

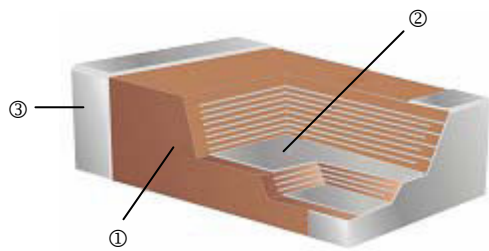
## Multilayer Ceramic Chip Capacitor



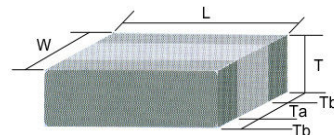
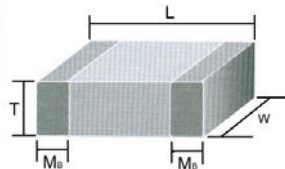
### ■ Features

- 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



①	Ceramic Material	③	Termination:
②	Inner Electrodes		NPO: Ag/Ni/Sn dielectric X7R, Y5V, X5R: Cu/Ni/Sn dielectric



Unit: mm

### ■ Dimensions

MC / MCHL / MCRF Type

Type	Size (Inch)	L	W	T / Symbol		M <sub>B</sub>	Packaging (7" Reel)	
							Paper tape	Plastic tape
01	0201	0.6±0.03	0.3±0.03	0.3±0.03	L	0.15±0.05	15K	-
02	0402	1.00±0.05	0.50±0.05	0.50±0.05	N	0.25 +0.05 / -0.10	10K	-
03	0603	1.60±0.10	0.80±0.10	0.80±0.10	S	0.40±0.15	4K	-
		1.60 +0.15 / -0.10	0.80 +0.15 / -0.10	0.80 +0.15 / -0.10	X		4K	
05	0805	2.00±0.15	1.25±0.20	0.60±0.15	A	0.50±0.20	4K	-
				0.80±0.10	B		4K	-
		1.25±0.10		D	-		3K	
		0.85±0.10		T	4K		-	
06	1206	3.20±0.15	1.60±0.15	1.25±0.20	I	0.60±0.20 (0.50±0.20)***	-	3K
				0.80±0.10	B		4K	-
		0.95±0.10		C	-		3K	
		1.25±0.10		D	-		3K	
06	1206	3.20±0.20	1.60±0.20	1.15±0.15	J	0.60±0.20 (0.50±0.20)***	-	3K
		3.20+0.3 / -0.1		1.60±0.20	G		-	2K
				1.60+0.3 / -0.1	1.60+0.3 / -0.1		P	-
10	1210	3.20±0.30	2.50±0.20	0.95±0.10	C	0.75±0.25	-	3K
				1.25±0.10	D		-	3K
		1.60±0.20		G	-		2K	
		2.00±0.20		K	-		1K	
		2.50±0.30		M	-		1K	
08	1808	4.50±0.40	2.03±0.25	1.25±0.10	D	0.75±0.25 (0.50±0.20)***	-	2K
		(4.5+0.5/-0.3)**		2.00±0.20	K		-	1K
12	1812	4.50±0.40	3.20±0.30	1.25±0.10	D	0.75±0.25 (0.50±0.20)***	-	1K
				(4.5+0.5/-0.3)**	2.00±0.20		K	-
		3.20±0.40		2.50±0.30	M		-	0.5K

\*\* For 1808/1812: 200~3KV, \*\*\*For 1206:1KV~3KV; 1808/1812: 200~3KV

Low Inductance Capacitors for MCLI Type

Unit: mm

Type	Size (Inch)	L	W	T / Symbol		T <sub>a</sub> min.	T <sub>b</sub> min.	Packaging (7" Reel)	
								Paper tape	Plastic tape
MCLI43	0612	3.20±0.15	1.60±0.15	0.80±0.10	B	0.5	0.13	4K	-

**Part Numbering**

MC	03	J	T	N	250	3R9
Product Type	Dimensions (L×W)	Capacitance Tolerance	Packaging	Dielectric	Voltage (VDCW)	Capacitance
MC : General; Ultra-small Middle and High Voltage MCHL: High Q and Low ESR MCRF: Ultra High Q and Low ESR (RF) MCLI: Low Inductance	01: 0201 02: 0402 03: 0603 05: 0805 06: 1206 10: 1210 08: 1808 12: 1812 43: 0612	B: ±0.1pF (Cap≤5pF) C: ±0.25pF (Cap≤5pF) D: ±0.5pF (5pF<Cap<10pF) F: ±1% G: ±2% J: ±5% K: ±10% M: ±20% Z: +80/-20%	T: Taping Reel	N: NPO (COG) B: X7R F: Y5V X: X5R	6V3: 6.3V 250: 25V 500: 50V 101: 100V 102: 1000V 202: 2000V 302: 3000V	3R9: 3.9pF 150: 15pF 181: 180pF 225: 2.2μF 476: 47μF 107: 100μF

