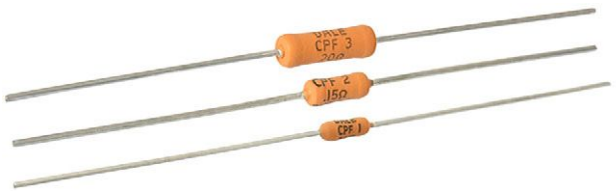
Metal Film Resistors, Axial, Industrial Power, Precision, Flameproof



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

Pb-free Available

e3 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) V	POWER RATING $P_{70\,°C}$ 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)

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 **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)

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)

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

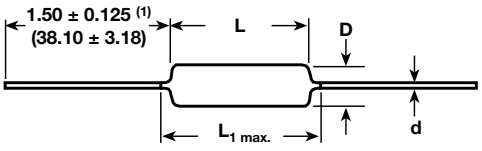
TECHNICAL SPECIFICATIONS

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

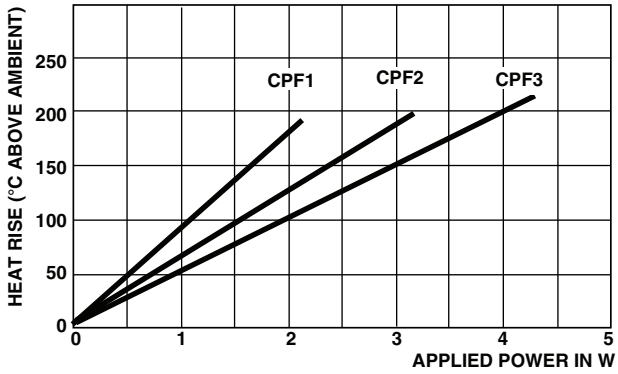


GLOBAL MODEL	DIMENSIONS in inches (millimeters)			
	L	D	$L_{1\ max.}$	d
CPF1	0.240 ± 0.020 (6.10 ± 0.51)	0.090 ± 0.008 (2.29 ± 0.20)	0.310 (7.87)	0.025 ± 0.002 (0.64 ± 0.05)
CPF2	0.344 ± 0.031 (8.74 ± 0.79)	0.145 ± 0.015 (3.68 ± 0.38)	0.425 (10.80)	0.032 ± 0.002 (0.81 ± 0.05)
CPF3	0.555 ± 0.041 (14.10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

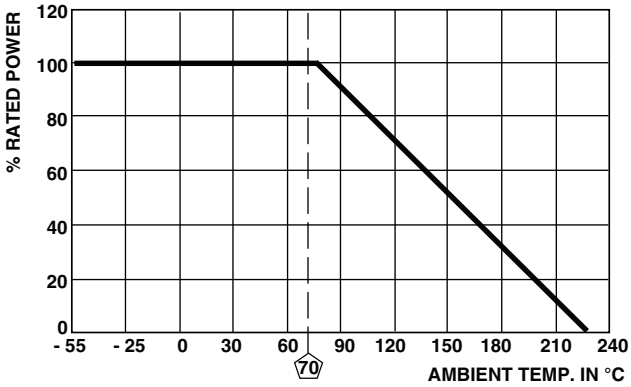
Note

(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

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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CPF1 18K .1%T2 CPF2 47.5K 1%T1TR CPF3 28 1%T1 CPF3 121K 1%T1 CPF1211%T1TR CPF2 221 1%T1 CPF3 30.9 1%T1 CPF3 39 1%T1 CPF1 5.9K 1%T9 CPF2 90.9K 1%T9 CPF3 12 1%T1 CPF3 20 1%T1 CPF3 30.1 1%T1 CPF3 61.9 1%T1 CPF3 75 1%T1 CPF3 82.5 1%T1 CPF1 4.7K 5%T1TR CPF1 38.3 1%T1 CPF2 249 1%T1 CPF3 82 1%T1 CPF2 5 1%T1 CPF3 1.07K 1%T1TR CPF1 220 .1%T9TR CPF3 300 1%T1 CPF1 15.4K 1%T1 CPF1 68 1%T1 CPF3 16.2K 1%T1TR CPF1 24.9K 1%T2 CPF1 16 1%T1 CPF3 741 1%T1 CPF2 110 1%T2 CPF1 .3 2%T00 CPF1 .39 2%T00TR CPF3 12K 2%T1 CPF3 3.65 1%T1 CPF1 .255 2%T00TR CPF1 10 2%T1TR CPF1 160 5%T1 CPF1 3.24K 1%T9 CPF1 30.1 1%T2 CPF1 5.6 1%T1 CPF1 75K 1%T2 CPF2 1.5K 1%T1 CPF2 1.5K 5%T1TR CPF2 1.62K 1%T1 CPF2 10 1% T1TR CPF2 105K 1%T1TR5 CPF2 10K 1%T1R36 CPF2 111 5%T1 CPF2 2 1%T1 CPF2 2 5%T1TR CPF2 20 1%T2 CPF2 210 1%T1TR CPF2 5.6 5%T2 CPF2 5.6 5%T2TR CPF2 51 2%T1TR CPF2 51K 5%T1 CPF2 680 5%T1TR CPF2 75K 1%T1 CPF2 898 .1%T9TR CPF3 .15 2%T00 CPF3 .536 2%T00TR CPF3 .649 1%T0R36 CPF3 1.5K 5%T1 CPF3 100K 5%T1 CPF3 10K 1%T2 CPF3 15 5%T1 CPF3 150K 1%T1 CPF3 22 5%T1 CPF3 271 1%T2 CPF3 3.65 1%T1TR CPF3 33 5%T1 CPF3 36.5 1%T2TR CPF3 4.7K 5%T1R36 CPF3 47K 1%T1 CPF3 47K 5%T1TR CPF3 49.9 1%T1 CPF3 75K 1%T1 CPF3 8.2 5%T1 CPF3 82 .25%T2 CPF3 82 5%T1TR CPF1 .1 5%T00TR CPF1 11K 1%T1TR CPF1 5.76K .1%T2 CPF3 24 5%T1 CPF3 36K 5%T1 CPF2 820 5%T1 CPF3 39.2 .5%T1 CPF3 4.3K 2%T1 CPF3 68 2%T1 CPF3 361 5%T1 CPF1 .511 1%T0 CPF1 3.01 1%T1 CPF3 2K 5%T1 CPF310K000JEE36 CPF1 4.22 1%T1 CPF3 12 1%T1TR CPF1 90.9 1%T1 CPF2 61.9 1%T9 CPF310K000JEEE6