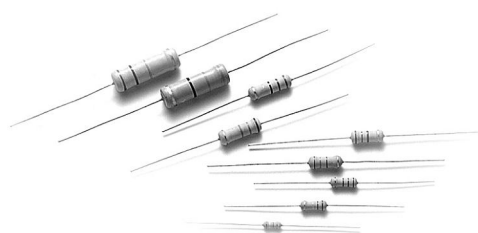


## Metal Oxide Film Resistors

# Flame-Proof Type

## Normal & Miniature Style [ RSF Series ]



### INTRODUCTION

The RSF Series Metal Oxide Film Flame Proof Resistors offer excellent performance in applications where stability and uniformity of characteristics are desired. They provide lower cost alternatives to Carbon Composition Resistors and General Purpose Metal Films. Metal Oxides also can replace many low power General Purpose wirewound applications, saving both money and time, with shorter delivery cycles. The normal style & the miniature style of RSF series are coated with layers of gray and pink colors flame proof lacquer respectively.

### DIMENSIONS



Note: RSF1WS (for MB Type)  $\varnothing d = 0,8 \pm 0,05 \text{ mm}$

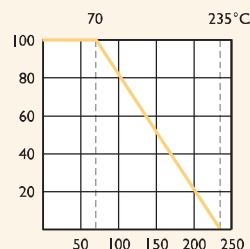
### FEATURES

Power Rating	1/4W, 1/2W, 1W, 2W, 3W, 5W
Resistance Tolerance	$\pm 2\%$ , $\pm 5\%$
T.C.R.	$\pm 300 \text{ ppm}/^\circ\text{C}$
Flameproof Multi-layer Coating Meets	UL-94V-0
Flameproof Feature Meets Overload Test	UL-1412

### DERATING CURVE

For resistors operated in ambient temperatures above  $70^\circ\text{C}$ , power rating must be derated in accordance with the curve below.

Rated Load (%)



Ambient Temperature ( $^\circ\text{C}$ )

Unit: mm

STYLE		DIMENSION			
Normal	Miniature	L	$\varnothing D$	H	$\varnothing d$
RSF-25	RSF50S	$6,3 \pm 0,5$	$2,4 \pm 0,2$	$28 \pm 2,0$	$0,55 \pm 0,05$
RSF-50	RSF1WS	$9,0 \pm 0,5$	$3,3 \pm 0,3$	$26 \pm 2,0$	$0,55 \pm 0,05$
RSF100	RSF2WS	$11,5 \pm 1,0$	$4,5 \pm 0,5$	$35 \pm 2,0$	$0,8 \pm 0,05$
RSF200	RSF3WS	$15,5 \pm 1,0$	$5,0 \pm 0,5$	$33 \pm 2,0$	$0,8 \pm 0,05$
RSF3WM	RSF5SS	$17,5 \pm 1,0$	$6,5 \pm 1,0$	$32 \pm 2,0$	$0,8 \pm 0,05$
RSF300	RSF5WS	$24,5 \pm 1,0$	$8,5 \pm 1,0$	$38 \pm 2,0$	$0,8 \pm 0,05$
RSF500	-	$24,5 \pm 1,0$	$8,5 \pm 1,0$	$38 \pm 2,0$	$0,8 \pm 0,05$

## ELECTRICAL CHARACTERISTICS

### NORMAL STYLE

STYLE	RSF-25	RSF-50	RSF100	RSF200	RSF3WM	RSF300	RSF500
Power Rating at 70°C	1/4W	1/2W	1W	2W	3W		5W
Maximum Working Voltage	200V	250V	350V		450V	500V	750V
Maximum Overload Voltage	300V	400V	600V		700V	800V	1,000V
Dielectric Withstanding Voltage	250V	350V	500V		600V	700V	750V
Resistance Range	1 Ω - 1M Ω & 0 Ω for E24 series value						
Operating Temp. Range	-55°C to +235°C						
Temperature Coefficient	±300ppm/°C						

### MINIATURE STYLE

STYLE	RSF50S	RSFIWS	RSF2WS	RSF3WS	RSF5SS	RSF5WS
Power Rating at 70°C	1/2W	1W	2W	3W	5W	
Maximum Working Voltage	250V	300V	350V		500V	700V
Maximum Overload Voltage	400V	500V	600V		800V	900V
Dielectric Withstanding Voltage	350V	400V	500V		700V	700V
Resistance Range	1 Ω - 1M Ω & 0 Ω for E24 series value					
Operating Temp. Range	-55°C to +235°C					
Temperature Coefficient	±300ppm/°C					

