

Lumimax Optoelectronic Technology

CF Series

Carbon Film Fixed Resistors

CFR1WK: Carbon Film 1W Resistor Sample Kit * 32 resistor values, 0~10M ohm

CFR1/4WK: Carbon Film 1/4W Resistor Sample Kit * 32 resistor values, 0~10M ohm

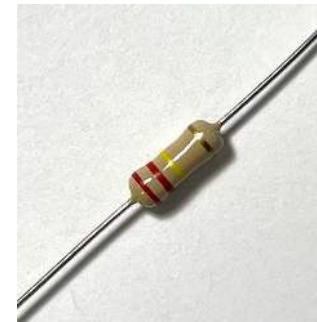
CFR1/2WK: Carbon Film 1/2W Resistor Sample Kit * 32 resistor values, 10~1M ohm

CFR1/8WK: Carbon Film 1/8W Resistor Sample Kit * 32 resistor values, 10~10M ohm

Note: * for Resistor values inside each sample kit, please refer to the last page of spec. sheet for details.

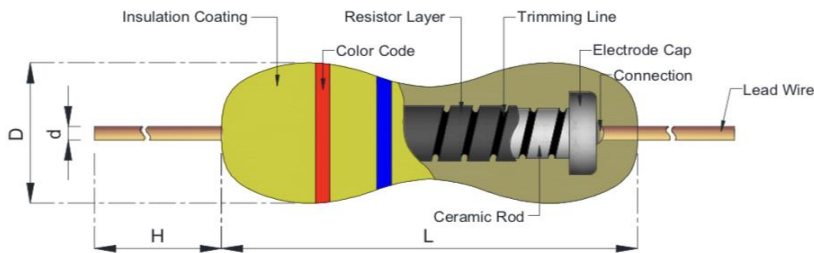
Product Features

- Excellent long-term stability
- Wide Resistance range 0.1Ω ~ 10MΩ
- Power ratings from 1/8W to 3Ws
- Products with lead-free terminations meet EU RoHS and China RoHS requirements
- All general purpose and Power applications
- AECQ-200 Qualified



**Pb-Free and
RoHS Compliant**

Power rating and Dimensions



Style	Dimensions (mm)			
	L	D	H	d
CF-1/8W	3.3 + 0.4 ~ -0.2	1.8 ± 0.3	29 ± 2.0	0.45 ± 0.03
CF-1/4W	6.3 ± 0.5	2.3 ± 0.3	28 ± 2.0	0.55 ± 0.03
CF-1/2W	9.0 ± 0.5	3.2 ± 0.5	26 ± 2.0	0.65 ± 0.03
CF-1W	11.5 ± 1.0	4.5 ± 0.5	35 ± 2.0	0.78 ± 0.03
CF-2W	15.5 ± 1.0	5.0 ± 0.5	32 ± 2.0	0.78 ± 0.03

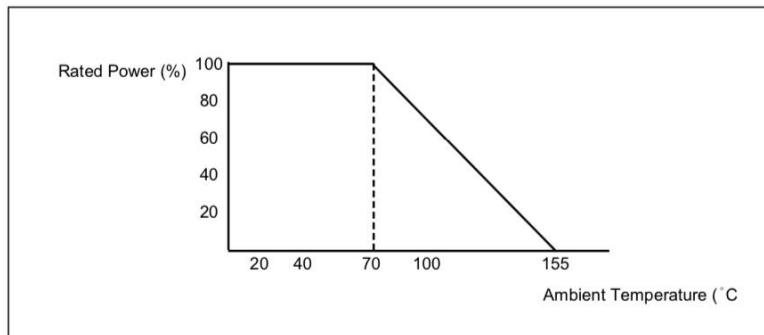
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Electrical Characteristics

Power rating at 70°C	1/8W	1/4W	1/2W	1W	2W
Body Size (D x L mm) (D x L inch)	1.8 x 3.3 0.071 x 0.13	2.3 x 6.3 0.091 x 0.248	3.2 x 9.0 0.126 x 0.354	4.5 x 11.5 0.177 x 0.453	5.0 x 15.5 0.197 x 0.61
Operating temp. range	-55°C + 155°C				
Max. working voltage	150V	250V	350V	450V	500V
Max. overload voltage	300V	500V	700V	1000V	1000V
Dielectric withstanding voltage	300V	500V	700V	1000V	1000V
Value range ± 5%	E6 series 0.1Ω ~ 0.68Ω ; E24 series 1Ω ~ 22MΩ				

Derating Curve



Temperature Coefficient (T.C.R.)

