

Multilayer Ceramic Chip Capacitor

STANDARD TYPE MLCC

FEATURES

- Nickel barrier end terminations to improve solderability.
- Multilayer block structure provides higher reliability.
- A wide range of capacitance values available in standard case sizes.

APPLICATIONS

- General electronic devices.

1. Product Identification

CP	101	K	050	X	R	A
1-1	1-2	1-3	1-4	1-5	1-6	1-7

1-1. CP UWA Standard Type MLCC

1-2. 101 Capacitance

Code	Capacitance (pF)	Code	Capacitance (pF)
0R5	0.5	101	100
010	1	104	100,000 (100nF)
100	10	106	10,000,000 (10uF)

1-3. J Capacitance Tolerance

Code	Tolerance	Nominal Capacitance
B	± 0.1 pF	≤ 10 pF
C	± 0.25 pF	
D	± 0.5 pF	
F	± 1 %	≥ 10 pF
G	± 2 %	
H	± 3 %	
J	± 5 %	
K	± 10 %	
M	± 20 %	
Z	- 20 ~ + 80 %	

1-4. 050 Rated Voltage

Code	Rated Voltage	Code	Rated Voltage
007	6.3V	025	25V
010	10V	050	50V
016	16V		

1-7. **0603** Size

Code	EIA Code	Length * Width mm / (inch)
H	0201	0.60 * 0.30 / (0.024 * 0.012)
F	0402	1.00 * 0.50 / (0.04 * 0.02)
A	0603	1.60 * 0.80 / (0.06 * 0.03)
B	0805	2.00 * 1.25 / (0.08 * 0.05)
C	1206	3.20 * 1.60 / (0.12 * 0.06)
D	1210	3.20 * 2.50 / (0.12 * 0.10)
E	1812	4.50 * 3.20 / (0.18 * 0.12)
G	2220	5.70 * 5.00 / (0.22 * 0.20)

1-5. **N** Temperature Characteristic

Code	Temperature Characteristic	Capacitance Change	Operation Temperature Range
N	NPO	±30 ppm	-55℃ ~ +125℃
X	X7R	±15 %	-55℃ ~ +125℃
Y	Y5V	+22 ~ -82 %	-30℃ ~ + 85℃
B	X5R	±15 %	-55℃ ~ + 85℃
S	X6S	±22 %	-55℃ ~ + 105℃
R	X5S	±22 %	-55℃ ~ + 85℃
E	Y5U	+22 ~ -56 %	-30℃ ~ + 85℃
Z	Z5U	+22 ~ -56 %	+10℃ ~ + 85℃

2. Standard Combination of Nominal Capacitance and Tolerance

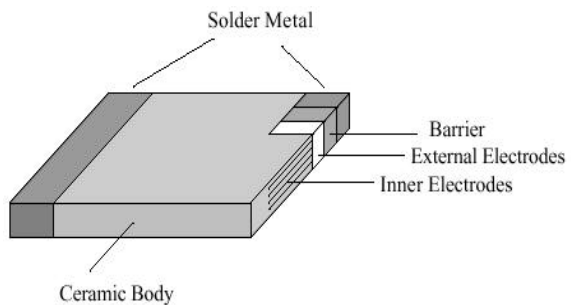
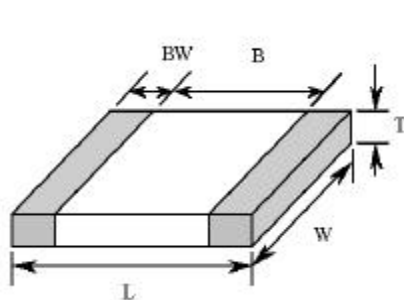
Class	Temperature Characteristic	Tolerance		Nominal Capacitance
Class I	NPO	Less Than 10pF	B(± 0.10 pF)	0.5,1,1.5,2,2.5,3
			C(± 0.25 pF)	0.5,1,1.5,2,2.5,3,3.5,4,4.5,5
			D(± 0.50 pF)	5,6,7,8,9,10
			F(± 1.00 pF)	6,7,8,9,10
		More Than 10pF	J($\pm 5\%$) B($\pm 10\%$)	E-24 series
Class II	X7R / X5R X5S / X6S	K($\pm 10\%$) , M($\pm 20\%$)		E-12 series
	Y5V	M($\pm 20\%$) , Z(-20 ~ +80%)		E- 6 series
	Y5U			
	Z5U			

	Application Capacitance											
E-3	1.0				2.2				4.7			
E-6	1.0		1.5		2.2		3.3		4.7		6.8	
E-12	1.0	1.2	1.5	1.8	2.2	2.7	3.3	3.9	4.7	5.6	6.8	8.2
E-24	1.0	1.2	1.5	1.8	2.2	2.7	3.3	3.9	4.7	5.6	6.8	8.2
	1.1	1.3	1.6	2.0	2.4	3.0	3.6	4.3	5.1	6.2	7.5	9.1

3. Dimension & Structure

(Unit : mm)

