Carbon Film Fixed Resistors

Performance Specification

Temperature Coefficient	≤ 10Ω : ±350PPM/°C 11Ω ~99KΩ : 0 ~ -450PPM/°C 100KΩ ~ 1MΩ : 0 ~ -700PPM/°C 1.1MΩ ~ 10MΩ : 0 ~ -1500PPM/°C
Short Time Overload	±(1.0% + 0.05Ω)Max, with no evidence of mechanical damage.
Insulation Resistance	Min. 10,000 Mega Ohm
Dieiectric Withstanding Voltage	No evidence of flashover, mechanical damage, arcing or insulation breakdown.
Terminal Strength	No evidence of mechanical damage.
Resistance to Soldering Heat	±(1.0% + 0.05Ω)Max, with no evidence of mechanical damage.
Solderability	Min. 95% coverage.
Resistance to Solvent	No deterioration of protective coating and markings.
Temperature Cycling	±(1.0% + 0.05Ω)Max, with no evidence of mechanical damage.
Load Life in Humidity	Normal type: <100KΩ: ±(3.0% + 0.05Ω)Max ≥100KΩ: ±(5.0% + 0.05Ω)Max Non-Flame type: <100KΩ: ±(5.0% + 0.05Ω)Max ≥100KΩ: ±(10.0% + 0.05Ω)Max
Load Life	Normal type: <56KΩ: ±(2.0% + 0.05Ω)Max ≥56KΩ: ±(3.0% + 0.05Ω)Max Non-Flame type: <100KΩ: ±(5.0% + 0.05Ω)Max ≥100KΩ: ±(10.0% + 0.05Ω)Max

Ordering Procedure: Ex.: CFR 1/4W, +/-5%,10KΩ, T/B-5000

C F R 0 W 4 J 0 1 0 3 A 5 0

Type:
CFR = Carbon Film

Feature:
0 = Standard
F = Non-Flame
I = Non-Inductive

Wattage:
Normal size:
W8 = 1/8W
W4 = 1/4W
W2 = 1/2W
1W = 1W
2W = 2W

Small size:
S4 = 1/4W-S
S3 = 1/3W-S
S2 = 1/2W-S
1S = 1W-S
2S = 2W-S
3S = 3W-S

Extra small size:
U2 = 1/2W-SS
1U = 1W-SS

Tolerance:
F = ±1%
G = ±2%
J = ±5%
K = ±10%

Resistance Value:
- E-24 series:
  1st digit is "0"
  2nd & 3rd digits are significant figures of the resistance
  4th indicates the number of zeros
  "J" ~0.1, "K" ~ 0.01
  Ex. 4.7Ω ~ 47J, 4.7KΩ ~ 472
- E-96 series:
  1st to 3rd digits are significant figures of the resistance
  4th digit indicates the number of zeros.
  Ex.: 1.33KΩ = 1331

Packing Type:
A = Tape/Box
T = Tape/Reel
B = Bulk/Box
P = Tape/Box of PT-26mm

Packing Qty:
1 = 1,000 pcs. 2 = 2,000 pcs.
4 = 4,000 pcs. 5 = 5,000 pcs.
A = 500 pcs. B = 2,500 pcs.
0 = Bulk/Box

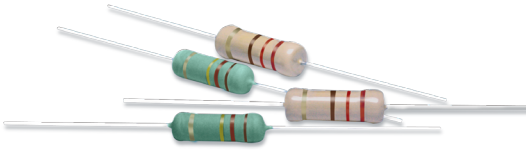
Additional Information:
P = Panasert type
1 = Avisert type
2 = Avisert type 2
3 = Avisert type 3
0 = PT-52mm, PT-26mm, Standard lead wire for Bulk/Box
8 = PT-58mm
9 = PT-64mm
7 = Lead wire (H) 38mm
C = PT-73mm

RoHS Compliant

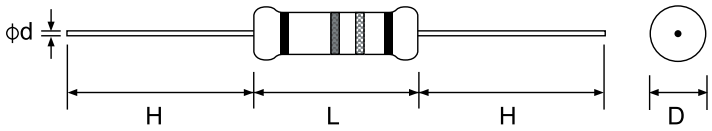
Carbon Film Fixed Resistors

Features

- Automatically insertable
- High quality performance
- Non-Flame type available
- Cost effective and commonly used
- Too low or too high values can be supplied on case to case basis



