
| Maximum Working Voltage                    | V                  | $\leq 200$     |
| Insulation Voltage (1 Min)                 | $V_{\text{eff}}$   | $> 500$        |
| Dielectric Strength                        | $V_{\text{AC}}$    | 450            |
| Insulation Resistance                      | $\Omega$           | $\geq 10^{11}$ |
| Operating Temperature Range                | $^{\circ}\text{C}$ | - 65 to + 165  |
| Weight                                     | g                  | 0.11 max.      |

## GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: CCF50301RFKR36 (preferred part numbering format)

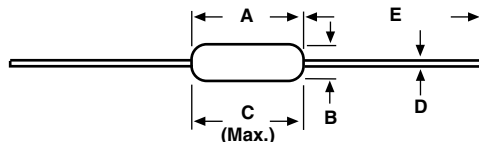
|              |   |                                                                                                                          |   |   |   |                                |   |                           |   |                                                                                        |   |   |                                                                                         |  |  |  |
|--------------|---|--------------------------------------------------------------------------------------------------------------------------|---|---|---|--------------------------------|---|---------------------------|---|----------------------------------------------------------------------------------------|---|---|-----------------------------------------------------------------------------------------|--|--|--|
| C            | C | F                                                                                                                        | 5 | 0 | 3 | 0                              | 1 | R                         | F | K                                                                                      | R | 3 | 6                                                                                       |  |  |  |
| GLOBAL MODEL |   | RESISTANCE VALUE                                                                                                         |   |   |   | TOLERANCE CODE                 |   | TEMPERATURE COEFFICIENT   |   | PACKAGING                                                                              |   |   | SPECIAL                                                                                 |  |  |  |
| CCF50        |   | R = $\Omega$<br>K = k $\Omega$<br>M = M $\Omega$<br>10R0 = 10 $\Omega$<br>680K = 680 k $\Omega$<br>1M00 = 1.0 M $\Omega$ |   |   |   | F = $\pm 1\%$<br>J = $\pm 5\%$ |   | H = 50 ppm<br>K = 100 ppm |   | E36 = Lead (Pb)-free,<br>T/R (5000 pieces)<br><br>R36 = Tin/Lead,<br>T/R (5000 pieces) |   |   | Blank = Standard<br>(Dash Number)<br>(up to 3 digits)<br>From 1 to 999<br>as applicable |  |  |  |

Historical Part Number example: CCF-503010F (will continue to be accepted)

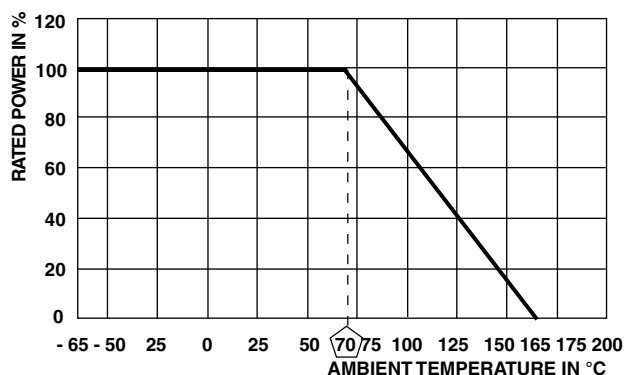
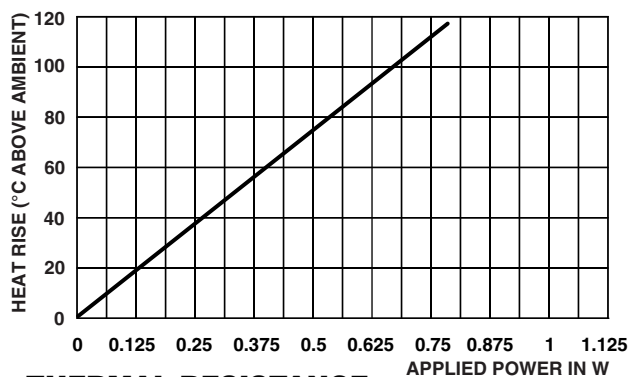
|                  |                  |                |           |
|------------------|------------------|----------------|-----------|
| CCF-50           | 3010             | F              | R36       |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

## Note

- For additional information on packaging, refer to the Through-Hole Resistor Packaging document ([www.vishay.com/doc?31544](http://www.vishay.com/doc?31544)).

**DIMENSIONS** in inches (millimeters)


| DIMENSION | INCHES            | MILLIMETERS        |
|-----------|-------------------|--------------------|
| A         | $0.133 \pm 0.010$ | $(3.3 \pm 0.025)$  |
| B         | $0.062 \pm 0.004$ | $(1.57 \pm 0.10)$  |
| C (Max.)  | 0.143             | (3.63)             |
| D         | $0.020 \pm 0.002$ | $(0.51 \pm 0.05)$  |
| E         | $1.125 \pm 0.040$ | $(28.58 \pm 1.02)$ |


**DERATING**

**THERMAL RESISTANCE**
**MARKING**

Color code marking with 5 color bands for  $\pm 1\%$  product and 4 color bands for  $\pm 5\%$  product

**PERFORMANCE**

| TEST <sup>(1)</sup>             | MAXIMUM $\Delta R$ (TYPICAL TEST LOTS) |
|---------------------------------|----------------------------------------|
| Thermal Shock                   | $\pm 0.1\%$                            |
| Short Time Overload             | $\pm 0.1\%$                            |
| Low Temperature Operation       | $\pm 0.1\%$                            |
| Moisture Resistance             | $\pm 0.2\%$                            |
| Resistance to Soldering Heat    | $\pm 0.05\%$                           |
| Shock                           | $\pm 0.1\%$                            |
| Vibration                       | $\pm 0.05\%$                           |
| Life                            | $\pm 0.5\%$                            |
| Terminal Strength               | $\pm 0.1\%$                            |
| Dielectric Withstanding Voltage | $\pm 0.05\%$                           |

**Note**

<sup>(1)</sup> Tests per MIL-R-10509



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