**General Capacitance & Voltage**

Capacitance & Voltage (NPO)

Dielectric		NPO														
EIA	Size	0402					0603					0805				
Code	VDCW	10V	16V	25V	50V	100V	10V	16V	25V	50V	100V	10V	16V	25V	50V	100V
0R5	0.5pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
0R6	0.6	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
0R7	0.7	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
0R8	0.8	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
0R9	0.9	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
1R0	1.0	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
1R2	1.2	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
1R5	1.5	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
1R8	1.8	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
2R2	2.2	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
2R7	2.7	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
3R3	3.3	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
3R9	3.9	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
4R7	4.7	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
5R6	5.6	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
6R8	6.8	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
8R2	8.2	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
100	10pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
120	12	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
150	15	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
180	18	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
220	22	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
270	27	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
330	33	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
390	39	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
470	47	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
560	56	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
680	68	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
820	82	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
101	100pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
121	120	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
151	150	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
181	180	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
221	220	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
271	270	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
331	330	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A
391	390	N	N	N	N	N	S	S	S	S	S	B	B	B	A/B	B/T
471	470	N	N	N	N	N	S	S	S	S	S	B	B	B	A/B	B/T
561	560	N	N	N	N	N	S	S	S	S	S	B	B	B	A/B	B/T
681	680	N	N	N	N	N	S	S	S	S	S	B	B	B	A/B	B/T
821	820	N	N	N	N	N	S	S	S	S	S	B	B	B	A/B	B/T
102	1000pF	N	N	N	N	N	S	S	S	S	S	B	B	B	A/B	B/T
122	1200						X	X	X	X	X	B	B	B	B/T	B/T
152	1500						X	X	X	X	X	B	B	B	B/T	B/T
182	1800						X	X	X	X	X	B	B	B	B/T	B/T
222	2200						X	X	X	X	X	B	B	B	B/T	B/T
272	2700						X	X	X	X	X	D	D	D	I	I
332	3300						X	X	X	X	X	D	D	D	I	I
392	3900											D	D	D	I	D
472	4700											D	D	D	I	D
562	5600											D	D	D	I	
682	6800											D	D	D	I	
822	8200											D	D	D	I	
103	0.01uF											D	D	D	B/I	

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

Capacitance & Voltage (NPO)