Standard : 2% ,5% ,10% -- E - 24 series
1% – E - 96 series

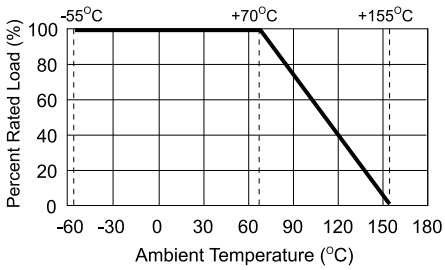


Part No.	Style	Power Rating at 70°C	Dimension (mm)					Resistance Range	Max Working Voltage	Max Overload Voltage	Dielectric Withstanding Voltage	Std Packing Qty
			D Max	L Max	H±3	d±0.05	PT					
Normal size												
CFR0W8	CFR 12	1/8W (0.125W)	1.85	3.5	28	0.45	52	1Ω~1MΩ	200	400	400	5,000
CFR0W4	CFR 25	1/4W(0.25W)	2.5	6.8	28	0.54(1)	52	1Ω~10MΩ	250	500	500	5,000
CFR0W2	CFR 50	1/2W (0.50W)	3.5	10.0	28	0.54	52	1Ω~10MΩ	350	700	700	1,000
CFR01W	CFR 100	1W	5.5	16.0	28	0.70	64	1Ω~10MΩ	500	1,000	1,000	1,000
CFR02W	CFR 200	2W	6.5	17.5	28	0.75	64	1Ω~10MΩ	500	1,000	1,000	500
Small size												
CFR0S4	CFR-25-S	1/4W(0.25W)	1.85	3.5	28	0.45	52	1Ω~1MΩ	200	400	400	5,000
CFRFU2	CFR-50-SS	1/2W (0.50W)	2.5	6.8	28	0.54(1)	52	1Ω~10MΩ	250	500	250	5,000
CFR0S2	CFR-50-S	1/2W (0.50W)	3.0	9.0	28	0.54	52	1Ω~10MΩ	350	700	700	4,000
CFRF1U	CFR-100-SS	1W	3.5	10.0	28	0.54	52	1Ω~10MΩ	350	700	350	1,000
CFR01S	CFR-100-S	1W	5.0	12.0	25	0.70	52	1Ω~10MΩ	500	1,000	1,000	1,000
CFR02S	CFR-200-S	2W	5.5	16.0	28	0.70	64	1Ω~10MΩ	500	1,000	1,000	1,000
CFR03S	CFR-300-S	3W	6.5	17.5	28	0.75	64	1Ω~10MΩ	500	1,000	1,000	500

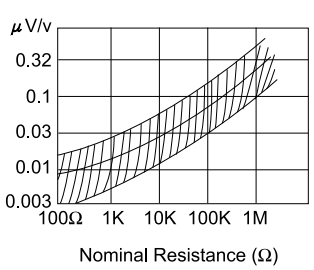
Note:

- Standard beige base color
- Standard grayish-green base color (Non-flammable coating) for CFRFU2 (CFR-50-SS) and CFRF1U (CFR•100.SS)
- (1) Lead diameter of CFR0W4 & CFRFU2 can be provided in 0.50mm, 0.54mm & 0.60mm
- Ohmic values outside the standard range available on a case to case basis

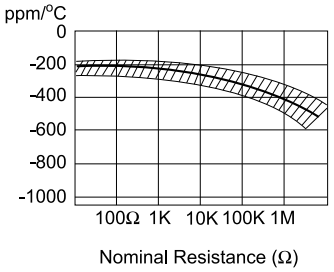
Derating Curve



Current Noise



Temp. Coefficient



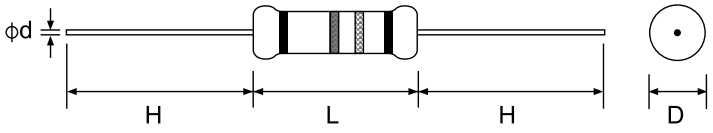
RoHS Compliant

Carbon Film Fixed Resistors

1) Copper Plated Steel Lead Wire Type

Copper Plated Wire (CP)

