

SINLOON®

碳膜固定電阻器
Power Range: 1/16W ~ 3W

CFR Series
Carbon Film Resistor

◆ FEATURES

Industry's lower cost and deliver from stock.
Exceptional long-term stability.
Exceeds carbon comp MIL-R-11 performance.
Standard tolerance:
Variety of packing-bulk, strip pack, 26mm and 52mm tape and reel, cut and formed or radial Pane.



◆ INTRODUCTION

Featuring consistency and stably-controlled, these carbon film resistors with reasonable prices are widely & largely used in the electronic, electrical and information industries. This resistor is a ceramic bar tightly coated with a carbon film which is composed of carbon separated from organic compound through the treatment of high-temperature vacuum. After the carbon-coated bar is connected with proper joint and engraved with grooves, its surface is finished with epoxy resin so that the bar is enclosed with a protective film.

◆ ORDERING

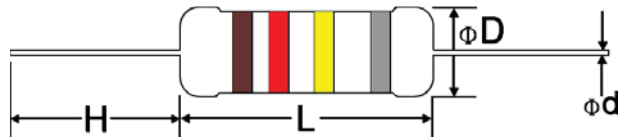
Example: CFR25F101JT52

Type	Power	TCR/°C ppm	Resistance	Tolerance	Package	Form	* Forming
CFR16	1/6W	E=±100	100 =10Ω	J = ±5%	T = T/Box	38mm	P
CFR18	1/8W	K=±150	101 =100Ω	K = ±10%	B = Bulk	52mm	M
CFR25	1/4W	F=±200	102=1KΩ	K = ±10%	R = Reel	63mm	MK
CFR50	1/2W	G=±300	103=10KΩ			73mm	F
CFR100	1W	Z=±1500	103=10KΩ				FK
CFR200	2W		104=100KΩ				KF
CFR300	3W		105=1MΩ				KK

* See Resistor Forming Type for data specification

◆ EXTERNAL DIMENSIONS

STYLE	DIMENSION (mm)			
	L	ΦD	H	Φd
CFR16	3.2±0.2	1.8±0.3	28±2	0.43±0.02
CFR18	3.2±0.2	1.8±0.3	28±2	0.43±0.02
CFR25	6.0±0.2	2.3±0.3	28±2	0.5±0.02
CFR50	9±0.5	3.2±0.3	26±2	0.6±0.02
CFR100	11.0±0.5	4.5±0.5	35±2	0.7±0.02
CFR200	15.0±0.5	5.0±0.5	32±2	0.8±0.02
CFR300	17.0±0.5	6.0±0.5	32±2	0.8±0.02



* The type designation shall be in the following form and as specified.

◆ RATED POWER

Type	Power	Maximum Voltage		Dielectric withstanding Voltage (AC)	Resistance Range	Operating temperature Range
		Working	Overload			
CFR16	1/6W	200V	500V	400V	1R~10MΩ	-55°C ~ +155°C
CFR18	1/8W	200V	500V	400V	1R~10MΩ	
CFR25	1/4W	250V	600V	500V	1R~10MΩ	
CFR50	1/2W	350V	700V	700V	1R~10MΩ	
CFR100	1W	500V	1KV	1KV	1R~10MΩ	
CFR200	2W	500V	1KV	1KV	1R~10MΩ	
CFR300	3W	600V	1KV	1KV	1R~10MΩ	

* Rated power is maximum power which can continuously loaded at specified ambient temerrmined 70 °C, however when the ambient temperture exveeds 7°C, rated power should be determined from the derating Curve of Fig 1.

$$\text{Rated continuous working voltage (RCWV)} = \sqrt{\text{Power rating} \times \text{Resistance value}}$$



