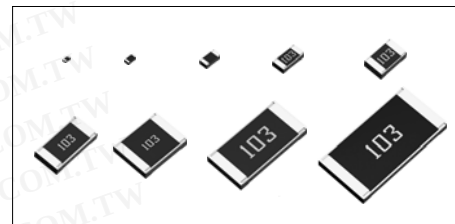


●Features

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



Part No.	Size		Type Code	Packing Specification	Quantity / Reel	Automotive Grade Available
	(mm)	(inch)				
MCR004	0402	01005	YZP	Paper tape (2mm pitch)	15,000	-
MCR006	0603	0201				Under developing
MCR01	1005	0402	MZP		10,000	Yes
MCR03	1608	0603	EZP	Paper tape (4mm pitch)	5,000	
MCR10	2012	0805				
MCR18	3216	1206				
MCR25	3225	1210	JZH	Embossed tape (4mm pitch)	4,000	
MCR50	5025	2010				
MCR100	6432	2512				

●Part Number Description

MCR	004	YZP	J	100						
Part No. MCR (Micro chip resistors)	Size (mm [inch]) 004 (0402 [01005]) 006 (0603 [0201]) 01 (1005 [0402]) 03 (1608 [0603]) 10 (2012 [0805]) 18 (3216 [1206]) 25 (3225 [1210]) 50 (5025 [2010]) 100 (6432 [2512])	Type Code	Resistance Tolerance D (±0.5%) F (±1%) FX (±1%) *Only MCR03EZP J (±5%) (Including jumper type)	Nominal Resistance Resistance code, 3 or 4 digits. 000 denotes jumper type. <table><tr><td>Resistance tolerance</td><td>Resistance code</td></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									

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●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)	
MCR004	YZP	0.031	15	+600 / -200 ±300 ±250	J(±5%)	1.0Ω to 9.1Ω 10Ω to 91Ω 100Ω to 3MΩ	E24	-55 to +125	
				±300 ±250	F(±1%)	10Ω to 91Ω 100Ω to 3MΩ	E24,E96		
		Jumper type : Rmax = 50m Ω / Imax. = 0.5A							
MCR006	YZP	0.05	25	+600 / -200 ±250	J(±5%)	1.0Ω to 9.1Ω 10Ω to 10MΩ	E24		
				±250	F(±1%)	10Ω to 10MΩ	E24,E96		
				±200 ±100	D(±0.5%)	10Ω to 910Ω 1kΩ to 1MΩ			
		Jumper type : Rmax = 50m Ω / Imax. = 0.5A							
MCR01	MZP	0.063	50	+500 / -250 ±200	J(±5%)	1.0Ω to 9.1Ω 10Ω to 10MΩ	E24		
				±100	F(±1%)	10Ω to 2.2MΩ	E24,E96		
				±100 ±50	D(±0.5%)	10Ω to 91Ω 100Ω to 1MΩ			
		Jumper type : Rmax = 50m Ω / Imax. = 1A							
MCR03	EZP	0.1	50	±400 ±200	J(±5%)	1.0Ω to 9.1Ω 10Ω to 10MΩ	E24		
				±100	FX(±1%)	10Ω to 10MΩ	E24,E96		
				±100 ±50	D(±0.5%)	10Ω to 91Ω 100Ω to 1MΩ			
		Jumper type : Rmax = 50m Ω / Imax. = 1A							
MCR10	EZP	0.125	150	±400 ±200	J(±5%)	1.0Ω to 9.1Ω 10Ω to 10MΩ	E24	-55 to +155	
		0.1		±100	F(±1%)	10Ω to 2.2MΩ	E24,E96		
				±100 ±50	D(±0.5%)	10Ω to 91Ω 100Ω to 1MΩ			
		Jumper type : Rmax = 50m Ω / Imax. = 2A							
MCR18	EZP	0.25	200	±400 ±200	J(±5%)	1.0Ω to 9.1Ω 10Ω to 10MΩ	E24		
		0.125		±100	F(±1%)	10Ω to 2.2MΩ	E24,E96		
				±100 ±50	D(±0.5%)	10Ω to 91Ω 100Ω to 1MΩ			
		Jumper type : Rmax = 50m Ω / Imax. = 2A							
MCR25	JZH	0.25	200	500±350 ±500	J(±5%)	1.0Ω to 2.0Ω 2.2Ω to 5.1Ω	E24		
				±200	F(±1%)	5.6Ω to 3.3MΩ	E24,E96		
				±100		10Ω to 1MΩ			
		Jumper type : Rmax = 50m Ω / Imax. = 2A							
MCR50	JZH	0.5	200	500±350 ±500	J(±5%)	1.0Ω to 2.0Ω 2.2Ω to 9.1Ω	E24		
				±200	F(±1%)	10Ω to 330kΩ	E24,E96		
				±350 ±100		360kΩ to 560kΩ 10Ω to 180kΩ			
		Jumper type : Rmax = 50m Ω / Imax. = 3A							
MCR100	JZH	1	200	500±350 ±500	J(±5%)	1.0Ω to 2.0Ω 2.2Ω to 9.1Ω	E24	-55 to +125	
				±350	F(±1%)	10Ω to 22Ω	E24,E96		
				±200 ±100		24Ω to 100kΩ 10Ω to 82kΩ			
		Jumper type : Rmax = 50m Ω / Imax. = 4A							