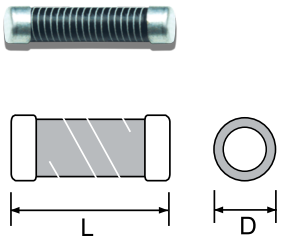
Tin Plated Copper Steel Lead Wire (CT)



Part No.	Style	Power Rating at 70°C	Dimension (mm)					Max Working Voltage	Max Overload Voltage	Dielectric Withstanding Voltage	Resistance Range	Std Packing Qty
			D Max	L Max	H±3	d±0.02	PT					
CPxxW8 / CTxxW8	CP/ CT 12	1/8W (0.125W)	1.85	3.5	28	0.50	52	200V	400V	400V	1Ω ~ 1MΩ	5,000
CPxxW4 / CTxxW4	CP/ CT 25	1/4W (0.25W)	2.5	6.8	28/38	0.50	52	250V	500V	500V	1Ω ~ 10MΩ	5,000
CPxxS3 / CTxxS3	CP/ CT 33-S	1/3W (0.33W)	2.5	6.8	28/38	0.50	52	300V	600V	500V	1Ω ~ 10MΩ	5,000
CPxxW3 / CTxxW3	CP/ CT 33	1/3W (0.33W)	3.0	9.0	28	0.50	52	300V	600V	700V	1Ω ~ 10MΩ	2,000
CPxxS2 / CTxxS2	CP/ CT 50-S	1/2W (0.5W)	3.0	9.0	28	0.50	52	350V	700V	700V	1Ω ~ 10MΩ	2,000

2) Cutting (CO) Type

Part No.	Style	Power Rating at 70°C	Dimension (mm)		Resistance Range
			D	L	
CO...W8	CO 12	1/8W (0.125W)	1.6 $^{+0.10}_{-0.00}$	3.2±0.1	1Ω ~ 10MΩ
CO...W4	CO 25	1/4W (0.25W)	2.1 $^{+0.09}_{-0.00}$	5.6 $^{+0.10}_{-0.20}$	1Ω ~ 10MΩ
CO...W4-A	CO 25-A	1/4W (0.25W)	2.1 $^{+0.09}_{-0.00}$	5.9 $^{+0.10}_{-0.15}$	1Ω ~ 10MΩ
CO...W4-B	CO 25-B	1/4W (0.25W)	2.1 $^{+0.09}_{-0.00}$	6.4 $^{+0.10}_{-0.15}$	1Ω ~ 10MΩ



Cutting type resistors are produced without lead wire and without coating

*Cap plated : Tin plated (ROYALOHM std.)

Ordering Procedure: Ex.: CPO 1/4W, +/-5%, 10Ω, T/B-5000

C P O 0 W 4 J 0 1 0 0 A 5 0

Type:
CPO =
Copper plated lead wire (H=28mm)
CPL =
Copper plated lead wire (H=38mm)
CTO =
Tin plated copper steel lead wire (H=28mm)
CTL =
Tin plated copper steel lead wire (H=38mm)
COT=
Cutting Type
(Tin-Plated Cap)

Feature:
0 = Standard
F = Non-Flame
I = Non-Inductive

Wattage:
Normal
W8 = 1/8W
W4 = 1/4W
W3 = 1/3W

Small
S2 = 1/2W-S
S3 = 1/3W-S

Tolerance:
G = ±2%
J = ±5%
K = ±10%

Resistance Value:
- E-24 series:
  1st digit is "0"
  2nd & 3rd digits are the significant figures of the resistance
  4th digit indicates the number of zeros: "J" ~ 0.1, "K" ~ 0.01
  Ex.: 4.7Ω ~ 47J, 4.7KΩ ~ 472

Packing Type:
A = Tape/Box
T = Tape/Reel
B = Bulk/Box

Packing Qty:
1 = 1,000 pcs. 2 = 2,000 pcs. 4 = 4,000 pcs.
5 = 5,000 pcs. A = 500 pcs. B = 2,500 pcs.
0 = Bulk/Box

Additional Information:
0 = CP/CT Type
A = Cutting type (CO-25-A)
B = Cutting type (CO-25-B)

RoHS Compliant