

Royal Ohm 0.25W Carbon film resistors

Order Code	Manufacturers Part No	Description
540-001 to 540-129	CFR0W4 plus value	0.25W carbon film resistors

RoHS compliant

The enclosed information is believed to be correct. Information may change without notice due to product improvement. Check to ensure that the product is suitable for the intended application. E. and O.E

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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 a case to case basis



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

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
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Resistor Type:
CFR = Carbon Film Fixed Resistors

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

Wattage:
Normal size: W8=1/8W, W6=1/6W, W4=1/4W, W2=1/2W, 1W=1W, 2W=2W, 3W=3W
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

Resistance Value:

- E-24 series:
1st digit is "0"
2nd & 3rd digits are the significant figures of the resistance
4th indicate 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 the significant figures of the resistance and the 4th digit indicates the number of zeros.
Ex.: 1.33KΩ = 1331

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

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

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 = for Bulk/Box packing

* More explanation on part no, please see details on pages 80-81.

Performance Specifications

Temperature coefficient	±350PPM/°C for ≤ 10Ω ±450PPM/°C for 11Ω ~ 99KΩ 0 ~ -700PPM/°C for 100KΩ ~ 1MΩ 0 ~ -1500PPM/°C for 1.1MΩ ~ 10MΩ
Short time overload	ΔR/R ≤ ±(1.0% + 0.05Ω), with no evidence of mechanical damage.
Insulation resistance	Min. 10,000 Mega Ohm
Dielectric withstanding voltage	No evidence of flashover, mechanical damage, arcing or insulation breakdown.
Terminal strength	No evidence of mechanical damage.
Resistance to soldering heat	ΔR/R ≤ ±(1.0% + 0.05Ω), with no evidence of mechanical damage.
Solderability	Min. 95% coverage.
Resistance to solvent	No deterioration of protective coating and markings.
Temperature cycling	ΔR/R ≤ ±(1.0% + 0.05Ω), with no evidence of mechanical damage.
Load life in humidity	Normal type: ΔR/R ± 3% for <100KΩ, ±5% for ≥ 100KΩ Non-Flame type: ΔR/R ± 5% for <100KΩ, ±10% for ≥ 100KΩ
Load life	Normal type: ΔR/R ± 2% for <56KΩ, ±3% for ≥ 56KΩ Non-Flame type: ΔR/R ± 5% for <100KΩ, ±10% for ≥ 100KΩ

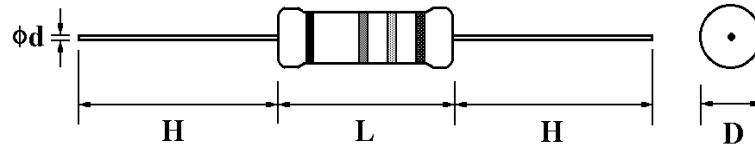
Additional Information:

- P = Panasert type
- 1 = Avisert type
- 2 = Avisert type 2
- 3 = Avisert type 3
- 0 = PT-52mm, NIL for PT-26
- 8 = PT-58mm
- 9 = PT-64mm
- 7 = Lead wire (H) 38mm

*More details, please see pages 78-79.

CARBON FILM FIXED RESISTORS

Dimension (mm)



Normal Size

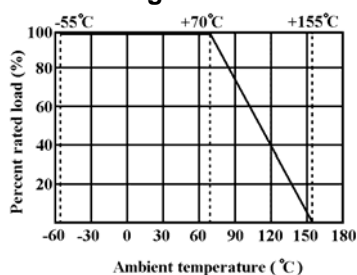
Part No.	Style	Power Rating at 70°C	Dimension (mm)				Max. Working Voltage	Max. Overload Voltage	Dielectric With-standing Voltage	Resistance Range
			D Max.	L Max.	H ± 3	d ± 0.05				
CFR0W8	CFR-125	1/8W (0.125W)	1.85	3.5	28	0.45	200 V	400 V	400 V	1Ω~1MΩ
CFR0W4	CFR-25	1/4W (0.25W)	2.5	6.8	28	0.54 ⁽¹⁾	250 V	500 V	500 V	1Ω~10MΩ
CFR0W2	CFR-50	1/2W (0.5W)	3.5	10.0	28	0.54	350 V	700 V	700 V	1Ω~10MΩ
CFR01W	CFR-100	1W	5.5	16.0	28	0.70	500 V	1,000 V	1,000 V	1Ω~10MΩ
CFR02W	CFR-200	2W	6.5	17.5	28	0.75	500 V	1,000 V	1,000 V	1Ω~10MΩ

