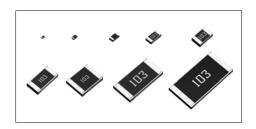
Thick Film Chip Resistors

MCR Series < General Purpose >

Datasheet

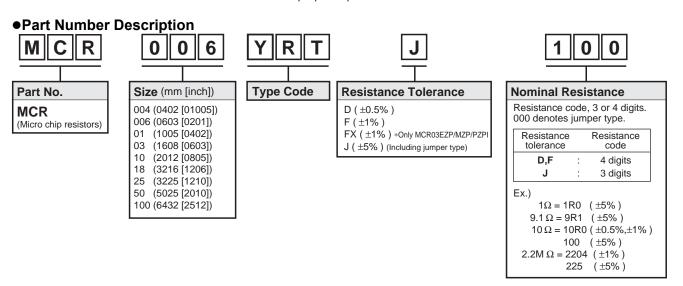
Features

- 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.
- 4) "Automotive" product is AEC-Q200 compliant.



	Si	ze	Туре	Code		
Part No.	(mm)	(inch)	GENERAL PURPOSE	AUTOMOTIVE *Corresponds to AEC-Q200	Packing Specification	Quantity / Reel
MCR004	0402	01005	YZP	-	Paper tape (2mm pitch)	15,000
WICK004	0402	01003	RZP	-	Embossed tape (1mm pitch)	40,000
MCR006	0603	0201	YRT	YZP	Paper tape	15,000
Moder	4005	0.400	MRT	MZP	(2mm pitch)	10,000
MCR01	1005	0402	PZPI (*For further information on datasheet, please refer to AUTOMOTIVE datasheet.)		Bulk case	50,000
моро			ERT EZP		Paper tape (4mm pitch)	5,000
MCR03	1608	0603	MZP / (*For further inform: please refer to AUTC		MZP : Paper tape (2mm pitch) PZPI : Bulk case	MZP : 10,000 PZPI : 25,000
MCR10	2012	0805	ERT	EZP	Paper tape	5,000
MCR18	3216	1206	ERI	EZF	(4mm pitch)	5,000
MCR25	3225	1210			JRT : Paper tape (4mm pitch) JZH : Embossed tape (4mm pitch)	
MCR50	5025	2010	JRT	JZH	Embossed tape	4,000
MCR100	6432	2512			(4mm pitch)	

^{*}Please contact us for status of AEC-Q200 on "General purpose" products.



