# CPF

Vishay Dale

# Metal Film Resistors, Industrial Power, 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
- Lead (Pb)-free version is RoHS compliant

Pb-free Available

RoHS* COMPLIANT

## STANDARD ELECTRICAL SPECIFICATIONS

| GLOBAL MODEL | HISTORICAL MODEL | POWER RATING $P_{70\,°C}$ W | LIMITING ELEMENT VOLTAGE MAX V≅ | RESISTANCE RANGE Ω | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.1 % - 1 % | 0.1 % - 5 % | 0.5 % - 5 % | 1 % - 5 % | 1 % | 2 % - 5 % |
| | | | | 25 ppm | 50 ppm | 100 ppm | 150 ppm | 200 ppm | 200 ppm |
| CPF1 | CPF-1 | 1 | 250 | 5 - 150K | 5 - 150K | 1 - 150K | R5 - 150K | R5 - 150K | R1 - 150K |
| CPF2 | CPF-2 | 2 | 350 | 5 - 150K | 5 - 150K | 1 - 150K | R5 - 150K | R5 - 150K | R1 - 150K |
| CPF3 | CPF-3 | 3 | 500 | 8 - 150K | 8 - 150K | 1 - 150K | 1 - 150K | 1 - 150K | R1 - 150K |

**Note:**
Marking: Print marked - DALE, Model, Resistance value, Tolerance/Temperature Coefficient, Date Code

## 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 (1) | V≅ | 250 | 350 | 500 |
| Insulation Voltage | V- | 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 $\sqrt{P \times R}$

## 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>**CPF** | **R** = Decimal<br>**K** = Thousand<br>**R10000** = 0.1 Ω<br>**10R000** = 10 Ω<br>**150K00** = 150 Ω | **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>**B36** = Tin/Lead, T/R (Full)<br>**BE6** = Tin/Lead, T/R (1000 pieces) | Blank = Standard (Dash Number) (up to 3 digits) From **1 - 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 |

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



For technical questions, contact: ff2bresistors@vishay.com

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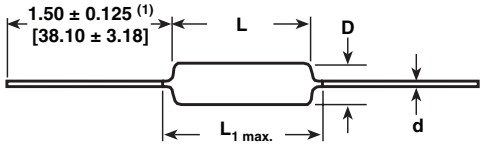
## DIMENSIONS

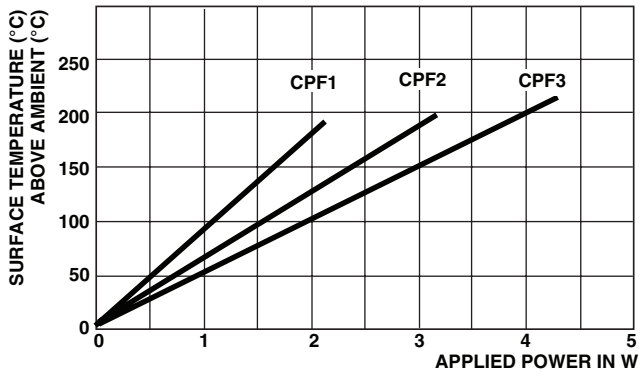



**Notes:**

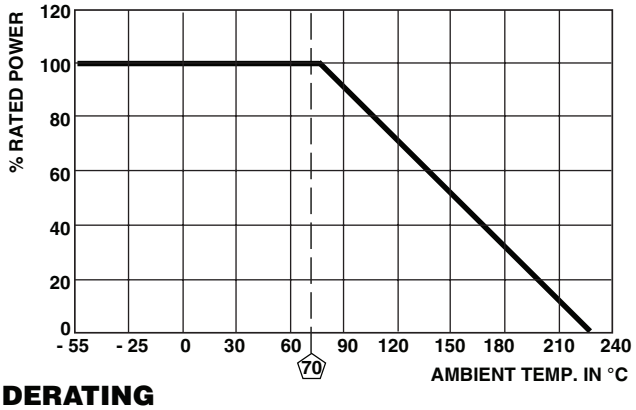
(1) 1.08 ± 0.125 [27.43 ± 3.18] if tape and reel

- 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.

| 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] |




**SURFACE TEMPERATURE VS. POWER**




**DERATING**

| 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 |

| PERFORMANCE | |
|---|---|
| **TEST** | **MAX. $\Delta R$ (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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