

Approval Sheet

for

**MELF Carbon Film Resistors
Power Type**

MCP series

±2%, ±5%

YAGEO CORPORATION

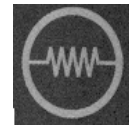
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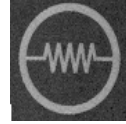
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Rev.	Description	Issue Date	Drawn	Approved
00	issue new spec.	Jul 16, 2007	Sara Lin	Joyce Chung
01	Adjust Dimension & electrical characteristics	Feb 17, 2009	Lynn Chen	Ken Hsu

Description	Melf Carbon Film Resistors		
Series	MCP	Rev.	01

**1. PRODUCT:**

POWER TYPE MELF CARBON FILM RESISTORS
(Normal & Miniature Style)

2. PART NUMBER:

Part number of the power type Melf Carbon film resistor is identified by the name, power, tolerance, packing, temperature coefficient, special type and resistance value.

Example :

MCP	100	J	R	-	100R
(1)	(2)	(3)	(4)	(5)	(6)
Series Name	Power Rating	Resistance Tolerance	Packing Style	Temperature Coefficient of Resistance	Resistance Value

(1) Style: MCP SERIES

(2) Power Rating : 100=1W 、 200=2W

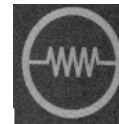
(3) Tolerance : G = $\pm 2\%$
J = $\pm 5\%$

(4) Packaging Type: R = Paper Taping Reel

(5) Temperature Coefficient: see table 1

(6) Resistance Value : E24 & E96 Series

Example : 1R 、 10R 、 100R 、 10K 、 100K 、 330K 、 1M.....



3. BAND-CODE:



COLOR	1ST BAND	2ND BAND	MULTIPLIER
BLACK	0	0	1 Ω
BROWN	1	1	10 Ω
RED	2	2	100 Ω
ORANGE	3	3	1K Ω
YELLOW	4	4	10K Ω
GREEN	5	5	100K
BLUE	6	6	1M Ω
VIOLET	7	7	10M Ω
GREY	8	8	
WHITE	9	9	
GOLD			0.1 Ω
SILVER			0.01 Ω

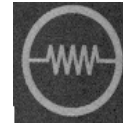
4. ELECTRICAL CHARACTERISTICS

STYLE	MCP100	MCP200
Power Rating at 70 °C	1W	2W
Maximum Working Voltage	350V	
Maximum Overload Voltage	700V	
Dielectric Withstanding Voltage	500V	
Standard Value Range ±1%	1 Ω ~ 1 M Ω & 0 Ω for E24 & E96 series	
Operating Temp. Range	- 55 °C to + 155 °C	
Temperature Coefficient	See table 1	

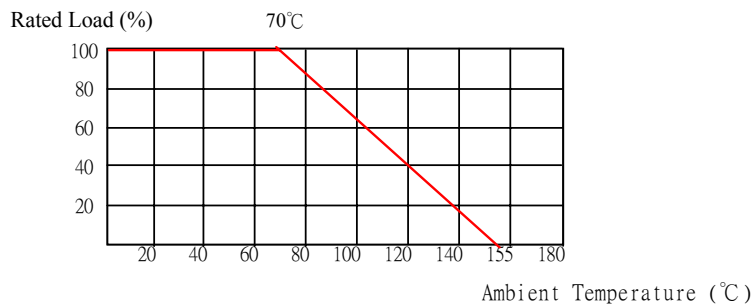
* Below or over this resistance range on request.

TABLE.1 TEMPERATURE COEFFICIENT

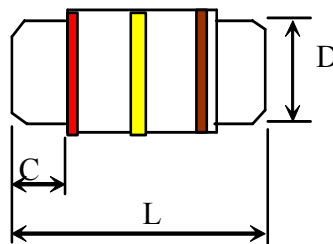
STYLE	Max. Value of Temp. Coefficient ppm/°C		
	Under 10K Ω	11K Ω ~ 150K Ω	160K Ω ~ 2M2 Ω
MCP100, MCP200	0 ~ - 350	0 ~ -600	0 ~ -1,000



