

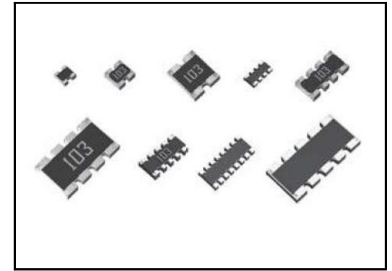


**THE DATASHEET OF
MNR04M0APJ470**



●Features

- 1) Can be mounted even more densely than chip resistors.
- 2) Mounting cost can be reduced by less frequency of mounting times.
- 3) Convex electrodes secures visual inspection of fillets after soldering.
- 4) ROHM resistors have obtained ISO9001 / IATF16949 certification.
- 5) Corresponds to AEC-Q200



●Products list

Part No.	Size		Rated power (70°C) (W)	Limiting element voltage (V)	Temperature coefficient (ppm / °C)	Resistance tolerance (%)	Resistance range (Ω)	Operating temperature range (°C)	Automotive grade available
	(mm)	[inch]							
ΔMNR02	1005 × 2	0402 × 2	0.063/ Element	25	±200	J (±5%)	10 ≤ R ≤ 1M (E24 series)	-55 ~ +155	Yes
			(Jumper type) Resistance : Max. 50mΩ, Rated current : 1A						
ΔMNR04	1005 × 4	0402 × 4	0.063/ Element	25	+500 / -250	J (±5%)	1 ≤ R < 10 (E24 series)	-55 ~ +155	Yes
			±200	J (±5%)	10 ≤ R ≤ 1M (E24 series)				
(Jumper type) Resistance : Max. 50mΩ, Rated current : 1A									
ΔMNR12	1608 × 2	0603 × 2	0.063/ Element	50	±200	J (±5%)	10 ≤ R ≤ 1M (E24 series)	-55 ~ +155	Yes
			(Jumper type) Resistance : Max. 50mΩ, Rated current : 1A						
ΔMNR14	1608 × 4	0603 × 4	0.063/ Element	50	±500	J (±5%)	2.2 ≤ R < 10 (E6 series)	-55 ~ +155	Yes
			±200	J (±5%)	10 ≤ R ≤ 1M (E24 series)				
(Jumper type) Resistance : Max. 50mΩ, Rated current : 1A									
ΔMNR15	1608 × 5	0603 × 5	0.031/ Element	12.5	±200	J (±5%)	56 ≤ R ≤ 100k (E24 series)	-55 ~ +125	Yes
ΔMNR18	1605 × 8	0602 × 8	0.063/ Element	25	±200	J (±5%)	10 ≤ R ≤ 1M (E24 series)	-55 ~ +125	Yes
			(Jumper type) Resistance : Max. 50mΩ, Rated current : 1A						
▲MNR32	3216 × 2	1206 × 2	0.125/ Element	200	±200	J (±5%)	10 ≤ R ≤ 1M (E24 series)	-55 ~ +125	Yes
			(Jumper type) Resistance : Max. 50mΩ, Rated current : 2A						
▲MNR34	3216 × 4	1206 × 4	0.125/ Element	200	±200	J (±5%)	10 ≤ R ≤ 1M (E24 series)	-55 ~ +125	Yes
			(Jumper type) Resistance : Max. 50mΩ, Rated current : 2A						
▲MNR35	3216 × 5	1206 × 5	0.063/ Element	50	±200	J (±5%)	56 ≤ R ≤ 100k (E12 series)	-55 ~ +125	Yes

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

△ : Only for customers who are currently purchasing the products from ROHM or its authorized distributor.

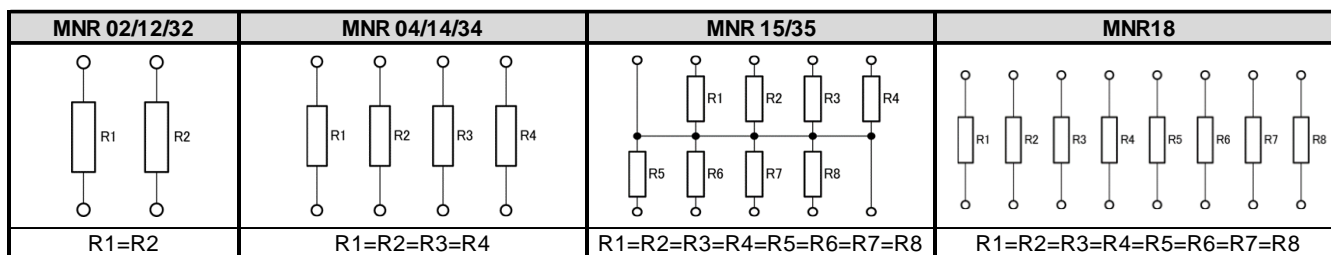
Please consider single chip resistor for new adoption. (Please contact us for details.)

