

Multilayer Ceramic Chip Capacitor

CC Series



INTRODUCTIONS

Yageo CC Series MLCC is Made by Either Pd/Ag or Nickel Electrode System and Offering Full Range of Chip Ceramic Capacitor in 16, 25, 50, 100, 200V Ratings. The Dielectric Material of CC Series Ranging from NPO to Y5V. The CC Series Chip Capacitor Has Much Lower ESR and ESL Than Most Leaded Type Capacitor, and Its Lower Dissipation Factor Leads to Lower Power is Wasted Than Aluminum Electrolytic and Tantalum Capacitors.

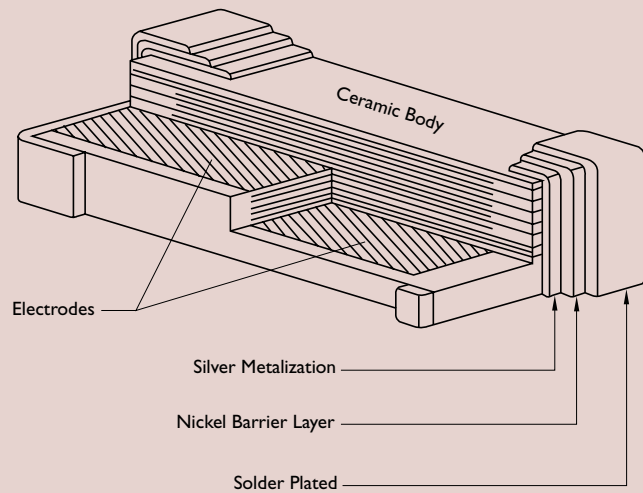
FEATURES

Standard EIA Chip Size Available

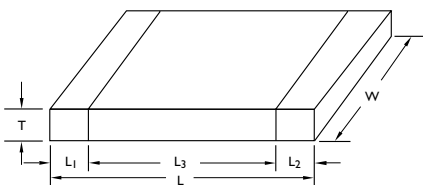
Wide Range of Capacitance 0.47pF~4.7uF is Available for Various Circuit Needs

The CC Series is Available in Both Paper and Plastic Embossed Tape and Reel Packaging for Automatic SMD Placement

Rugged Termination is Capable to Use at Both Reflow and Wave Soldering System



DIMENSIONS



Unit : mm

STYLE	L	W	T		L ₁ : L ₂		L ₃
			MIN.	MAX.	MIN.	MAX.	MIN.
CC0402	1.0±0.05	0.5±0.05	0.45	0.55	0.20	0.30	0.40
CC0603	1.6±0.10	0.8±0.10	0.70	0.90	0.25	0.65	0.40
CC0805	2.0±0.10	1.25±0.10	0.51	1.35	0.25	0.75	0.55
CC1206	3.2±0.15	1.6±0.15	0.51	1.35	0.25	0.75	1.40