Products List

Part No.	Type Code	Rated Power (70°C)	Limiting Element Voltage	Temperature Coefficient	Resistance Tolerance	Resistance Range	Series	Operating Temperature
T dit ito.	1)00 0000	(W)	(V)	(ppm / °C)	(%)	rtoolotarioo rtarigo	Conoc	Range (°C)
MCR004	YZP, RZP	0.031	15	+600 / -200 ±300 ±250 ±300	J(±5%)	1.0Ω to 9.1Ω 10Ω to 91Ω 100Ω to 3MΩ 10Ω to 91Ω	E24	
	1121			±250	F(±1%)	100 Ω to 3M Ω		
			•	Jumper type : Rmax	$\kappa = 50 \text{m} \Omega / \text{Imax}$			-55 to +125
		0.05	0.5	+600 / -200 ±250	J(±5%)	1.0Ω to 9.1Ω 10Ω to 10MΩ	F04	
MCR006	YRT	0.05	25	±250 ±200	F(±1%)	10Ω to 10MΩ 10Ω to 910Ω	E24	
				±100	D(±0.5%)	1kΩ to 1MΩ		_
			•	Jumper type : Rmax	$\kappa = 50 \text{m} \Omega / \text{Imax}$			
				+500 / -250 ±200	J(±5%)	1.0Ω to 9.1Ω 10Ω to 10MΩ	E24	
MCR01	MRT	0.063	50	±100	F(±1%)	10 Ω to 976k Ω 10 Ω to 2.2M Ω 1M Ω to 2.2M Ω	E24,E96	
				±100 ±50	D(±0.5%)	10Ω to 91Ω 100Ω to $1M\Omega$	E24	
				Jumper type : Rma	$ax = 50m \Omega / Ima$	1		
				±400	J(±5%)	1.0Ω to 9.1Ω	E24	
				±200	J(±5%)	10Ω to 10MΩ	E24	
MODOS	ERT	0.1	50	±100	F(±1%)	10Ω to 976kΩ 10Ω to 10MΩ		
MCR03	EKI			1400		1MΩ to $10MΩ$	E24,E96	
				±100 ±50	D(±0.5%)	10Ω to 91Ω 100Ω to 1MΩ		
				Jumper type : Rma	$ax = 50m \Omega / Ima$	x. = 1A		
		0.405		±400 ±200	J(±5%)	1.0Ω to 9.1Ω 10Ω to 10ΜΩ	E24	
MCR10	ERT	0.125	150	±100	F(±1%)	10 Ω to 976k Ω 10 Ω to 2.2M Ω 1M Ω to 2.2M Ω	E24,E96	
		0.1		±100 ±50	D(±0.5%)	10Ω to 91Ω 100Ω to 1MΩ	E24	-55 to +155
				Jumper type : Rma	ax = 50m Ω / Ima		I.	-55 10 +155
		0.05		±400 ±200	J(±5%)	1.0Ω to 9.1Ω 10Ω to 10ΜΩ	E24	
MCR18	ERT	0.25	200	±100	F(±1%)	10 Ω to 976k Ω 10 Ω to 2.2M Ω 1M Ω to 2.2M Ω	E24,E96	
		0.125		±100 ±50	D(±0.5%)	10Ω to 91Ω 100Ω to 1MΩ		
			1	Jumper type : Rma	$ax = 50 \text{m} \Omega / \text{Ima}$		I .	
				±200	J(±5%)	1.0Ω to 9.1Ω	E24	
MCR25	JRT	0.25	200	±100 ±100	F(±1%)	10Ω to 3.3MΩ 10Ω to 1MΩ	E24,E96	
				Jumper type : Rma	, ,		E24,E90	
				±250		x = 2A 1.0Ω to 9.1Ω		
MCR50	JRT	0.5	200	±100	J(±5%)	10Ω to 560kΩ	E24	
III ON OU	JKI			±100	F(±1%)	10Ω to 180kΩ	E24,E96	
				Jumper type : Rma	$ax = 50 \text{m} \Omega / \text{Ima}$			
MCB400	IDT	1	200	±250 ±100	J(±5%)	1.0Ω to 9.1Ω 10Ω to 100kΩ	E24	-55 to +125
MCR100	JRT			±100	F(±1%)	10Ω to 82kΩ	E24,E96	-00 IU +120
				Jumper type : Rma		ax. =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 determained from the following.

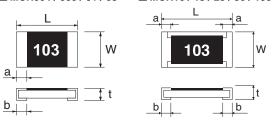
When rated voltage exceeds the limiting element voltage, the limiting element voltage shall be the rated voltage.

^{*}Rated voltage = √ Rated power × Rasistance

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	а	b	Marking existence
MCR004	YZP,RZP	0402	01005	0.4±0.02	0.2±0.02	0.13±0.02	0.1±0.03	0.1±0.03	No
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
MCR004 / 006 / 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 : $100k\Omega = 104$

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.

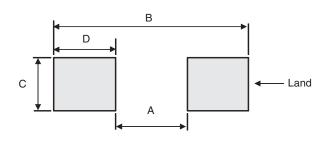
Example : $100k_{\Omega} = 01d$ $(01d \rightarrow 100 \times 10^{3} = 100,000_{\Omega} = 100k_{\Omega})$ Example : $3.01k_{\Omega} = 47b$ $(47b \rightarrow 301 \times 10^{1} = 3010_{\Omega} = 3.01k_{\Omega})$

·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

under the last marking letter. Example : $390\Omega = 391$

Land pattern Example



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	А	b	С	d	Е	F	Х	Υ
multipliers	10°	10¹	10 ²	10³	10⁴	10⁵	10-1	10-2

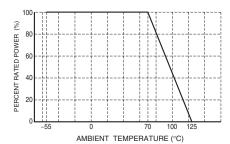
(Unit : mm)