▲ : NRND(Not Recommended for New Design)

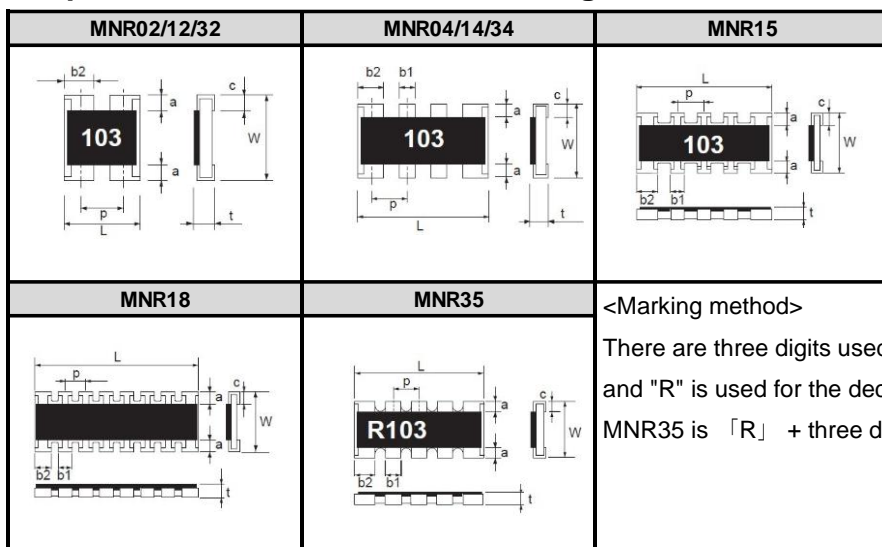
●Part Number Description

MNR	02	M0AP	J	105			
Part No.	Size (mm)[inch]	Type code		Resistance tolerance	Nominal resistance		
MNR Chip resistors networks	02 (1005×2)[0402×2] 04 (1005×4)[0402×4] 12 (1608×2)[0603×2] 14 (1608×4)[0603×4] 15 (1608×5)[0603×5] 18 (1605×8)[0602×8] 32 (3216×2)[1206×2] 34 (3216×4)[1206×4] 35 (3216×5)[1206×5]	Part No.	Code	Packaging specifications	Quantity / Reel	J (±5%) (Including jumper type)	Resistance code, 3 digits. 000 denotes jumper type.
		MNR02	M0AP	Paper tape (2mmPitch)	10,000		Resistance tolerance code J : 3 digits
		MNR04	M0AP	Paper tape (2mmPitch)	10,000		EX)
		MNR12	E0AP	Paper tape (4mmPitch)	5,000		1Ω = 1R0 (±5%)
		MNR14	E0AP	Paper tape (4mmPitch)	5,000		9.1Ω = 9R1 (±5%)
		MNR15	E0RP	Paper tape (4mmPitch)	5,000		10Ω = 100 (±5%)
		MNR18	E0AP	Paper tape (4mmPitch)	5,000		1MΩ = 105 (±5%)
		MNR32	J0AB	Embossed tape (4mmPitch)	4,000		
		MNR34	J5AB	Embossed tape (4mmPitch)	4,000		
		MNR35	J5R	Embossed tape (4mmPitch)	4,000		

