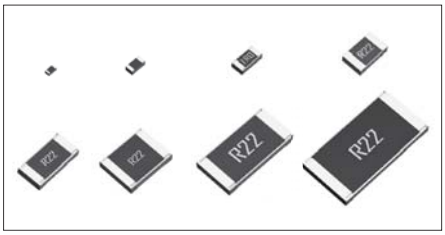
Low Ohmic Thick Film Chip Resistors

MCR Series < Automotive >

●Features

1) Very-low ohmic resistance from 47mΩ is in lineup by thick-film resistive element.
2) ROHM resistors have obtained ISO9001 / ISO / TS16949 certification.
3) "Automotive" product is AEC-Q200 compliant.



Part No.	Size		Type Code		Packing Specification	Quantity / Reel
	(mm)	(inch)	GENERAL PURPOSE	AUTOMOTIVE ∗Corresponds to AEC–Q200		
MCR006	0603	0201	YRT	YZP	Paper tape (2mm Pitch)	15,000
MCR01	1005	0402	MRT	MZP		10,000
MCR03	1608	0603	ERT	EZP	Paper tape (4mm Pitch)	5,000
MCR10	2012	0805	EZH			
MCR18	3216	1206	EZH			
MCR25	3225	1210	JZH		Embossed tape (4mm Pitch)	4,000
MCR50	5025	2010	JZH			
MCR100	6432	2512	JZH			

∗Please contact us for status of AEC-Q200 on "General purpose" products.

●Part Number Description

M C R — **Part No.**
MCR (Micro chip resistors)

1 0 — **Size** (mm [inch])
006 (0603 [0201])
01 (1005 [0402])
03 (1608 [0603])
10 (2012 [0805])
18 (3216 [1206])
25 (3225 [1210])
50 (5025 [2010])
100 (6432 [2512])

E Z H — **Type Code**

J — **Resistance Tolerance**
F (±1%)
J (±5%)

L — **Special part code**

L	0.1 to 9.1Ω (±1%) 0.1 to 0.91Ω (±5%)
S	0.047 to 0.091Ω

1 R 0 — **Nominal Resistance**
Resistance code, 3 or 4 digits.

Resistance tolerance + Special P / N	Resistance code
FL, FS, JS :	4 digits
JL :	3 digits

Ex.)
0.047Ω = R047 (±1%, ±5%)
9.1Ω = 9R10 (±1%)
9R1 (±5%)

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●Products List

Part No.	Type Code	Rated Power (70°C) (W)	Limiting Element Voltage (V)	Maximum Overload Voltage (V)	Temperature Coefficient (ppm / °C)	Resistance Tolerance (%)	Resistance Range	Series	Operating Temperature Range (°C)
MCR006	YZP	0.05	0.67	1.34	±600 / −200	F(±1%)	1.0Ω to 9.1Ω	E24	−55 to +125
MCR01	MZP	0.063	0.76	1.52	±400	F(±1%)	1.0Ω to 9.1Ω		−55 to +155
MCR03	EZP	0.1	0.95	1.90	±400	F(±1%)	1.0Ω to 9.1Ω		
MCR10	EZH	0.25	1.51	3.02	500±300 400±200 ±250	J(±5%)	0.047Ω to 0.091Ω 0.1Ω to 0.13Ω 0.15Ω to 0.91Ω		
					500±300 400±200 ±250	F(±1%)	0.047Ω to 0.091Ω 0.1Ω to 0.13Ω 0.15Ω to 9.1Ω		
MCR18	EZH	0.25	1.51	3.02	500±300 400±200 ±250	J(±5%)	0.047Ω to 0.091Ω 0.1Ω to 0.13Ω 0.15Ω to 0.91Ω		
					500±300 400±200 ±250	F(±1%)	0.047Ω to 0.091Ω 0.1Ω to 0.13Ω 0.15Ω to 9.1Ω		
MCR25	JZH	0.5	2.13	4.26	300±300 ±200	J(±5%)	0.047Ω to 0.091Ω 0.1Ω to 0.91Ω		
					300±300 ±200	F(±1%)	0.047Ω to 0.091Ω 0.1Ω to 9.1Ω		
MCR50	JZH	0.5	2.13	4.26	500±300 400±200 ±250	J(±5%)	0.047Ω to 0.091Ω 0.1Ω to 0.13Ω 0.15Ω to 0.91Ω		
					500±300 400±200 ±250	F(±1%)	0.047Ω to 0.091Ω 0.1Ω to 0.13Ω 0.15Ω to 9.1Ω		
MCR100	JZH	1	3.01	6.02	500±300 400±200 ±250	J(±5%)	0.047Ω to 0.091Ω 0.1Ω to 0.13Ω 0.15Ω to 0.91Ω		−55 to +125
					500±300 400±200 ±250	F(±1%)	0.047Ω to 0.091Ω 0.1Ω to 0.13Ω 0.15Ω to 9.1Ω		

