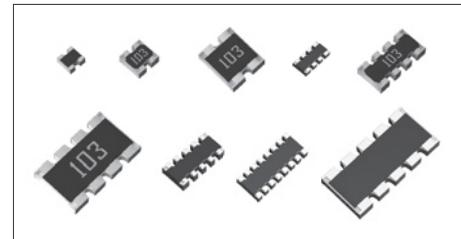


Features

- 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 / ISO / TS16949 certification.
- 5) "Automotive" product is AEC-Q200 compliant.

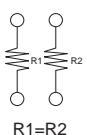
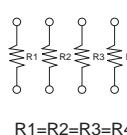
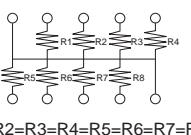
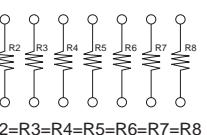


●Products List

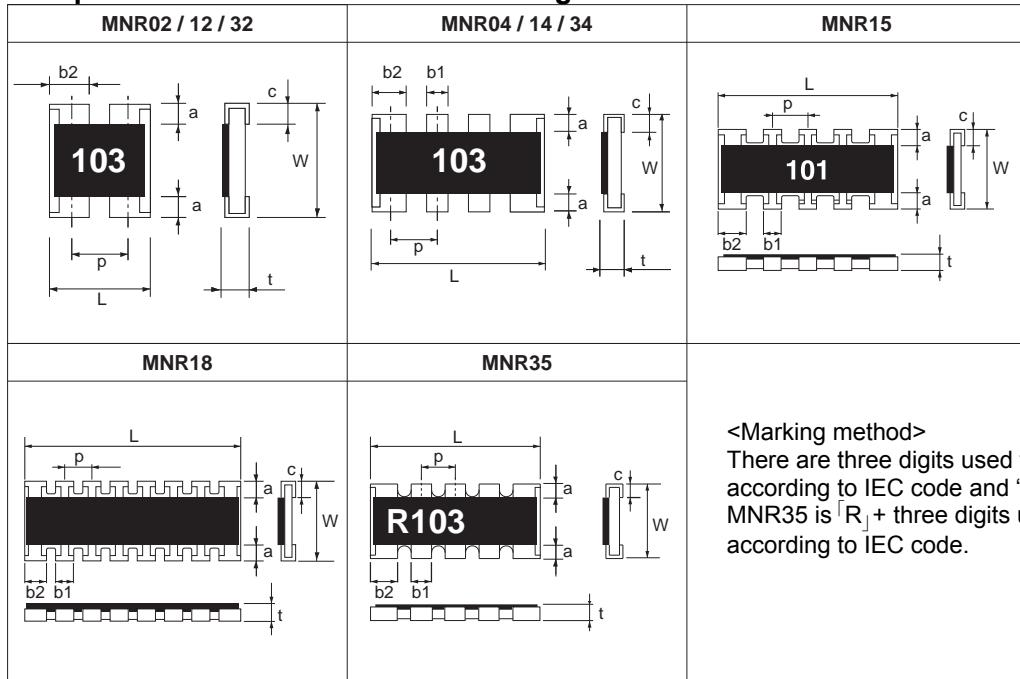
Part No.	Type Code	Rated Power (70°C) (W)	Limiting Element Voltage (V)	Maximum Overload Voltage (V)	Temperature Coefficient (ppm / °C)	Resistance Tolerance (%)	Resistance Range	Series	Operating Temperature Range (°C)	
MNR02	MOAP	0.063 / Element	25	-	±200	J(±5%)	10Ω to 1MΩ	E24	-55 to +155	
							Jumper type : Rmax = 50mΩ / Imax. = 1A (Element)			
MNR04	MOAP	0.063 / Element	25	50	+500/-250	J(±5%)	1Ω to 9.1Ω	E24		
					±200		10Ω to 1MΩ			
Jumper type : Rmax = 50mΩ / Imax. = 1A (Element)										
MNR12	E0AP	0.063 / Element	50	-	±200	J(±5%)	10Ω to 1MΩ	E24		
					±100	F(±1%)	10Ω to 1MΩ			
Jumper type : Rmax = 50mΩ / Imax. = 1A (Element)										
MNR14	E0AP	0.063 / Element	50	-	±500	J(±5%)	2.2Ω to 6.8Ω	E6		
					±200		10Ω to 1MΩ			
Jumper type : Rmax = 50mΩ / Imax. = 1A (Element)										
MNR15	E0RP	0.031 / Element	12.5	-	±200	J(±5%)	56Ω to 100kΩ	E24	-55 to +125	
MNR18	E0AP	0.063 / Element	25	-	±200	J(±5%)	10Ω to 1MΩ	E24		
MNR32	J0AB	0.125 / Element	200	400	±200	J(±5%)	10Ω to 1MΩ	E24		
Jumper type : Rmax = 50mΩx / Imax. = 2A (Element)										
MNR34	J5AB	0.125 / Element	200	400	±200	J(±5%)	10Ω to 1MΩ	E24		
Jumper type : Rmax = 50mΩ / Imax. = 2A (Element)										
MNR35	J5R	0.063 / Element	50	100	±200	J(±5%)	56Ω to 100kΩ	E12		