Dielectric		NPO												
EIA	Size	1206					1210					1812		
Code	VDCW	10V	16V	25V	50V	100V	10V	16V	25V	50V	100V	16V	50V	100V
1R2	1.8	B	B	B	B	B								
1R5	1.5	B	B	B	B	B								
1R8	1.8	B	B	B	B	B								
2R2	2.2	B	B	B	B	B								
2R7	2.7	B	B	B	B	B								
3R3	3.3	B	B	B	B	B					C			
3R9	3.9	B	B	B	B	B					C			
4R7	4.7	B	B	B	B	B					C			
5R6	5.6	B	B	B	B	B					C			
6R8	6.8	B	B	B	B	B					C			
8R2	8.2	B	B	B	B	B					C			
100	10pF	B	B	B	B	B					C	D	D	D
120	12	B	B	B	B	B					C	D	D	D
150	15	B	B	B	B	B					C	D	D	D
180	18	B	B	B	B	B					C	D	D	D
220	22	B	B	B	B	B	C	C	C	C	C	D	D	D
270	27	B	B	B	B	B	C	C	C	C	C	D	D	D
330	33	B	B	B	B	B	C	C	C	C	C	D	D	D
390	39	B	B	B	B	B	C	C	C	C	C	D	D	D
470	47	B	B	B	B	B	C	C	C	C	C	D	D	D
560	56	B	B	B	B	B	C	C	C	C	C	D	D	D
680	68	B	B	B	B	B	C	C	C	C	C	D	D	D
820	82	B	B	B	B	B	C	C	C	C	C	D	D	D
101	100pF	B	B	B	B	B	C	C	C	C	C	D	D	D
121	120	B	B	B	B	B	C	C	C	C	C	D	D	D
151	150	B	B	B	B	B	C	C	C	C	C	D	D	D
181	180	B	B	B	B	B	C	C	C	C	C	D	D	D
221	220	B	B	B	B	B	C	C	C	C	C	D	D	D
271	270	B	B	B	B	B	C	C	C	C	C	D	D	D
331	330	B	B	B	B	B	C	C	C	C	C	D	D	D
391	390	B	B	B	B	B	C	C	C	C	C	D	D	D
471	470	B	B	B	B	B	C	C	C	C	C	D	D	D
561	560	B	B	B	B	B	C	C	C	C	C	D	D	D
681	680	B	B	B	B	B	C	C	C	C	C	D	D	D
821	820	B	B	B	B	B	C	C	C	C	C	D	D	D
102	1000pF	B	B	B	B	B	C	C	C	C	C	D	D	D
122	1200	B	B	B	B	B	C	C	C	C	C	D	D	D
152	1500	B	B	B	B	B	C	C	C	C	C	D	D	D
182	1800	B	B	B	B	B	C	C	C	C	C	D	D	D
222	2200	B	B	B	B	B	C	C	C	C	C	D	D	D
272	2700	B	B	B	B	B	C	C	C	C	C	D	D	D
332	3300	B	B	B	B	B	C	C	C	C	C	D	D	D
392	3900	B	B	B	B	B	C	C	C	C	C	D	D	D
472	4700	B	B	B	B	B	C	C	C	C	C	D	D	D
562	5600	B	B	B	B	B	C	C	C	C	C	D	D	D
682	6800	C	C	C	C	C	C	C	C	C	C	D	D	D
822	8200	D	D	D	D	D	C	C	C	C	C	D	D	D
103	0.01uF	D	D	D	D	D	C	C	C	C	C	D	D	D
123	0.012	D^	D^				C	C	D	D	D	D	D	D
153	0.015	D^	D^				C	C	D	D	D	D	D	D
183	0.018	D^	D^									D	D	D
223	0.022	D^	D^									D	D	D
273	0.027	D^	D^									D	D	D
333	0.033	D^	D^									D	D	D

- The letter in cell is expressed the symbol of product thickness
- The “^” mark is expressed product with Ag/Ni/Sn

Capacitance & Voltage (X7R)

