

Quick Reference

Category	Dimensions (mm)			Part No.	Classification	Capacitance range (pF)		Page
	L	W	T			For temp. compensation	High dielectric constant system	
Solder plated termination (MCH series)	1.0	0.5	0.5	MCH15	Standard product	0.5~220	220~33,000	226~227
	1.6	0.8	0.8	MCH18	Standard product	0.5~820	220~220,000	
	2.0	1.25	0.6	MCH21	Standard product	0.5~1,300	220~150,000	
			0.85			620~2,200	27,000~220,000	
			1.25			1,600~2,700	47,000~1,000,000	
	3.2	1.6	0.6	MCH31	Standard product	0.5~1,200	220~100,000	
0.85			820~2,200			33,000~330,000		
		1.15			1,200~6,800	120,000~2,200,000		
Quad-capacitor with solder plated termination (MNA series)	3.2	1.6	0.8	New MNA14	Standard product	100~470	-	227
	5.1	2.0	1.25	MNA24				

Characteristics

Solder plated termination [MCH series]

Can be soldered either by flow or reflow soldering.

● Capacitance Range

Class 1 (For temperature compensated)

(Unit : pF)

Part No.	Thickness (mm)	A (COG) characteristic	
		Standard product	
		50V	UJ (U2J)
MCH15	0.50±0.05	0.5~220	0.5~160
MCH18	0.8±0.1	0.5~820	0.5~820
MCH21	0.6±0.1	0.5~560	0.5~1,300
	0.85±0.1	620~1,500	1,500~2,200
	1.25±0.1	1,600	2,400~2,700
MCH31	0.6±0.1	0.5~750	0.5~1,200
	0.85±0.1	820~1,100	1,300~2,200
	1.15±0.1	1,200~3,600	2,400~6,800
Tolerance (%)		J (±5), <0.5~5pF> : C (±0.25pF), <5.1~10pF> : D (±0.5pF)	
Standard production series		E24	

Class 2 (High dielectric constant)

(Unit : pF)

Part No.	Thickness (mm)	C (X7R) characteristic		
		Standard product		
		50V	25V	16V
MCH15	0.50±0.05	220~3,900	4,700~6,800	8,200~10,000
MCH18	0.8±0.1	220~10,000	12,000~33,000	39,000~100,000
MCH21	0.6±0.1	220~22,000	27,000~39,000	-
	0.85±0.1	27,000~39,000	47,000~68,000	-
	1.25±0.1	47,000~68,000	82,000~150,000	180,000~220,000
MCH31	0.6±0.1	220~27,000	-	-
	0.85±0.1	33,000~100,000	120,000~150,000	-
	1.15±0.1	120,000	180,000~330,000	390,000~470,000
Tolerance (%)		K (±10)		
Standard production series		E12		

Solder plated termination (MCH series)

● Capacitance Range

Class 2 (High dielectric constant)

Part No.	Thickness (mm)	F (Y5V) characteristic		
		Standard product		
		50V	25V	16V
MCH15	0.50±0.05	1,000~15,000	22,000~33,000	-
MCH18	0.8±0.1	1,000~33,000	47,000~100,000	150,000~220,000
MCH21	0.6±0.1	1,000~68,000	100,000~150,000	-
	0.85±0.1	100,000	220,000	-
	1.25±0.1	150,000~220,000	330,000~470,000	680,000~1,000,000
MCH31	0.6±0.1	1,000~100,000	-	-
	0.85±0.1	150,000~220,000	330,000	-
	1.15±0.1	330,000~470,000	680,000~1,500,000	2,200,000
Tolerance (%)		Z (+80, -20)		
Standard production series		E6		

Quad-capacitor with solder plated termination (MNA series)

For conventional multi layer chip ceramic capacitors are combined into one chip. The convex solder plated termination ensures better solderability. Ideal choice for reducing cost and space of mounting.