CF series	Max. Value of Temp. Coefficient ppm/°C			
	Under 1Ω	1Ω to 100KΩ	100KΩ to 1MΩ	1MΩ to 10MΩ
1W, 2W	± 1500	± 350	-500~0	-1500 ~ 0
1/8W, 1/4W, 1/2W	± 1500	-500 ~ 350	-700~0	-1500 ~ 0

Test and Requirements

Performance test	Test Method	Appraise
Short time overload	JIS-C-5202 5.5 2.5 times RCWV for 5 seconds	±(0.75%+0.05Ω)
Temperature Coefficient (TCR)	Resistance value at room temperature and room temperature +100°C	page
Dielectric withstanding voltage	JIS-C5202 5.7 In V-Block for 60 seconds	By type

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Pulse overload	JIS-C5202 5.8 4 times RCWV for 10000 cycles (1 sec. on, 25 secs. Off)	± (1% +0.05Ω)
Insulation resistance	JIS-C5202 5.6 In V-Block	>10000MΩ
Load life	JIS-C5202 7.10 70°C at RCWV for 1000 hours (1.5 hrs on, 0.5 hrs. off)	± (3%+0.05Ω)
Load life in humidity	JIS-C5202 7.9 40°C± 2°C 90~95% RH at RCWV for 1000 hours (1.5 hrs on, 0.5 hrs. off)	Less than 100KΩ± 3%. 100KΩ or more ± 5%.
Solder ability	JIS-C5202 6.5 260°C± 5°C for 2±0.5 seconds	95% min. coverage
Resistance to solvent	JIS-C5202 6.9 Specimens shall be immersed in a bath of alcohol completely for 3 mins. Using ultrasonic test equipment.	No deterioration of coatings and markings.
Terminal strength	Direct load for 10 sec. in the direction off the terminal leads.	Tensile: ≥ 2.5kg

Note: RCWV: Rated Continuous Working Voltage = $\sqrt{\text{Power rating} \times \text{Resistance value}}$

Resistor body color

Normal size 1/8W to 2W: Khaki color

Part Number

CF	1W	2K	J	T
Type	Power rating	Resistance	Tolerance	Packaging
CF – Carbon film	1/8W	1R = 1Ω	J = ± 5%	TB = Taping in box
	1/4W	10R = 10Ω	G = ± 2%	TR = Taping in reel
	1/2W	2K = 2KΩ		BU = Bulk
	1W	3K3 = 3.3KΩ		T = Cut Taped
	2W	10M = 10MΩ		

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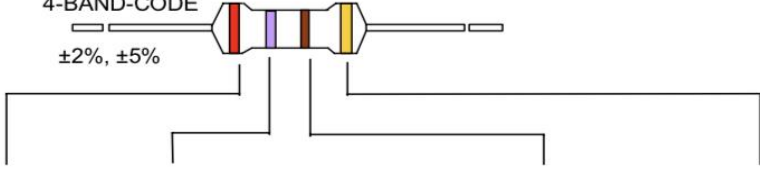
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Tape on box packing

1/2W, 1W and 2W Resistor	Quantity per box: 1000pcs
1/4W and 1/8W Resistor	Quantity per box: 5000pcs