Dielectric		X7R															
EIA	Size	0402				0603					0805						
Code	VDCW	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V	100V
101	100pF	N	N	N	N		S	S	S	S	S		B	B	B	B	B
121	120	N	N	N	N		S	S	S	S	S		B	B	B	B	B
151	150	N	N	N	N		S	S	S	S	S		B	B	B	A/B/T	B/T
181	180	N	N	N	N		S	S	S	S	S		B	B	B	A/B/T	B/T
221	220	N	N	N	N		S	S	S	S	S		B	B	B	A/B/T	B/T
271	270	N	N	N	N		S	S	S	S	S		B	B	B	A/B/T	B/T
331	330	N	N	N	N		S	S	S	S	S		B	B	B	A/B/T	B/T
391	390	N	N	N	N		S	S	S	S	S		B	B	B	A/B/T	B/T
471	470	N	N	N	N		S	S	S	S	S		B	B	B	A/B/T	B/T
561	560	N	N	N	N		S	S	S	S	S		B	B	B	A/B/T	B/T
681	680	N	N	N	N		S	S	S	S	S		B	B	B	A/B/T	B/T
821	820	N	N	N	N		S	S	S	S	S		B	B	B	A/B/T	B/T
102	1000pF	N	N	N	N		S	S	S	S	S		B	B	A/B/T	A/B/T	B/T
122	1200	N	N	N	N		S	S	S	S	S		B	B	A/B/T	A/B/T	B/T
152	1500	N	N	N	N		S	S	S	S	S		B	B	A/B/T	A/B/T	B/T
182	1800	N	N	N	N		S	S	S	S	S		B	B	A/B/T	A/B/T	B/T
222	2200	N	N	N	N		S	S	S	S	S		B	B	A/B/T	A/B/T	B/T
272	2700	N	N	N	N		S	S	S	S	S		B	B	A/B/T	A/B/T	B/T
332	3300	N	N	N	N		S	S	S	S	S		B	B	A/B/T	A/B/T	B/T
392	3900	N	N	N	N		S	S	S	S	S		B	B	A/B/T	A/B/T	B/T
472	4700	N	N	N	N		S	S	S	S	S		B	B	A/B/T	A/B/T	B/T
562	5600	N	N	N	N		S	S	S	S	S		B	B	A/B/T	A/B/T	B/T
682	6800	N	N	N	N		S	S	S	S	S		B	B	A/B/T	A/B/T	B/T
822	8200	N	N	N	N		S	S	S	S	S		B	B	A/B/T	A/B/T	B/T
103	0.01μF	N	N	N	N		S	S	S	S	S		B	B	A/B/T	A/B/T	B/T
123	0.012	N	N	N			S	S	S	S			B	B	A/B/T	A/B/T	B/T
153	0.015	N	N	N			S	S	S	S			B	B	A/B/T	A/B/T	B/T
183	0.018	N	N	N			S	S	S	S			B	B	A/B/T	A/B/T	B/T
223	0.022	N	N	N			S	S	S	S			B	B	A/B/T	A/B/T	B/T
273	0.027	N	N	N			S	S	S	S			B	B	A/B/T	A/B/T	D
333	0.033	N	N	N			S	S	S	X			B	B	A/B/T	A/B/T	D
393	0.039	N	N	N			S	S	S	X			B	B	A/B/T	A/B/T	D
473	0.047	N	N	N			S	S	S	X			B	B	B/T	B/T	D
563	0.056	N	N				S	S	S	X			B	B	B/T	B/T	D
683	0.068	N	N				S	S	S	X			B	B	B/T	B/T	D
823	0.082	N	N				S	S	S	X			B	B	B/T	B/T	D
104	0.10μF	N	N	N	N		S	S	S	X			B	B	B/T	B/T	D
124	0.12						S	X	X				D	D	D/T	D/T	
154	0.15						S	X	X				D	D	D/T	D/T	
184	0.18						S	X	X				D	D	D/T	D/T	
224	0.22	N	N			X	S	X	X				D	D	D/T	D/T	
274	0.27					X	X	X	X				D	D	D/T	D/T	
334	0.33					X	X	X	X				D	I	I	I	
394	0.39					X	X	X	X				D	D	D	I	
474	0.47					X	X	X	X				D	I	I	I	
564	0.56					X	X	X					D	D	D		
684	0.68					X	X	X					D	D	D		
824	0.82					X	X	X					D	D	D		
105	1.0μF					X	X	X	X				D	D	D		
155	1.5												I	I	I	I	
225	2.2						X					I	I	I	I		
335	3.3																
475	4.7											I	I	I	I		
106	10											I	I				

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

**Multilayer Ceramic Chip Capacitor**

Capacitance & Voltage (X7R)

Dielectric		X7R															
EIA	Size	1206					1210					1812					
Code	VDCW	6.3V	10V	16V	25V	50V	100V	10V	16V	25V	50V	100V	10V	16V	25V	50V	100V
101	100pF																
121	120																
151	150		B	B	B	B	B										
181	180		B	B	B	B	B										
221	220		B	B	B	B	B										
271	270		B	B	B	B	B										
331	330		B	B	B	B	B										
391	390		B	B	B	B	B										
471	470		B	B	B	B	B										
561	560		B	B	B	B	B										
681	680		B	B	B	B	B										
821	820		B	B	B	B	B										
102	1000pF		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
122	1200		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
152	1500		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
182	1800		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
222	2200		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
272	2700		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
332	3300		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
392	3900		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
472	4700		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
562	5600		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
682	6800		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
822	8200		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
103	0.01μF		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
123	0.012		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
153	0.015		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
183	0.018		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
223	0.022		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
273	0.027		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
333	0.033		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
393	0.039		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
473	0.047		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
563	0.056		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
683	0.068		B	B	B	B	B	C	C	C	C	C	D	D	D	D	D
823	0.082		B	B	B	B	D	C	C	C	C	C	D	D	D	D	D
104	0.10μF		B	B	B	B	D	C	C	C	C	C	D	D	D	D	D
124	0.12		B	B	B	B	D	C	C	C	C	C	D	D	D	D	D
154	0.15		C	C	C	C	G	C	C	C	C	D	D	D	D	D	D
184	0.18		C	C	C	C	G	C	C	C	C	D	D	D	D	D	D
224	0.22		C	C	C	C	G	C	C	C	C	D	D	D	D	D	D
274	0.27		C	C	C	D	G	C	C	C	C	G	D	D	D	D	D
334	0.33		C	C	C	D	G	C	C	C	D	G	D	D	D	D	D
394	0.39		C	C	J	P	G	C	C	C	D	M	D	D	D	D	D
474	0.47		J	J	J	P	G	C	C	C	D	M	D	D	D	D	K
564	0.56		J	J	J	P	P	D	D	D	D	M	D	D	D	D	K
684	0.68		J	J	J	P	P	D	D	D	D	K	D	D	D	K	K
824	0.82		J	J	J	P	P	D	D	D	D	K	D	D	D	K	K
105	1.0μF		J	J	J	P	P	D	D	D	D	K	D	D	D	K	K
155	1.5	J	J	J	P							M					K
225	2.2	J	J	J	P	P			K	G						M	M
335	3.3	P	P	P	P						G						
475	4.7	P	P	P	P	P		K	K	K	M						
106	10	P	P	P	P			K	K	K	M						
226	22		P						M	M							