*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.

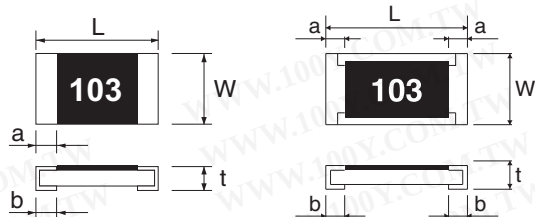
When rated voltage exceeds the limiting element voltage, the limiting element voltage shall be the rated voltage.

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

*E24 : Standard products, E96 : Custom products

●Chip Resistor Dimensions and Markings

■ MCR004 / 006 / 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
MCR004	YZP	0402	01005	0.4±0.02	0.2±0.02	0.13±0.02	0.1±0.03	0.1±0.03	No
MCR006	YZP	0603	0201	0.6±0.03	0.3±0.03	0.23±0.03	0.1±0.05	0.15±0.05	No
MCR01	MZP	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	EZP	1608	0603	1.6±0.1	0.8±0.1	0.45±0.1	0.3±0.2	0.3±0.2	Yes *
MCR10	EZP	2012	0805	2.0±0.1	1.25±0.1	0.55±0.1	0.4±0.2	0.4±0.2	Yes
MCR18	EZP	3216	1206	3.2±0.15	1.6±0.15	0.55±0.1	0.5±0.25	0.5±0.25	Yes
MCR25	JZH	3225	1210	3.2±0.15	2.5±0.15	0.55±0.15	0.5±0.25	0.5±0.25	Yes
MCR50	JZH	5025	2010	5.0±0.15	2.5±0.15	0.55±0.15	0.6±0.25	0.6±0.25	Yes
MCR100	JZH	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
MCR004 / 006 / 01 / 25 / 50 / 100	No
MCR03 / 10 / 18	Yes

*Marking method of MCR25/50/100

Blueglass over coat is used for the jumper type.

There is no marking on the jumper type.

*Marking method of MCR03

For MCR03 series resistors, the printing process restricts the marking to three digits/characters.

Consequently, 1% tolerance resistors with values from the E24 series will be marked the same as

5% resistors with the same value, but 1% tolerance resistors with values from the E96 series will not be marked.

Examples:

MCR03EZPJ243 (5% tolerance, E24 / 24 k Ω)
MCR03EZPF2402 (1% tolerance, E24 / 24 k Ω)
MCR03EZPF2432 (1% tolerance, E96 / 24.3 k Ω)

Marking = 243

Marking = 243

No Marking

MCR18EZPJ243 (5% tolerance, E24 / 24 k Ω)
MCR18EZPF2402 (1% tolerance, E24 / 24 k Ω)
MCR18EZPF2432 (1% tolerance, E96 / 24.3 k Ω)