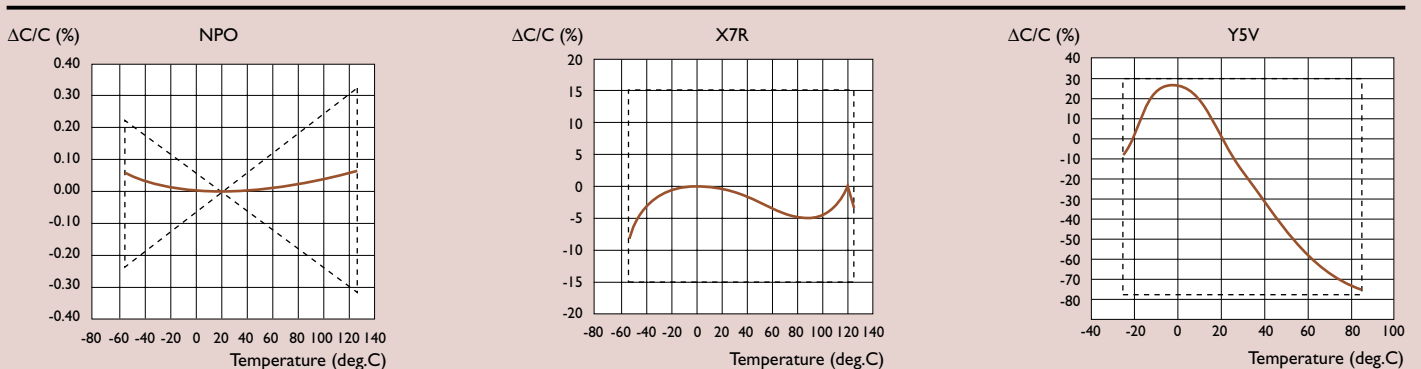
ELECTRICAL CHARACTERISTICS

CHARACTERISTICS	TEST CONDITIONS	REQUIREMENT		
		CLASS I		CLASS II
		NPO	X7R	Y5V
Operation Temperature Range		-55°C to 125°C	-55°C to 125°C	-25°C to 85°C
Temperature Characteristic/Coefficient (TC)	With Respect to 20°C within Operation Temperature Range	C < 10pF, ±150ppm/°C C ≥ 10pF, ±30ppm/°C	±15%	+30% to -80%
Capacitance Tolerance	With Respect to 20°C	In Accordance with Specification		
Dissipation Factor (Tan δ)	NPO : C ≤ 1000pF IVrms/1MHZ C > 1000pF IVrms/1KHZ X7R/Y5V : IVrms/1KHZ	C < 10pF : Tan δ ≤ 10 (3/C+0.7) × 10 ⁻⁴ or 30 × 10 ⁻⁴ Whichever is Less C ≥ 10pF Tan δ ≤ 10 × 10 ⁻⁴	Tan δ ≤ 2.5%, 25/50V Tan δ ≤ 3.5%, 16V	Tan δ ≤ 5%, 25V, 50V Tan δ ≤ 7%, 16V Tan δ ≤ 9%, 16V(≥1u)
Insulation Resistance (IR)	At Ur (Rated Voltage) for 1 Minute	Rins > 100GΩ or Rins × C ≥ 1000s Whichever is Less	Rins > 100GΩ or Rins × C ≥ 1000s Whichever is Less	Rins > 10GΩ or Rins × C ≥ 100s Whichever is Less
Dielectric Withstanding Voltage	At 2.5Ur (Rated Voltage) for 1 Minute	No Breakdown		

ENVIRONMENTED CHARACTERISTICS

IEC	TEST ITEMS	CONDITIONS	REQUIREMENT		
			NPO	X7R	Y5V
384-10					
4.9	Bending	Bending Rate 1mm/s, Jig, Radius 340mm	ΔC/C ≤ 1%	ΔC/C ≤ 10%	ΔC/C ≤ 20%
4.10	Resistance to Soldering Heat	260±5°C for 10±0.5s in Static Soldering Bath	ΔC/C ≤ 0.5% or 0.5pF Whichever is Greater	-5% ≤ ΔC/C ≤ 10%	-10% ≤ ΔC/C ≤ 20%
4.11	Solderability	235±5°C for 2±0.5s in a Static Soldering Bath	75% Minimum Coverage of Metallic Area		
4.12	Rapid Change of Temperature	NPO/X7R : -55°C to +125°C, 5Cycles Y5V : -25°C to +85°C, 5Cycles	ΔC/C ≤ 1% or 1pF Whichever is Greater	ΔC/C ≤ 15%	ΔC/C ≤ 20%
4.14	Damp Heat, Steady State	At 40°C, 90 to 95% RH and Ur Applied for 56 Days	ΔC/C : 2% or 1pF Whichever is Greater Tan δ : ≤ 2 × Specified Value IR : 2500MΩ or RxC ≥ 25s Whichever is Less	ΔC/C ≤ 15% Tan δ : ≤ 7% IR : 1000MΩ or RxC ≥ 25s Whichever is Less	ΔC/C ≤ 30% Tan δ : 7% IR : 1000MΩ or RxC ≥ 25s Whichever is Less
4.15	Endurance	At Upper Category Temperature, 2xUr Applied for 42 Days	ΔC/C : 2% or 1pF Whichever is Greater Tan δ : ≤ 2 × Specified Value IR : 4000MΩ or RxC ≥ 40s Whichever is Less	ΔC/C ≤ 15% Tan δ : ≤ 7% IR : 2000MΩ or RxC ≥ 50s Whichever is Less	ΔC/C ≤ 30% Tan δ : 7% IR : 2000MΩ or RxC ≥ 50s Whichever is Less

CAPACITANCE - TEMPERATURE CHARACTERISTICS





SPECIFICATION & PACKING

Tape Width : mm

Y5V		16V		25V		50V	
Cap.	Code 15~17	CC0402		CC0402		CC0402	
(μ F) 0.022	222	In Columns : Thickness Class				0.5 \pm 0.05	
0.033	332						
0.047	472						
0.068	682						
0.10	103						
0.15	153			0.5 \pm 0.05			
0.22	223						
0.33	333	0.5 \pm 0.05					
0.47	473						
0.68	683						
1.0	104						

SPECIFICATION & PACKING

Tape Width : mm

Y5V		16V			25V			50V					
Cap.	Code 15~17	CC0603	CC0805	CC1206	CC0603	CC0805	CC1206	CC0603	CC0805	CC1206			
(μ F) 0.010	103	In Columns : Thickness Class			0.8 \pm 0.1			0.6 \pm 0.1					
0.015	153												
0.022	223												
0.033	333												
0.047	473												
0.068	683												
0.10	104												
0.15	154	0.8 \pm 0.1											
0.22	224												
0.33	334												
0.47	474	0.8 \pm 0.1		1.25 \pm 0.1		1.25 \pm 0.1			0.8 \pm 0.1				
0.68	684					1.25 \pm 0.1							
1.0	105								1.25 \pm 0.1				
1.5	155	1.25 \pm 0.1											
2.2	225												
3.3	335												
4.7	475												