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

Capacitance & Voltage (X5R)

Dielectric		X5R																							
EIA	Size	0402				0603				0805				1206					1210					1812	
Code	VDCW	6.3V	10V	16V	25V	6.3V	10V	16V	25V	6.3V	10V	16V	25V	6.3V	10V	16V	25V	35V	6.3V	10V	16V	25V	50V	16V	
273	0.027µF			N																					
333	0.033			N																					
393	0.039			N																					
473	0.047			N																					
563	0.056		N	N																					
683	0.068		N	N																					
823	0.082	N	N	N																					
104	0.10µF	N	N	N	N																				
224	0.22	N	N	N	N				X	X															
274	0.27						X	X																	
334	0.33	N				X	X	X	X																
394	0.39						X	X																	
474	0.47	N	N				X	X	X																
684	0.68	N					X	X	X																
824	0.82					X	X	X																	
105	1.0µF	N	N	N		X	X	X	X		D	I/T	I/T												
155	1.5					X				I	I	I	I		J	J						K	K		
225	2.2	N	N			X	X	X	X	I	I/T	I	I		J	J	P					K	K		
335	3.3									I	I	I	I		P	P	P								
475	4.7					X	X	X		I	I	I	I		P	P	P	P				K	K	K	
685	6.8														P	P									
106	10µF					X	X			I	I	I	I		P	P	P	P	P		K	K	K	K	M
226	22					X				I	I				P	P	P	P			M	M	M	M	M
476	47									I					P	P					M	M	M		
107	100																				M	M			

Capacitance & Voltage (Y5V)

Dielectric		Y5V																																				
EIA	Size	0402					0603					0805					1206					1210					1812											
Code	VDCW	6.3	10V	16V	25V	50V	6.3	10V	16V	25V	50V	6.3	10V	16V	25V	50V	100	10V	16V	25V	35V	50V	100	6.3	10V	16V	25V	35V	50V	100	10V	16V	25V	50V	100			
103	0.010µF		N	N	N	N		S	S	S	S		A	A	A	A	B	B	B	B		B	B													C		D
153	0.015		N	N	N	N		S	S	S	S		A	A	A	A	B	B	B	B		B	B													C		D
223	0.022		N	N	N	N		S	S	S	S		A	A	A	A	B	B	B	B		B	B													C		D
333	0.033		N	N	N	N		S	S	S	S		A	A	A	A	B	B	B	B		B	B													C		D
473	0.047		N	N	N			S	S	S	S		A	A	A	A	B	B	B	B		B	B													C		D
683	0.068		N	N	N			S	S	S	S		A	A	A	A	B	B	B	B		B	B													C		D
104	0.10µF		N	N	N			S	S	S	S		A	A	A	A	B	B	B	B		B	B			C	C	C		C	C	D	D	D	D	D	D	
154	0.15		N	N				S	S	S	S		A	A	A		B	B	B		B	C			C	C	C		C	C	D	D	D	D	D	D		
224	0.22		N	N	N		S	S	S	S		A	A/T	A/T	A/T		B	B	B		B	C			C	C	C		C	C	D	D	D	D	D	D		
334	0.33		N	N	N			S	S	S			B	B	B	B		B	B	B		B				C	C	C		C	C	D	D	D	D	D	D	
474	0.47		N	N	N			S	S	X	S		B	T	T	T/D		B	B	B		B				C	C	C		C		D	D	D	D	D	D	
684	0.68		N					S	X				B	B	D	D		B	B	B		B				C	C	C		C		D	D	D	D	D	D	
105	1.0µF		N	N				X	X	X			B	T	I	I		C	C	C		C/D				C	C	C		C		D	D	D	D	D	D	
155	1.5							S					D	D				C	C	C						C	C	C				D	D	D	D	D	D	
225	2.2						S	S	X				D	D/T	I			C	C	C		J				C	C	C		G		D	D	D	D	D	D	
335	3.3												D	D				J	J	J						C	C	C				D	D	D	D	D	D	
475	4.7						X	X					D	D	I			J	J	J	J	P				C	C	D		G		D	D	D	D	D	D	
685	6.8												I					J	J							C	C	D				D	D	D	D	D	D	D
106	10µF											I	I	I				J	J	P						D	D	G	K			D	D	D				
226	22µF												I					P									K	K			K							
476	47µF																									K	K									M		
107	100µF																										M											

