

Carbon Film Resistors

FLAME-PROOF TYPE

Normal & Miniature Style [FCR Series]



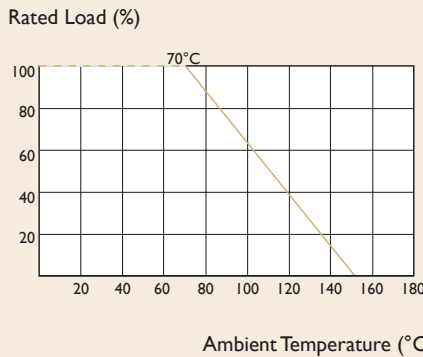
INTRODUCTION

The FCR series flame-proof Carbon Film Resistors are manufactured by Coating a homogeneous film of pure carbon on high grade ceramic rods, resistance less than 10Ω have an electroless deposited nickel film, and are coated with layers of gray color flame-proof lacquer. These resistors meet overload tests in accordance with UL specification #1412 without producing a fire hazard.

FEATURES

- Low Cost. Prompt Delivery
- High Power-to-Size Ratio for Significant Space Savings
- Flameproof Silicone Coating (UL94V-0)
- Excellent Long-Term Stability
- Wide Resistance Range: $1\Omega \sim 10M\Omega$
- Resistance Tolerance: $\pm 5\%$

DERATING CURVE



HOT-SPOT TEMPERATURE

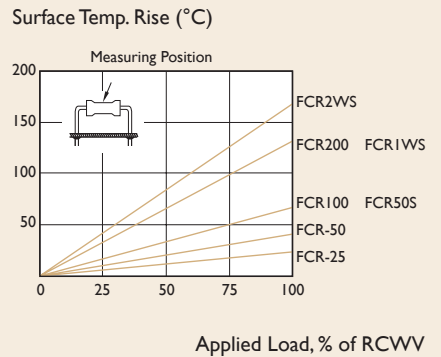
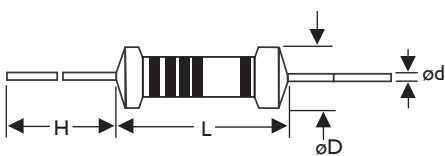


TABLE I TEMPERATURE COEFFICIENT

STYLE	Max. Value of Temp. Coefficient ppm/°C		
	under 100K Ω	100K Ω ~ 1M Ω	1M Ω ~ 10M Ω
FCR100, FCR200, FCR2WS	± 350	-500	-1500
FCR-25, FCR-50,	+350	-700	-1500
FCR50S, FCR1WS	-500		

DIMENSIONS



*The 5th is black color band for FCR series

Unit : mm

STYLE		DIMENSION			
Normal	Miniature	L	øD	H	ød
FCR-25	FCR50S	6.3 \pm 0.5	2.4 \pm 0.2	28 \pm 2.0	0.6 \pm 0.05
FCR-50	FCR1WS	9.0 \pm 0.5	3.3 \pm 0.3	26 \pm 2.0	0.6 \pm 0.05
FCR100	FCR2WS	11.5 \pm 1.0	4.5 \pm 0.5	35 \pm 2.0	0.8 \pm 0.05
FCR200	-	15.5 \pm 1.0	5.0 \pm 0.5	33 \pm 2.0	0.8 \pm 0.05



Note :

ELECTRICAL CHARACTERISTICS

STYLE	FCR-25	FCR50S	FCR-50	FCR1WS	FCR100	FCR2WS	FCR200
Power Rating at 70°C	1/4W	1/2W		1W		2W	
Operating Temp. Range	-55°C to +155°C						
Maximum Working Voltage	250V	300V	350V	400V	500V	500V	500V
Maximum Overload Voltage	500V	600V	700V	800V	1000V	1000V	1000V
Dielectric Withstanding Voltage	400V	400V	500V	600V	750V	750V	750V
Value Range ±2%, ±5%	1Ω~10MΩ						
Temperature Coefficient (by Type)	see TABLE I						

* Standard resistance is 1Ω~10MΩ, below or over this resistance on request.

ENVIRONMENTAL CHARACTERISTICS

PERFORMANCE TEST	TEST METHOD	APPRAISE	
Short Time Overload	JIS-C-5202 5.5	2.5 Times RCWV for 5 Seconds	±(0.75%+0.05Ω)
Dielectric Withstanding Voltage	JIS-C-5202 5.7	in V-Block for 60 Seconds	by Type
Temperature Coefficient of Resistance	JIS-C-5202 5.2	-55°C to +155°C	by Type
Insulation Resistance	JIS-C-5202 5.6	in V-Block	>1000MΩ
Solderability	JIS-C-5202 6.5	235±5°C for 5±0.5 Seconds	95% Min. Coverage
Resistance to Solvent	JIS-C-5202 6.9	IPA for 1 Min. with Ultrasonic	No Deterioration of Coatings and Markings
Terminal Strength	Direct load for 10 Sec. in The Direction of The Terminal Leads		≥2.5kg (24.5N)
Pulse Overload	JIS-C-5202 5.8	4 Times RCWV 10000 Cycles (1 Sec. on , 25 Sec. off)	±(1%+0.05Ω)
Load Life in Humidity	JIS-C-5202 7.9	40±2°C, 90~95% RH at RCWV for 1000 Hrs. (1.5 Hrs. on , 0.5 Hrs. off)	±(3%+0.05Ω)
Load Life	JIS-C-5202 7.10	70°C at RCWV for 1000 Hrs. (1.5 Hrs. on , 0.5 Hrs. off)	±(3%+0.05Ω)
Temperature Cycling	JIS-C-5202 7.4	-55°C→Room Temp.→+155°C→Room Temp. for 5 Cycles	±(1%+0.05Ω)
Resistance to Soldering Heat	JIS-C-5202 6.4	350°C±10°C for 3±0.5 Seconds	±(1%+0.05Ω)

* Rated Continuous Working Voltage (RCWV)= $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$