Note: Special value is available on request

## ENVIRONMENTAL CHARACTERISTICS

PERFORMANCE TEST	TEST METHOD		APPRAISE
Short Time Overload	JIS-C-5202 5.7	2.5 times RCWV for 5 Sec.	±1.0%+0.05 Ω for normal style ±2.0%+0.05 Ω for miniature style
Dielectric Withstanding Voltage	JIS-C-5202 5.7	in V-Block for 60 Sec.	By type
Temperature Coefficient	JIS-C-5202 5.2	-55°C to +235°C	By type
Insulation Resistance	JIS-C-5202 5.6	in V-Block	>1,000M Ω
Solderability	JIS-C-5202 6.5	260±5°C for 5±0.5 Sec.	95% Min. coverage
Resistance to Solvent	JIS-C-5202 6.9	PA for 1 Min. with ultrasonic	No deterioration of coatings and markings
Terminal Strength	JIS-C-5202 6.1	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 10,000 cycles (1 Sec. on, 25 Sec. off)	±2.0%+0.05 Ω
Load Life in Humidity	JIS-C-5202 7.9	40±2°C, 90-95% RH at RCWV for 1,000 Hr. (1.5 Hr. on, 0.5 Hr. off)	±5.0%+0.05 Ω
Load Life	JIS-C-5202 7.10	70°C at RCWV for 1,000 Hr. (1.5 Hr. on, 0.5 Hr. off)	±5.0%+0.05 Ω
Temperature Cycling	JIS-C-5202 7.4	-55°C ⇄ Room Temp. ⇄ +155°C ⇄ Room Temp. (5 cycles)	±1.0%+0.05 Ω
Resistance to Soldering Heat	JIS-C-5202 6.4	350±10°C for 3±0.5 Sec.	±1.0%+0.05 Ω
Overload Flame Retardant	JIS-C-5202 7.12	4 times RCWV for 1 Min.	No evidence of flaming or arcing

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

## EXPLANATIONS OF ORDERING CODE

MFR	-12	F	T	F	52-	100R
Code 1 - 3 <b>Series Name</b> See Index	Code 4 - 6 <b>Power Rating</b> -05 = $\varnothing$ d0,5mm -06 = $\varnothing$ d0,6mm -07 = $\varnothing$ d0,7mm -08 = $\varnothing$ d0,8mm -10 = $\varnothing$ d1,0mm -14 = $\varnothing$ d1,4mm -12 = 1/6W -25 = 1/4W 25S = 1/4WS -50 = 1/2W 50S = 1/2WS 100 = 1W 1WS = 1WS 200 = 2W 2WS = 2WS 204 = 0,4W 207 = 0,6W 300 = 3W 3WS = 3WS 3WM = 3WM 400 = 4W 500 = 5W 5WS = 5WS 5SS = 5WSS 700 = 7W 7WS = 7WS 10A = 10W 20A = 20W 30A = 30W 40A = 40W 50A = 50W 10S = 10WS 15A = 15W 25A = 25W 10B = 100W 25B = 250W	Code 7 <b>Tolerance</b> P = $\pm 0,02$ % A = $\pm 0,05$ % B = $\pm 0,1$ % C = $\pm 0,25$ % D = $\pm 0,5$ % F = $\pm 1$ % G = $\pm 2$ % J = $\pm 5$ % K = $\pm 10$ % - = Base on Spec.	Code 8 <b>Packing Style</b> T = Tape/Box R = Tape/Reel B = Bulk	Code 9 <b>Temperature Coef- ficient of Resistance</b> - = Base on Spec. A = $\pm 5$ ppm/ $^{\circ}$ C B = $\pm 10$ ppm/ $^{\circ}$ C C = $\pm 15$ ppm/ $^{\circ}$ C D = $\pm 25$ ppm/ $^{\circ}$ C E = $\pm 50$ ppm/ $^{\circ}$ C F = $\pm 100$ ppm/ $^{\circ}$ C G = $\pm 200$ ppm/ $^{\circ}$ C H = $\pm 250$ ppm/ $^{\circ}$ C I = $\pm 300$ ppm/ $^{\circ}$ C J = $\pm 350$ ppm/ $^{\circ}$ C	Code 10 - 12 <b>Forming Type</b> 26- = 26mm 52- = 52,4mm 73- = 73mm 81- = 81mm 91- = 91mm F = F Type FK = FK Type FKK = FKK Type FFK = F-form Kink M = M-Type Forming MB = M-form W/flat MT = MT Type Forming MR = MR Type AV = AVIsert PN = PANAsert	Code 13 - 17 <b>Resistance Value</b> 0R1 = 0,1 100R = 100 10K = 10,000 10M = 10,000,000

## EXCEPTION:

## • Cement series:

&lt;Code 8&gt;: Special packing style code

B: Bulk with wirewound or metal oxide sub-assembly for resistance value

W: Bulk with wirewound sub-assembly for resistance value

M: Bulk with metal oxide sub-assembly for resistance value

&lt;Code 10-12&gt;: Without forming code

Example: **SQP500JB-10R**

## • JPW series:

&lt;Code 13-17&gt;: without resistance value code

Example: **JPW-06-T-52-**