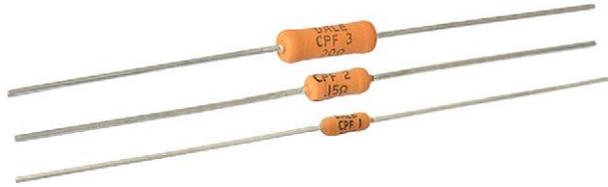




# Metal Film Resistors, Axial, Industrial Power, Precision, Flameproof



### 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](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

| STANDARD ELECTRICAL SPECIFICATIONS |                  |   |  |                       |                         |                                     |
|------------------------------------|------------------|---|--|-----------------------|-------------------------|-------------------------------------|
| GLOBAL MODEL                       | HISTORICAL MODEL | MAXIMUM WORKING VOLTAGE <sup>(1)</sup><br>V | POWER RATING<br><i>P</i> <sub>70 °C</sub><br>W | RESISTANCE RANGE<br>Ω | TOLERANCE<br>± %        | TEMPERATURE COEFFICIENT<br>± 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

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

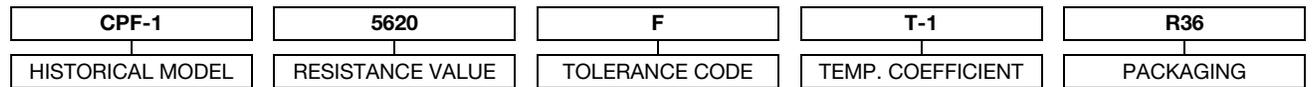
**GLOBAL PART NUMBER INFORMATION**

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



| GLOBAL MODEL         | RESISTANCE VALUE   | TOLERANCE CODE  | TEMPERATURE COEFFICIENT  | PACKAGING  | SPECIAL   |
|----------------------|--|---|--|--|---|
| CPF1<br>CPF2<br>CPF3 | R = $\Omega$<br>K = k $\Omega$<br>R10000 = 0.1 $\Omega$<br>10R000 = 10 $\Omega$<br>150K00 = 150 k $\Omega$ | B = $\pm 0.1\%$<br>C = $\pm 0.25\%$<br>D = $\pm 0.5\%$<br>F = $\pm 1\%$<br>G = $\pm 2\%$<br>J = $\pm 5\%$ | E = 25 ppm<br>H = 50 ppm<br>K = 100 ppm<br>L = 150 ppm<br>N = 200 ppm<br>M = 300 ppm | E14 = lead (Pb)-free, bulk<br>E36 = lead (Pb)-free, T/R (full)<br>EE6 = lead (Pb)-free, T/R (1000 pcs)<br><br>B14 = tin / lead, bulk<br>R36 = tin / lead, T/R (full)<br>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](http://www.vishay.com/doc?31544))

**TEMPERATURE COEFFICIENT CODES**

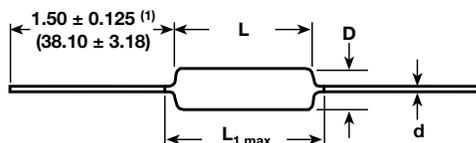
| GLOBAL TC CODE | HISTORICAL TC CODE | TEMPERATURE COEFFICIENT     |
|----------------|--------------------|-----------------------------|
| E              | T-9                | 25 ppm/ $^{\circ}\text{C}$  |
| H              | T-2                | 50 ppm/ $^{\circ}\text{C}$  |
| K              | T-1                | 100 ppm/ $^{\circ}\text{C}$ |
| L              | T-0                | 150 ppm/ $^{\circ}\text{C}$ |
| N              | T-00               | 200 ppm/ $^{\circ}\text{C}$ |
| M              | M                  | 300 ppm/ $^{\circ}\text{C}$ |

**TECHNICAL SPECIFICATIONS**

| PARAMETER                                  | UNIT               | CPF1   | CPF2 | CPF3 |
|--|--------------------|--|------|------|
| Rated Dissipation at 70 $^{\circ}\text{C}$ | W                  | 1  | 2    | 3    |
| Limiting Element Voltage <sup>(1)</sup>    | V $\cong$          | 250  | 350  | 500  |
| Insulation Voltage                         | V <sub>eff</sub>   | 900  | 900  | 900  |
| Thermal Resistance                         | K/W                | 85   | 60   | 50   |
| Insulation Resistance                      | $\Omega$           | 10 <sup>10</sup>                                 |      |      |
| Category Temperature Range                 | $^{\circ}\text{C}$ | -65 $^{\circ}\text{C}$ / +230 $^{\circ}\text{C}$ |      |      |

**Note**

- <sup>(1)</sup> Rated voltage  $\sqrt{P \times R}$

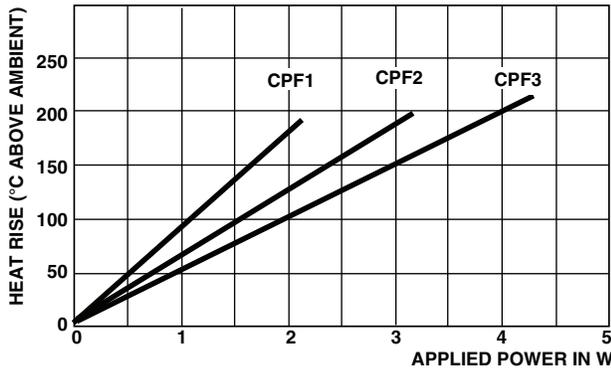
**DIMENSIONS**

**Note**

- <sup>(1)</sup> 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

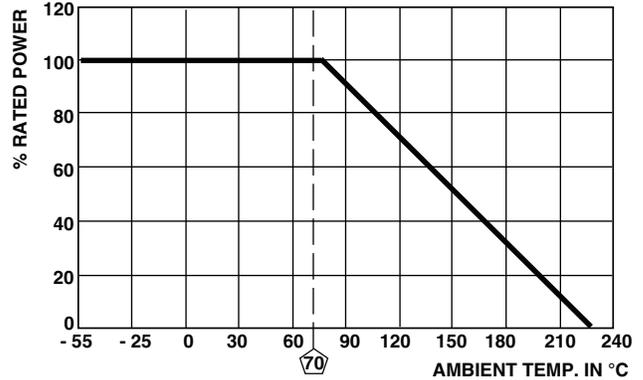
| GLOBAL MODEL | DIMENSIONS in inches (millimeters)      |   |                     |  |
|--------------|---|---|---------------------|--|
|              | L                                       | D                                       | L <sub>1 max.</sub> | d                                      |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