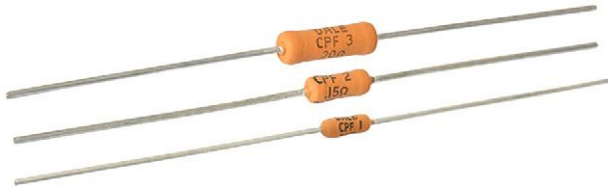




# Metal Film Resistors, Axial, Industrial Power, Precision, Flameproof



## 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)



RoHS\* Available

### 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)<br>V | POWER RATING<br>P <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                                 |
|                                    |                  |                                  |   | 0.1 to 150K           | 2, 5                    | 200                                 |
| 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                                 |
|                                    |                  |                                  |   | 0.1 to 150K           | 2, 5                    | 200                                 |
| 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                                 |
|                                    |                  |                                  |   | 0.1 to 150K           | 2, 5                    | 200                                 |

### 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)     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |
| C  | P   | F   | 1   | 5   | 6 | 2   | R | 0 | 0 | F | K | R | 3 | 6 |  |  |  |
| GLOBAL MODEL   | RESISTANCE VALUE  | TOLERANCE CODE  | TEMPERATURE COEFFICIENT   | PACKAGING   |   | SPECIAL   |   |   |   |   |   |   |   |   |  |  |  |
| CPF1<br>CPF2<br>CPF3   | R = Ω<br>K = kΩ<br>R10000 = 0.1 Ω<br>10R000 = 10 Ω<br>150K00 = 150 kΩ | B = ± 0.1 %<br>C = ± 0.25 %<br>D = ± 0.5 %<br>F = ± 1 %<br>G = ± 2 %<br>J = ± 5 % | E = 25 ppm<br>H = 50 ppm<br>K = 100 ppm<br>L = 150 ppm<br>N = 200 ppm | E14 = lead (Pb)-free, bulk<br>E36 = lead(Pb)-free, T/R (full)<br>EE6 = lead (Pb)-free, T/R (1000 pieces)<br>B14 = tin/lead, bulk<br>R36 = tin/lead, T/R (full)<br>RE6 = tin/lead, T/R (1000 pieces) |   | 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) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |  |
| CPF-1  | 5620  | F   | T-1   | R36   |   |   |   |   |   |   |   |   |   |   |  |  |  |
| HISTORICAL MODEL   | RESISTANCE VALUE  | TOLERANCE CODE  | TEMP. COEFFICIENT   | PACKAGING   |   |   |   |   |   |   |   |   |   |   |  |  |  |

### Note

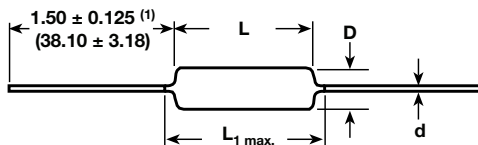
• For additional information on packaging, refer to the Through-Hole Resistor Packaging document ([www.vishay.com/doc?31544](http://www.vishay.com/doc?31544)).

| 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              |

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

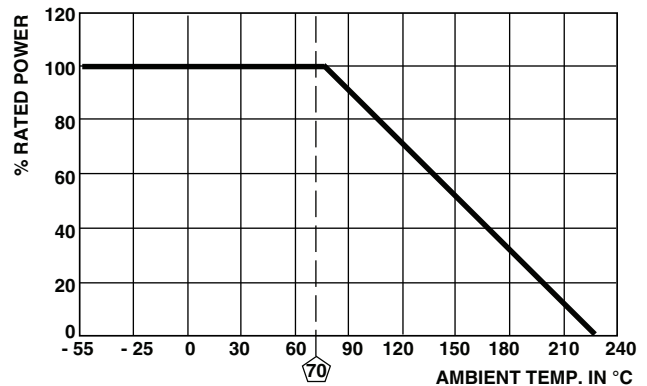
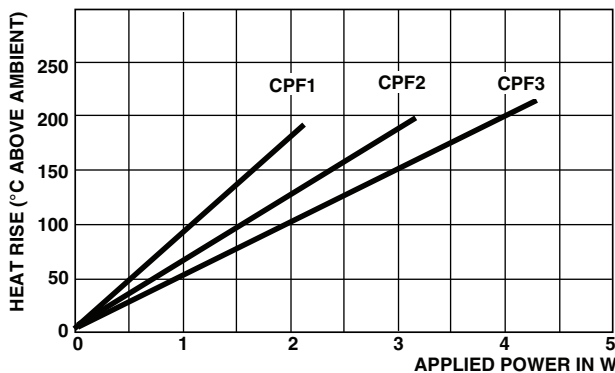
**Note**

(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 <sub>1 max.</sub> | d                              |
| CPF1         | 0.240 ± 0.020<br>(6.10 ± 0.51)     | 0.090 ± 0.008<br>(2.29 ± 0.20)  | 0.310<br>(7.87)     | 0.025 ± 0.002<br>(0.64 ± 0.05) |
| CPF2         | 0.344 ± 0.031<br>(8.74 ± 0.79)     | 0.145 ± 0.015<br>(3.68 ± 0.38)  | 0.425<br>(10.80)    | 0.032 ± 0.002<br>(0.81 ± 0.05) |
| CPF3         | 0.555 ± 0.041<br>(14.10 ± 1.04)    | 0.180 ± 0.015<br>(4.57 ± 0.381) | 0.650<br>(16.51)    | 0.032 ± 0.002<br>(0.81 ± 0.05) |


**DERATING**
**THERMAL RESISTANCE**
**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 |                     |
| 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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