

# DATA SHEET

## MELF METAL FILM RESISTORS

High Power  
MMP Series

$\pm 1\%$ ,  $\pm 2\%$ ,  $\pm 5\%$

1W AND 2W

RoHS compliant & Halogen Free





**APPLICATIONS**

- All general purpose applications
- Power applications
- Energy meter

**FEATURES**

- AEC-Q200 qualified
- MELF, SMD package
- Excellent pulse withstanding capability
- Ultra miniature size
- Higher power rating
- RoHS compliant and halogen free

**ORDERING INFORMATION**

Part number of the power MELF metal film resistor is identified by the series, power rating, tolerance, packing, temperature coefficient and resistance value.

**PART NUMBER**

<u>MMP</u>	<u>100</u>	<u>J</u>	<u>R</u>	<u>-</u>	<u>100R</u>
(1)	(2)	(3)	(4)	(5)	(6)

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**(1) SERIES**

MMP Series

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**(2) POWER RATING**

100 = 1W

200 = 2W

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**(3) TOLERANCE**

F = ±1%

J = ±5%

G = ±2%

- = Based on spec.

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**(4) PACKAGING**

R = Reel Pack

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**(5) TEMPERATURE COEFFICIENT OF RESISTANCE**

E=±50ppm/°C

- = Based on spec.

F=±100ppm/°C

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**(6) RESISTANCE VALUE**

E24 & E96 Series value

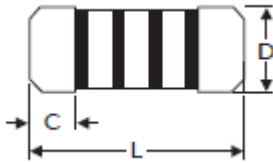
Example:

1R = 1Ω, 10K = 10,000Ω, 1M = 1,000,000Ω

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**DIMENSIONS**

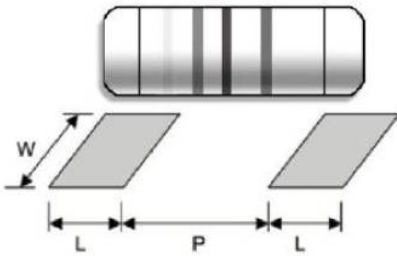
Unit: mm



Ultra Miniature	L	D	C Min.
MMP100	5.90 ± 0.2	2.20 ± 0.1	0.5
MMP200	8.50 ± 0.2	3.20 ± 0.2	0.5

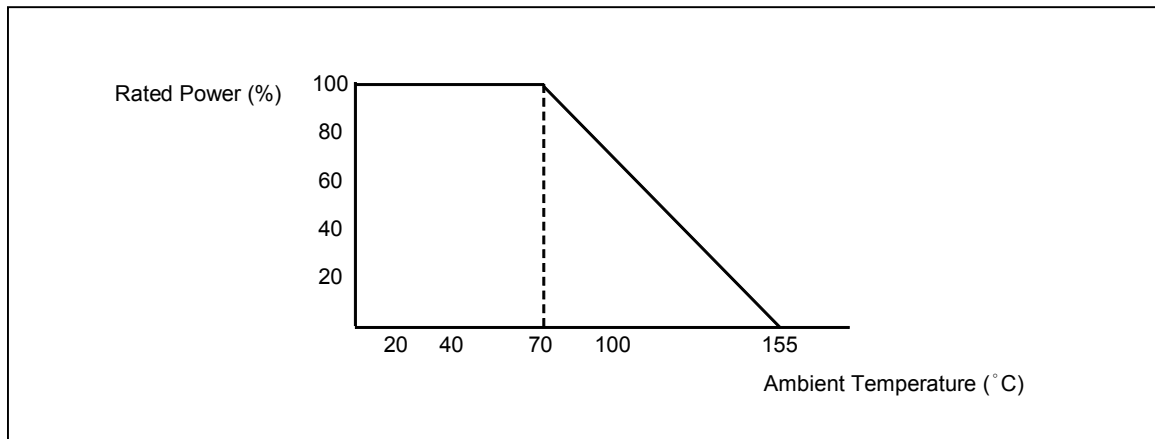
**SUGGESTED PAD LAYOUT**

Unit: mm



Ultra Miniature	Soldering Mode	L Min.	P	W Min.
MMP100	Reflow	2.0	3.0 ± 0.1	3.0
	Wave	2.5	3.0 ± 0.1	3.0
MMP200	Reflow	2.3	5.5 ± 0.2	4.0
	Wave	2.8	5.5 ± 0.2	4.0

**DERATING CURVE**



**ELECTRICAL CHARACTERISTICS**

CHARACTERISTICS	MMP100	MMP200
Power Rating at 70 °C	1W	2W
Maximum Working Voltage	350V	350V
Maximum Overload Voltage	700V	700V
Voltage Proof on Insulation	500V	500V
Resistance Range	1Ω ~ 1MΩ & 0Ω for E24 & E96 series value	
Operating Temp. Range	- 55°C to +155°C	
Temperature Coefficient	±50ppm/°C, ±100ppm/°C	

Note: For resistance value out of above range is by request.

**TEST AND REQUIRMENTS**

TEST	TEST METHOD	PROCEDURE	APPRAISE
Short Time Overload	IEC 60115-1 4.13	2.5 times RCWV for 5 sec.(Not more than maximum overload voltage)	±0.5%+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.	>10,000MΩ
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
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.(1.5 Hr.on,0.5 Hr. off)	±2.0%+0.05Ω
Temperature Cycling	IEC 60115-1 4.19	➔ -55°C ➔ Room Temp. ➔ +155°C Room Temp.(5 cycles)	±0.75%+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	±0.5%+0.05Ω

Note:

### RCWV (Rated Continuous Working Voltage):

The DC or AC (rms) continuous working voltage corresponding to the rated power is determined by the following formula:

$$V = \sqrt{P \times R}$$

or max. working voltage whichever is less

Where

V=Continuous rated DC or  
AC (rms) working voltage (V)

P=Rated power (W)

R=Resistance value ( $\Omega$ )

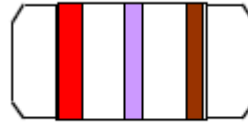
### PACKING

TYPE			Unit: piece
Ultra Miniature	Packaging	Quantity Per Reel	
MMP100	7"	2,000	
MMP200	13"	2,500	

**MARKING**

3-BAND-CODE

±2%, ±5%



COLOR	1st BAND	2nd BAND	3rd BAND	MULTIPLIER
BLACK	0	0	0	1Ω
BROWN	1	1	1	10Ω
RED	2	2	2	100Ω
ORANGE	3	3	3	1KΩ
YELLOW	4	4	4	10KΩ
GREEN	5	5	5	100K
BLUE	6	6	6	1MΩ
VIOLET	7	7	7	10MΩ
GREY	8	8	8	0.001Ω
WHITE	9	9	9	0.0001Ω
GOLD				0.1Ω
SILVER				0.01Ω

±1%

5-BAND-CODE



**REVISION HISTORY**

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version 0	Aug.2, 2021	-	- First issue of this specification

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