●Circuit construction



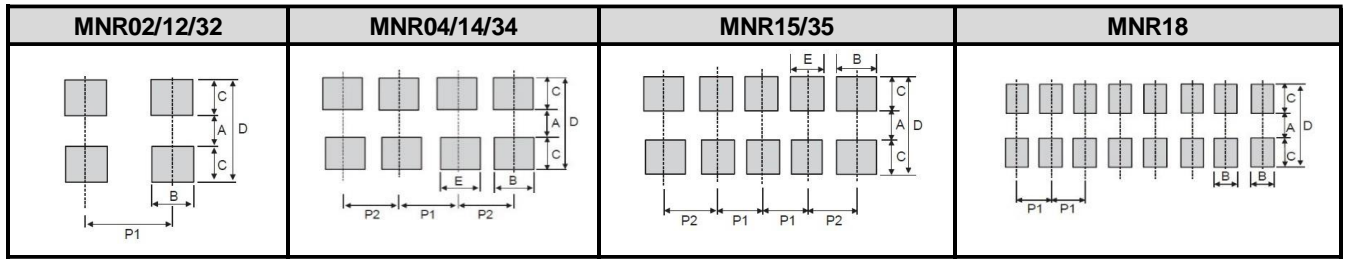
●Chip resistor dimensions and markings



(Unit : mm)

Part No.	Type code	(mm)	[inch]	L	W	t	a	b1	b2	c	p	Marking existence <small>*Including jumper type</small>
MNR02	M0AP	1005x2	0402x2	1.00±0.10	1.00±0.10	0.35±0.10	0.20±0.10	—	0.33+0.10 -0.05	0.25±0.10	0.68	No
MNR04	M0AP	1005x4	0402x4	2.00±0.10	1.00±0.10	0.35±0.10	0.20±0.10	0.30±0.10	0.40±0.10	0.25±0.10	0.5	No
MNR12	E0AP	1608x2	0603x2	1.60±0.10	1.60±0.10	0.50±0.10	0.30±0.20	—	0.60±0.15	0.25±0.15	0.8	Yes
MNR14	E0AP	1608x4	0603x4	3.20±0.10	1.60±0.10	0.50±0.10	0.30±0.20	0.40±0.15	0.60±0.15	0.25±0.15	0.8	Yes
MNR15	E0RP	1608x5	0603x5	3.20±0.10	1.60±0.10	0.50±0.10	0.30±0.10	0.32±0.15	0.48±0.15	0.30±0.10	0.64	Yes
MNR18	E0AP	1605x8	0602x8	3.80±0.10	1.60±0.10	0.45±0.10	0.30±0.20	0.30±0.10	0.30±0.10	0.30±0.20	0.5	No
MNR32	J0AB	3216x2	1206x2	2.60±0.20	3.10±0.20	0.55±0.10	0.50±0.30	—	1.00±0.20	0.5MAX	1.27	Yes
MNR34	J5AB	3216x4	1206x4	5.20±0.40	3.10±0.20	0.55±0.10	0.50±0.30	0.80±0.20	1.00±0.20	0.5MAX	1.27	Yes
MNR35	J5R	3216x5	1206x5	6.40±0.40	3.10±0.20	0.55±0.10	0.50±0.30	0.80±0.20	1.00±0.20	0.5MAX	1.27	Yes

●Land pattern example



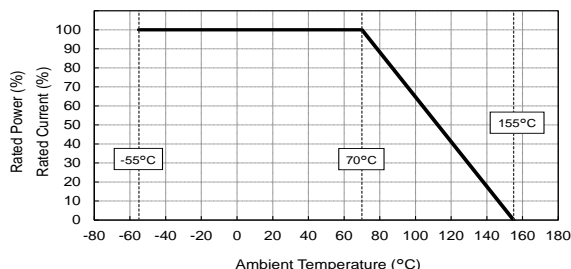
(Unit : mm)

Part No.	Type code	A	B	C	D	E	P1	P2
MNR02	M0AP	0.5	0.35 ~ 0.4	0.5	1.5	—	0.65 ~ 0.7	—
MNR04	M0AP	0.5	0.4	0.5	1.5	0.3	0.5	0.5 ~ 0.55
MNR12	E0AP	1.0	0.4 ~ 0.6	0.7 ~ 0.8	2.4 ~ 2.6	—	0.8 ~ 1.0	—
MNR14	E0AP	1.0	0.4 ~ 0.6	0.7 ~ 0.8	2.4 ~ 2.6	0.4	0.8	0.8 ~ 0.9
MNR15	E0RP	1.0	0.48	0.7 ~ 0.8	2.4 ~ 2.6	0.32	0.64	0.72
MNR18	E0AP	1.0	0.3	0.7 ~ 0.8	2.4 ~ 2.6	—	0.5	—
MNR32	J0AB	2.1	0.8 ~ 1.0	0.8 ~ 1.0	3.7 ~ 4.1	—	1.27 ~ 1.6	—
MNR34	J5AB	2.1	0.8 ~ 1.0	0.8 ~ 1.0	3.7 ~ 4.1	0.7 ~ 0.8	1.27 ~ 1.35	1.27 ~ 1.45
MNR35	J5R	2.1	0.8 ~ 1.0	0.8 ~ 1.0	3.7 ~ 4.1	0.7 ~ 0.8	1.27 ~ 1.3	1.27 ~ 1.4