					(Offic : Hillin)
Dimensions Part No.	Type Code	Α	В	С	D
MCR004	YZP,RZP	0.2	0.4	0.16	0.1
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

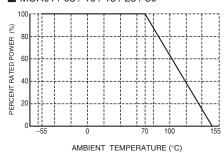
Derating Curve

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

■ MCR004 / 006 / 100



■ MCR01 / 03 / 10 / 18 / 25 / 50



Characteristics

Test Items		eed Value	Test Conditions	
	Resistor Type	Jumper Type		
Resistance	See "Pro	ducts 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		ating of minimum of e being immersed damage.	Rosin·Ethanol : 25% (Weight) Soldering condition : 235±5°C Duration of immersion : 2.0±0.5s	
Resistance to soldering heat	$\pm (1.0\% + 0.05 \Omega) \qquad \text{Max. } 50 \text{m}\Omega$ No remarkable abnormality on the appearance.		Soldering condition : 260±5°C Duration of immersion : 10±1s	
Rapid change of temperature	± (1.0%+0.05Ω)	Max. 50mΩ	Test temp55°C to +125°C 100cycle (MCR004 / 006) -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 (MCR004 / 006 / 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	± (1.0%+0.05Ω)	Max. 50mΩ		
the end face plating	Without mechanical da	amage such as breaks.		

Maximum overload voltage *Test voltage

 MCR004
 MCR006
 MCR01
 MCR03
 MCR10
 MCR18
 MCR025
 MCR50
 MCR100

 30V
 50V
 100V
 100V
 200V
 400V
 400V
 400V
 400V
 400V

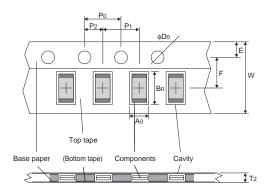
Compliance Standard(s) : IEC60115-8 JISC 5201-8

●Chip weight (typical value)

Parameter	Unit	MCR004 YZP / RZP	MCR006 YRT	MCR01 MRT	MCR03 ERT	MCR10 ERT	MCR18 ERT	MCR25 JRT	MCR50 JRT	MCR100 JRT
Weight	mg/pc	0.04	0.150	0.565	2.03	4.73	8.56	16.5	25.8	42.0

●Tape Dimensions

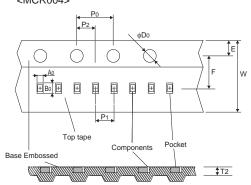
■ Paper Tape



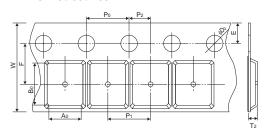
						(Unit : mm)
Part No.	Type Code	W	F	Е	A0	B0
MCR004	YZP	8.0±0.2	3.5±0.05	1.75±0.1	0.24±0.03	0.45±0.03
MCR006	YRT	8.0±0.2	3.5±0.05	1.75±0.1	0.38±0.03	0.68±0.03
MCR01	MRT	8.0±0.3	3.5±0.05	1.75±0.1	0.7±0.1	1.2±0.1
MCR03	ERT	8.0±0.3	3.5±0.05	1.75±0.1	1.0±0.1	1.8±0.1
MCR10	ERT	8.0±0.3	3.5±0.05	1.75±0.1	1.55±0.1	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	Po	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	YRT	φ1.5 ^{+0.1} ₀	4.0±0.1	2.0±0.05	2.0±0.05	Max 0.5
MCR01	MRT	φ1.5 ^{+0.1} ₀	4.0±0.1	2.0±0.1	2.0±0.05	Max 1.1
MCR03	ERT	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MCR10	ERT	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MCR18	ERT	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MCR25	JRT	φ1.5 ^{+0.1} ₀	4.0±0.05	4.0±0.1	2.0±0.05	Max 1.1

■ Embossed Tape <MCR004>



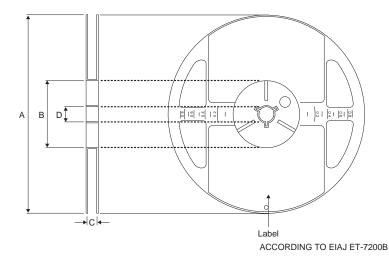
<mcr25< td=""><td>/50</td><td>/ 100></td></mcr25<>	/50	/ 100>



