

# INDEX

## Multilayer Ceramic Capacitors

### General Capacitors

Type	Dielectric	Size	Capacitance	Rated Voltage	Page
MC	NPO	0402,0603,0805,1206,1210,1812	0.5pF~0.039uF	16V,25V, 50V,100V	4
	X7R	0402,0603,0805,1206,1210,1812	100pF~4.7uF	10V,16V,25V, 50V,100V	5
	X5R	0402,0603,0805,1206	0.027uF~10uF	6.3V,10V,16V	6
	Y5V	0402,0603,0805,1206,1210,1812	0.01uF~47uF	6.3V,10V,16V,25V,35V,50V,100V	6

### Middle and High Voltage Capacitors

Type	Dielectric	Size	Capacitance	Rated Voltage	Page
MC	NPO	0603,0805,1206,1210,1808,1812	0.5pF~6800pF	200V,250V,500V,630V,1KV, 2KV,3KV	8
	X7R	0805,1206,1210,1808,1812	100pF~0.47uF	200V,250V,500V,630V,1KV,1.5KV,2KV,3KV	9
	Y5V	0805,1206,1210, 1812	1000pF~0.022uF	200V,250V	10

### Ultra-small Capacitors

Type	Dielectric	Size	Capacitance	Rated Voltage	Page
MC	NPO	0201 <b>NEW</b>	0.5pF~100pF	16V,25V	11
	X7R	0201 <b>NEW</b>	100pF~4700pF	16V,25V,50V	11
	X5R	0201 <b>NEW</b>	1000pF~0.022uF	6.3V,10V,16V	11

### High Q and Low ESR Capacitors

Type	Dielectric	Size	Capacitance	Rated Voltage	Page
MCHL	NPO	0402,0603	0.5pF~3300pF	16V,25V,50V,100V	12

### High Frequency Capacitors

Type	Dielectric	Size	Capacitance	Rated Voltage	Page
MCHF	NPO	0402,0603	0.1pF~22pF	50V	14

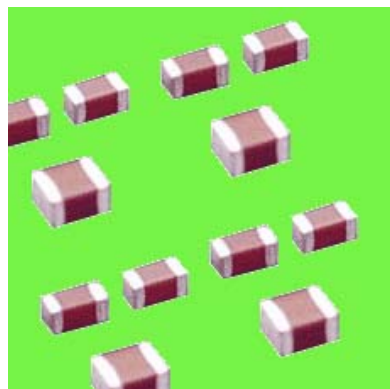
### Low Inductance Capacitors

Type	Dielectric	Size	Capacitance	Rated Voltage	Page
MCLI	NPO	0612	10nF~150nF	50V	17

### Capacitor Arrays

Type	Dielectric	Size	Capacitance	Rated Voltage	Page
CA	NPO	4×0603	10pF~470pF	50V	16
	X7R	4×0603	180pF~0.10uF	16V,50V	16
	Y5V	4×0603	0.010uF~0.10uF	50V	16

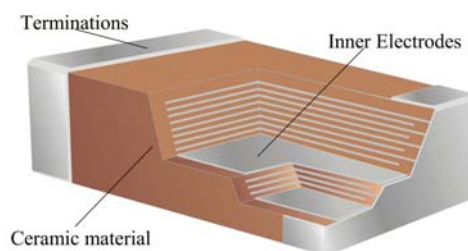
# MULTILAYER CERAMIC CAPACITORS



## Features

- Wide capacitance range, extremely compact size.
- Low inductance of capacitor for high frequency application.
- Excellent solderability and resistance to soldering heat, suitable for flow and reflow soldering.
- Adaptable to high-speed surface mount assembly.
- Conform to EIAJ-RC3402, and also compatible with EIA-RS198 and IEC PUB. 384-10.