**Multilayer Ceramic Chip Capacitor**

**Environmental Characteristics**

Size	0402, 0603, 0805, 1206, 1210, 1812			
Dielectric	NPO	X7R	X5R	Y5V
Capacitance*	0.5pF~0.039μF	100pF~22μF	27nF~100μF	10nF~100μF
Capacitance tolerance	Cap ≤ 5pF: B (±0.1pF), C (±0.25pF) 5pF < Cap < 10pF: C (±0.25pF), D (±0.50pF) Cap ≥ 10pF: J (±5%)	J (± 5%) K (±10%)		M (±20%) Z (-20 / +80%)
Rated voltage (VDCW)	10V, 16V, 25V, 50V, 100V	6.3V, 10V, 16V, 25V, 35V, 50V, 100V		
Q*	Cap < 30pF: Q ≥ 400 +20C Cap ≥ 30pF: Q ≥ 1000	Note 1		
Insulation resistance at Ur**	≥ 10GΩ or R×C ≥ 500Ω×F Whichever is less			
Operating temperature	-55 to +125°C		-55 to 85°C	-25 to +85°C
Capacitance change	±30 ppm	±15%		+30/-80%
Termination	Ni/Sn (lead-free termination)			

- \*\*Measured at the condition of 30~70% related humidity
- NPO: Apply 1.0±0.2Vrms, 1.0MHz±10% for Cap ≤ 1000pF and 1.0±0.2Vrms, 1.0 KHz±10% for Cap > 1000pF, 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, 1.0 KHz±10% at the condition of 20°C ambient temperature

**Note 1:**

**X7R / X5R**

Rated vol.	D.F.	Exception of D.F.	
≥ 50V	≤ 2.5%	≤ 3%	0603 ≥ 0.047μF 0805 ≥ 0.18μF 1206 ≥ 0.47μF
25V	≤ 3.5%	≤ 5%	0805 ≥ 1μF 1210 ≥ 10μF
		≤ 7%	0603 ≥ 0.33μF 1206 ≥ 4.7μF
		≤ 10%	0402 ≥ 0.10μF 0603 ≥ 0.47μF 0805 ≥ 2.2μF 1206 ≥ 6.8μF
16V	≤ 3.5%	≤ 5%	0402 ≥ 0.033μF 0603 ≥ 0.15μF 0805 ≥ 0.68μF 1206 ≥ 2.2μF 1210 ≥ 4.7μF
		≤ 10%	0603 ≥ 0.68μF 0805 ≥ 0.68μF 1206 ≥ 4.7μF 1210 ≥ 22μF
10V	≤ 5.0%	≤ 10%	0402 ≥ 0.33μF 0603 ≥ 0.33μF 0805 ≥ 2.2μF 1206 ≥ 2.2μF 1210 ≥ 22μF
		≤ 15%	0402 ≥ 1μF
6.3V	≤ 10%	≤ 15%	0603 ≥ 10μF 0805 ≥ 4.7μF 1210 ≥ 100μF
		≤ 20%	0402 ≥ 2.2μF