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

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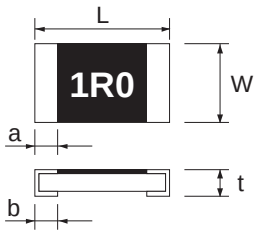
●Chip Resistor Dimensions and Markings

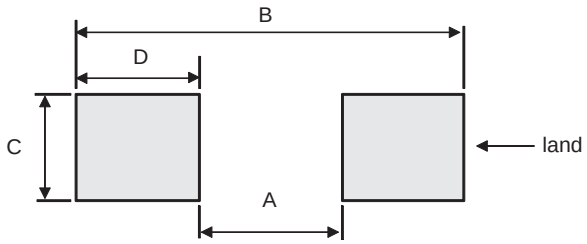


<Marking method>
There are three or four digits used for the calculation number according to IEC code and “R”is used for the decimal point.

(Unit : mm)

Part No.	Type Code	(mm)	(inch)	L	W	t	a	b	Marking existence
MCR006	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	3 digits
MCR10	EZH	2012	0805	2.0±0.1	1.25±0.1	0.55±0.1	0.4±0.2	0.4±0.2	Yes
MCR18	EZH	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

●Land pattern Example



(Unit : mm)

Dimensions / Part No.	Type Code	A	B	C	D
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	EZH	1.2	2.6	1.15	0.7
MCR18	EZH	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

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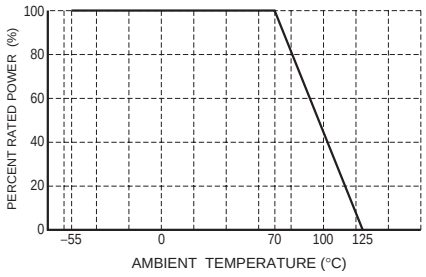
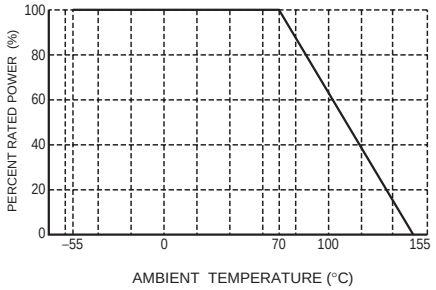
●Derating Curve

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

■ MCR006 / 100



■ MCR01 / 03 / 10 / 18 / 25 / 50



●Characteristics

Test Items	Guaranteed Value	Test Conditions
Resistance	See "Products List"	20°C
Variation of resistance with temperature	See "Products List"	Measurement : +20 / –55 / +20 / +125°C
Overload	± (2.0%+0.005Ω)	Rated voltage (current) ×2.5, 2s. 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.	Soldering condition : 260±5°C Duration of immersion : 10±1s
Rapid change of temperature	± (1.0%+0.005Ω)	Test temp. –55°C to +125°C 100cycle (MCR006) –55°C to +125°C 5cycle (MCR01 / 03 / 10 / 18 / 25 / 50 / 100)
Damp heat, steady state	± (3.0%+0.005Ω)	40°C, 93%RH (Relative Humidity) Test time : 1,000h to 1,048h
Endurance at 70°C	± (3.0%+0.005Ω)	70°C Rated voltage (current) 1.5h : ON – 0.5h : OFF Test time : 1,000h to 1,048h
Endurance	± (3.0%+0.005Ω)	125°C (MCR006 / 100) 155°C (MCR01 / 03 / 10 / 18 / 25 / 50) Test time : 1,000h to 1,048h
Resistance to solvent	± (1.0%+0.005Ω) ※MCR006 only ± (0.5%+0.005Ω)	23±5°C, Immersion cleaning, 5±0.5min Solvent : 2–propanol
Bend strength of the end face plating	Without Open.	–