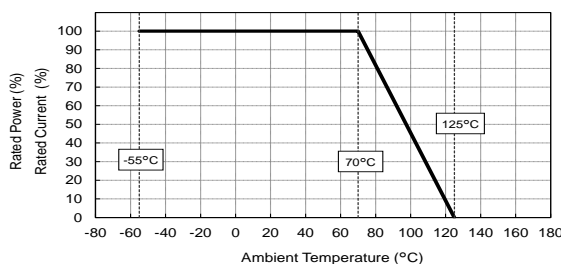
●Derating curve

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

■MNR02 /04/12 /14



■MNR15/18/32/34/35



●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 : +25/-55, +25/+125°C(MNR12/14/15/32/34/35) +25/+125°C(MNR02/04/18)
Overload	±(2.0%+0.1Ω)	MAX. 50mΩ	Test voltage is the smaller one of ① or ② ①Rated voltage(current)×2.5 Test time : 2s ②Maximum overload voltage *
Solderability	A new uniform coating of minimum of 95% of the surface being immersed and no soldering damage.		Rosin-ethanol solution(25% mass) Soldering condition : 245±5°C Duration of immersion : 2.0±0.5s
Resistance to soldering heat	±(1.0%+0.05Ω) ±(1.0%+0.1Ω) MNR35	MAX. 50mΩ	Soldering condition : 260±5°C Duration of immersion : 10±1s
Rapid change of temperature	±(1.0%+0.05Ω) ±(1.0%+0.1Ω) MNR35	MAX. 50mΩ	Test temp : -55°C~+125°C 1,000cycles
Damp heat, steady state	±(3.0%+0.1Ω)	MAX. 100mΩ	85°C, 85%(Relative humidity) Test time : 1,000h
Endurance at 70°C	±(3.0%+0.1Ω)	MAX. 100mΩ	Rated voltage(current),70°C±3°C 1.5h:ON – 0.5h:OFF Test time : 1,000h
Endurance	±(3.0%+0.1Ω)	MAX. 100mΩ	155°C(MNR02/04/12/14) 125°C(MNR15/18/32/34/35) Test time : 1,000h
Resistance to solvent	±(1.0%+0.05Ω) ±(1.0%+0.1Ω) MNR35	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	Endurance with 90mm width Deflection : 3mm

Compliance Standards : IEC60115-1 / IEC60115-8
JIS C 5201-1 / JIS C 5201-8

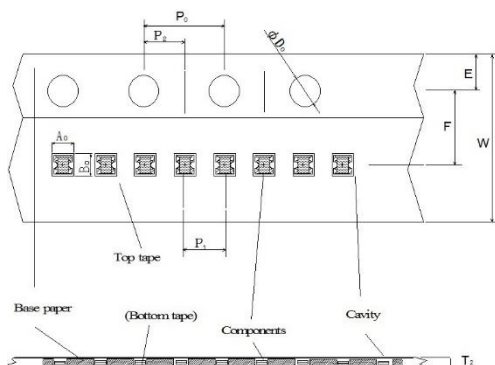
※Maximum overload voltage (Test voltage)

MNR02	MNR04	MNR12	MNR14	MNR15	MNR18	MNR32	MNR34	MNR35
50V	50V	100V	100V	25V	50V	400V	400V	100V

●Tape dimensions

■Paper tape

(Unit : mm)

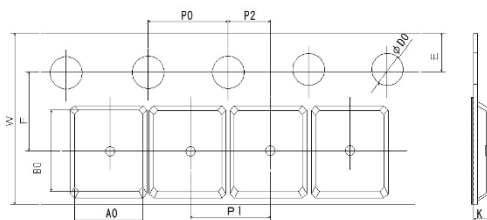


Part No.	Type code	W	F	E	A0	B0
MNR02	M0AP	8.0±0.3	3.5±0.05	1.75±0.1	1.17±0.1	1.17±0.1
MNR04	M0AP	8.0±0.3	3.5±0.05	1.75±0.1	1.2±0.1	2.2±0.1
MNR12	E0AP	8.0±0.3	3.5±0.05	1.75±0.1	1.8±0.1	1.8±0.1
MNR14	E0AP	8.0±0.3	3.5±0.05	1.75±0.1	1.8±0.1	3.4±0.1
MNR15	E0RP	8.0±0.3	3.5±0.05	1.75±0.1	1.8±0.1	3.4±0.1
MNR18	E0AP	8.0±0.3	3.5±0.05	1.75±0.1	1.95±0.15	4.1±0.15