**Y5V**

Rated vol.	D.F.	Exception of D.F.	
≥ 50V	≤ 5.0%	≤ 7%	0603 ≥ 0.1μF 0805 ≥ 0.47μF 1206 ≥ 4.7μF
35V	7%	—	—
25V	≤ 5.0%	≤ 7%	0402 ≥ 0.047μF 0603 ≥ 0.1μF 0805 ≥ 0.33μF 1206 ≥ 1μF 1210 ≥ 4.7μF
		≤ 9%	0402 ≥ 0.068μF 0603 ≥ 0.47μF 1206 ≥ 4.7μF 1210 ≥ 22μF
16V (C < 1.0μF)	≤ 7.0%	≤ 9%	0402 ≥ 0.068μF 0603 ≥ 0.68μF
		≤ 12.5%	0402 ≥ 0.22μF
16V (C ≥ 1.0μF)	≤ 9.0%	≤ 12.5%	0603 ≥ 2.2μF 0805 ≥ 3.3μF 1206 ≥ 10μF 1210 ≥ 22μF 1812 ≥ 47μF
10V	≤ 12.5%	≤ 20%	0402 ≥ 0.47μF
6.3V	≤ 20%	—	—

**Multilayer Ceramic Chip Capacitor**

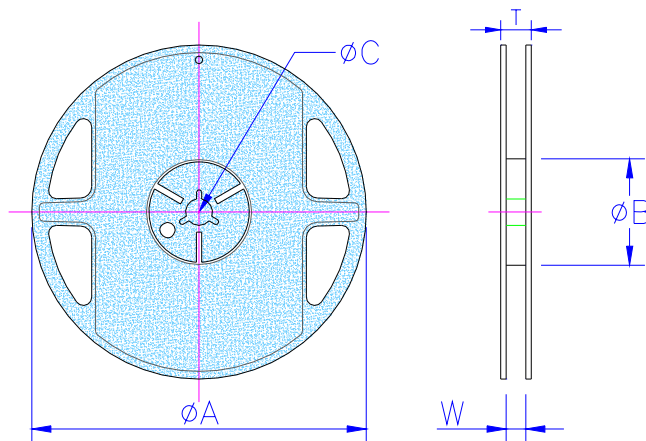
**■Packaging**

Packaging Quantity

Unit: mm

Type	Thickness / Symbol		Packaging (7" Reel)	
			Paper tape	Plastic tape
0201	0.30±0.03	L	15K	-
0402	0.50±0.05	N	10K	-
0603	0.80±0.10	S	4K	-
	0.80 +0.15 / -0.10	X	4K	-
0805	0.60±0.10	A	4K	-
	0.80±0.10	B	4K	-
	0.85±0.10	T	4K	-
	1.25±0.10	D	-	3K
	1.25±0.20	I	-	3K
1206	0.80±0.10	B	4K	-
	0.95±0.10	C	-	3K
	1.15±0.15	J	-	3K
	1.25±0.10	D	-	3K
	1.60±0.20	G	-	2K
	1.60 +0.30 / -0.10	P	-	2K
1210	0.95±0.10	C	-	3K
	1.25±0.10	D	-	3K
	1.60±0.20	G	-	2K
	2.00±0.20	K	-	1K
	2.50±0.30	M	-	1K
1808	1.25±0.10	D	-	2K
	2.00±0.20	K	-	1K
1812	1.25±0.10	D	-	1K
	2.00±0.20	K	-	1K
	2.50±0.30	M	-	0.5K
0612	0.80±0.10	B	4K	-

Tape and Reel



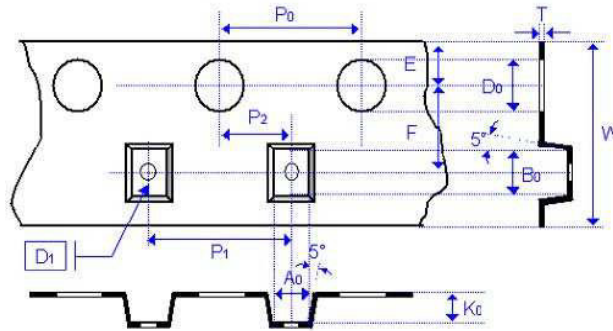
Unit: mm

Type	Chip Size							
	0201	0402	0603	0805	1206/0612	1210	1808	1812
φC	13.0±1.0	13.0±1.0	13.0±1.0	13.0±1.0	13.0±1.0	13.0±1.0	13.0±1.0	13.0±1.0
W	9.0±1.0	9.0±1.0	9.0±1.0	9.0±1.0	9.0±1.0	9.0±1.0	13.5±1.0	13.5±1.0
φA	178±1.0(7")	178±1.0(7")	178±1.0(7")	178±1.0(7")	178±1.0(7")	178±1.0(7")	178±1.0(7")	178±1.0(7")
φB	60.5±1.0(7")	60.5±1.0(7")	60.5±1.0(7")	60.5±1.0(7")	60.5±1.0(7")	60.5±1.0(7")	80.0±1.0(7")	80.0±1.0(7")



