

Type CPF Series

Key Features

- Thin film precision resistors with TC's of 15ppm, 25ppm and 50ppm and tolerances to 0.1%. Applications in measurement, telemetry and for sensing circuits.
- Wide range of case sizes from 0201 to 2512
- CPF chip resistors are suitable for all applications where close accuracy and stability are essential
- Terminal finish - electro-plated 100% matte Sn



Applications

- Communications
- Industrial Controls
- Instrumentation
- Medical

The CPF series is a high stability precision chip resistor range offering various power dissipations relating to a wide range of chip sizes. The CPF series offers TCR's down to 15ppm/°C and resistance tolerances to 0.1%. Standard values are within the IEC 63 E96 and E24 value grids. The CPF has accurate and uniform physical dimensions to facilitate placement.

Characteristics - Electrical

	0201				0402								
Rated Power @ 70°C:	0.03125W				0.063W								
Resistance Range (Ohms)	Min:	49R9	49R9	49R9	49R9	10R	10R	49R9	10R	1R0	49R9	10R	1R0
	Max:	5K0	33K	5K0	33K	70K	255K	205K	70K	255K	205K	70K	255K
Tolerance (%):		0.5		1		0.1			0.5			1	
Code letter:		D		F		B			D			F	
Selection Series:		E24 & E96				E24 & E96							
Temp. Coefficient (ppm/°C):		25	50	25	50	15	25	50	15	25	50	15	25
Code Letter:		E	C	E	C	D	E	C	D	E	C	D	E
Limiting Element Voltage:		15V				25V							
Max. Overload Voltage:		30V				50V							
Operating Temp. Range:		-55 to +155°C				-55 to +155°C							
Climatic Category (°C):		55/125/55				55/125/55							
Insulation Resistance Dry Min:		1000MΩ				1000MΩ							
Stability:		0.5%				0.5%							

	0603						0805						
Rated Power @ 70°C:	0.063W						0.1W						
Resistance Range (Ohms)	Min:	4R7	4R7	4R7	2R0	4R7	2R0	4R3	4R7	4R3	1R0	4R3	
	Max:	332K	1M0	332K	1M0	332K	1M0	511K	2M0	511K	2M0	511K	
Tolerance (%):		0.1		0.5		1		0.1		0.5		1	
Code letter:		B		D		F		B		D		F	
Selection Series:		E24 & E96											

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	1206						1210					
Rated Power @ 70°C:	0.125W						0.2W					
Resistance Range (Ohms) Min:	4R7	4R7	4R7	1R0	4R7	1R0	4R7	4R7	4R7	1R0	4R7	1R0
Max:	1M0	2M5	1M0	2M5	1M0	2M5	1M0	2M5	1M0	2M5	1M0	2M5
Tolerance (%):	0.1		0.5		1		0.1		0.5		1	
Code letter:	B		D		F		B		D		F	
Selection Series:	E24 & E96						E24 & E96					
Temp. Coefficient (ppm/°C):	15	25	50	15	25	50	15	25	50	15	25	50
Code Letter:	D	E	C	D	E	C	D	E	C	D	E	C
Limiting Element Voltage:	150V						150V					
Max. Overload Voltage:	300V						300V					
Operating Temp. Range:	-55 to +155°C						-55 to +155°C					
Climatic Category (°C):	55/125/55						55/125/55					
Insulation Resistance Dry Min:	1000MΩ						1000MΩ					
Stability:	0.5%						0.5%					

	2010						2512					
Rated Power @ 70°C:	0.25W						0.5W					
Resistance Range (Ohms) Min:	4R7	4R7	4R7	1R0	4R7	1R0	4R7	4R7	4R7	1R0	4R7	1R0
Max:	1M0	3M0	1M0	3M0	1M0	3M0	1M0	3M0	1M0	3M0	1M0	3M0
Tolerance (%):	0.1		0.5		1		0.1		0.5		1	
Code letter:	B		D		F		B		D		F	
Selection Series:	E24 & E96						E24 & E96					
Temp. Coefficient (ppm/°C):	15	25	50	15	25	50	15	25	50	15	25	50
Code Letter:	D	E	C	D	E	C	D	E	C	D	E	C
Limiting Element Voltage:	150V						150V					
Max. Overload Voltage:	300V						300V					
Operating Temp. Range:	-55 to +155°C						-55 to +155°C					
Climatic Category (°C):	55/125/55						55/125/5					

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Marking Codes - Case Sizes 0805 to 2512

