

DATA SHEET

MELF CARBON FILM RESISTORS

High Power
MCP Series

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

1W AND 2W

RoHS compliant & Halogen Free



YAGEO

Product specification – September 5, 2024 V.2





APPLICATIONS

- All general purpose applications
- Power applications
- Energy meter

FEATURES

- MELF, SMD package
- Excellent pulse withstanding capability
- Ultra miniature size
- Higher power rating
- RoHS compliant & halogen-free

ORDERING INFORMATION

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

PART NUMBER

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

(1) SERIES

MCP Series

(2) POWER RATING

100 = 1W

200 = 2W

(3) TOLERANCE

G = $\pm 2\%$

- = Based on spec.

J = $\pm 5\%$

(4) PACKAGING

R = Reel Pack

(5) TEMPERATURE COEFFICIENT OF RESISTANCE

- = Based on spec.

(6) RESISTANCE VALUE

E24 Series value

Example:

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

DIMENSIONS

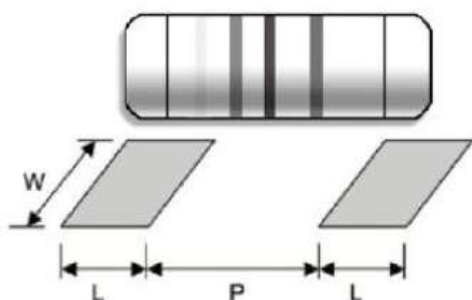
Unit: mm



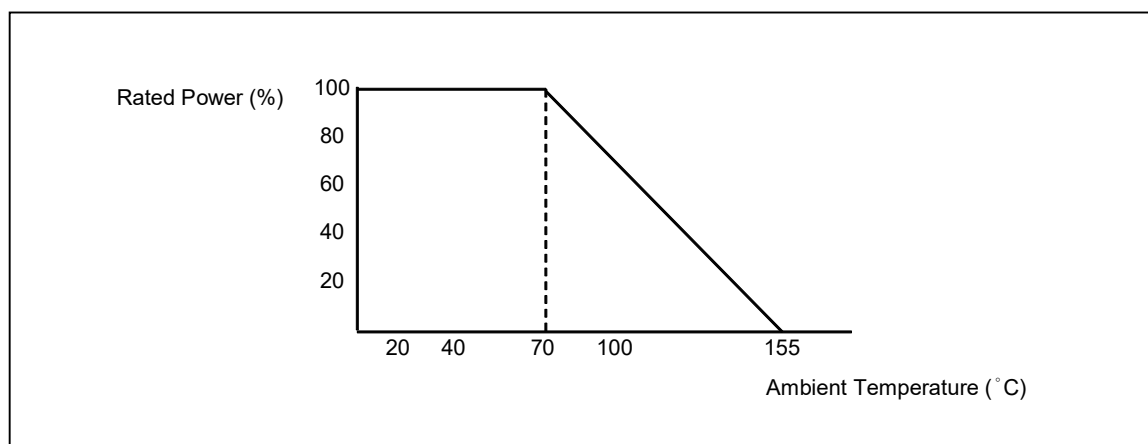
Ultra Miniature	L	D	C Min.
MCP100	5.9 ± 0.2	2.2 ± 0.1	0.5
MCP200	8.5 ± 1.0	3.0 ± 0.2	0.5

SUGGESTED PAD LAYOUT

Unit: mm



Ultra Miniature	Soldering Mode	L Min.	P	W Min.
MCP100	Reflow	2.0	3.0 ± 0.1	3.0
	Wave	2.5	3.0 ± 0.1	3.0
MCP200	Reflow	2.3	5.5 ± 0.2	4.0
	Wave	2.8	5.5 ± 0.2	4.0

DERATING CURVE**TABLE I TEMPERATURE COEFFICIENT**

TYPE	MAX. VALUE OF TEMP. COEFFICIENT PPM/ °C		
	under 10KΩ	11KΩ – 150KΩ	160KΩ – 1MΩ
MCP100, MCP200	-350 ~0	-600 ~0	-1000 ~0

ELECTRICAL CHARACTERISTICS

CHARACTERISTICS	MCP100	MCP200
Power Rating at 70 °C	1W	2W
Maximum Working Voltage	300V	350V
Maximum Overload Voltage	600V	700V
Voltage Proof on Insulation	500V	500V
Resistance Range	1Ω ~ 1MΩ & 0Ω for E24 series value	
Operating Temp. Range	- 55°C to +155°C	
Temperature Coefficient	see Table I	

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)	±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.	>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	±5.0%+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)	±3.0%+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	±1.0%+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