## Construction



## Part Numbering

MC	03	J	T	N	250	3R9
①	②	③	④	⑤	⑥	⑦

### ①Product Type

Product Type	
MC	General Capacitors
MC	Ultra-small Capacitors
MC	Middle and High Voltage Capacitors
MCHL	High Q and Low ESR Capacitors
MCHF	High Frequency Capacitors
MCLI	Low Inductance Capacitors
CA	Capacitor Arrays

### ②Dimensions (LxW)

Codes	Dimensions (LxW)	EIA
12	4.5 × 3.2mm	1812
08	4.5 × 2.03mm	1808
10	3.2 × 2.5mm	1210
06	3.2 × 1.6mm	1206
05	2.0 × 1.25mm	0805
03	1.6 × 0.8mm	0603
02	1.0 × 0.5mm	0402
01	0.6 × 0.3mm	0201
43	3.2 × 1.6mm	0612
03	3.2 × 1.6mm	0603×4

### ③Capacitance Tolerance

Codes	Capacitance Tolerance	Capacitance Tolerance		
		NPO	X7R	Y5V
B	±0.1 pF (Cap≤5pF)	v		
C	±0.25 pF (Cap≤5pF)	v		
D	±0.5 pF (5pF<Cap<10pF)	v		
F	±1.0 %	v		
G	±2.0 %	v		
J	±5.0 %	v	v	
K	±10 %	v	v	
M	±20 %		v	v
Z	-20%/+80%			v

\* Storage Temperature :25±3°C ;>80%RH

Termination: Ag/Ni/Sn for NPO dielectric.

Cu/Ni/Sn for X7R, Y5V, X5R and X5S dielectric.

### ④Packaging

Code	Type
T	Taping Reel

### ⑤Dielectric

Code	Dielectric
N	COG(NPO)
B	X7R
F	Y5V
X	X5R
S	X6S

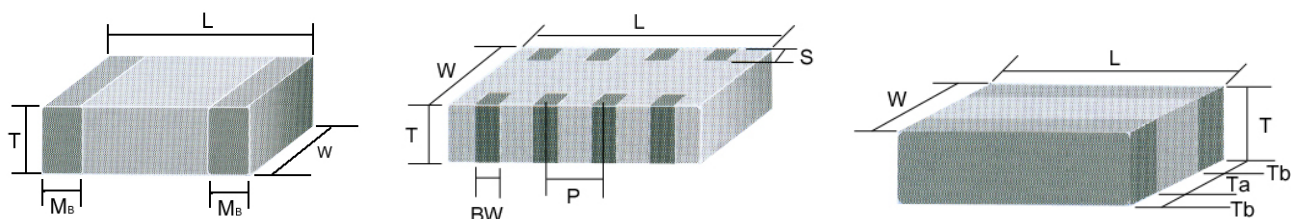
### ⑥Voltage (VDCW)

Code	Voltage
6V3	6.3V
250	25V
500	50V
101	100V
102	1000V
202	2000V
302	3000V

### ⑦Capacitance

Code	Capacitance
3R9	3.9 pF
150	15 pF
181	180 pF
225	2.2 μF
476	47 μF

## Dimensions and Packaging



Single chip capacitors for MC Series , MCHL Series , MCHF Series

SIZE Inch (mm)	L (mm)	W (mm)	T / Symbol (mm)		Mb	Packaging (7" Reel)		
						Paper tape	Plastic tape	
0201 (0603)	0.6±0.03	0.3±0.03	0.3±0.03	L	0.15±0.05	15K		
0402 (1005)	1.00±0.05	0.50±0.05	0.50±0.05	N	0.25 +0.05 / -0.10	10K		
0603 (1608)	1.60±0.10	0.80±0.10	0.80±0.07	S	0.40±0.15	4K		
	1.60 +0.15 / -0.10	0.80 +0.15 / -0.10	0.80 +0.05 / -0.10	X		4K		
0805 (2012)	2.00±0.15	1.25±0.10	0.60±0.10	A	0.50±0.20	4K		
			0.80±0.10	B		4K		
			1.25±0.10	D			3K	
	2.00±0.20	1.25±0.20	1.25±0.20	I			3K	
1206 (3216)	3.20±0.15	1.60±0.15	0.80±0.10	B	0.60±0.20	4K		
			0.95±0.10	C			3K	
			1.15±0.15	J			3K	
			1.25±0.10	D			3K	
			1.60±0.20	1.60±0.20		G		2K
	3.20 +0.30 / -0.10	1.60 +0.30 / -0.10	1.60 +0.30 / -0.10	1.60 +0.30 / -0.10		P		2K
1210 (3225)	3.20±0.30	2.50±0.20	0.95±0.10	C	0.75±0.25		3K	
			1.25±0.10	D			3K	
	3.20±0.40	2.50±0.30	1.60±0.20	G			2K	
			2.00±0.20	K			1K	
			2.50±0.30	M			1K	
1808 (4520)	4.50±0.40	2.03±0.25	1.25±0.10	D	0.50±0.25*		2K	
			2.00±0.20	K			1K	
1812 (4532)	4.50±0.40	3.20±0.30	1.25±0.10	D	0.75±0.25 0.50±0.25*		1K	
			2.00±0.20	K			1K	

