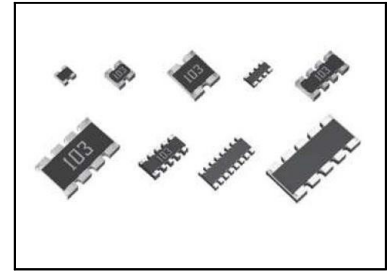


●Features

- 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.

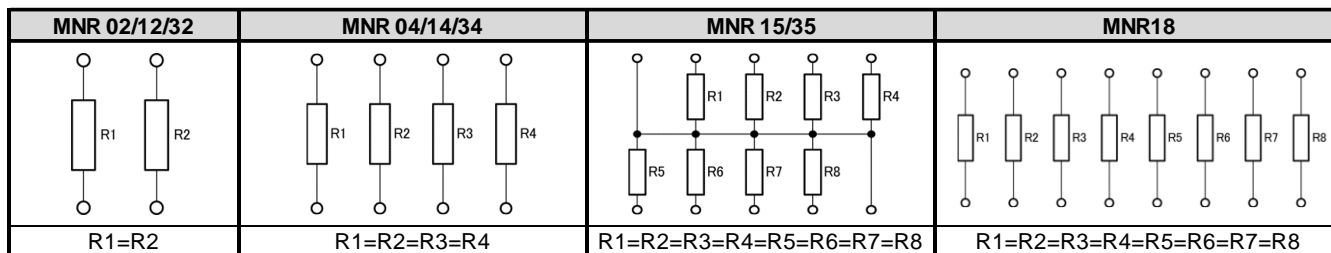
Please consider single chip resistor for new adoption. (Please contact us for details.)

▲ : NRND(Not Recommended for New Design)

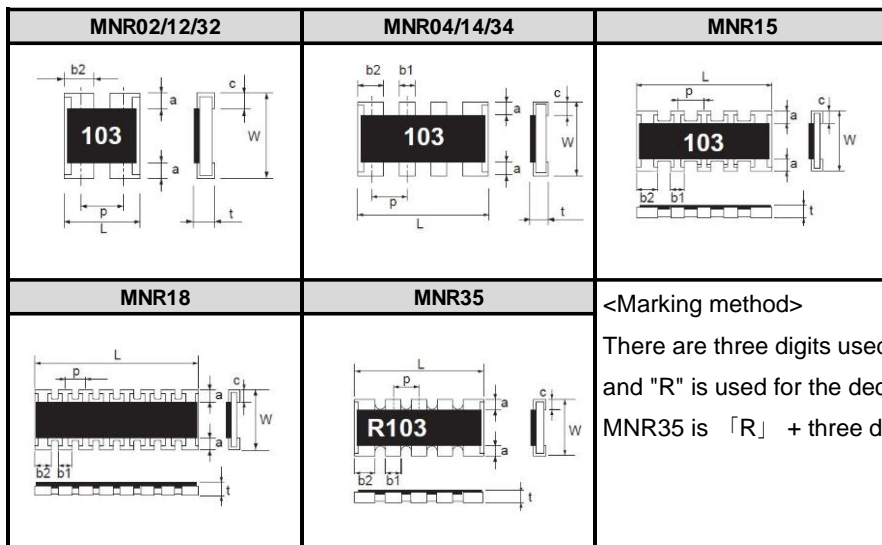
●Part Number Description

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	EX) 1Ω = 1R0 (±5%) 9.1Ω = 9R1 (±5%) 10Ω = 100 (±5%) 1MΩ = 105 (±5%)
		MNR04	M0AP	Paper tape (2mmPitch)	10,000		
		MNR12	E0AP	Paper tape (4mmPitch)	5,000		
		MNR14	E0AP	Paper tape (4mmPitch)	5,000		
		MNR15	E0RP	Paper tape (4mmPitch)	5,000		
		MNR18	E0AP	Paper tape (4mmPitch)	5,000		
		MNR32	J0AB	Embossed tape (4mmPitch)	4,000		
		MNR34	J5AB	Embossed tape (4mmPitch)	4,000		
		MNR35	J5R	Embossed tape (4mmPitch)	4,000		

●Circuit construction



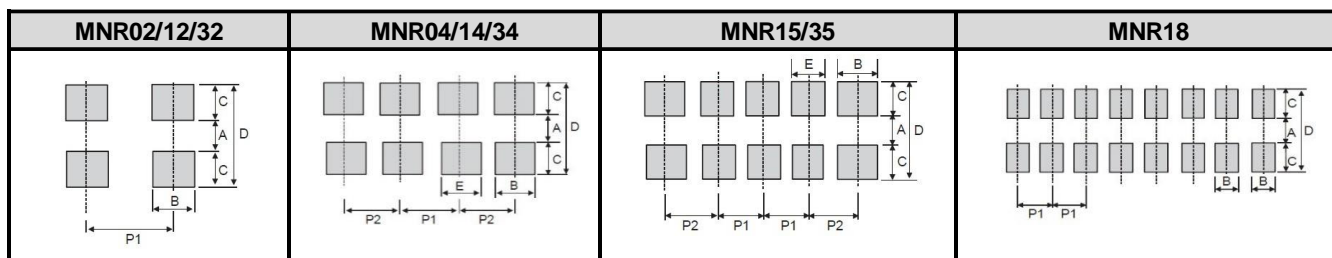
●Chip resistor dimensions and markings



(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



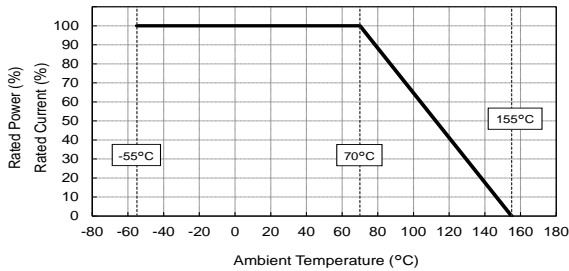
(Unit : mm)