5. DERATING CURVE



6. DIMENSIONS



Unit : mm

STYLE	L	D	C (Min)
MCP100	5.9±0.2	2.2±0.1	0.5
MCP200	8.5±0.2	3.2±0.2	0.5

7. ENVIRONMENTAL CHARACTERISTICS

(1) Short Time Over Load Test

At 2.5 times of the rated voltage. (If the voltage exceeds the maximum load voltage, the maximum load voltage will be used as the rated voltage) applied for 5 seconds, the resistor should be free from defects after the resistor is released from load for about 30 minutes

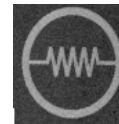
$$\text{Short Time Overload Voltage} = 2.5 * \sqrt{\text{Power Rating} \times \text{Resistance Value}}$$

The change of the resistance value should be within $\pm 1.0 \% + 0.05 \Omega$ (for normal size)

(2) Temperature Coefficient Test

Test of resistors above room temperature $100^{\circ}\text{C} \pm 2^{\circ}\text{C}$ (Testing Temperature 115°C to 130°C) at the constant temperature silicon plate for over 5 minutes. Then measure the resistance value.

The Temperature Coefficient is calculated by the following equation and its value should be within the range of requested.



$$\text{Resistor Temperature Coefficient} = \frac{R - R_0}{R_0} \times \frac{1}{t - t_0} \times 10^6$$

R = Resistance value under the testing temperature

R₀ = Resistance value at the room temperature

t = The testing temperature

t₀ = Room temperature

(3) Solderability

Immerse the specimen into the solder pot at 260 ± 5 °C for 5 ± 0.5 seconds.
At least 95% solder coverage on the termination.

(4) Resistance to Solvent

The specimen into the appropriate solvent of IPA condition of ultrasonic machine for 1 minutes.
The specimen is no deterioration of coatings and color code.

(5) Pulse Overload

Apply 4 times of rated voltage to the specimen at the 1 second on and 25 seconds off cycle, subjected to voltage application cycles specified in 10,000 time ◦
The change of the resistance value shall be within $\pm 1.0\% + 0.05 \Omega$

(6) Load Life in Humidity

Place the specimen in a test chamber at 40 ± 2 °C and 90 ~ 95 % relative humidity. Apply the rated voltage to the specimen at the 1.5 hours on and 0.5 hour off cycle. The total length of test is 1,000 hours
The change of the resistance value shall be within $\pm 5\% + 0.1 \Omega$

(7) Load Life Test

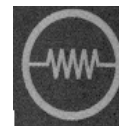
Placed in the constant temperature chamber of 70 ± 3 °C the resistor shall be connected to the lead wire at the point of 25mm. Length with each terminal, the resistors shall be arranged not much effected mutually by the temperature of the resistors and the excessive ventilation shall not be performed, for 90 minutes on and 30 minutes off under this condition the rated D.C. voltage is applied continuously for 1000+48/-0 hours then left at no-load for 1hour, measured at this time the resistance value ◦
The change of the resistance value shall be within $\pm 3\% + 0.1 \Omega$.
There shall be no remarkable change in the appearance and the color code shall be legible after the test.

(8) Temperature Cycling Test

The temperature cycle shown in the following table shall be repeated 5 times consecutively. The measurement of the resistance value is done before the first cycle and after ending the fifth cycle, leaving in the room temperature for about 1 hour ◦

Temperature Cycling Conditions:

Step	Temperature(°C)	Time (minute)
1	-55 ± 3	30
2	25 ± 3	2 ~ 3
3	155 ± 3	30
4	25 ± 3	2 ~ 3



The change of the resistance value shall be within $\pm 0.75\% + 0.05\ \Omega$
After the test the resistor shall be free from the electrical or mechanical damage.

(9) Resistance to Soldering Heat

The terminal lead shall be dipped into the solder pot at $350 \pm 10\ ^\circ\text{C}$ for 3 ± 0.5 seconds up to 2 ~ 2.5 mm.
The change of the resistance value shall be within $\pm 1\% + 0.05\ \Omega$

8. PACKING METHODS

STYLE		TAPE ON REEL	
SIZE	Normal	Packaging	Qty per reel
0207	MCP100	7"	2,000PCS
0309	MCP200	13"	2,500PCS

9. Plant Address

- A. Taiwan Xindian Plant
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Xindian, Taipei, Taiwan, ROC
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- B. China Dongguan Plant
7-1, Gaoli Road, Gaoli Industrial Zone
Tangxia Zhen, Dongguan, Guangdong, China
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Tel. 86-769-8772 0275
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- C. China Mudu Plant
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