						(Unit : mm)
Part No.	Type Code	W	F	E	Ao	B0
MCR004	RZP	4.0±0.05	1.8±0.02	0.9±0.05	0.23±0.02	0.43±0.02
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

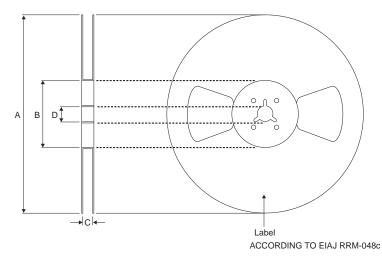
Part No.	Type Code	D0	Po	P1	P2	T2
MCR004	RZP	ф0.8±0.04	2.0±0.04	1.0±0.02	1.0±0.02	0.2±0.02
MCR25	JRT	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MCR50	JRT	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MCR100	JRT	φ1.5 ^{+0.1} 0	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1

●Reel Dimensions



71	In	iŧ	m	m
(\	ווע	ш	ш	m

Part No.	Type Code	А	В	С	D	
MCR004	YZP					
MCR006	YRT					
MCR01	MRT					
MCR03	ERT	_		9 +1.0		
MCR10	ERT	φ180 ⁰ -1.5	φ60 ^{+1.0}		ф13±0.2	
MCR18	ERT	_	-			
MCR25	JRT					
MCR50	JRT					13 +1.0
MCR100	JRT			13 0		



(Unit: mm)

Part No.	Type Code	А	В	С	D
MCR004	RZP	φ178±1.0	φ60±1.0	5 ^{+1.0} _{-0.6}	φ13±0.2

Notes

- 1) The information contained herein is subject to change without notice.
- 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 Poducts 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 ensur the accuracy of the information contained in this document. However, ROHM does not warrants that such information is error-free, and ROHM shall have no responsibility for any damages arising from any inaccuracy or misprint of such information.
- 12) Please use the Products in accordance with any applicable environmental laws and regulations, such as the RoHS Directive. For more details, including RoHS compatibility, please contact a ROHM sales office. ROHM shall have no responsibility for any damages or losses resulting non-compliance with any applicable laws or regulations.
- 13) When providing our Products and technologies contained in this document to other countries, you must abide by the procedures and provisions stipulated in all applicable export laws and regulations, including without limitation the US Export Administration Regulations and the Foreign Exchange and Foreign Trade Act.
- 14) This document, in part or in whole, may not be reprinted or reproduced without prior consent of ROHM



Thank you for your accessing to ROHM product informations. More detail product informations and catalogs are available, please contact us.

ROHM Customer Support System

http://www.rohm.com/contact/

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Thick Film Resistors - SMD category:

Click to view products by ROHM manufacturer:

Other Similar products are found below:

CRCW04028R20JNEE CRCW06036K80FKEE CRG1206F1K58 CRL0603-FW-R700ELF M55342K06B6E19RWL RC1005F1072CS

RC1005F471CS RC1005F4751CS RCP0603W100RGED RCWP72251K47FKWB RLR05C7501GPB14 RLR07C5111FSBSL ERJ
IGMF1R00C ERJ-1GMF1R20C ERJ-1GMF2R55C ERJ-1GMF8R66C 25121WF1003T4E 25.501.3653.0 290-1.0M-RC 292
2.2K-RC 292-4.7K-RC 25121WF4700T4E 292-470K-RC 302-1.0M-RC CPG1206F10KC CRCW02011R00FXED CRCW060315K0FKEE

CRCW060320K5FKEE CRG0201F10K RCG0402150RFKED RCG04023K92FKED RCP2512B100RGWB RCWP110010R0FKS3

RCWP11002K00FKS3 RCWP12061K00FKS2 3520510RJT 352075KJT M55342K11B9E53RUL RMC16-102JT RMC1JPTE TR0603MR
075K1L 5-2176094-4 35202K7JT WF06Q1000FTL ERJ-S03J1R0V ERJ-S14J4R7U CHP2512L4R30GNT CPCC10270R0JE32

RCWP11001K00FKS3