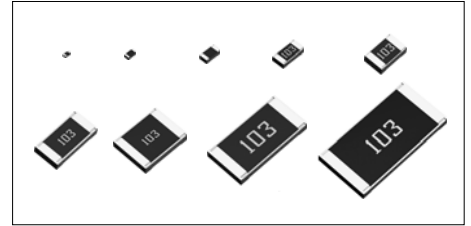


●Features

- 1) Full line up from ultra small size (01005) to 2512 with jumper type.
- 2) ROHM resistors have obtained ISO9001/ISO/TS16949 certification.



| Part No. | Size | | Type Code | Packing Specification | Quantity / Reel |
|---------------|------|--------|-----------|------------------------------|-----------------|
| | (mm) | (inch) | | | |
| MCR006 | 0603 | 0201 | YRT | Paper tape (2mm pitch) | 15,000 |
| MCR01 | 1005 | 0402 | MRT | | 10,000 |
| MCR03 | 1608 | 0603 | ERT | Paper tape (4mm pitch) | 5,000 |
| MCR10 | 2012 | 0805 | | | |
| MCR18 | 3216 | 1206 | | | |
| MCR25 | 3225 | 1210 | JRT | Embossed tape (4mm pitch) | 4,000 |
| MCR50 | 5025 | 2010 | | | |
| MCR100 | 6432 | 2512 | | | |

●Part Number Description

| M C R | 0 0 6 | Y R T | J | 1 0 0 | | | | | | |
|--------------------------------------|--|------------------|---|---|----------------------|-----------------|------------|------------|----------|------------|
| Part No. | Size (mm [inch]) | Type Code | Resistance Tolerance | Nominal Resistance | | | | | | |
| MCR (Micro chip resistors) | 006 (0603 [0201]) 01 (1005 [0402]) 03 (1608 [0603]) 10 (2012 [0805]) 18 (3216 [1206]) 25 (3225 [1210]) 50 (5025 [2010]) 100 (6432 [2512]) | | D (±0.5%) F (±1%) J (±5%) (Including jumper type) | Resistance code, 3 or 4 digits. 000 denotes jumper type. <table border="1" style="width: 100%;"><tr><th>Resistance tolerance</th><th>Resistance code</th></tr><tr><td>D,F</td><td>: 4 digits</td></tr><tr><td>J</td><td>: 3 digits</td></tr></table> Ex.) 1Ω = 1R0 (±5%) 9.1Ω = 9R1 (±5%) 10Ω = 10R0 (±0.5%, ±1%) 100 (±5%) 2.2MΩ = 2204 (±1%) 225 (±5%) | Resistance tolerance | Resistance code | D,F | : 4 digits | J | : 3 digits |
| Resistance tolerance | Resistance code | | | | | | | | | |
| D,F | : 4 digits | | | | | | | | | |
| J | : 3 digits | | | | | | | | | |

