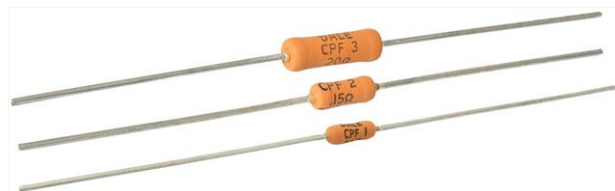




# Metal Film Resistors, Industrial Power, Precision, Flameproof



## FEATURES

- High power rating, small size
- Flameproof, high temperature 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 <sup>(1)</sup><br>V | POWER RATING<br>$P_{70^{\circ}\text{C}}$<br>W | RESISTANCE RANGE<br>$\Omega$ | TOLERANCE<br>$\pm \%$   | TEMPERATURE COEFFICIENT<br>$\pm \text{ppm}/^{\circ}\text{C}$ |
|--------------|------------------|---------------------------------------------|-----------------------------------------------|------------------------------|-------------------------|--------------------------------------------------------------|
| 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

<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)

|                      |   |   |                                                                                                            |   |   |                                                                                                                 |   |   |                                                                       |   |   |                                                                                                                                                                                                      |   |   |                                                                             |  |  |
|----------------------|---|---|------------------------------------------------------------------------------------------------------------|---|---|-----------------------------------------------------------------------------------------------------------------|---|---|-----------------------------------------------------------------------|---|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|-----------------------------------------------------------------------------|--|--|
| 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 = $\Omega$<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 |   |   | 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**

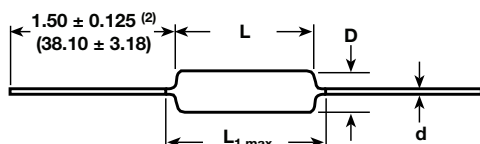
| GLOBAL TC CODE | HISTORICAL TC CODE | TEMPERATURE COEFFICIENT |
|----------------|--------------------|-------------------------|
| E              | T-9                | 25 ppm/°C               |
| H              | T-2                | 50 ppm/°C               |
| K              | T-1                | 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   |      |      |

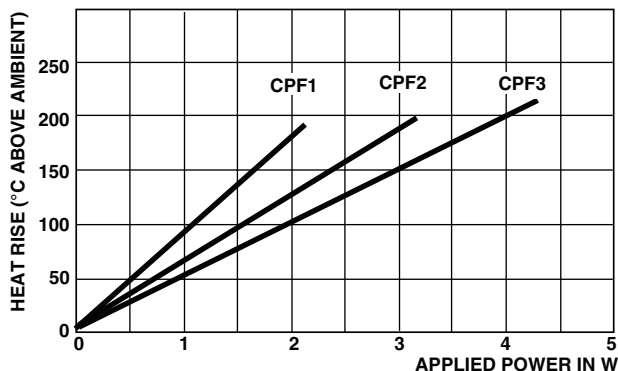
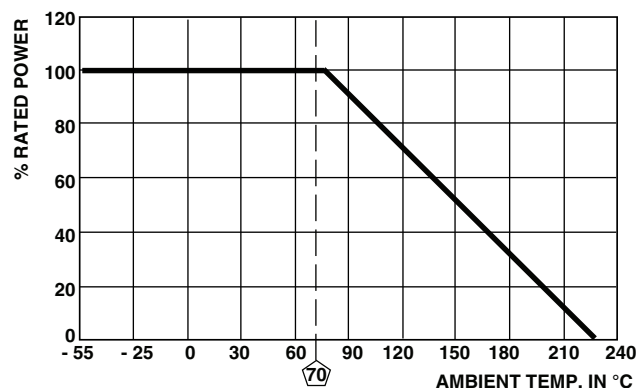
**Note**

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

**DIMENSIONS**

**Note**

<sup>(2)</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 ± 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 k $\Omega$ | Value               |
| 1 % T2          | Tolerance and TC    |
| 1208            | 4-digit date code   |

## PERFORMANCE

| TEST                            | MAX. $\Delta R$ (TYPICAL TEST LOTS) |
|---------------------------------|-------------------------------------|
| Thermal Shock                   | $\pm 1.0$ %                         |
| Short Time Overload             | $\pm 0.5$ %                         |
| Low Temperature Operation       | $\pm 0.5$ %                         |
| Moisture Resistance             | $\pm 1.5$ %                         |
| Resistance to Soldering Heat    | $\pm 0.5$ %                         |
| Shock                           | $\pm 0.5$ %                         |
| Vibration                       | $\pm 0.5$ %                         |
| Terminal Strength               | $\pm 0.5$ %                         |
| Dielectric Withstanding Voltage | $\pm 0.5$ %                         |
| Life                            | $\pm 2.0$ %                         |



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