IEC 4 Digit Marking

Resistance:	100Ω	2.2KΩ	10KΩ	49.9KΩ	100KΩ
Marking Code:	1000	2201	1002	4992	1003

Case Sizes 0603

E24 3 Digit Marking - Example: 101=100Ω 102=1KΩ

E24	10	11	12	13	15	16	18	20	22	24	27	30
	33	36	39	43	47	51	56	62	68	75	82	91

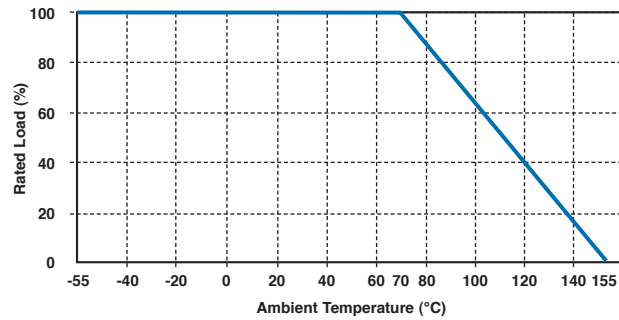
E96 3 Digit Marking - Examples: 14C=13K7Ω, 13C=13K3Ω, 68B=4K99Ω, 68X=49.9Ω



0603 E96 Marking Code Table

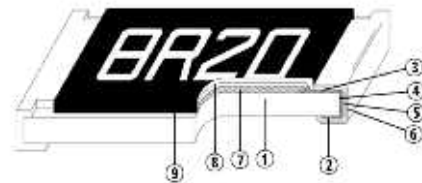
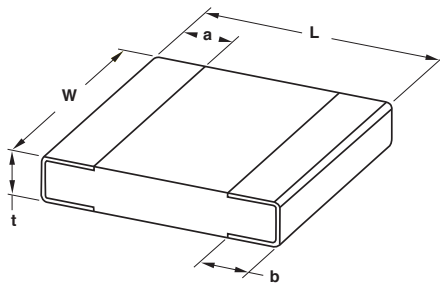
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Power Derating Curve



For resistors operated in ambient temperatures above 70°C, power rating must be derated in accordance with this curve.

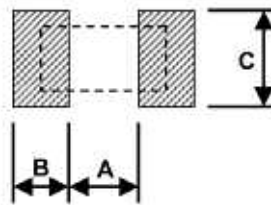
Dimensions



- | | | |
|--------------------------|----------------------------|--------------------------|
| 1. Alumina Substrate | 4. Edge Electrode (NiCr) | 7. Resistor Layer (NiCr) |
| 2. Bottom Electrode (Ag) | 5. Barrier Layer (Ni) | 8. Overcoat (Epoxy) |
| 3. Top Electrode (Ag-Pd) | 6. External Electrode (Sn) | 9. Marking |

Part Number	L	W	H	a	b	Weight (g) 1000 pieces
CPF0201	0.58 ±0.05	0.29 ±0.05	0.23 ±0.05	0.12 ±0.05	0.15 ±0.05	0.14
CPF0402	1.00 ±0.05	0.50 ±0.05	0.30 ±0.05	0.20 ±0.10	0.20 ±0.10	0.54
CPF0603	1.55 ±0.10	0.80 ±0.10	0.45 ±0.10	0.30 ±0.20	0.30 ±0.20	1.83
CPF0805	2.00 ±0.15	1.25 ±0.15	0.55 ±0.10	0.30 ±0.20	0.40 ±0.25	4.71
CPF1206	3.05 ±0.15	1.55 ±0.15	0.55 ±0.10	0.42 ±0.20	0.35 ±0.25	9.02
CPF1210	3.10 ±0.15	2.40 ±0.15	0.55 ±0.10	0.40 ±0.20	0.55 ±0.25	10.00
CPF2010	4.90 ±0.15	2.40 ±0.15	0.55 ±0.10	0.60 ±0.30	0.50 ±0.25	23.61
CPF2512	6.30 ±0.15	3.10 ±0.15	0.55 ±0.10	0.60 ±0.30	0.50 ±0.25	38.08

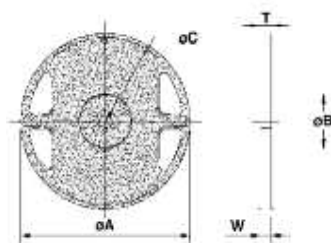
Recommend Land Pattern



Type	A	B	C
CPF0201	0.25	0.3	0.40 ±0.2
CPF0402	0.5	0.5	0.60 ±0.2
CPF0603	0.8	1.0	0.90 ±0.2
CPF0805	1.0	1.0	1.35 ±0.2
CPF1206	2.0	1.15	1.70 ±0.2
CPF1210	2.0	1.15	2.50 ±0.2
CPF2010	3.6	1.4	2.50 ±0.2
CPF2512	4.9	1.6	3.10 ±0.2