\* For Middle and High Voltage Capacitors

Capacitor Arrays for CA Series

SIZE Inch (mm)	L (mm)	W (mm)	T / Symbol (mm)		S(mm)	BW(mm)	P(mm)	Packaging (7" Reel)	
								Paper tape	Plastic tape
0612(1632) 4×0603	3.20±0.15	1.60±0.15	0.80±0.10	B	0.30±0.20	0.40±0.15	0.80±0.15	4K	

Low Inductance Capacitors for MCLI Series

SIZE Inch (mm)	L (mm)	W (mm)	T / Symbol (mm)		Ta min. (mm)	Tb min. (mm)	Packaging (7" Reel)	
							Paper tape	Plastic tape
0612(1632)	3.20±0.15	1.60±0.15	0.80±0.10	B	0.5	0.13	4K	

## Capacitor Arrays

### Capacitance & Voltage

DIELECTRIC		NPO		X7R			Y5V	
EIA	Size	4 × 0603						
Code	VDCW	25V	50V	16V	25V	50V	25V	50V
100	10pF	B	B					
150	15	B	B					
220	22	B	B					
330	33	B	B					
470	47	B	B					
680	68	B	B					
101	100	B	B					
151	150	B	B					
181	180	B	B		B	B		
221	220	B	B		B	B		
331	330	B	B		B	B		
471	470	B	B		B	B		
681	680				B	B		
102	1000				B	B		
152	1500				B	B		
222	2200				B	B		
332	3300				B	B		
472	4700				B	B		
682	6800				B	B		
103	0.010uF				B	B	B	B
153	0.015			B	B	B	B	B
223	0.022			B	B	B	B	B
333	0.033			B			B	B
473	0.047			B			B	B
683	0.068			B			B	B
104	0.10			B			B	B

The letter in cell is expressed the symbol of product thickness.

#### General Electrical Data

Size	4×0603		
Dielectric	NPO	X7R	Y5V
Capacitance*	10pF~470pF	180pF~100nF	10nF~100nF
Capacitance tolerance	J (±5%) K (±10%)	K (±10%) M (±20%)	Z(-20 / +80%)
Rated voltage(WVDC)	25V,50V	16V,25V,50V	25V,50V
Q / Tan δ*	Cap<30pF:Q≥400 +20°C Cap≥30pF: Q≥1000	Ur=25V,50V: ≤2.5% Ur=16V: ≤3.5%	≤5%
Insulation resistance at Ur	≥10GΩ	≥10GΩ or R×C≥500Ω×F Whichever is less	
Operating temperature	-55 to +125°C		-25 to +85°C
Capacitance change	±30 ppm	±15%	+30/-80%
Termination	Ni/Sn(lead-free termination)		

\* Measured at 30-70% related humidity.

**NPO:**Apply 1.0±0.2Vrms, 1.0MHz±10% at the condition of 25°C ambient temperature.

**X7R:**Apply 1.0±0.2Vrms, 1.0kHz±10% at the condition of 25°C ambient temperature.

**Y5V:**Apply 1.0±0.2Vrms, 1.0kHz±10% at the condition of 20°C ambient temperature.