◆ **PERFORMANCE SPECIFICATIONS**

PERFORMANCE TEST	TEST METHOD	APPRAISE
Short Time Overload	JIS-C-5202 5.5 : 2.5 times RCWV for 5 seconds	$\pm(0.75\%+0.05)\Omega$
Dielectric Withstanding V.	JIS-C-5202 5.7 : in V-Block for 60 seconds	By Type
Temperature Coefficient	JIS-C-5202 5.2 : -55oC ~+155oC	By Type
Insulation Resistance	JIS-C-5202 5.6 : in V-Block	$\geq 1000 M\Omega$
Solderability	JIS-C-5202 6.5 : 230oC for 5 \pm 0.5 seconds	95% min. coverage
Resistance to Solvent	JIS-C-5202 6.9 : Trichroethance for 1 min. with ultrasonic	no deterioration
Terminal Strength	Direct load for 10 sec. In the direction of the terminal leads	$\geq 2.5KG/24.5N$
Pulse Overload	JIS-C-5202 5.8 : 4 time RCWV 10000 cycles(1 sec.on, 25 sec.off)	$\pm(2\%+0.05)\Omega$
Load Life in Humidity	JIS-C-5202 7.9 : 40 \pm 2oC, 90~95% RH at RCWV for 1000 hrs (1.5hrs. on, 0.5 hrs. off)	$\pm(3\%+0.05)\Omega$
Load Life	JIS-C-5202 7.10 : 70oC at RCWV for 1000hrs (1.5hrs.on, 0.5hrs.off)	$\pm(3\%+0.05)\Omega$
Temperature Cycling		$\pm(1\%+0.05)\Omega$
Soldering Heat		$\pm(1\%+0.05)\Omega$

◆ **POWER DERATING CURVE**

Fig-1

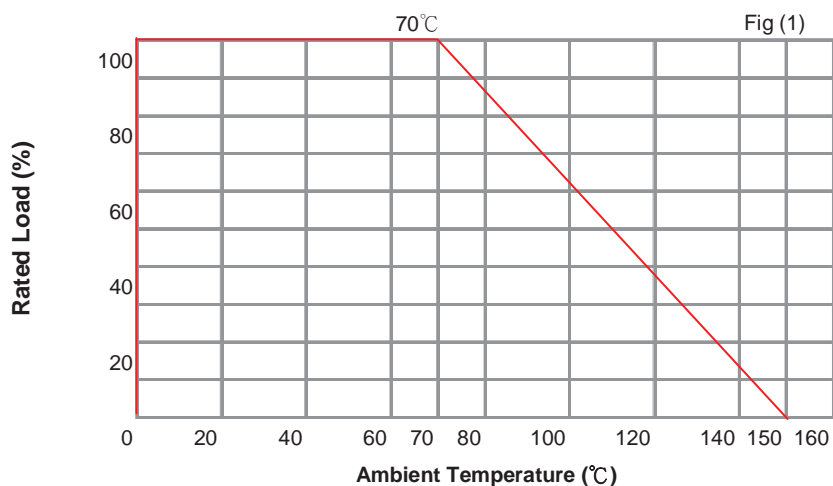
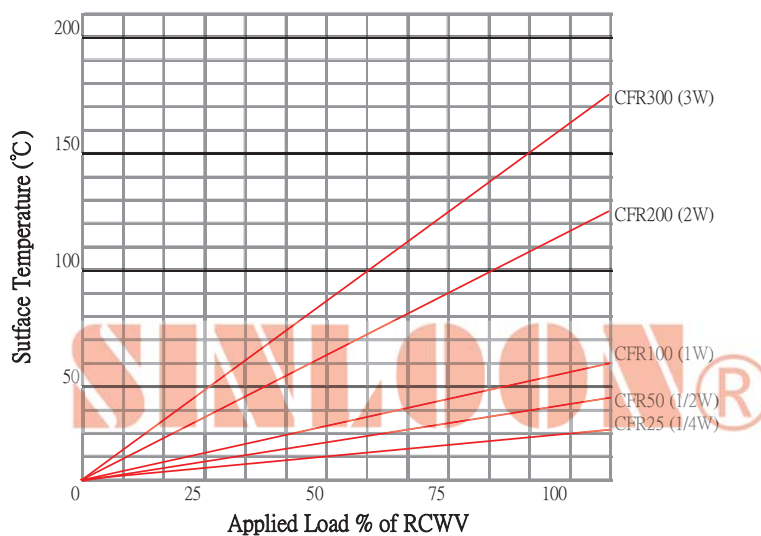
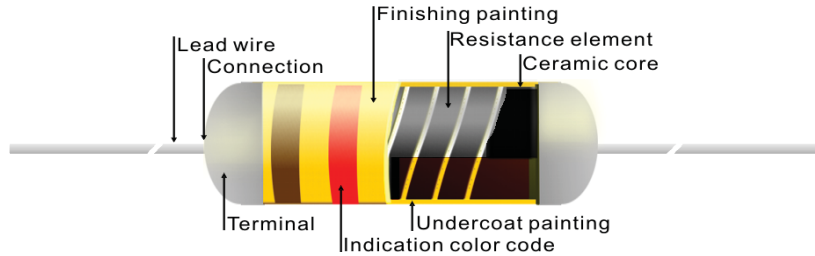


Fig 2. Ambient Temperature (°C)



◆ **STRUCTURE DIAGRAM**

The construction of resistor (CFR Series) shall be Figure.