Small Size

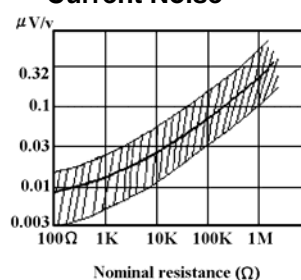
Part No.	Style	Power Rating at 70°C	Dimension (mm)				Max. Working Voltage	Max. Overload Voltage	Dielectric With-standing Voltage	Resistance Range
			D Max.	L Max.	H ± 3	d ± 0.05				
CFR0S4	CFR-25-S	1/4W (0.25W)	1.85	3.5	28	0.45	200 V	400 V	400 V	1Ω~1MΩ
CFRFU2	CFR-50-SS	1/2W (0.5W)	2.5	6.8	28	0.54 ⁽¹⁾	250 V	500 V	250 V	1Ω~10MΩ
CFR0S2	CFR-50-S	1/2W (0.5W)	3.0	9.0	28	0.54	350 V	700 V	700 V	1Ω~10MΩ
CFR01S	CFR-100-S	1W	5.0	12.0	25	0.70	500 V	1,000 V	1,000 V	1Ω~10MΩ
CFR02S	CFR-200-S	2W	5.5	16.0	28	0.70	500 V	1,000 V	1,000 V	1Ω~10MΩ
CFR03S	CFR-300-S	3W	6.5	17.5	28	0.75	500 V	1,000 V	1,000 V	1Ω~10MΩ

- Note:**
- Standard E-24 series values in ±5% tolerance
 - Standard beige base color; Light brown base color for CFR01S, CFR02S & CFR03S
 - Standard grayish-green base color (Non-flammable coating) for CFRFU2 (CFR-50-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

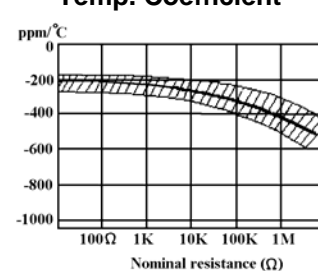
Derating Curve



Current Noise



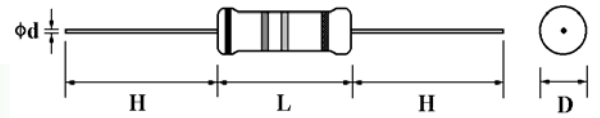
Temp. Coefficient



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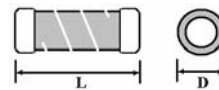
(1) Copper Plated Steel Lead Wire Type

Copper Plated Wire (CP)/Tin Plated Copper Wire (CT)



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

(2) Cutting (CO) Type



Part No.	Dimension (mm)	Power Rating at 70°C	Dimension (mm)		Resistance Range
			D	L	
CO...W8	CO-12	0.125W	+0.10 1.6 -0.00	3.2 ± 0.1	1Ω ~ 10MΩ
CO...W4	CO-25	0.25W	+0.09 2.1 -0.00	+0.10 5.6 -0.20	1Ω ~ 10MΩ
CO...W4...A	CO-25-A	0.25W	+0.09 2.1 -0.00	+0.10 5.9 -0.15	1Ω ~ 10MΩ
CO...W4...B	CO-25-B	0.25W	+0.09 2.1 -0.01	+0.10 6.4 -0.15	1Ω ~ 10MΩ

* Cutting type resistors are produced without lead-wire and without coating * Cap plated: 1. Tin-plated (Royal std), 2. Nickel-plated (Special request)

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	
Resistor 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) CON= Cutting Type (Nickel Plated Cap)				Wattage: Normal size: W8=1/8W W4=1/4W W3=1/3W Small size: S2=1/2W-S S3=1/3W-S			Resistance Value: E-24 series: 1 st digit is "0" 2 nd & 3 rd digits are for the significant figures of the resistance 4 th digit indicate 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			
Special Feature: 0 = Standard Product F = Non-Flame I = Non-Inductive				Tolerance: G = ±2% J = ±5% K = ±10%			Packing Qty: 1 = 1,000 pcs, 2 = 2,000 pcs, 5 = 5,000 pcs, A = 500 pcs, B = 2,500 pcs, 0 = for Bulk/Box packing				Additional Information: 0 = For CP/CT type, A = Cutting type (CO-25-A) B = Cutting type (CO-25-B)			

* More explanation on part no, please see details on pages 80-81.