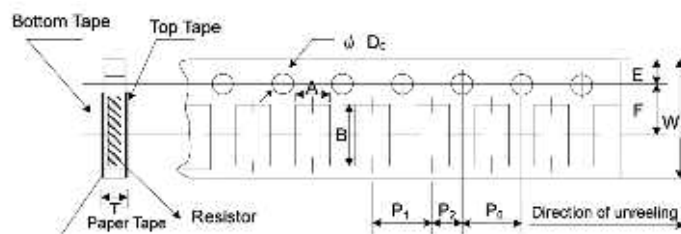
Type CPF Series

Packaging Quantity & Reel Specifications



Type	øA	øB	øC	W	T	Paper Tape (EA)	Embossed Plastic Tape (EA)
CPF0201	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	9.5 ±1.0	11.5 ±1.0	1000 / 5000	-
CPF0402	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	9.5 ±1.0	11.5 ±1.0	1000 / 5000	-
CPF0603	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	9.5 ±1.0	11.5 ±1.0	1000 / 5000	-
CPF0805	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	9.5 ±1.0	11.5 ±1.0	1000 / 5000	-
CPF1206	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	9.5 ±1.0	11.5 ±1.0	1000 / 5000	-
CPF1210	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	9.5 ±1.0	11.5 ±1.0	1000 / 5000	-
CPF2010	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	13.5 ±1.0	15.5 ±1.0	-	4000
CPF2512	178.0 ±1.0	60.0 +1.0	13.5 ±0.7	13.5 ±1.0	15.5 ±1.0	-	4000

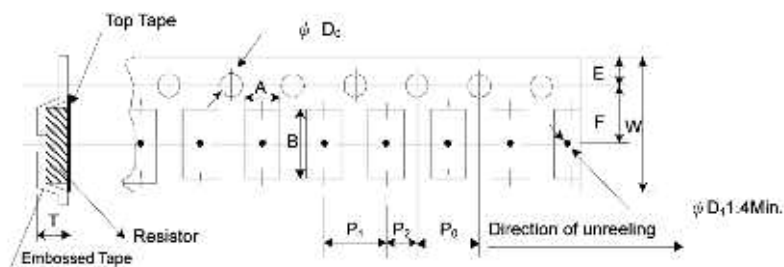
Paper Tape Specification



Type	A	B	W	E	F	P ₀	P ₁	P ₂	øD ₀	T
CPF0201	0.40 ±0.05	0.70 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.10	2.00 ±0.05	2.00 ±0.05	1.55 ±0.03	0.42 ±0.02
CPF0402	0.70 ±0.05	1.16 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.10	2.00 ±0.05	2.00 ±0.05	1.55 ±0.05	0.40 ±0.03
CPF0603	1.10 ±0.05	1.90 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	1.55 ±0.05	0.60 ±0.03
CPF0805	1.60 ±0.05	2.37 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	1.55 ±0.05	0.75 ±0.05
CPF1206	2.00 ±0.05	3.55 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.10	4.00 ±0.10	2.00 ±0.05	1.55 ±0.05	0.75 ±0.05
CPF1210	2.75 ±0.05	3.40 ±0.05	8.00 ±0.10	1.75 ±0.05	3.5 ±0.05	4.00 ±0.05	4.00 ±0.10	2.00 ±0.05	1.60 ±0.10	0.75 ±0.05

Type CPF Series

Embossed Plastic Tape Specifications



Type	A	B	W	E	F	P ₀	P ₁	P ₂	øD ₀	T
CPF2010	2.85 ±0.10	5.45 ±0.10	12.0 ±0.10	1.75 ±0.10	5.5 ±0.05	4.00 ±0.05	4.00 ±0.10	2.00 ±0.05	1.50 +0.10	1.00 ±0.20
CPF2512	3.40 ±0.10	6.65 ±0.10	12.0 ±0.10	1.75 ±0.10	5.5 ±0.05	4.00 ±0.05	4.00 ±0.10	2.00 ±0.05	1.50 +0.10	1.00 ±0.20

How to Order

CPF	0603	B	100R	E	1
Common Part	Package Size	Tolerance	Value	TCR	Packaging
CPF - Chip precision film resistor	0201 1206 0402 1210 0603 2010 0805 2512	B - ± 0.1% D - ±0.5% F - ± 1%	100R (100 Ohms) 1K0 (1000 Ohms) 100K (100,000 Ohms)	D - 15ppm E - 25ppm C - 50ppm	1 - 1K REEL Blank - 5K REEL

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