**Multilayer Ceramic Chip Capacitor**

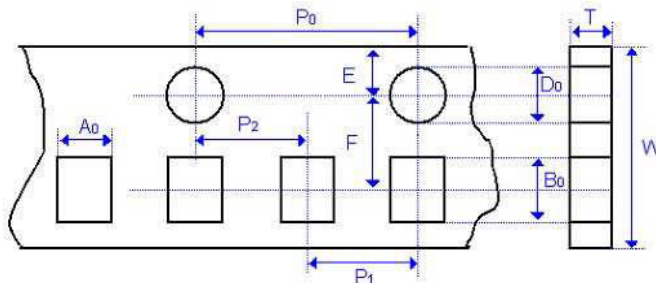
Plastic Tape Size Specification



Unit: mm

Type	0805		1206			1210				1808		1812						
Thickness	D	I	C	J	D	G	P	C	D	G	K	M	D	K	D	K	M	
A <sub>0</sub>	<1.57		<1.85			<1.95				<2.97		<3.81						
B <sub>0</sub>	<2.40		<3.46			<3.67				<3.73		<4.98   <5.00		<5.30				
T	0.23±0.05		0.23±0.05			0.23±0.05				0.23±0.05		0.25±0.05		0.25±0.05				
K <sub>0</sub>	<2.50		<2.50			<2.50				<2.50		<3.00		<2.50   <3.00				
W	8.00±0.10		8.00±0.10			8.00±0.10				8.00±0.10		8.00±0.10		12.0±0.20		12.0±0.20		
P <sub>0</sub>	4.00±0.10		4.00±0.10			4.00±0.10				4.00±0.10		4.00±0.10		4.00±0.10		8.00±0.10		
P <sub>1</sub>	4.00±0.10		4.00±0.10			4.00±0.10				4.00±0.10		4.00±0.10		4.00±0.10		8.00±0.10		
P <sub>2</sub>	2.00±0.05		2.00±0.05			2.00±0.05				2.00±0.05		2.00±0.05		2.00±0.05		2.00±0.05		
D <sub>0</sub>	1.50±0.05		1.50±0.05			1.50±0.05				1.50±0.05		1.50±0.05		1.50±0.05		1.50±0.05		
D <sub>1</sub>	1.00±0.10		1.00±0.10			1.00±0.10				1.00±0.10		1.00±0.10		1.00±0.10		1.00±0.10		
E	1.75±0.10		1.75±0.10			1.75±0.10				1.75±0.10		1.75±0.10		1.75±0.10		1.75±0.10		
F	3.50±0.05		3.50±0.05			3.50±0.05				3.50±0.05		3.50±0.05		3.50±0.05		5.50±0.05		

Paper Tape Size Specification



Unit: mm

Type	0201	0402	0603		0805		1206/0612
Thickness	L	N	S	X	A	B	B
A <sub>0</sub>	0.45±0.05	0.62±0.05	1.02±0.05		1.50±0.10	1.50±0.10	2.00±0.10
B <sub>0</sub>	0.75±0.05	1.12±0.05	1.82±0.05		2.30±0.10	2.30±0.10	3.50±0.10
T	0.60±0.05	0.60±0.05	0.95±0.05		0.75±0.05	0.95±0.05	0.95±0.05
W	8.00±0.10	8.00±0.10	8.00±0.10		8.00±0.10	8.00±0.10	8.00±0.10
P <sub>0</sub>	4.00±0.10	4.00±0.10	4.00±0.10		4.00±0.10	4.00±0.10	4.00±0.10
P <sub>1</sub>	2.00±0.05	2.00±0.05	4.00±0.10		4.00±0.10	4.00±0.10	4.00±0.10
P <sub>2</sub>	2.00±0.05	2.00±0.05	2.00±0.05		2.00±0.05	2.00±0.05	2.00±0.05
D <sub>0</sub>	1.55±0.05	1.55±0.05	1.55±0.05		1.55±0.05	1.55±0.05	1.50±0.05
E	1.75±0.05	1.75±0.05	1.75±0.05		1.75±0.05	1.75±0.05	1.75±0.10
F	3.50±0.05	3.50±0.05	3.50±0.05		3.50±0.05	3.50±0.05	3.50±0.05