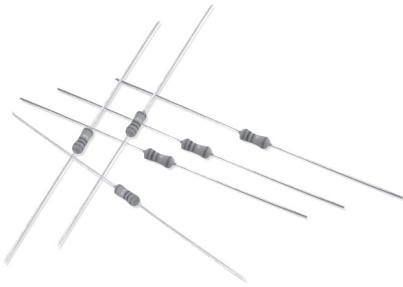


Metal Film Resistors

High Power & Flame-Proof Type

Ultra Miniature Style [FMP Series]



INTRODUCTION

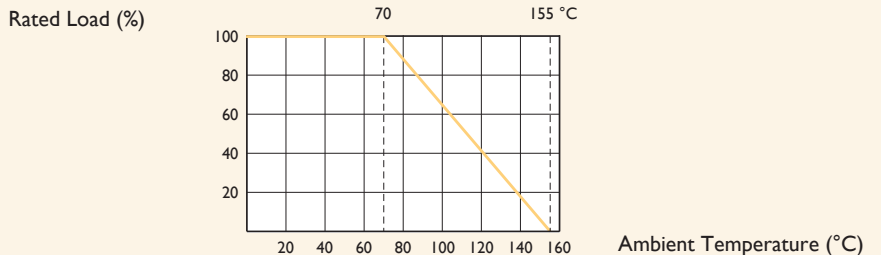
The FMP Series Metal Film High Power Resistors are manufactured using a vacuum sputtering system to deposit multiple layers of mixed metal alloys and passivative materials onto a carefully treated high grade ceramic substrate. After a helical groove has been cut in the resistive layer; tinned connecting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

FEATURES

Power Rating	1/2W, 1W, 2W, 3W
Resistance Tolerance	$\pm 1\%$, $\pm 5\%$
T.C.R.	$\pm 100\text{ppm}/^{\circ}\text{C}$
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°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 $\pm$ 0.3	1.9 $\pm$ 0.2	28 $\pm$ 2.0	0.45 $\pm$ 0.05
FMP100	6.3 $\pm$ 0.5	2.4 $\pm$ 0.2	28 $\pm$ 2.0	0.55 $\pm$ 0.05
FMP200	9.0 $\pm$ 0.5	3.9 $\pm$ 0.3	26 $\pm$ 2.0	0.55 $\pm$ 0.05
FMP3WS	11.5 $\pm$ 1.0	4.5 $\pm$ 0.5	35 $\pm$ 2.0	0.8 $\pm$ 0.05
FMP300	15.5 $\pm$ 1.0	5.0 $\pm$ 0.5	33 $\pm$ 2.0	0.8 $\pm$ 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.

Revision: 2020