# Metal Film Resistors, Industrial, ± 1 % and ± 5 % Tolerance

## FEATURES

- 0.33 W power rating
- ± 100 ppm/°C standard, ± 50 ppm/°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

Pb-free Available

e3

RoHS* COMPLIANT

**Note**

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

## STANDARD ELECTRICAL SPECIFICATIONS

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

**Notes**

(1) 50 ppm/°C on request

(2) 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 °C | W | 0.33 |
| Maximum Working Voltage | V | ≤ 200 |
| Insulation Voltage (1 Min) | $V_{eff}$ | > 500 |
| Dielectric Strength | $V_{AC}$ | 450 |
| Insulation Resistance | Ω | ≥ $10^{11}$ |
| Operating Temperature Range | °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** = Ω<br>**K** = kΩ<br>**M** = MΩ<br>**10R0** = 10 Ω<br>**680K** = 680 kΩ<br>**1M00** = 1.0 MΩ | **F** = ± 1 %<br>**J** = ± 5 % | **H** = 50 ppm<br>**K** = 100 ppm | **E36** = Lead (Pb)-free, T/R (5000 pieces)<br>**R36** = Tin/Lead, T/R (5000 pieces) | Blank = Standard (Dash Number) (up to 3 digits) From **1 to 999** as applicable |

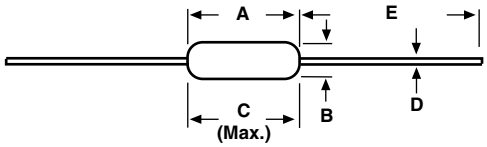
**Historical Part Number example: CCF-503010F (will continue to be accepted)**

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

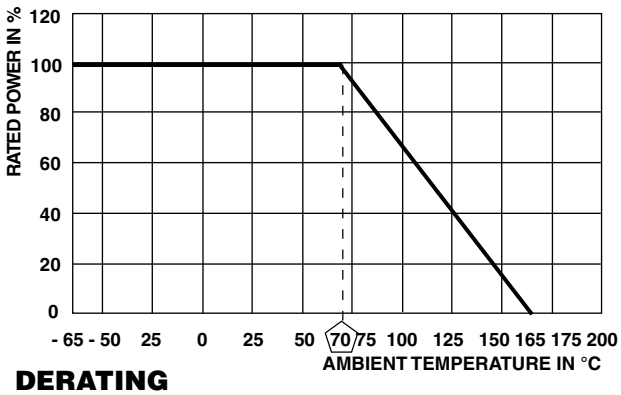
**Note**

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

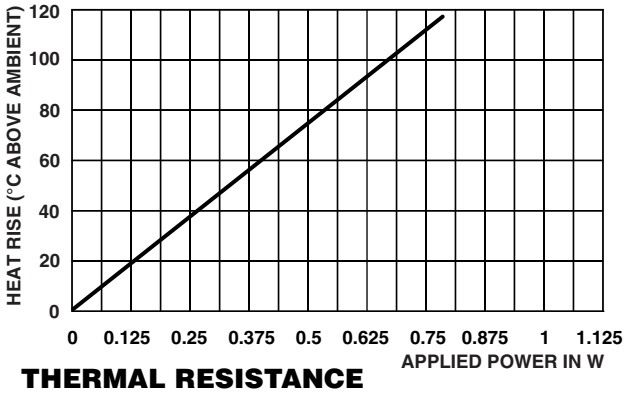
**DIMENSIONS** in inches (millimeters)




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




**DERATING**




**THERMAL RESISTANCE**

## MARKING

Color code marking with 5 color bands for ± 1 % product and 4 color bands for ± 5 % product

## PERFORMANCE

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

**Note**

[1] Tests per MIL-R-10509

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