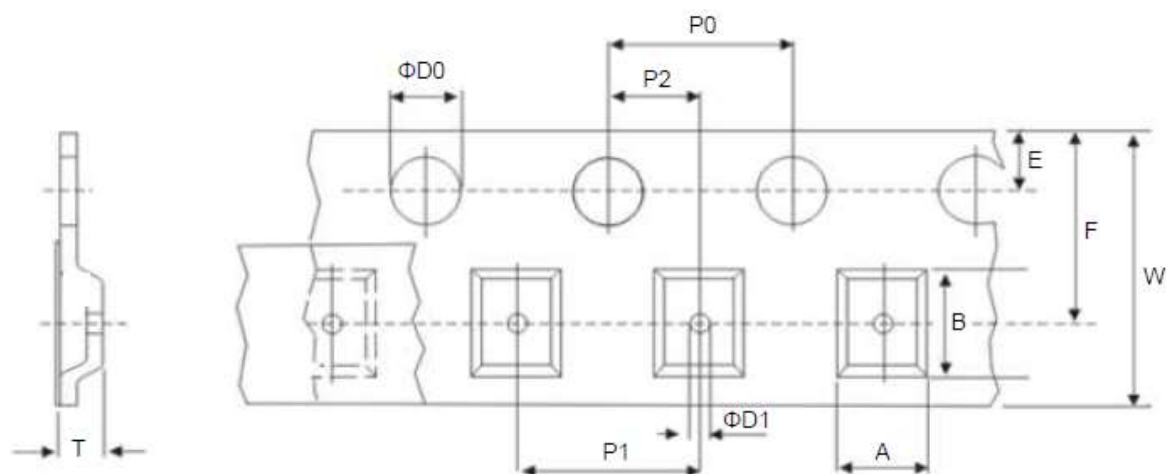
Where

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

P=Rated power (W)

R=Resistance value (Ω)

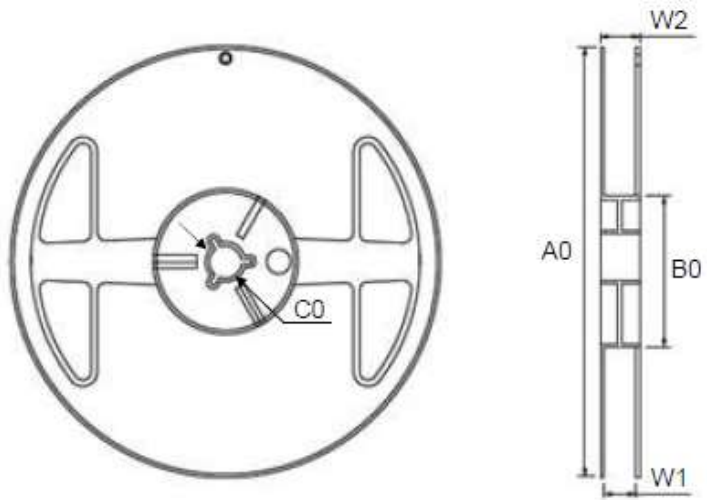
PACKING METHODS



DIMENSIONS

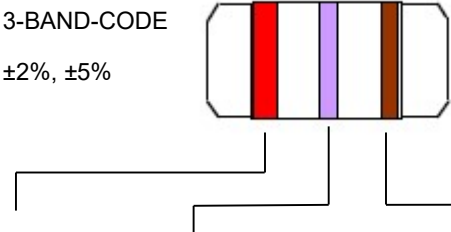
Unit: mm

TYPE	A	B	W	E	F	P0	P1	P2	ΦD0	ΦD1	T
MCP100	2.4±0.1	6.3±0.1	12.0±0.2	1.75±0.1	7.5±0.05	4.0±0.1	4.0±0.1	2.0±0.05	1.5±0.1	1.4 Min.	2.50±0.1
MCP200	3.3±0.1	9.0±0.1	16.0±0.3	1.75±0.1	9.5±0.1	4.0±0.1	8.0±0.1	2.0±0.05	1.5±0.1	1.4 Min.	3.30±0.1



DIMENSIONS						Unit: mm/piece	
TYPE	A0	B0	C0	W1	W2	Packaging	Quantity
MCP100	178.5±1.5	60.0±1.0	13.0±0.5	13.0±0.5	15.5±0.5	7"	2,000
MCP200	330.0±1.5	100.0±1.0	13.0±0.5	17.0±0.5	19.0±0.5	13"	2,500

MARKING



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

REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version 2	Sep. 05, 2024	-	- Updated packing methods
Version 1	Aug. 31, 2023	-	- Revised LEGAL DISCLAIMER
Version 0	Aug. 2, 2021	-	- First issue of this specification

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