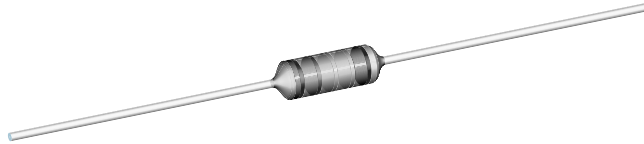


Metal Film Resistors, Industrial Power, Flameproof



FEATURES

- Small size suitable for 1/2, 1 & 2 watt applications
- High power rating, small size
- Flameproof, high temperature coating meets EIA RS-325-A
- Excellent high frequency characteristics
- Low noise
- Low voltage coefficient
- Tape and reel packaging for automatic insertion (52.4 mm inside tape spacing per EIA-296-E)
- Lead (Pb)-free version is RoHS Compliant



RoHS*
COMPLIANT

| STANDARD ELECTRICAL SPECIFICATIONS | | | | | | | |
|------------------------------------|------------------|---|---|---------------------------------------|--------------------|----------------------------------|--|
| GLOBAL MODEL | HISTORICAL MODEL | POWER RATING $P_{70\text{ }^\circ\text{C}}$ W | LIMITING ELEMENT VOLTAGE MAX. $V \cong$ | TEMPERATURE COEFFICIENT ppm/°C | TOLERANCE % | RESISTANCE RANGE Ω | E-SERIES |
| CCF02 | CCF-2 | 2.0 | 350 | 100 | $\pm 1, \pm 5$ | 4R99 - 1M | 96 for 1 % tolerance 24 for 5 % tolerance |

| TECHNICAL SPECIFICATIONS | | |
|-------------------------------|--------------------|----------------|
| PARAMETER | UNIT | CCF02 |
| Rated Dissipation at 70 °C | W | 2.0 |
| Maximum Working Voltage | $V \cong$ | ≤ 350 |
| Insulation Voltage (1 min) | V_{eff} | > 500 |
| Dielectric Strength | VAC | 900 |
| Insulation Resistance | Ω | $\geq 10^{11}$ |
| Operating Temperature Range | °C | - 65 / + 230 |
| Terminal Strength (pull test) | lb | 2 |
| Failure Rate | $10^{-9}/\text{h}$ | < 1 |
| Weight (max) | g | 0.35 |

| MATERIAL SPECIFICATIONS | |
|-------------------------|---|
| Element: | Proprietary nickel-chrome film |
| Solderability: | Satisfactory per MIL-STD-202, Method 208. |
| Core: | Fire-cleaned high purity ceramic |
| Termination: | Standard lead material is solder-coated copper. Solderable and weldable per MIL-STD-1276, Type C. |

| MARKING |
|----------------------------------|
| - 5 band colorband for $\pm 1\%$ |
| - 4 band colorband for $\pm 5\%$ |

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: CCF02301RFKR36 (preferred part numbering format)

| | | | | | | | | | | | | | | | | |
|--------------|---|--|---|---|---|--------------------------------|---|---|-------------------------|---|---|---|---|--|--|--|
| C | C | F | 0 | 2 | 3 | 0 | 1 | R | F | K | R | 3 | 6 | | | |
| GLOBAL MODEL | | RESISTANCE VALUE | | | | TOLERANCE CODE | | | TEMPERATURE COEFFICIENT | | PACKAGING | | | SPECIAL | | |
| CCF02 | | R = Decimal K = Thousand M = Million 4R99 = 4.99 Ω 680K = 680 k Ω 1M00 = 1.0 M Ω | | | | F = $\pm 1\%$ J = $\pm 5\%$ | | | K = 100 ppm | | E36 = Lead Free, T/R (2500 pcs) R36 = Tin/Lead, T/R (2500 pcs) | | | Blank = Standard (Dash Number) (up to 3 digits) From 1-999 as applicable | | |

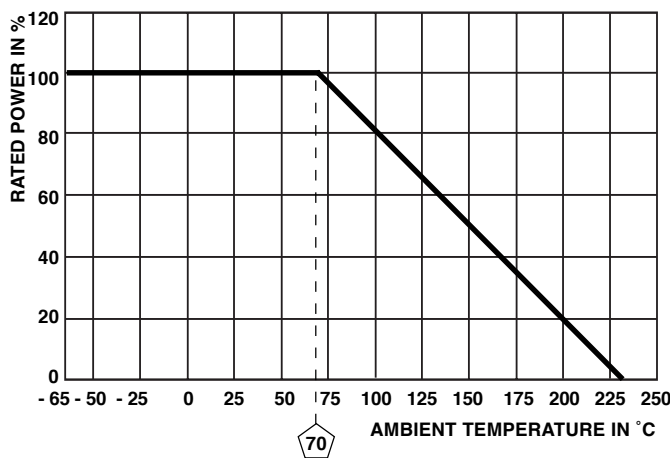
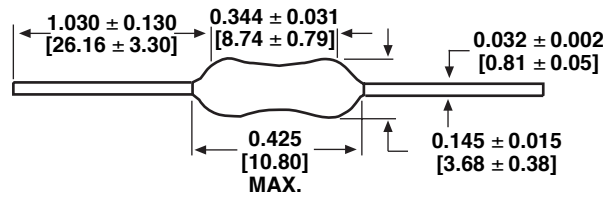
Historical Part Number example: CCF-23010F (will continue to be accepted)

| | | | |
|------------------|------------------|----------------|-----------|
| CCF-2 | 3010 | F | R36 |
| HISTORICAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | PACKAGING |

* Pb containing terminations are not RoHS compliant, exemptions may apply

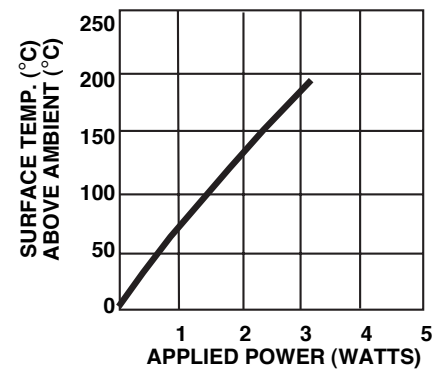


DIMENSIONS in inches [millimeters]



Surface temperatures were taken with an infrared pyrometer in + 25 °C still air.

Resistors were supported by their leads in test clips at a point 0.5" [12.70 mm] out from the resistor body ends.



DERATING

SURFACE TEMPERATURE vs POWER

| PERFORMANCE | |
|---------------------------------|-----------------------------|
| TEST | MAX. ΔR (Typical Test Lots) |
| Thermal Shock | ± 1.0 % |
| Short Time Overload | ± 0.5 % |
| Low Temperature Operation | ± 0.5 % |
| Moisture Resistance | ± 1.5 % |
| Resistance to Soldering Heat | ± 0.5 % |
| Shock | ± 0.5 % |
| Vibration | ± 0.5 % |
| Terminal Strength | ± 0.5 % |
| Dielectric Withstanding Voltage | ± 0.5 % |
| Life | ± 2.0 % |



Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.