●Products List

| Part No. | Type Code | Rated Power (70°C) (W) | Limiting Element Voltage (V) | Temperature Coefficient (ppm / °C) | Resistance Tolerance (%) | Resistance Range | Series | Operating Temperature Range (°C) |
|---|-----------|------------------------------|------------------------------------|--|--------------------------------|--|---------|---|
| MCR006 | YRT | 0.05 | 25 | +600 / -200 ±250 | J(±5%) | 1.0Ω to 9.1Ω 10Ω to 10MΩ | E24 | -55 to +125 |
| | | | | ±250 | F(±1%) | 10Ω to 10MΩ | | |
| | | | | ±200 ±100 | D(±0.5%) | 10Ω to 910Ω 1kΩ to 1MΩ | | |
| Jumper type : Rmax = 50m Ω / Imax. = 0.5A | | | | | | | | |
| MCR01 | MRT | 0.063 | 50 | +500 / -250 ±200 | J(±5%) | 1.0Ω to 9.1Ω 10Ω to 10MΩ | E24 | |
| | | | | ±100 | F(±1%) | 10Ω to 976kΩ 10Ω to 2.2MΩ 1MΩ to 2.2MΩ | E24,E96 | |
| | | | | ±100 ±50 | D(±0.5%) | 10Ω to 91Ω 100Ω to 1MΩ | E24 | |
| Jumper type : Rmax = 50m Ω / Imax. = 1A | | | | | | | | |
| MCR03 | ERT | 0.1 | 50 | ±400 ±200 | J(±5%) | 1.0Ω to 9.1Ω 10Ω to 10MΩ | E24 | |
| | | | | ±100 | F(±1%) | 10Ω to 976kΩ 10Ω to 10MΩ 1MΩ to 10MΩ | E24,E96 | |
| | | | | ±100 ±50 | D(±0.5%) | 10Ω to 91Ω 100Ω to 1MΩ | E24 | |
| Jumper type : Rmax = 50m Ω / Imax. = 1A | | | | | | | | |
| MCR10 | ERT | 0.125 | 150 | ±400 ±200 | J(±5%) | 1.0Ω to 9.1Ω 10Ω to 10MΩ | E24 | |
| | | | | ±100 | F(±1%) | 10Ω to 976kΩ 10Ω to 2.2MΩ 1MΩ to 2.2MΩ | E24,E96 | |
| | | 0.1 | | ±100 ±50 | D(±0.5%) | 10Ω to 91Ω 100Ω to 1MΩ | E24 | |
| Jumper type : Rmax = 50m Ω / Imax. = 2A | | | | | | | | |
| MCR18 | ERT | 0.25 | 200 | ±400 ±200 | J(±5%) | 1.0Ω to 9.1Ω 10Ω to 10MΩ | E24 | |
| | | | | ±100 | F(±1%) | 10Ω to 976kΩ 10Ω to 2.2MΩ 1MΩ to 2.2MΩ | E24,E96 | |
| | | 0.125 | | ±100 ±50 | D(±0.5%) | 10Ω to 91Ω 100Ω to 1MΩ | E24 | |
| Jumper type : Rmax = 50m Ω / Imax. = 2A | | | | | | | | |
| MCR25 | JRT | 0.25 | 200 | ±200 ±100 | J(±5%) | 1.0Ω to 9.1Ω 10Ω to 3.3MΩ | E24 | |
| | | | | ±100 | F(±1%) | 10Ω to 1MΩ | E24,E96 | |
| | | | | Jumper type : Rmax = 50m Ω / Imax. = 2A | | | | |
| MCR50 | JRT | 0.5 | 200 | ±250 ±100 | J(±5%) | 1.0Ω to 9.1Ω 10Ω to 560kΩ | E24 | |
| | | | | ±100 | F(±1%) | 10Ω to 180kΩ | E24,E96 | |
| | | | | Jumper type : Rmax = 50m Ω / Imax. = 2A | | | | |
| MCR100 | JRT | 1 | 200 | ±250 ±100 | J(±5%) | 1.0Ω to 9.1Ω 10Ω to 100kΩ | E24 | -55 to +125 |
| | | | | ±100 | F(±1%) | 10Ω to 82kΩ | E24,E96 | |
| | | | | Jumper type : Rmax = 50m Ω / Imax. =2A | | | | |

*Design and specifications are subject to change without notice. Carefully check the specification sheet supplied with the product before using or ordering it.

*Rated voltage is determined from the following.

When rated voltage exceeds the limiting element voltage, the limiting element voltage shall be the rated voltage.

*Rated voltage = $\sqrt{\text{Rated power} \times \text{Resistance}}$

●Chip Resistor Dimensions and Markings

■ MCR006 / 01 / 03 ■ MCR10 / 18 / 25 / 50 / 100



<Marking method>

There are three or four digits used for the calculation number according to IEC code and "R" is used for the decimal point.

(Unit : mm)

