Innovative Service Around the Globe YAGEO

# DATA SHEET

## MELF CARBON FILM RESISTORS

High Power
MCP Series
±2%, ±5%

**1W AND 2W**
**RoHS compliant & Halogen Free**

YAGEO

Product specification – August 24, 2021 V.0

## 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

| MCP | 100 | J | R | - | 100R |
|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) |

### (1) SERIES

MCP Series

### (2) POWER RATING

100 = 1W
200 = 2W

### (3) TOLERANCE

G = ±2%
J = ±5%
- = Based on spec.

### (4) PACKAGING

R = Reel Pack

### (5) TEMPERATURE COEFFICIENT OF RESISTANCE

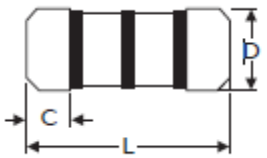
- = Based on spec.

### (6) RESISTANCE VALUE

E24 Series value
Example:
1R = 1Ω, 10K = 10,000Ω, 1M = 1,000,000Ω

## DIMENSIONS

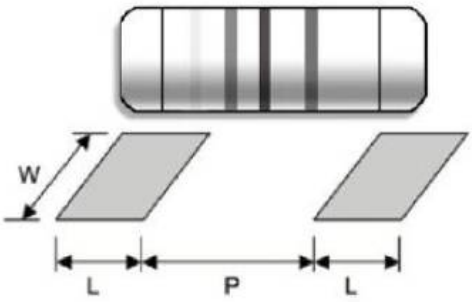
Unit: mm




| 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 |

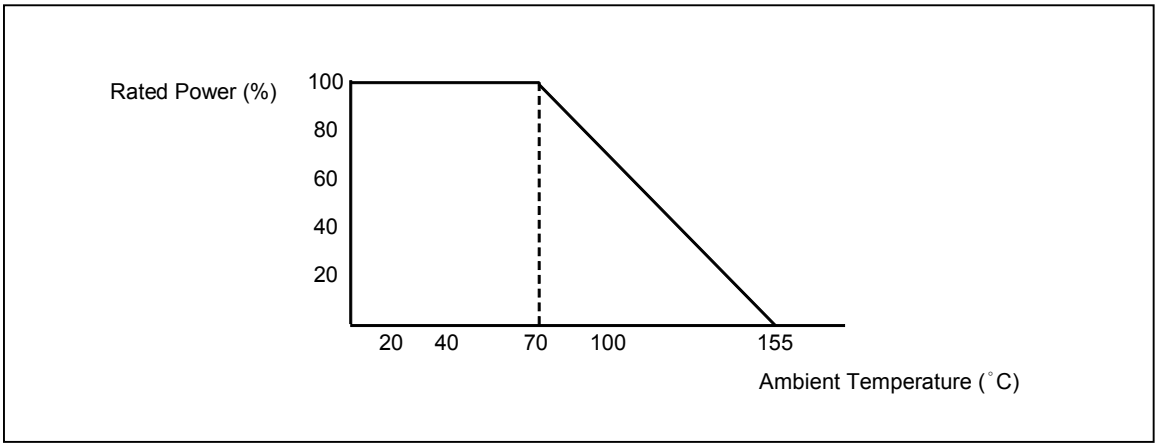
## SUGGESTED PAD LAYOUT

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

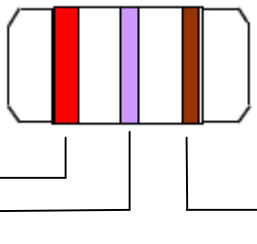
TYPE Unit: piece

| Ultra Miniature | Packaging | Quantity Per Reel |
|---|---|---|
| MCP100 | 7” | 2,000 |
| MCP200 | 13” | 2,500 |

## MARKING

3-BAND-CODE

±2%, ±5%



| 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 0 | Aug. 2 , 2021 | - | - First issue of this specification |

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