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

●Circuit Construction

MNR02 / 12 / 32	MNR04 / 14 / 34	MNR15 / 35	MNR18
 R1=R2	 R1=R2=R3=R4	 R1=R2=R3=R4=R5=R6=R7=R8	 R1=R2=R3=R4=R5=R6=R7=R8

● Chip Resistor Dimensions and Markings



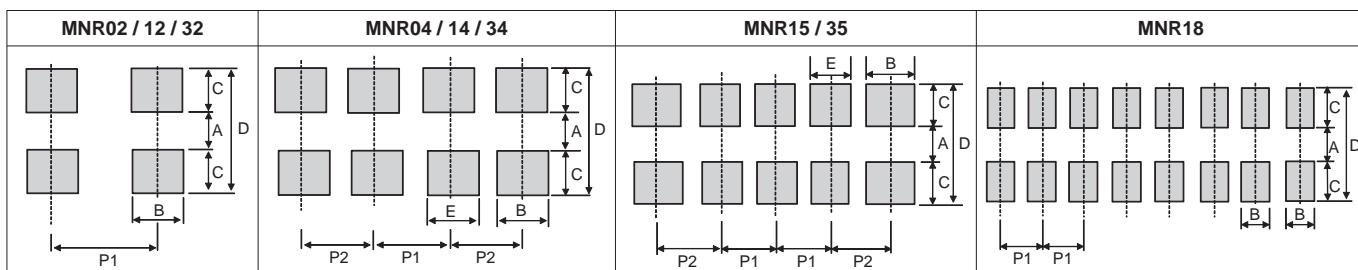
<Marking method>

There are three digits used for the calculation number according to IEC code and "R" is used for the decimal point. MNR35 is [R] + three digits used for the calculation number according to IEC code.

(Unit : mm)

Part No.	Type Code	(mm)	(inch)	L	W	t	a	b1	b2	c	p	Marking existence *Including jumper type
MNR02	M0AP	1005 × 2	0402 × 2	1.0±0.1	1.0±0.1	0.35±0.1	0.2±0.1	—	0.33 ^{+0.1} ₀	0.25±0.1	0.68	No
MNR04	M0AP	1005 × 4	0402 × 4	2.0±0.1	1.0±0.1	0.35±0.1	0.2±0.1	0.3±0.1	0.4±0.1	0.25±0.1	0.5	No
MNR12	E0AP	1608 × 2	0603 × 2	1.6±0.1	1.6±0.1	0.5±0.1	0.3±0.2	—	0.6±0.15	0.25±0.15	0.8	Yes
MNR14	E0AP	1608 × 4	0603 × 4	3.2±0.1	1.6±0.1	0.5±0.1	0.3±0.2	0.4±0.15	0.6±0.15	0.25±0.15	0.8	Yes
MNR15	E0AP	1608 × 5	0603 × 5	3.2±0.1	1.6±0.1	0.5±0.1	0.3±0.1	0.32±0.15	0.48±0.15	0.3±0.1	0.64	Yes
MNR18	J5AB	1605 × 8	0602 × 8	3.8±0.1	1.6±0.1	0.45±0.1	0.3±0.2	0.3±0.1	0.3±0.1	0.3±0.2	0.5	No
MNR32	E0RP	3216 × 2	1206 × 2	2.6±0.2	3.1±0.2	0.55±0.1	0.5±0.3	—	1.0±0.2	0.5Max	1.27	Yes
MNR34	E0AP	3216 × 4	1206 × 4	5.2±0.4	3.1±0.2	0.55±0.1	0.5±0.3	0.8±0.2	1.0±0.2	0.5Max	1.27	Yes
MNR35	J5R	3216 × 5	1206 × 5	6.4±0.4	3.1±0.2	0.55±0.1	0.5±0.3	0.8±0.2	1.0±0.2	0.5Max	1.27	Yes