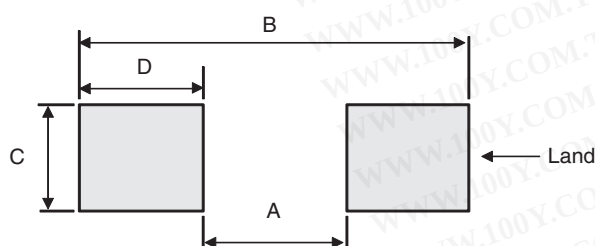
Marking = 243

Marking = 2402

Marking = 2432

(Unit : mm)

●Land pattern Example

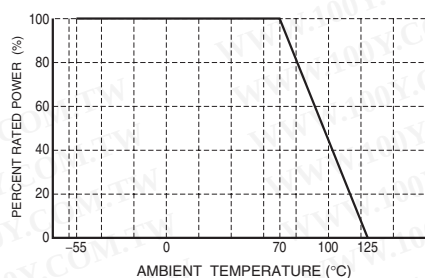


Part No.	Type Code	A	B	C	D
MCR004	YZP	0.2	0.4	0.16	0.1
MCR006	YZP	0.3	0.84	0.3	0.27
MCR01	MZP	0.5	1.3	0.5	0.4
MCR03	EZP	1.0	2.0	0.8	0.5
MCR10	EZP	1.2	2.6	1.15	0.7
MCR18	EZP	2.2	4.0	1.5	0.9
MCR25	JZH	2.2	4.0	2.3	0.9
MCR50	JZH	3.8	6.0	2.3	1.1
MCR100	JZH	5.1	8.1	3.0	1.5

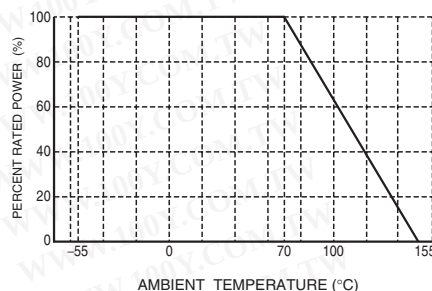
Derating Curve

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

■ MCR004 / 006 / 100



■ MCR01 / 03 / 10 / 18 / 25 / 50



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) x2.5, 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 / 01 / 03) -55°C to +125°C 5cycle (MCR10 / 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)

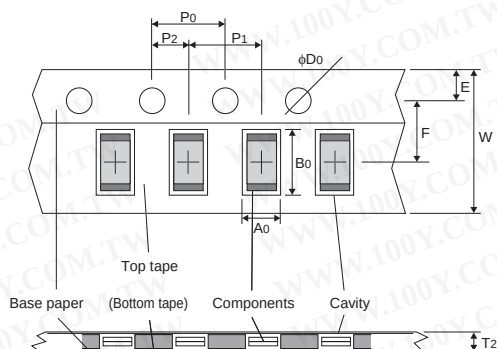
MCR004	MCR006	MCR01	MCR03	MCR10	MCR18	MCR025	MCR50	MCR100
30V	50V	100V	100V	200V	400V	400V	400V	400V

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

●Tape Dimensions

(Unit : mm)

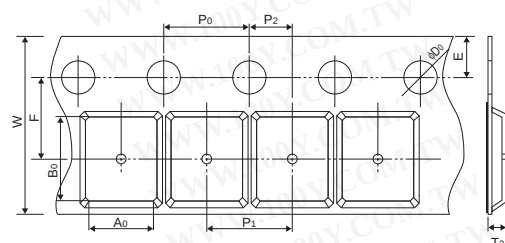
■ Paper Tape



Part No.	Type Code	W	F	E	A0	B0
MCR004	YZP	8.0±0.2	3.5±0.05	1.75±0.1	0.24±0.03	0.45±0.03
MCR006	YZP	8.0±0.2	3.5±0.05	1.75±0.1	0.38±0.03	0.68±0.03
MCR01	MZP	8.0±0.3	3.5±0.05	1.75±0.1	0.7±0.1	1.2±0.1
MCR03	EZP	8.0±0.3	3.5±0.05	1.75±0.1	1.1±0.1	1.9±0.1
MCR10	EZP	8.0±0.3	3.5±0.05	1.75±0.1	1.65 ^{+0.2} _{-0.1}	2.4 ^{+0.2} _{-0.1}
MCR18	EZP	8.0±0.3	3.5±0.05	1.75±0.1	1.95 ^{+0.1} _{-0.05}	3.5 ^{+0.15} _{-0.05}

