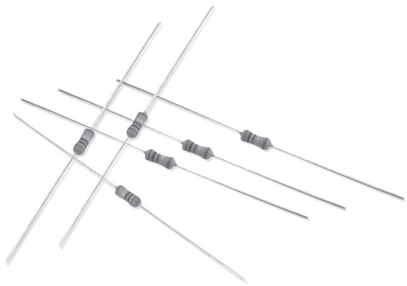
Metal Film Resistors

High Power & Flame-Proof Type

Ultra Miniature Style [FMP Series]



FEATURES

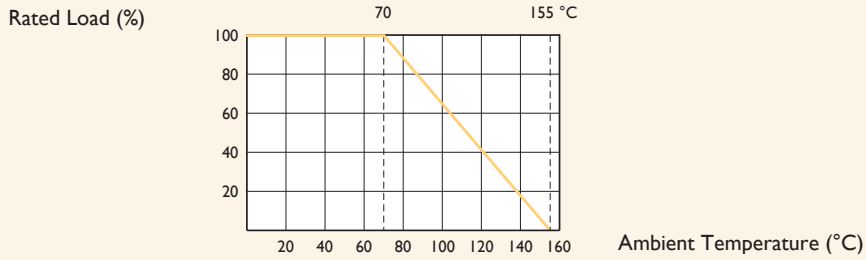
Power Rating	1/2W, 1W, 2W, 3W
Resistance Tolerance	±1%, ±5%
T.C.R.	±100ppm/°C
Flameproof Multi-layer Coating Meets	UL-94V-0
Flameproof Feature Meets Overload Test	UL-1412

INTRODUCTION

The FMP Series Metal Film High Power Resistors are manufactured using a vacuum sputtering system to deposit multiple layers of mixed metal alloys and passivative materials onto a carefully treated high grade ceramic substrate. After a helical groove has been cut in the resistive layer, tinned connecting leads of electrolytic copper are welded to the end-caps. The resistors are coated with layers of pink color lacquer.

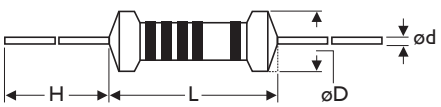
DERATING CURVE

For resistors operated in ambient temperatures above 70°C, power rating must be derated in accordance with the curve below.



DIMENSIONS

Unit: mm



STYLE	DIMENSION			
Ultra Miniature	L	øD	H	ød
FMP-50	3.4±0.3	1.9±0.2	28±2.0	0.45±0.05
FMP100	6.3±0.5	2.4±0.2	28±2.0	0.55±0.05
FMP200	9.0±0.5	3.9±0.3	26±2.0	0.55±0.05
FMP3WS	11.5±1.0	4.5±0.5	35±2.0	0.8±0.05
FMP300	15.5±1.0	5.0±0.5	33±2.0	0.8±0.05

Note:

ELECTRICAL CHARACTERISTICS

STYLE	FMP-50	FMP100	FMP200	FMP3WS	FMP300
Power Rating at 70°C	1/2W	1W	2W	3W	
Maximum Working Voltage	200V	350V	500V		750V
Maximum Overload Voltage	400V	600V	700V		1,000V
Voltage Proof on Insulation	300V	500V			
Resistance Range	1Ω - 4M7Ω & for E24 & E96 series value				
Operating Temp. Range	-55°C to +155°C				
Temperature Coefficient	±100ppm/°C , ±50ppm/°C (FMP-50 & FMP100 types, R ≥ 10RΩ)				