● Land pattern Example



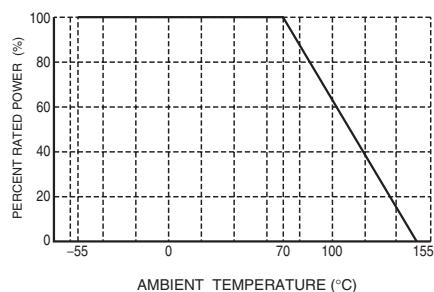
(Unit : mm)

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

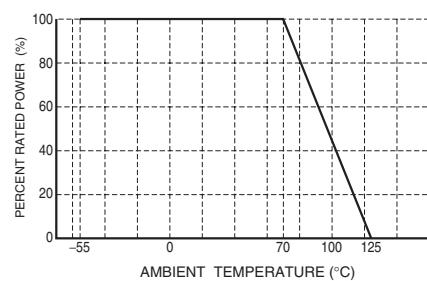
●Derating Curve

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 : +20 / -55 / +20 / +125°C
Overload	± (2.0%+0.1Ω)	Max. 50mΩ	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) ± (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 to +125°C 5cycle
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 (MNR15 / 18 / 32 / 34 / 35) 155°C (MNR02 / 04 / 12 / 14) Test time : 1,000h to 1,048h
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)	Max. 50mΩ	Without mechanical damage such as breaks.

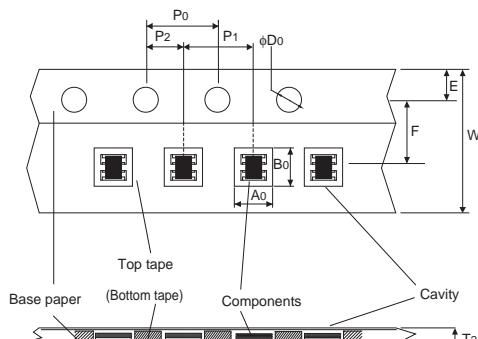
Compliance Standard(s) : IEC60115-8
JISC 5201-8

●Chip weight (typical value)

Parameter	Unit	MNR02 MOAP	MNR04 MOAP	MNR12 EOAP	MNR14 EOAP	MNR15 EORP	MNR18 EOAP	MNR32 JOAB	MNR34 J5AB	MNR35 J5R
Weight	mg/pc	1.04	2.22	4.04	7.55	7.41	8.90	15.9	31.2	38.4

● Tape Dimensions

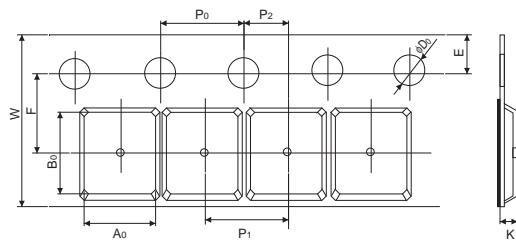
■ Paper Tape



Part No.	Type Code	W	F	E	A ₀	B ₀	(Unit : mm)
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	D ₀	P ₀	P ₁	P ₂	T ₂
MNR02	M0AP	φ1.5 ^{+0.1} ₀	4.0±0.1	2.0±0.1	2.0±0.05	Max 0.5
MNR04	M0AP	φ1.5 ^{+0.1} ₀	4.0±0.1	2.0±0.1	2.0±0.05	Max 1.1
MNR12	E0AP	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MNR14	E0AP	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MNR15	E0RP	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1
MNR18	E0AP	φ1.5 ^{+0.1} ₀	4.0±0.1	4.0±0.1	2.0±0.05	Max 1.1