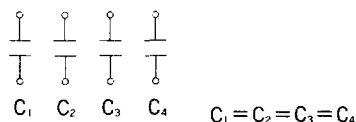
● Capacitance Range

(Unit : pF)

Part No.	Thickness (mm)	A (COG) characteristic
		Standard product
		50V
New MNA14	0.8±0.1	100~470
MNA24	1.25±0.1	100~470
Tolerance (%)		K (±10)
Standard production series		E3

● Equivalent Circuit

● MNA14/MNA24



(Stray capacitance between elements=0.5% or less nominal electrostatic capacitance)

Capacitance-Specific Standard Production Series

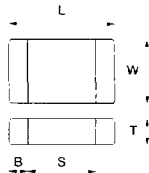
(The capacitance values in unit of pF can be determined by multiplying the values below by the nth power of 10.)

E3	1					2.2					4.7													
E6	1			1.5		2.2			3.3		4.7			6.8										
E12	1	1.2	1.5	1.8	2.2	2.7	3.3	3.9	4.7	5.6	6.8	8.2												
E24	1	1.1	1.2	1.3	1.5	1.6	1.8	2	2.2	2.4	2.7	3	3.3	3.6	3.9	4.3	4.7	5.1	5.6	6.2	6.8	7.5	8.2	9.1

Dimensions Diagram

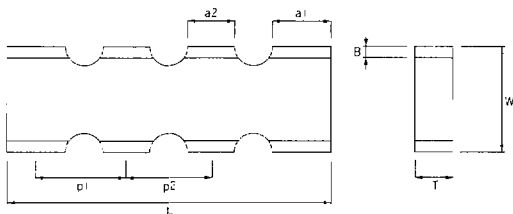
(Unit : mm)

Solder plated termination (MCH series)



Part No.	L	W	T	B (Min.)	S (Min.)
MCH15	1.0±0.05	0.5±0.05	0.5±0.05	0.1	0.3
MCH18	1.6±0.1	0.8±0.1	0.8±0.1	0.15	0.4
MCH21	2.0±0.15	1.25±0.15	1.25±0.1 1.15±0.1	0.2	0.6
MCH31	3.2±0.15	1.6±0.15	0.85±0.1 0.6±0.1	0.2	1.0

Quad-capacitor with solder plated termination (MNA series)



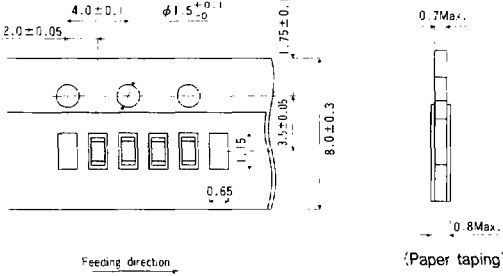
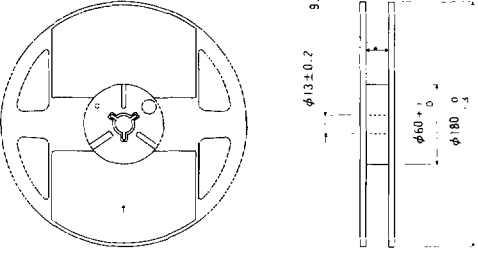
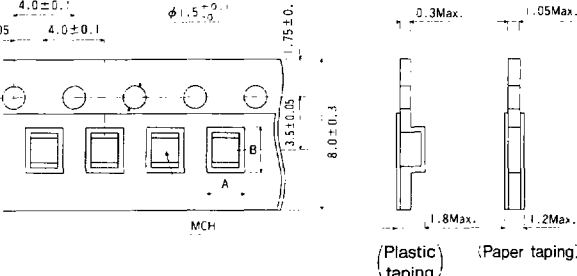
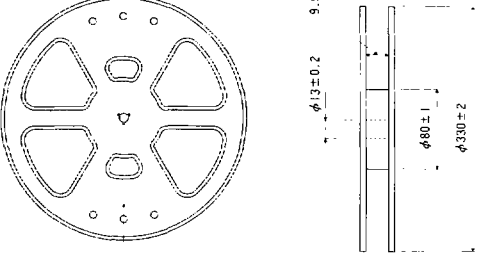
Part No.	L	W	T	B	a1	a2	p1	p2
MNA14	3.2±0.2	1.6±0.2	0.8±0.1	0.15±0.15	0.7±0.2	0.55±0.1	0.85±0.1	0.8±0.1
MNA24	5.1±0.4	2.0±0.2	1.25±0.1	0.2±0.15	1.0±0.2	0.7±0.1	1.4±0.15	1.27±0.15