Note: Special value is available on request

ENVIRONMENTAL CHARACTERISTICS

PERFORMANCE TEST	TEST METHOD		APPRAISE
Short Time Overload	IEC 60115-1 4.13	2.5 times RCWV for 5 sec. (Not more than maximum Overload Voltage)	±1.0%+0.05Ω
Voltage Proof on Insulation	IEC 60115-1 4.7	In V-Block for 60 sec., test voltage as above table	No Breakdown
Temperature Coefficient	IEC 60115-1 4.8	Between -55°C to +155°C	By type
Insulation Resistance	IEC 60115-1 4.6	in V-block for 60 Sec.	>1,000MΩ
Solderability	IEC 60115-1 4.17	245±5°C for 3±0.5 Sec.	95% Min. coverage
Solvent Resistance of Marking	IEC 60115-1 4.30	IPA for 5±0.5 Min. with ultrasonic	No deterioration of coatings and markings
Robustness of Terminations	IEC 60115-1 4.16	Direct load for 10 Sec. in the direction of the terminal leads	≥2.5kg (24.5N)
Periodic-pulse Overload	IEC 60115-1 4.39	4 times RCWV 10,000 cycles (1 Sec. on, 25 Sec. off)	±1.0%+0.05Ω
Damp Heat Steady State	IEC 60115-1 4.24	40±2°C, 90-95% RH for 56 days, loaded with 0.1 times RCWV	±2.0%+0.05Ω
Endurance at 70°C	IEC 60115-1 4.25	70±2°C at RCWV (or Umax., Whichever less) for 1,000 Hr. (1.5Hr.on, 0.5Hr. Off)	±2.0%+0.05Ω
Temperature Cycling	IEC 60115-1 4.19	-55°C ⇨ Room Temp. ⇨ +155°C ⇨ Room Temp. (5 cycles)	±1.0%+0.05Ω
Resistance to Soldering Heat	IEC 60115-1 4.18	260±3°C for 10±1 Sec., immersed to a point 3±0.5mm from the body	±0.25%+0.05Ω
Accidental Overload Test	IEC 60115-1 4.26	4 times RCWV for 1 Min.	No evidence of flaming or arcing

Note: RCWV (Rated Continuous Working Voltage) = $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$ or Max. working voltage listed above, whichever less.

Mouser Electronics

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Yageo:

FMP100JR-52-12K FMP100JR-52-220R FMP100JR-52-3K3 FMP200FRF52-130K FMP200FRF52-154K FMP200FRF52-220R FMP200FRF52-249R FMP200FRF52-274K FMP200FRF52-332K FMP200FRF52-390K FMP200FRF52-715K FMP200FRF52-75K FMP200JR-52-180K FMP200JR-52-1M FMP200JR-52-200K FMP200JR-52-220K FMP200JR-52-2K7 FMP200JR-52-390R FMP200JR-52-470R FMP300FTF73-100K FMP300FTF73-100R FMP300FTF73-47K FMP300JR-73-22R FMP100JR-52-470K FMP200JR-52-1K2 FMP100JR-52-27K FMP300FRF73-1K5 FMP300FRF73-49K9 FMP300FRF73-48K7 FMP300FRF73-100K FMP300FRF73-6K65 FMP100JR-52-1K FMP100JR-52-4R7 FMP100JR-52-22K FMP100JR-52-22R FMP100JR-52-47R FMP200JR-52-7K5 FMP200JR-52-820K FMP100JR-52-270R FMP100JR-52-2K2 FMP100JR-52-47K FMP100JR-52-4K7 FMP200JR-52-39K FMP100JR-52-100K FMP200JR-52-22R FMP200JR-52-4R7 FMP200JR-52-100K FMP200JR-52-4K7 FMP200JR-52-33R FMP100JR-52-390R FMP100JR-52-56K FMP200JR-52-120K FMP200JR-52-15K FMP200JR-52-330R FMP200JR-52-430R FMP200JR-52-560R FMP100JR-52-68R FMP200JR-52-10K FMP200JR-52-1K5 FMP200JR-52-270R FMP100JR-52-1M FMP100JR-52-560R FMP200JR-52-47K FMP200JR-52-8K2 FMP100JR-52-10R FMP200JR-52-47R FMP200JR-52-12K FMP100JR-52-1K5 FMP200JR-52-18K FMP200JR-52-68K FMP200FRF52-100R FMP100JR-52-1K2 FMP200JR-52-43R FMP100JR-52-18K FMP200JR-52-150K FMP100JR-52-180R FMP100JR-52-82K FMP200JR-52-120R FMP100JR-52-16K FMP200JR-52-22K FMP200JR-52-27R FMP200JR-52-30K FMP100JR-52-100R FMP200JR-52-1K8 FMP100JR-52-150K FMP100JR-52-270K FMP100JR-52-33K FMP100JR-52-820K FMP200JR-52-27K FMP200JR-52-56R FMP200JR-52-820R FMP200JR-52-18R FMP200JR-52-150R FMP200JR-52-180R FMP200JR-52-2K2 FMP200JR-52-5K1 FMP100JR-52-68K FMP200JR-52-220R FMP200JR-52-270K FMP100JR-52-180K