MARKING

4-BAND-CODE
±2%, ±5%






COLOR	1st BAND	2nd BAND	3rd BAND	MULTIPLIER	TOLERANCE
BLACK	0	0	0	1Ω	
BROWN	1	1	1	10Ω	
RED	2	2	2	100Ω	± 2% (G)
ORANGE	3	3	3	1KΩ	
YELLOW	4	4	4	10KΩ	
GREEN	5	5	5	100K	
BLUE	6	6	6	1MΩ	
VIOLET	7	7	7	10MΩ	
GREY	8	8	8	0.001Ω	
WHITE	9	9	9	0.0001Ω	
GOLD				0.1Ω	± 5% (J)
SILVER				0.01Ω	

Carbon Film Resistor sample kit values

<p>CFR1WK</p> 	<p>Carbon film 1W Resistor kit, 0~10M ohm, tol: 5% 32 values, 5pc/value. Total 160pcs</p> <p>32 Resistance values (ohm) are:</p> <p>① 0 ② 1 ③ 10 ④ 100 ⑤ 1K ⑥ 10K ⑦ 100K ⑧ 15 ⑨ 150 ⑩ 1K5 ⑪ 15K ⑫ 22 ⑬ 220 ⑭ 2K2 ⑮ 22K ⑯ 220K ⑰ 33 ⑱ 330 ⑲ 3K3 ⑳ 33K ㉑ 3R9 ㉒ 39 ㉓ 390 ㉔ 39K ㉕ 47 ㉖ 470 ㉗ 4K7 ㉘ 47K ㉙ 51 ㉚ 510 ㉛ 5K1 ㉜ 10M</p>
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<p>CFR1/4WK</p> 	<p>Carbon film 1/4W Resistor kit, 0~10M ohm, tol: 5% 32 values, 5pc/value. Total 160pcs</p> <p>32 Resistance values (ohm) are:</p> <p>① 0 ② 1 ③ 10 ④ 100 ⑤ 1K ⑥ 10K ⑦ 100K ⑧ 15 ⑨ 150 ⑩ 1K5 ⑪ 15K ⑫ 22 ⑬ 220 ⑭ 2K2 ⑮ 22K ⑯ 220K ⑰ 33 ⑱ 330 ⑲ 3K3 ⑳ 33K ㉑ 3R9 ㉒ 39 ㉓ 390 ㉔ 39K ㉕ 47 ㉖ 470 ㉗ 4K7 ㉘ 47K ㉙ 51 ㉚ 510 ㉛ 5K1 ㉜ 10M</p>
<p>CFR1/8WK</p> 	<p>Carbon film 1/8W Resistor kit, 10~10M ohm, tol: 5% 32 values, 5pc/value. Total 160pcs</p> <p>32 Resistance values (ohm) are:</p> <p>① 10 ② 15 ③ 22 ④ 30 ⑤ 39 ⑥ 47 ⑦ 51 ⑧ 100 ⑨ 220 ⑩ 300 ⑪ 470 ⑫ 510 ⑬ 1K ⑭ 2K ⑮ 2K2 ⑯ 3K ⑰ 3K3 ⑱ 4K7 ⑲ 5K1 ⑳ 10K ㉑ 15K ㉒ 22K ㉓ 33K ㉔ 47K ㉕ 51K ㉖ 68K ㉗ 100K ㉘ 220K ㉙ 470K ㉚ 510K ㉛ 1M ㉜ 10M</p>
<p>CFR1/2WK</p> 	<p>Carbon film 1/2W Resistor kit, 10~1M ohm, tol: 5% 32 values, 5pc/value. Total 160pcs</p> <p>32 Resistance values (ohm) are:</p> <p>① 10 ② 15 ③ 22 ④ 47 ⑤ 68 ⑥ 100 ⑦ 120 ⑧ 150 ⑨ 220 ⑩ 330 ⑪ 470 ⑫ 510 ⑬ 680 ⑭ 1K ⑮ 2K ⑯ 2K2 ⑰ 3K3 ⑱ 4K7 ⑲ 5K1 ⑳ 6K8 ㉑ 10K ㉒ 15K ㉓ 22K ㉔ 47K ㉕ 51K ㉖ 68K ㉗ 100K ㉘ 220K ㉙ 470K ㉚ 510K ㉛ 680K ㉜ 1M</p>