Part No.	Type code	D0	P0	P1	P2	T2
MNR02	M0AP	$\Phi 1.5+0.1$ 0	4.0±0.1	2.0±0.1	2.0±0.05	MAX0.5
MNR04	M0AP	$\Phi 1.5+0.1$ 0	4.0±0.1	2.0±0.1	2.0±0.05	MAX1.1
MNR12	E0AP	$\Phi 1.5+0.1$ 0	4.0±0.1	4.0±0.1	2.0±0.05	MAX1.1
MNR14	E0AP	$\Phi 1.5+0.1$ 0	4.0±0.1	4.0±0.1	2.0±0.05	MAX1.1
MNR15	E0RP	$\Phi 1.5+0.1$ 0	4.0±0.1	4.0±0.1	2.0±0.05	MAX1.1
MNR18	E0AP	$\Phi 1.5+0.1$ 0	4.0±0.1	4.0±0.1	2.0±0.05	MAX1.1

■Embossed tape

(Unit : mm)



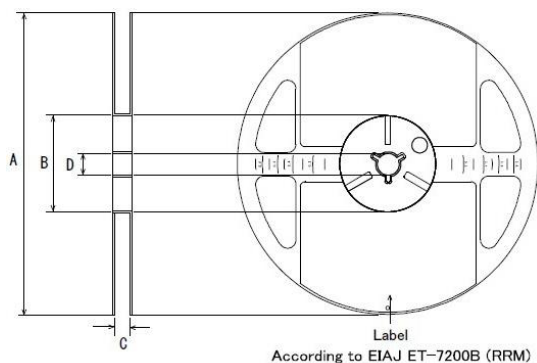
Part No.	Type code	W	F	E	A0	B0
MNR32	J0AB	8.0±0.3	3.5±0.05	1.75±0.1	3.0±0.1	3.5±0.1
MNR34	J5AB	12.0±0.3	5.5±0.05	1.75±0.1	3.4±0.1	5.6±0.1
MNR35	J5R	12.0±0.3	5.5±0.05	1.75±0.1	3.4±0.1	6.6±0.1

Part No.	Type code	D0	P0	P1	P2	K
MNR32	J0AB	$\Phi 1.5+0.1$ 0	4.0±0.1	4.0±0.1	2.0±0.05	0.9±0.1
MNR34	J5AB	$\Phi 1.5+0.1$ 0	4.0±0.1	4.0±0.1	2.0±0.05	1.0±0.15
MNR35	J5R	$\Phi 1.5+0.1$ 0	4.0±0.1	4.0±0.1	2.0±0.05	1.0±0.15

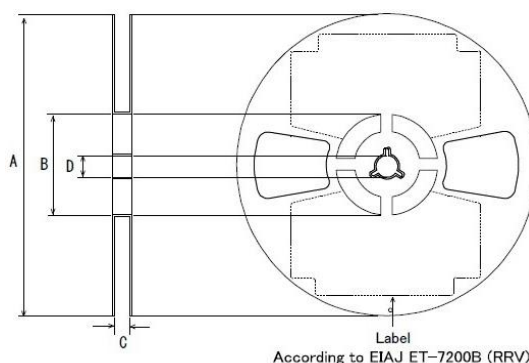
●Reel dimensions

Using two kinds of reels for taping.

①MNR 02/04/12/14/15/18/32/34/35



②MNR 02/04/12/14/15/18/32



(Unit : mm)

Part No.		A	B	C	D
MNR02	M0AP	Φ180 0 -1.5	Φ60 +1.0 0	9 +1.0 0	Φ13±0.2
MNR04	M0AP				
MNR12	E0AP				
MNR14	E0AP				
MNR15	E0RP				
MNR18	E0AP				
MNR32	J0AB			13 +1.0 0	
MNR34	J5AB				
MNR35	J5R				

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