



Metal Film Resistors, Axial, Industrial Power, Precision, Flameproof



FEATURES

- High power rating, small size
- Flameproof, high temperature silicone coating
- Special filming and coating processes
- Excellent high frequency characteristics
- Low noise
- Low voltage coefficient
- Material categorization: for definitions of compliance please see 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

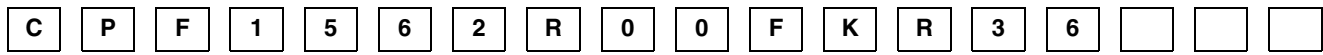
| STANDARD ELECTRICAL SPECIFICATIONS | | | | | | |
|------------------------------------|------------------|---|--|-----------------------|-------------------------|-------------------------------------|
| GLOBAL MODEL | HISTORICAL MODEL | MAXIMUM WORKING VOLTAGE ⁽¹⁾ V | POWER RATING <i>P</i> _{70 °C} W | RESISTANCE RANGE Ω | TOLERANCE ± % | TEMPERATURE COEFFICIENT ± ppm/°C |
| CPF1 | CPF-1 | 250 | 1 | 5 to 150K | 0.1, 0.25, 0.5, 1 | 25 |
| | | | | 5 to 150K | 0.1, 0.25, 0.5, 1, 2, 5 | 50 |
| | | | | 1 to 150K | 0.5, 1, 2, 5 | 100 |
| | | | | 0.5 to 150K | 1, 2, 5 | 150 |
| | | | | 0.5 to 150K | 1 | 200 |
| | | | | 0.2 to 150K | 2, 5 | 200 |
| | | | | 0.1 to 150K | 2, 5 | 300 |
| CPF2 | CPF-2 | 350 | 2 | 5 to 150K | 0.1, 0.25, 0.5, 1 | 25 |
| | | | | 5 to 150K | 0.1, 0.25, 0.5, 1, 2, 5 | 50 |
| | | | | 1 to 150K | 0.5, 1, 2, 5 | 100 |
| | | | | 0.5 to 150K | 1, 2, 5 | 150 |
| | | | | 0.5 to 150K | 1 | 200 |
| | | | | 0.2 to 150K | 2, 5 | 200 |
| | | | | 0.1 to 150K | 2, 5 | 300 |
| CPF3 | CPF-3 | 500 | 3 | 8 to 150K | 0.1, 0.25, 0.5, 1 | 25 |
| | | | | 8 to 150K | 0.1, 0.25, 0.5, 1, 2, 5 | 50 |
| | | | | 1 to 150K | 0.5, 1, 2, 5 | 100 |
| | | | | 1 to 150K | 1, 2, 5 | 150 |
| | | | | 1 to 150K | 1 | 200 |
| | | | | 0.2 to 150K | 2, 5 | 200 |
| | | | | 0.1 to 150K | 2, 5 | 300 |

Note

⁽¹⁾ Continuous working voltage shall be $\sqrt{P \times R}$ or maximum working voltage, whichever is less

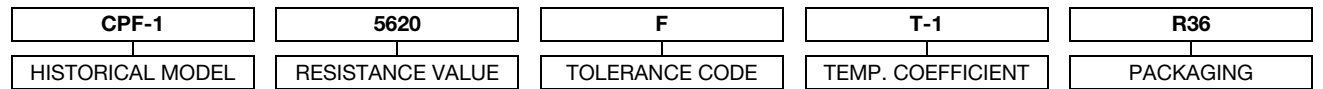
GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: CPF1562R00FKR36 (preferred part numbering format)



| GLOBAL MODEL | RESISTANCE VALUE | TOLERANCE CODE | TEMPERATURE COEFFICIENT | PACKAGING | SPECIAL |
|----------------------|---|---|--|--|---|
| CPF1 CPF2 CPF3 | R = Ω K = kΩ R10000 = 0.1 Ω 10R000 = 10 Ω 150K00 = 150 kΩ | B = ± 0.1 % C = ± 0.25 % D = ± 0.5 % F = ± 1 % G = ± 2 % J = ± 5 % | E = 25 ppm H = 50 ppm K = 100 ppm L = 150 ppm N = 200 ppm M = 300 ppm | E14 = lead (Pb)-free, bulk E36 = lead (Pb)-free, T/R (full) EE6 = lead (Pb)-free, T/R (1000 pcs) B14 = tin / lead, bulk R36 = tin / lead, T/R (full) RE6 = tin / lead, T/R (1000 pcs) | Blank = standard (dash number) (up to 3 digits) From 1 to 999 as applicable |