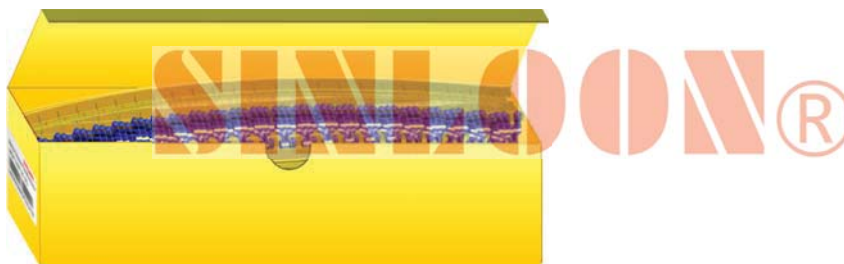
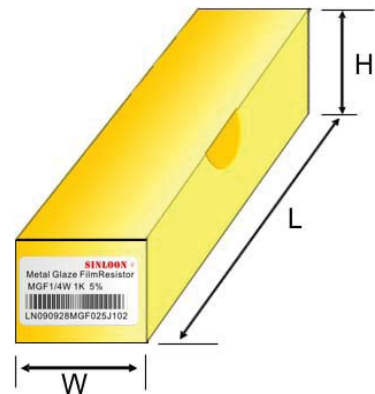
Item	Material
Ceramic Core	High alumina ceramic is used
Resistance element	The resistor element shall consist of metal glaze film.
Terminal	Tinned iron cap.
Connection	The lead wire, Which is plated with solder, shall be mounted to the caps by welding process.
Lead Wire	Soldered or tinned annealed copper wire.
Undercoat Painting	Electric insulation varnish.
Finishing painting	Epoxy resin is used.
Indiction	Color code.

◆ **Painting Resistor body color**



◆ **PACKAGE:**

Type	Power	Form	Dimensions (mm)		
			L	W	H
CFR	1/16W	T38	262	65	105
			262	65	105
CFR	1/4W	T52	262	80	105
			262	80	89
CFR	1W	T52	265	107	102
		T63	265	107	102
CFR	2W	T52	265	107	105
		T63	265	107	102
		T73	265	107	102
CFR	3W	T73	265	107	102
		T73	265	107	102



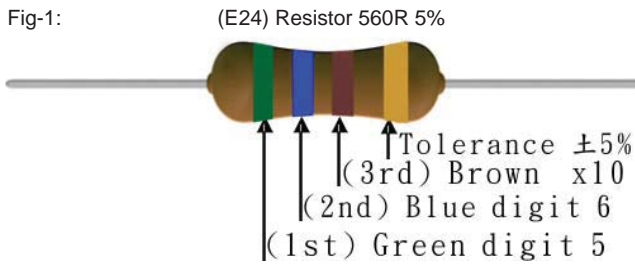
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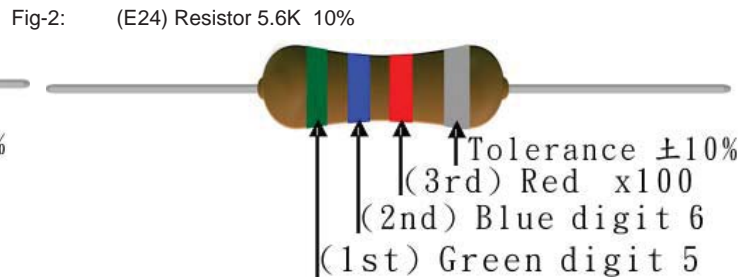
□ **Standard Resistor Color Code (4 band code)**

Color	Black	Brown	Red	Orange	Yellow	Green	Blue	Violet	Gray	White	Gold	Silver
1st digit	0	1	2	3	4	5	6	7	8	9		
2nd digit	0	1	2	3	4	5	6	7	8	9		
Multiplier	$\times 10^0$	$\times 10^1$	$\times 10^2$	$\times 10^3$	$\times 10^4$	$\times 10^5$	$\times 10^6$	$\times 10^7$	$\times 10^8$	$\times 10^9$		
Tolerance		$\pm 1\%$ (F)	$\pm 2\%$ (G)			$\pm 0.5\%$ (D)	$\pm 0.25\%$ (C)	$\pm 0.1\%$ (B)			$\pm 5\%$ (J)	$\pm 10\%$ (K)