Code	L	W	T(max)	Bw
0201	0.60 $\pm$ 0.03	0.30 $\pm$ 0.03	0.33	0.15 $\pm$ 0.05
0402	1.00 $\pm$ 0.05	0.50 $\pm$ 0.05	0.55	0.25 $\pm$ 0.10
0603	1.60 $\pm$ 0.10	0.80 $\pm$ 0.10	0.95	0.35 $\pm$ 0.15
0805	2.00 $\pm$ 0.20	1.25 $\pm$ 0.20	1.40	0.45 $\pm$ 0.25
1206	3.20 $\pm$ 0.30	1.60 $\pm$ 0.20	1.80	0.50 $\pm$ 0.20
1210	3.20 $\pm$ 0.30	2.50 $\pm$ 0.20	2.70	0.60 $\pm$ 0.30
1812	4.50 $\pm$ 0.40	3.20 $\pm$ 0.30	3.30	0.80 $\pm$ 0.40
2220	5.70 $\pm$ 0.40	5.00 $\pm$ 0.40	3.00	1.00 $\pm$ 0.50



Low Profile MLCC Thickness

Cap	Code	0805							1206						1210			1812
uF	T.C.	X7R		X5R			Y5V		X7R	X5R			Y5V		X7R	X5R		X6S
	Vdc	16	10	16	10	6.3	10	6.3	10	16	10	6.3	10	6.3	25	10	6.3	6.3
0.22	224																	
0.33	334																	
0.47	474	D																
0.68	684	D																
1	105		D	D											D			
1.5	155			D						D								
2.2	225						D		D	D								
3.3	335										D					D		
4.7	475					D		D			D		D					
6.8	685																D	
10	106											D		D			D	
22	226																Y	
47	476																	
100	107																	Y

4.Capacitance Range

Temperature Characteristic	Size Code	Rated Voltage	Capacitance Range (pF)								
			0R5	100	101	102	103	104	105	106	107
CLASS JL NPO	0201 (0603)	16	100								
		25	100								
	0402 (1005)	25	470								
		50	220								
	0603	50	1,000								
		0805	25	3,300 10,000							
	50		4,700								
	1206	50	10,000								
CLASS 「J」 X5R X6S · X7R	0201 (0603)	6.3	1,000 10,000 10,000								
		10	1,000 6,800								
		16	100 1,000 4,700								
	0402 (1005)	6.3	100 100,000 220,000 220,000								
		10	100 100,000								
		16	100 100,000								
		25	100 47,000								
		50	100 10,000								
	0603 (1608)	6.3	330,000 1,000,000 2,200,000 2,200,000								
		10	100 680,000 1,000,000 1,000,000								
		16	100 220,000 470,000 220,000								
		25	100 100,000								
		50	100 100,000								
	0805 (2012)	6.3	4,700,000 10,000,000 10,000,000								
		10	100 3,300,000 4,700,000 3,300,000								
		16	100 1,000,000 3,300,000 1,000,000								
		25	100 470,000								
		50	100 220,000								
	1206 (3216)	6.3	1,000 10,000,000 22,000,000 22,000,000								
		10	1,000 10,000,000 22,000,000 22,000,000								
		16	1,000 1,000,000 22,000,000 10,000,000								
		25	1,000 1,000,000 10,000,000 4,700,000								
		50	1,000 1,000,000								
	1210 (3225)	6.3	1,000,000 10,000,000 22,000,000 100,000,000								
		10	220,000 4,700,000 22,000,000 22,000,000								
		16	220,000 1,000,000 4,700,000 22,000,000								
		25	220,000 1,000,000 10,000,000 10,000,000								
		50	220,000 1,000,000 2,200,000 4,700,000								
	1812 (4532)	6.3	3,300,000 10,000,000 47,000,000 100,000,000								
		10	220,000 1,000,000 47,000,000 47,000,000								
		16	220,000 4,700,000 33,000,000 33,000,000								

Temperature Characteristic	Size Code	Rated Voltage	Capacitance Range (pF)								
			0R5	100	101	102	103	104	105	106	107
CLASS 「□」 X5R X7R	1812 (4532)	25						220,000	1,000,000	22,000,000	22,000,000
		50						220,000	1,000,000	4,700,000	3,300,000
	2220 (5755)	6.3							10,000,000	47,000,000	100,000,000
		10								10,000,000	47,000,000
		16								10,000,000	33,000,000
										10,000,000	22,000,000
		25								10,000,000	22,000,000
		50								4,700,000	10,000,000
	50							100,000	4,700,000		
CLASS 「□」 Y5V	0402 (1005)	16				2,200		220,000			
		25				2,200		47,000			
		50				2,200		10,000			
	0603 (1608)	6.3							1,000,000	2,200,000	
		10				2,200		1,000,000			
		16				2,200		1,000,000			
		25				2,200		330,000			
		50				2,200		100,000			
	0805 (2012)	6.3							4,700,000	10,000,000	
		10							4,700,000	10,000,000	
		16					10,000		4,700,000		
		25					10,000		2,200,000		
		50					10,000		1,000,000		
	1206 (3216)	10						100,000		22,000,000	
		16					10,000		10,000,000		
		25					10,000		4,700,000		
		50					10,000		1,000,000		
	1210 (3225)	6.3							22,000,000	47,000,000	
		10							10,000,000	22,000,000	
		16					220,000		22,000,000		
		25					220,000		10,000,000		
		50					220,000		4,700,000		
	1812 (4532)	6.3							47,000,000	100,000,000	
		10							10,000,000	47,000,000	
		16							10,000,000	22,000,000	
		25							4,700,000	10,000,000	
	2220 (5755)	10							100,000,000	100,000,000	
		16							10,000,000	47,000,000	
		25							10,000,000	33,000,000	
		50							4,700,000	10,000,000	