

# Carbon Film Resistors

JARO COMPONENTS, INC. LEADED RESISTORS

## FLAME-PROOF TYPE

Normal & Miniature Style [F Series]

### FEATURES

Low Cost. Prompt Delivery

High Power-to-Size Ratio for Significant Space Savings

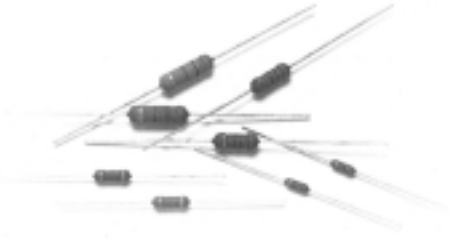
Complete Flameproof Construction-UL 1412

Excellent Long-Term Stability

Wide Resistance Range: 1Ω~10MΩ

Resistance Tolerance: ±5%

Coating and Marking Resist Trichlorethylene, Freon, and Other Cleaning Agents

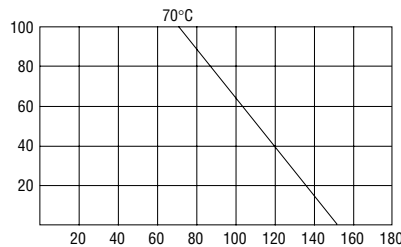


### INTRODUCTION

The F 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 green or grey color flame-proof lacquer: These resistors meet overload tests in accordance with UL specification #1412 without producing a fire hazard.

### DERATING CURVE

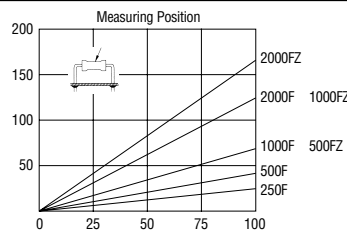
Rated Load (%)



Ambient Temperature (°C)

### HOT-SPOT TEMPERATURE

Surface Temp. Rise (°C)

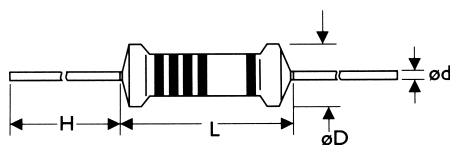


Applied Load, % of RCWV

### FIG. 1 TEMPERATURE COEFFICIENT

STYLE	Max. Value of Temp. Coefficient ppm/°C		
	under 100KΩ	100K to 1MΩ excl.	1MΩ and over
1000F, 2000F, 2000FZ	±350	+350 -500	+350 -1000
250F, 500F	±350	+350	+350
500FZ, 1000FZ	-500	-700	-1000

### DIMENSIONS



\*The 5th is black color band for FCR series

STYLE	DIMENSION	Unit : mm					
		Normal	Miniature	L	øD	H	ød
250F	500FZ			6.3±0.5	2.3±0.3	28±2.0	0.6±0.05
500F	1000FZ			9.0±0.5	3.2±0.5	26±2.0	0.6±0.05
1000F	2000FZ			11.5±1.0	4.5±0.5	35±2.0	0.8±0.05
2000F	-			15.5±1.0	5.0±0.5	32±2.0	0.8±0.05

# F Series

## ELECTRICAL CHARACTERISTICS

STYLE	250F	500FZ	500F	1000FZ	1000F	2000FZ	2000F
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 FIG. 1						

\* 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°C for 5±0.5 Seconds 95% Min. Coverage
Resistance to Solvent	JIS-C-5202 6.9	Trichroethane 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	-65°C·Room Temp.·150°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)=√Power Rating x Resistance Value