Historical Part Number Example: CPF-15620FT-1 R36 (will continue to be accepted)


Note

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

TEMPERATURE COEFFICIENT CODES

| GLOBAL TC CODE | HISTORICAL TC CODE | TEMPERATURE COEFFICIENT |
|----------------|--------------------|-------------------------|
| E | T-9 | 25 ppm/°C |
| H | T-2 | 50 ppm/°C |
| K | T-1 | 100 ppm/°C |
| L | T-0 | 150 ppm/°C |
| N | T-00 | 200 ppm/°C |
| M | M | 300 ppm/°C |

TECHNICAL SPECIFICATIONS

| PARAMETER | UNIT | CPF1 | CPF2 | CPF3 |
|---|------------------|------------------|------|------|
| Rated Dissipation at 70 °C | W | 1 | 2 | 3 |
| Limiting Element Voltage ⁽¹⁾ | V _≅ | 250 | 350 | 500 |
| Insulation Voltage | V _{eff} | 900 | 900 | 900 |
| Thermal Resistance | K/W | 85 | 60 | 50 |
| Insulation Resistance | Ω | 10 ¹⁰ | | |
| Category Temperature Range | °C | -65 °C / +230 °C | | |

Note

- ⁽¹⁾ Rated voltage $\sqrt{P \times R}$

DIMENSIONS

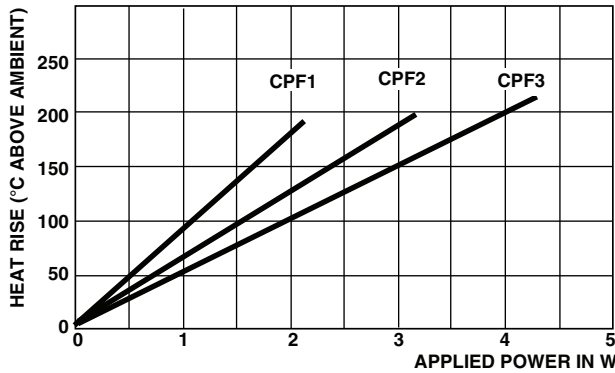
Note

- ⁽¹⁾ Lead length for product in bulk pack. For product supplied in tape and reel, the actual lead length would be based on the body size, tape spacing and lead trim

| GLOBAL MODEL | DIMENSIONS in inches (millimeters) | | | |
|--------------|------------------------------------|---------------------------------|---------------------|--------------------------------|
| | L | D | L _{1 max.} | d |
| CPF1 | 0.240 ± 0.020 (6.10 ± 0.51) | 0.090 ± 0.008 (2.29 ± 0.20) | 0.310 (7.87) | 0.025 ± 0.002 (0.64 ± 0.05) |
| CPF2 | 0.344 ± 0.031 (8.74 ± 0.79) | 0.145 ± 0.015 (3.68 ± 0.38) | 0.425 (10.80) | 0.032 ± 0.002 (0.81 ± 0.05) |
| CPF3 | 0.555 ± 0.041 (14.10 ± 1.04) | 0.180 ± 0.015 (4.57 ± 0.381) | 0.650 (16.51) | 0.032 ± 0.002 (0.81 ± 0.05) |



THERMAL RESISTANCE



DERATING



Note

- 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 0.500" (12.70 mm) out from the resistor body ends

| MATERIAL SPECIFICATIONS | |
|-------------------------|---|
| Element | Proprietary nickel-chrome alloy |
| Core | Cleaned high purity ceramic |
| Coating | Special high temperature conformal coat |
| Termination | Standard lead material is solder-coated Solderable and weldable per MIL-STD-1276, type C |

| MECHANICAL SPECIFICATIONS | |
|---------------------------|---|
| Terminal Strength | 2 pound pull test |
| Solderability | Continuous satisfactory coverage when tested in accordance with MIL-STD-202, method 208 |

| MARKING | |
|---|---------------------|
| Temperature Coefficient: T00 = 200 ppm, T0 = 150 ppm, T1 = 100 ppm, T2 = 50 ppm, T9 = 25 ppm, M = 300 ppm | |
| CPF1, CPF2, CPF3: (5 lines) | |
| DALE | Manufacturer's name |
| CPF-1 | Style and size |
| 49.9 kΩ | Value |
| 1 % T2 | Tolerance and TC |
| 1208 | 4-digit date code |

| 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 % |



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