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

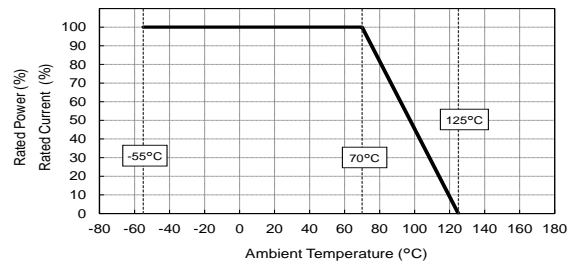
●Derating curve

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

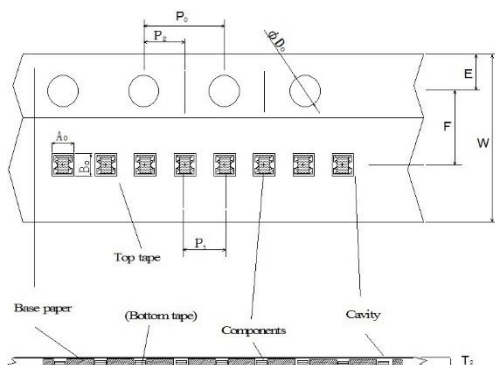
※Maximum overload voltage (Test voltage)

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

●Tape dimensions

■Paper tape

(Unit : mm)

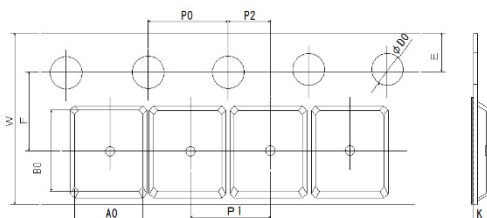


Part No.	Type code	W	F	E	A0	B0
MNR02	M0AP	8.0±0.3	3.5±0.05	1.75±0.1	1.17±0.1	1.17±0.1
MNR04	M0AP	8.0±0.3	3.5±0.05	1.75±0.1	1.2±0.1	2.2±0.1
MNR12	E0AP	8.0±0.3	3.5±0.05	1.75±0.1	1.8±0.1	1.8±0.1
MNR14	E0AP	8.0±0.3	3.5±0.05	1.75±0.1	1.8±0.1	3.4±0.1
MNR15	E0RP	8.0±0.3	3.5±0.05	1.75±0.1	1.8±0.1	3.4±0.1
MNR18	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	Φ1.5+0.1 0	4.0±0.1	2.0±0.1	2.0±0.05	MAX0.5
MNR04	M0AP	Φ1.5+0.1 0	4.0±0.1	2.0±0.1	2.0±0.05	MAX1.1
MNR12	E0AP	Φ1.5+0.1 0	4.0±0.1	4.0±0.1	2.0±0.05	MAX1.1
MNR14	E0AP	Φ1.5+0.1 0	4.0±0.1	4.0±0.1	2.0±0.05	MAX1.1
MNR15	E0RP	Φ1.5+0.1 0	4.0±0.1	4.0±0.1	2.0±0.05	MAX1.1
MNR18	E0AP	Φ1.5+0.1 0	4.0±0.1	4.0±0.1	2.0±0.05	MAX1.1

■Embossed tape

(Unit : mm)



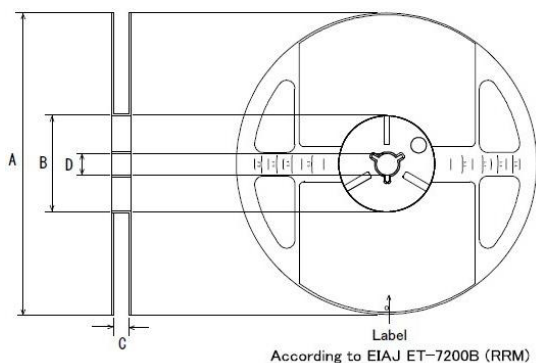
Part No.	Type code	W	F	E	A0	B0
MNR32	J0AB	8.0±0.3	3.5±0.05	1.75±0.1	3.0±0.1	3.5±0.1
MNR34	J5AB	12.0±0.3	5.5±0.05	1.75±0.1	3.4±0.1	5.6±0.1
MNR35	J5R	12.0±0.3	5.5±0.05	1.75±0.1	3.4±0.1	6.6±0.1

Part No.	Type code	D0	P0	P1	P2	K
MNR32	J0AB	Φ1.5+0.1 0	4.0±0.1	4.0±0.1	2.0±0.05	0.9±0.1
MNR34	J5AB	Φ1.5+0.1 0	4.0±0.1	4.0±0.1	2.0±0.05	1.0±0.15
MNR35	J5R	Φ1.5+0.1 0	4.0±0.1	4.0±0.1	2.0±0.05	1.0±0.15

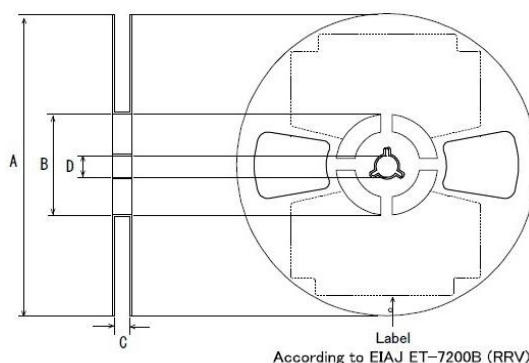
●Reel dimensions

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				