| Part No. | Type Code | (mm) | (inch) | L | W | t | a | b | Marking existence |
|----------|-----------|------|--------|-----------|-----------|-----------|-----------|---------------------------------------|-------------------|
| MCR006 | YRT | 0603 | 0201 | 0.6±0.03 | 0.3±0.03 | 0.23±0.03 | 0.15±0.05 | 0.15±0.05 | No |
| MCR01 | MRT | 1005 | 0402 | 1.0±0.05 | 0.5±0.05 | 0.35±0.05 | 0.2±0.1 | 0.25 ^{+0.05} _{-0.1} | No |
| MCR03 | ERT | 1608 | 0603 | 1.6±0.1 | 0.8±0.1 | 0.45±0.1 | 0.3±0.2 | 0.3±0.2 | Yes * |
| MCR10 | ERT | 2012 | 0805 | 2.0±0.1 | 1.25±0.1 | 0.5±0.1 | 0.35±0.2 | 0.35±0.2 | Yes |
| MCR18 | ERT | 3216 | 1206 | 3.05±0.15 | 1.55±0.15 | 0.55±0.1 | 0.45±0.25 | 0.35±0.25 | Yes |
| MCR25 | JRT | 3225 | 1210 | 3.2±0.15 | 2.5±0.15 | 0.55±0.15 | 0.5±0.25 | 0.5±0.25 | Yes |
| MCR50 | JRT | 5025 | 2010 | 5.0±0.15 | 2.5±0.15 | 0.55±0.15 | 0.6±0.25 | 0.6±0.25 | Yes |
| MCR100 | JRT | 6432 | 2512 | 6.3±0.15 | 3.2±0.15 | 0.55±0.15 | 0.6±0.25 | 0.6±0.25 | Yes |

Marking method of jumper type

| Jumper type | Marking existence |
|-----------------------------|-------------------|
| MCR006 / 01 / 25 / 50 / 100 | No |
| MCR03 / 10 / 18 | Yes |

*Marking method of MCR03

The description of markings on the chip resistor are as shown below.

① Marking method (J class):

The nominal resistance is expressed in by E-24series 3 digits. The first 2 digits apply to the resistance value and the last one indicates the number of zeros to follow. The R is used as a decimal point.

Example : 100kΩ = 104

② Marking method (F/D class):

·For the resistance value contained in E96 series.

The nominal resistance is expressed in 3 digits. The first 2 digits is symbol to the resistance value and the last one is symbol to multipliers.

Example : 100kΩ = 01d (01d→100 × 10³ = 100,000Ω = 100kΩ)

Example : 3.01kΩ = 47b (47b→301 × 10¹ = 3010Ω = 3.01kΩ)

·For the resistance value not contained in E96 series and contained in E-24 series.

The marking is expressed by E-24 series in 3 digits and one short bar under the last marking letter.

Example : 390Ω = 391̄

Symbol for E96 Series nominal resistance value

| Symbol | E96 | Symbol | E96 | Symbol | E96 | Symbol | E96 |
|--------|-----|--------|-----|--------|-----|--------|-----|
| 01 | 100 | 25 | 178 | 49 | 316 | 73 | 562 |
| 02 | 102 | 26 | 182 | 50 | 324 | 74 | 576 |
| 03 | 105 | 27 | 187 | 51 | 332 | 75 | 590 |
| 04 | 107 | 28 | 191 | 52 | 340 | 76 | 604 |
| 05 | 110 | 29 | 196 | 53 | 348 | 77 | 619 |
| 06 | 113 | 30 | 200 | 54 | 357 | 78 | 634 |
| 07 | 115 | 31 | 205 | 55 | 365 | 79 | 649 |
| 08 | 118 | 32 | 210 | 56 | 374 | 80 | 665 |
| 09 | 121 | 33 | 215 | 57 | 383 | 81 | 681 |
| 10 | 124 | 34 | 221 | 58 | 392 | 82 | 698 |
| 11 | 127 | 35 | 226 | 59 | 402 | 83 | 715 |
| 12 | 130 | 36 | 232 | 60 | 412 | 84 | 732 |
| 13 | 133 | 37 | 237 | 61 | 422 | 85 | 750 |
| 14 | 137 | 38 | 243 | 62 | 432 | 86 | 768 |
| 15 | 140 | 39 | 249 | 63 | 442 | 87 | 787 |
| 16 | 143 | 40 | 255 | 64 | 453 | 88 | 806 |
| 17 | 147 | 41 | 261 | 65 | 464 | 89 | 825 |
| 18 | 150 | 42 | 267 | 66 | 475 | 90 | 845 |
| 19 | 154 | 43 | 274 | 67 | 487 | 91 | 866 |
| 20 | 158 | 44 | 280 | 68 | 499 | 92 | 887 |
| 21 | 162 | 45 | 287 | 69 | 511 | 93 | 909 |
| 22 | 165 | 46 | 294 | 70 | 523 | 94 | 931 |
| 23 | 169 | 47 | 301 | 71 | 536 | 95 | 953 |
| 24 | 174 | 48 | 309 | 72 | 549 | 96 | 976 |