□ **Examples:**



Green, Blue, brown, silver tolerance band:
 $56 \times 10 = 560$ ohms (560 ohms), with a tolerance of 5%



Green, blue, red, with silver tolerance band:
 $56 \times 100 = 5.6$ kohms, with a tolerance of 10%

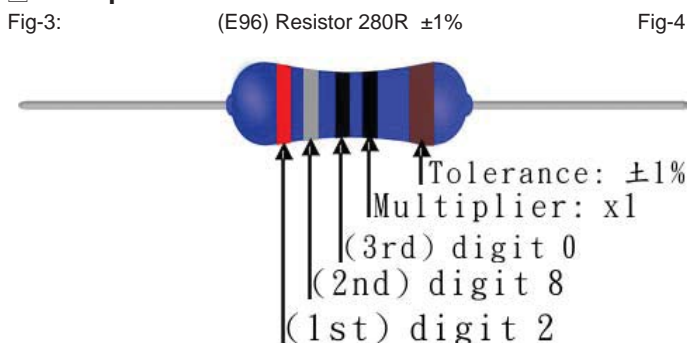
□ **Standard EIA Decade Resistor Value E24 series: (5% tolerance)**

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

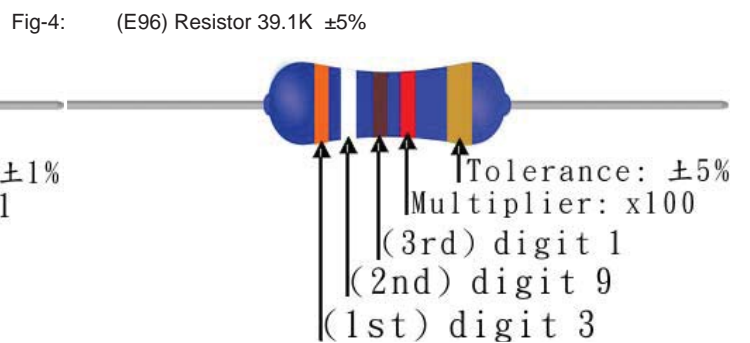
□ **Standard Resistor Color Code (5 band code)**

Color	Black	Brown	Red	Orange	Yellow	Green	Blue	Violet	Gray	White	Gold	Silver
1st digit	0	1	2	3	4	5	6	7	8	9		
2nd digit	0	1	2	3	4	5	6	7	8	9		
3rd digit	0	1	2	3	4	5	6	7	8	9		
Multiplier	$\times 10^0$	$\times 10^1$	$\times 10^2$	$\times 10^3$	$\times 10^4$	$\times 10^5$	$\times 10^6$	$\times 10^7$	$\times 10^8$	$\times 10^9$		
Tolerance		$\pm 1\%$ (F)	$\pm 2\%$ (G)			$\pm 0.5\%$ (D)	$\pm 0.25\%$ (C)	$\pm 0.1\%$ (B)			$\pm 5\%$ (J)	$\pm 10\%$ (K)

□ **Examples:**



Red, Gray, Black, Black, Brown tolerance band:
 $280 \times 1 = 280$ ohms (2800 ohms), with a tolerance of 1%



Orange, White, Brown, Red, Gold tolerance band:
 $390 \times 100 = 39.1$ K ohms (39.1K ohms),
with a tolerance of 5%

E96 series: (1% tolerance)

100, 102, 105, 107, 110, 113, 115, 118, 121, 124, 127, 130, 133, 137, 140, 143, 147, 150, 154, 158, 162, 165, 169, 174, 178, 182, 187, 191, 196, 200, 205, 210, 215, 221, 226, 232, 237, 243, 249, 255, 261, 267, 274, 280, 287, 294, 301, 309, 316, 324, 332, 340, 348, 357, 365, 374, 383, 392, 402, 412, 422, 432, 442, 453, 464, 475, 487, 491, 511, 523, 536, 549, 562, 576, 590, 604, 619, 634, 649, 665, 681, 698, 715, 732, 750, 768, 787, 806, 825, 845, 866, 887, 909, 931, 959, 976

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※Mayloon characteristic parameters of electronic product specification changes or updates without prior notice.