Packaging Specifications

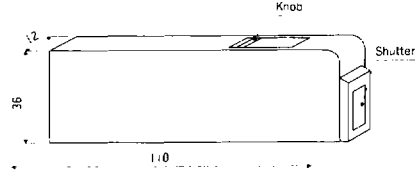
(Unit : mm)

Solder plated termination {MCH series}

Taping

Tape dimensions	Reel dimensions																
<p>MCH15</p>  <p>(Paper taping)</p>	<p>Plastic reel MCH15/18/21/31</p>  <p>Label sticking position (φ180mm reel)</p> <p>EIAJ ETX-7001 compatible</p>																
<p>MCH18/21/31</p>  <p>(Plastic taping) (Paper taping)</p> <table border="1" data-bbox="261 1500 562 1606"> <thead> <tr> <th>Part No.</th> <th>MCH18</th> <th>MCH21</th> <th>MCH31</th> </tr> </thead> <tbody> <tr> <td>Size</td> <td></td> <td></td> <td></td> </tr> <tr> <td>A</td> <td>1.0</td> <td>1.65</td> <td>2.0</td> </tr> <tr> <td>B</td> <td>1.8</td> <td>2.4</td> <td>3.6</td> </tr> </tbody> </table>	Part No.	MCH18	MCH21	MCH31	Size				A	1.0	1.65	2.0	B	1.8	2.4	3.6	<p>Plastic reel MCH15/18/21/31</p>  <p>Label sticking position (φ330mm reel)</p> <p>EIAJ ETX-7001 compatible</p>
Part No.	MCH18	MCH21	MCH31														
Size																	
A	1.0	1.65	2.0														
B	1.8	2.4	3.6														

Bulk Case Dimensions



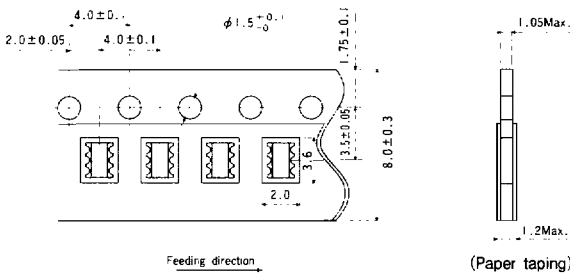
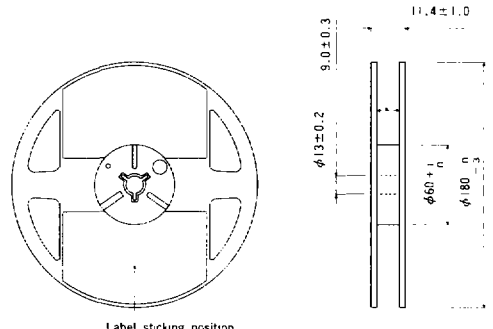
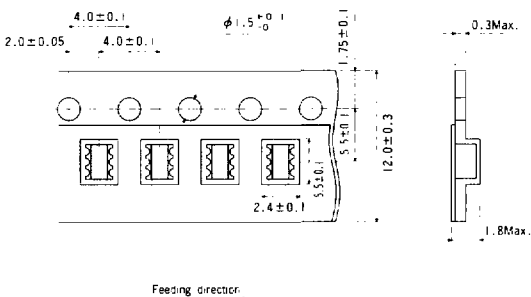
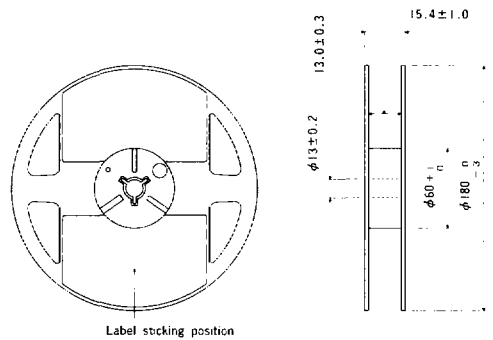
EIAJ ETX-7201 compatible