Part No.	Type Code	D0	P0	P1	P2	T2
MCR004	YZP	φ1.5 ^{+0.1} ₀	4.0±0.1	2.0±0.05	2.0±0.05	Max 0.5
MCR006	YZP	φ1.5 ^{+0.1} ₀	4.0±0.1	2.0±0.05	2.0±0.05	Max 0.5
MCR01	MZP	φ1.5 ^{+0.1} ₀	4.0±0.1	2.0±0.05	2.0±0.05	Max 1.1
MCR03	EZP	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MCR10	EZP	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MCR18	EZP	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1

■ Embossed Tape



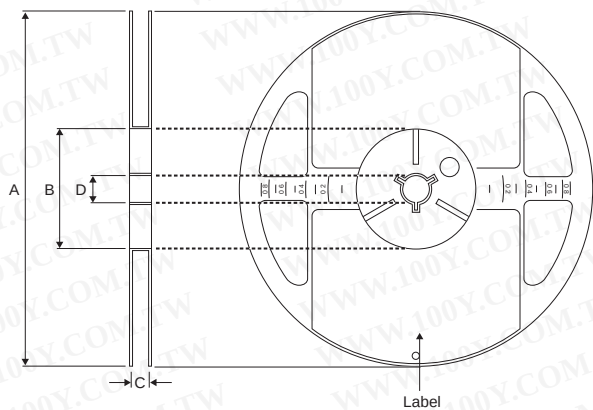
(Unit : mm)

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

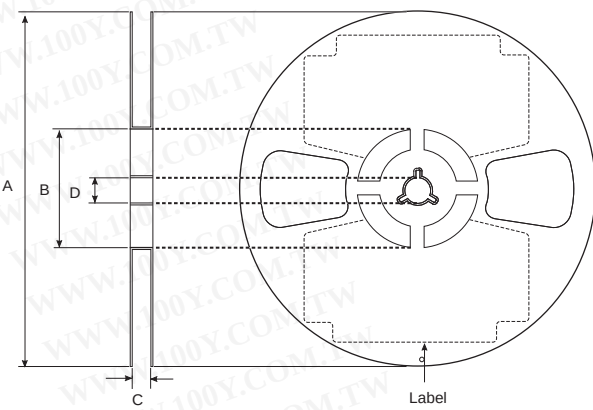
Part No.	Type Code	D0	P0	P1	P2	T2
MCR25	JZH	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MCR50	JZH	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MCR100	JZH	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1

●Reel Dimensions

① MCR004 / 006 / 01 / 03 / 10 / 18 / 25 / 50 / 100



② MCR004 / 006 / 01 / 03 / 10 / 18 / 25



(Unit : mm)

Part No.	Type Code	A	B	C	D	
MCR004	YZP	$\phi 180 \begin{smallmatrix} 0 \\ -1.5 \end{smallmatrix}$	$\phi 60 \begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$	$9 \begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$	$\phi 13 \pm 0.2$	
MCR006	YZP					
MCR01	MZP					
MCR03	EZP MZP					
MCR10	EZP					
MCR18	EZP					
MCR25	JZH			$13 \begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$		
MCR50	JZH					
MCR100	JZH					

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Notes

- 1) The information contained herein is subject to change without notice.
- 2) Before you use our Products, please contact our sales representative and verify the latest specifications :
- 3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors.
Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Products beyond the rating specified by ROHM.
- 4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.
- 5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.
- 6) The Products are intended for use in general electronic equipment (i.e. AV/OA devices, communication, consumer systems, gaming/entertainment sets) as well as the applications indicated in this document.
- 7) The Products specified in this document are not designed to be radiation tolerant.
- 8) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.
- 9) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.
- 10) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.
- 11) ROHM has used reasonable care to ensure the accuracy of the information contained in this document. However, ROHM does not warrant that such information is error-free, and ROHM shall have no responsibility for any damages arising from any inaccuracy or misprint of such information.
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