Symbol for multipliers

| Symbol | A | b | C | d | E | F | X | Y |
|-------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|
| multipliers | 10 ⁰ | 10 ¹ | 10 ² | 10 ³ | 10 ⁴ | 10 ⁵ | 10 ⁻¹ | 10 ⁻² |

●Land pattern Example



(Unit : mm)

| Part No. | Type Code | A | B | C | D |
|----------|-----------|-----|------|------|------|
| MCR006 | YRT | 0.3 | 0.84 | 0.3 | 0.27 |
| MCR01 | MRT | 0.5 | 1.3 | 0.5 | 0.4 |
| MCR03 | ERT | 1.0 | 2.0 | 0.8 | 0.5 |
| MCR10 | ERT | 1.2 | 2.6 | 1.15 | 0.7 |
| MCR18 | ERT | 2.2 | 4.0 | 1.5 | 0.9 |
| MCR25 | JRT | 2.2 | 4.0 | 2.3 | 0.9 |
| MCR50 | JRT | 3.8 | 6.0 | 2.3 | 1.1 |
| MCR100 | JRT | 5.1 | 8.1 | 3.0 | 1.5 |

●Derating Curve

When the ambient temperature exceeds 70°C, power dissipation must be adjusted according to the derating curves below.



●Characteristics

| Test Items | Guaranteed Value | | Test Conditions |
|--|--|-------------|---|
| | Resistor Type | Jumper Type | |
| Resistance | See "Products List" | | 20°C |
| Variation of resistance with temperature | See "Products List" | | Measurement : +20 / -55 / +20 / +125°C |
| Overload | ± (2.0%+0.1Ω) | Max. 50mΩ | Test voltage is the smaller one of ① or ② ① Rated voltage (current) ×2.5, 2s. ② Maximum overload voltage |
| Solderability | A new uniform coating of minimum of 95% of the surface being immersed and no soldering damage. | | Rosin-Ethanol : 25% (Weight) Soldering condition : 235±5°C Duration of immersion : 2.0±0.5s |
| Resistance to soldering heat | ± (1.0%+0.05Ω) No remarkable abnormality on the appearance. | Max. 50mΩ | Soldering condition : 260±5°C Duration of immersion : 10±1s |
| Rapid change of temperature | ± (1.0%+0.05Ω) | Max. 50mΩ | Test temp. -55°C to +125°C 100cycle (MCR006) -55°C to +125°C 300cycle (MCR01) -55°C to +125°C 5cycle (MCR03 / 10 / 18 / 25 / 50 / 100) |
| Damp heat, steady state | ± (3.0%+0.1Ω) | Max. 100mΩ | 40°C, 93%RH (Relative Humidity) Test time : 1,000h to 1,048h |
| Endurance at 70°C | ± (3.0%+0.1Ω) | Max. 100mΩ | 70°C Rated voltage (current) 1.5h : ON – 0.5h : OFF Test time : 1,000h to 1,048h |
| Endurance | ± (3.0%+0.1Ω) | Max. 100mΩ | 125°C (MCR006 / 25 / 50 / 100) 155°C (MCR01 / 03 / 10 / 18) Test time : 1,000h to 1,048h |
| Resistance to solvent | ± (1.0%+0.05Ω) | Max. 50mΩ | 23±5°C, Immersion cleaning, 5±0.5min Solvent : 2-propanol |
| Bend strength of the end face plating | ± (1.0%+0.05Ω) Without mechanical damage such as breaks. | Max. 50mΩ | - |

Maximum overload voltage *Test voltage

| MCR006 | MCR01 | MCR03 | MCR10 | MCR18 | MCR025 | MCR50 | MCR100 |
|--------|-------|-------|-------|-------|--------|-------|--------|
| 50V | 100V | 100V | 200V | 400V | 400V | 400V | 400V |

Compliance Standard(s) : IEC60115-8
JISC 5201-8

●Tape Dimensions

(Unit : mm)