■ Embossed Tape



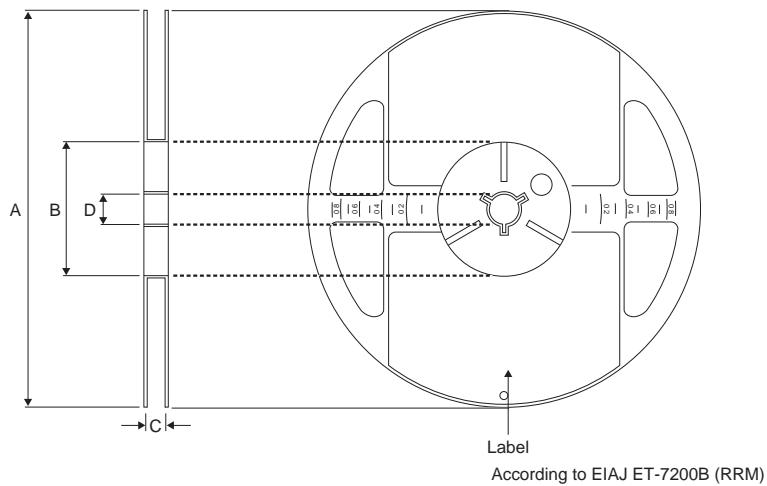
Part No.	Type Code	W	F	E	A ₀	B ₀	(Unit : mm)
MNR32	J0AB	8.0±0.3	3.5±0.05	1.75±0.1	3.0±0.1	3.5±0.1	
MNR34	J5AB	12.0±0.3	5.5±0.05	1.75±0.1	3.4±0.1	5.6±0.1	
MNR35	J5R	12.0±0.3	5.5±0.05	1.75±0.1	3.4±0.1	6.6±0.1	

Part No.	Type Code	D ₀	P ₀	P ₁	P ₂	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

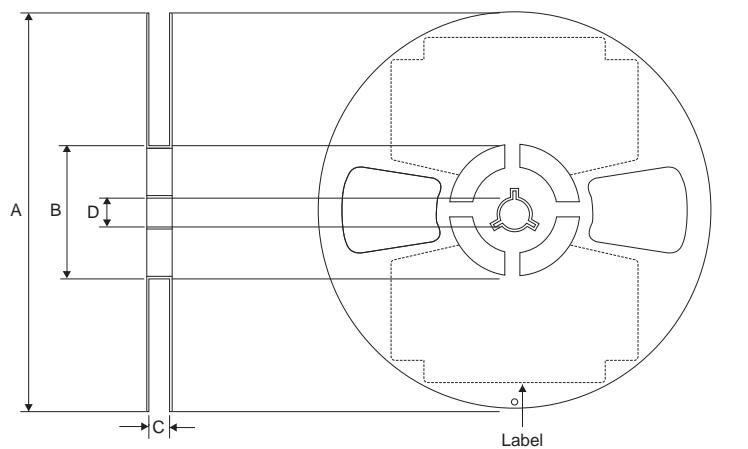
● Reel Dimensions

Using two kinds of reels for taping. (*MNR34/35 applies Fig. 1 only.)

■ Fig.1



■ Fig.2



(Unit : mm)

Part No.	Type Code	A	B	C	D
MNR02	M0AP				
MNR04	M0AP				
MNR12	E0AP				
MNR14	E0AP				
MNR15	E0RP	$\phi 180$ 0 -1.5	$\phi 60$ +1.0 0	9 +1.0 0	$\phi 13 \pm 0.2$
MNR18	E0AP				
MNR32	J0AB				
MNR34	J5AB			13 +1.0 0	
MNR35	J5R				

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