Packaging Specifications

(Unit : mm)

Quad-capacitor with solder plated termination (MNA series)

Taping

Tape dimensions	Reel dimensions
<p>MNA14</p>  <p>(Paper taping)</p>	<p>Plastic reel MNA14</p>  <p>Label sticking position (φ180mm reel)</p> <p>EIAJ ETX-7001 compatible</p>
<p>MNA24</p> 	<p>Plastic reel MNA24</p>  <p>Label sticking position (φ180mm reel)</p> <p>EIAJ ETX-7001 compatible</p>

Product Designation

- When ordering, specify the part number.
- Check each code against the tables shown below.
- Fill in from the left, leaving any extra boxes empty on the right.

Multi-Layer Ceramic Chip Capacitors

Symbol	Voltage
2	25V
3	16V
5	50V

In picofarads, given by a three-digit number, the first two digits are significant digits and the last digit gives the number of zeros. The position of a decimal point is identified by the letter R.

Example 331 : 330pF, 472 : 4700pF, 1R5 : 1.5pF, 010 : 1pF, R75 : 0.75pF

Symbol	Tolerance	Application
C	±0.25pF	0.5~5.0pF
D	±0.5pF	5.1~10pF
J	±5%	A,UJ Characteristics
K	±10%	C Characteristics
Z	+80, -20%	F Characteristics

• Blank is standard product
• Fill this space for the custom specification.

Shape · Dimensions

Rated voltage

Nominal capacitance

Capacitance tolerance

Custom specification code

M	C	H	2	1	2	F		1	0	4	Z	K	-				
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Series name

Symbol	Series
MCH	Solder plated termination
MNA	Quad-capacitor with solder plated termination

Capacitance-temperature characteristics

Symbol	EIA code	Operating Temperature Range (°C)	Temp. Coefficient or Percent Change
A	COG	-55~+125	0±30ppm/°C
UJ	U2J	-25~+85	-750±120ppm/°C
C	X7R	-55~+125 (-25~+85)	±15% (±10%)
F	Y5V	-30~+85	+22%, -82%

For packaging specifications, see page 228 for MCH series, and 230 page for MNA series.

Part No.	Product thickness (T)	Code	Package	Packaging style	Basic ordering unit (pcs)
MCH15	T=0.5 mm	K	Paper taping	dia. 180 mm reel	10,000
		L		dia. 330 mm reel	50,000
		C	Bulk case	Case	50,000
MCH18	T=0.8 mm	K	Paper taping	dia. 180 mm reel	4,000
		L		dia. 330 mm reel	16,000
		C	Bulk case	Case	15,000
MCH21	T=0.6, 0.85 mm	K	Paper taping	dia. 180 mm reel	4,000
		L		dia. 330 mm reel	16,000
	T=1.25 mm	P	Plastic taping	dia. 180 mm reel	3,000
		Q		dia. 330 mm reel	12,000
	T=0.6 mm T=0.85, 1.25 mm	C	Bulk case	Case	10,000 5,000
MCH31		T=0.6, 0.85 mm	K	dia. 180 mm reel	4,000
	L		dia. 330 mm reel	16,000	
	T=1.15 mm	P	dia. 180 mm reel	3,000	
		Q	dia. 330 mm reel	12,000	
MNA14	T=0.8 mm	K	Paper taping	dia. 180 mm reel	4,000
MNA24	T=1.25 mm	P	Plastic taping	dia. 180 mm reel	3,000