■ Paper Tape



| Part No. | Type Code | W | F | E | A0 | B0 |
|----------|-----------|---------|----------|----------|-----------|-----------|
| MCR006 | YRT | 8.0±0.2 | 3.5±0.05 | 1.75±0.1 | 0.38±0.03 | 0.68±0.03 |
| MCR01 | MRT | 8.0±0.3 | 3.5±0.05 | 1.75±0.1 | 0.7±0.1 | 1.2±0.1 |
| MCR03 | ERT | 8.0±0.3 | 3.5±0.05 | 1.75±0.1 | 1.0±0.1 | 1.8±0.1 |
| MCR10 | ERT | 8.0±0.3 | 3.5±0.05 | 1.75±0.1 | 1.55±0.1 | 2.3±0.1 |
| MCR18 | ERT | 8.0±0.3 | 3.5±0.05 | 1.75±0.1 | 1.9±0.2 | 3.5±0.2 |
| MCR25 | JRT | 8.0±0.2 | 3.5±0.05 | 1.75±0.1 | 2.8±0.2 | 3.5±0.2 |

| Part No. | Type Code | D0 | P0 | P1 | P2 | T2 |
|----------|-----------|--|----------|----------|----------|---------|
| MCR006 | YRT | $\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$ | 4.0±0.1 | 2.0±0.05 | 2.0±0.05 | Max 0.5 |
| MCR01 | MRT | $\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$ | 4.0±0.1 | 2.0±0.1 | 2.0±0.05 | Max 1.1 |
| MCR03 | ERT | $\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$ | 4.0±0.1 | 4.0±0.1 | 2.0±0.05 | Max 1.1 |
| MCR10 | ERT | $\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$ | 4.0±0.1 | 4.0±0.1 | 2.0±0.05 | Max 1.1 |
| MCR18 | ERT | $\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$ | 4.0±0.1 | 4.0±0.1 | 2.0±0.05 | Max 1.1 |
| MCR25 | JRT | $\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$ | 4.0±0.05 | 4.0±0.1 | 2.0±0.05 | Max 1.1 |

■ Embossed Tape
<MCR25 / 50 / 100>

(Unit : mm)



| Part No. | Type Code | W | F | E | A0 | B0 |
|----------|-----------|---------|----------|----------|---------|---------|
| MCR25 | JRT | 8.0±0.3 | 3.5±0.05 | 1.75±0.1 | 3.0±0.1 | 3.5±0.1 |
| MCR50 | JRT | 12±0.3 | 5.5±0.05 | 1.75±0.1 | 3.4±0.2 | 5.6±0.2 |
| MCR100 | JRT | 12±0.3 | 5.5±0.05 | 1.75±0.1 | 3.5±0.2 | 6.7±0.2 |

| Part No. | Type Code | D0 | P0 | P1 | P2 | T2 |
|----------|-----------|--|---------|---------|----------|---------|
| MCR25 | JRT | $\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$ | 4.0±0.1 | 4.0±0.1 | 2.0±0.05 | Max 1.1 |
| MCR50 | JRT | $\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$ | 4.0±0.1 | 4.0±0.1 | 2.0±0.05 | Max 1.1 |
| MCR100 | JRT | $\phi 1.5 \begin{smallmatrix} +0.1 \\ 0 \end{smallmatrix}$ | 4.0±0.1 | 4.0±0.1 | 2.0±0.05 | Max 1.1 |

●Reel Dimensions



(Unit : mm)

| Part No. | Type Code | A | B | C | D |
|----------|-----------|--|---|--|-------------------|
| MCR006 | YRT | $\phi 180 \begin{matrix} 0 \\ -1.5 \end{matrix}$ | $\phi 60 \begin{matrix} +1.0 \\ 0 \end{matrix}$ | $9 \begin{matrix} +1.0 \\ 0 \end{matrix}$ | $\phi 13 \pm 0.2$ |
| MCR01 | MRT | | | | |
| MCR03 | ERT | | | | |
| MCR10 | ERT | | | | |
| MCR18 | ERT | | | $13 \begin{matrix} +1.0 \\ 0 \end{matrix}$ | |
| MCR25 | JRT | | | | |
| MCR50 | JRT | | | | |
| MCR100 | JRT | | | | |

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