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

●Chip weight (typical value)

Parameter	Unit	MCR006 YZP	MCR01 MZP	MCR03 EZP	MCR10 EZH	MCR18 EZH	MCR25 JZH	MCR50 JZH	MCR100 JZH
Weight	mg/pc	0.15	0.565	2.03	5.00	9.78	16.5	25.8	42.0

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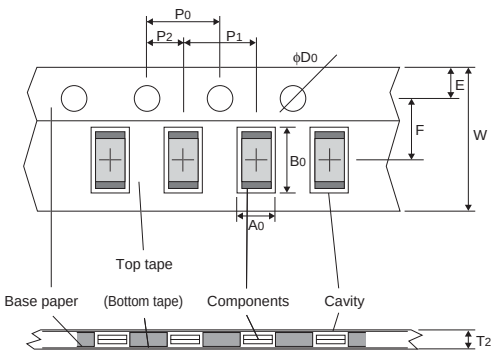
●Tape Dimensions

■ Paper Tape

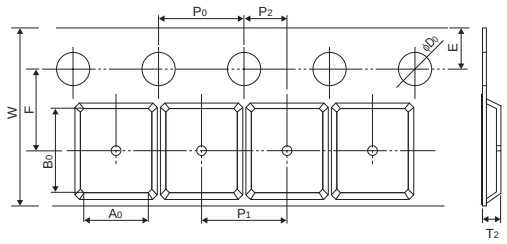


(Unit : mm)

Part No.	Type Code	W	F	E	A0	B0
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	EZH	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	EZH	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
MCR006	YZP	$\phi 1.5^{+0.1}_{0}$	4.0±0.1	2.0±0.05	2.0±0.05	Max 0.5
MCR01	MZP	$\phi 1.5^{+0.1}_{0}$	4.0±0.1	2.0±0.05	2.0±0.05	Max 1.1
MCR03	EZP	$\phi 1.5^{+0.1}_{0}$	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MCR10	EZH	$\phi 1.5^{+0.1}_{0}$	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MCR18	EZH	$\phi 1.5^{+0.1}_{0}$	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	$\phi 1.5^{+0.1}_{0}$	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MCR50	JZH	$\phi 1.5^{+0.1}_{0}$	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MCR100	JZH	$\phi 1.5^{+0.1}_{0}$	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1

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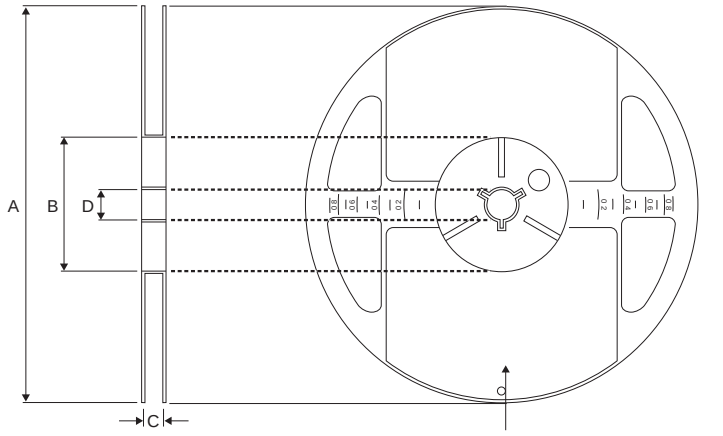
●Reel Dimensions



ACCORDING EIAJ ET-7200B

(Unit : mm)

Part No.	Type Code	A	B	C	D
MCR006	YZP	$\phi180^{\ 0}_{-1.5}$	$\phi60^{+1.0}_{\ 0}$	$9^{+1.0}_{\ 0}$	$\phi13\pm0.2$
MCR01	MZP				
MCR03	EZP				
MCR10	EZH				
MCR18	EZH				
MCR25	JZH				
MCR50	JZH			$13^{+1.0}_{\ 0}$	
MCR100	JZH				

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