THICKNESS CLASS AND PACKAGING QUANTITIES

Thickness Classes (mm)	180mm/7"		330mm/13"		Amount Per Bulk Case			
	Paper	Embossed	Paper	Embossed	CC0402	CC0603	CC0805	CC1206
0.5 \pm 0.05	10000	–	50000	–	50000	–	–	–
0.6 \pm 0.1	4000	–	15000	–	–	–	10000	4000
0.8 \pm 0.1	4000	–	15000	–	–	15000	–	–
1.25 \pm 0.1	–	3000	–	10000	–	–	–	2000

SPECIFICATION & PACKING

Tape Width : mm

X7R		16V				25V			
Cap.	Code 15~17	CC0402	CC0603	CC0805	CC1206	CC0402	CC0603	CC0805	CC1206
(pF) 100	101								
120	121								
150	151								
180	181								
220	221								
270	271								
330	331								
390	391								
470	471								
560	561								
680	681								
820	821								
1000	102								
1200	122								
1500	152								
1800	182								
2200	222								
2700	272								
3300	332								
3900	392								
4700	472					0.5±0.05			
5600	562								
6800	682								
8200	822								
(μF) 0.010	103	0.5±0.05					0.8±0.1	0.6±0.1	
0.012	123								
0.015	153								
0.018	183								
0.022	223								
0.027	273		0.8±0.1						
0.033	333								
0.039	393							0.8±0.1	0.8±0.1
0.047	473								
0.056	563								
0.068	683								
0.082	823								
0.10	104								
0.12	124							1.25±0.1	
0.15	154								
0.18	184								
0.22	224			1.25±0.1					
0.27	274				1.25±0.1				
0.33	334								
0.47	474								1.25±0.1

In Columns :
Thickness Class

THICKNESS CLASS AND PACKAGING QUANTITIES

Thickness	180mm/7"		330mm/13"		Amount Per Bulk Case			
	Paper	Embossed	Paper	Embossed	CC0402	CC0603	CC0805	CC1206
0.5 ± 0.05	10000	–	50000	–	50000	–	–	–
0.6 ± 0.1	4000	–	15000	–	–	–	10000	4000
0.8 ± 0.1	4000	–	15000	–	–	15000	–	–
0.9 to 1.3	–	3000	–	10000	–	–	–	–
1.25 ± 0.1	–	3000	–	10000	–	–	–	2000



SPECIFICATION & PACKING

Tape Width : mm

X7R		50V				100V			200V	
Cap.	Code I5~I7	CC0402	CC0603	CC0805	CC1206	CC0603	CC0805	CC1206	CC0805	CC1206
(pF) 100	101	0.5±0.05	0.8±0.1			0.8±0.1				
120	121									
150	151									
180	181			0.6±0.1			0.6±0.1		0.8±0.1	
220	221				0.8±0.1			0.8±0.1		
270	271									
330	331									
390	391									
470	471									
560	561									
680	681									0.8±0.1
820	821									
1000	102									
1200	122									
1500	152									
1800	182									
2200	222									
2700	272									
3300	332									
3900	392									
4700	472									
5600	562									
6800	682									
8200	822									
(μF) 0.010	103									
0.012	123									
0.015	153									
0.018	183									
0.022	223									
0.027	273			0.8±0.1						
0.033	333									
0.039	393									
0.047	473									
0.056	563									
0.068	683			1.25±0.1						
0.082	823									
0.10	104									
0.12	124									
0.15	154				1.25±0.1					
0.18	184									
0.22	224									
0.27	274									
0.33	334									

In Columns :
Thickness Class

THICKNESS CLASS AND PACKAGING QUANTITIES

Thickness	180mm/7"		330mm/13"		Amount Per Bulk Case			
	Paper	Embossed	Paper	Embossed	CC0402	CC0603	CC0805	CC1206
0.5 ± 0.05	10000	–	50000	–	50000	–	–	–
0.6 ± 0.1	4000	–	15000	–	–	–	10000	4000
0.8 ± 0.1	4000	–	15000	–	–	15000	–	–
0.9 to 1.3	–	3000	–	10000	–	–	–	–
1.25 ± 0.1	–	3000	–	10000	–	–	–	2000

SPECIFICATION & PACKING

Tape Width : mm

NPO		25V	50V	100V					
Cap.	Code 15~17	CC0402	CC0402	CC0603	CC0805	CC1206	CC0603	CC0805	CC1206
0.47	478		0.5±0.05	0.8±0.1	0.6±0.1	0.6±0.1	0.8±0.1	0.6±0.1	
0.56	568								
0.68	688								
0.82	828								0.6±0.1
1.0	109								
1.2	129								
1.5	159								
1.8	189								
2.2	229								
2.7	279								
3.3	339								
3.9	399								
4.7	479								
5.6	569								
6.8	689								
8.2	829								
10	100								
12	120								
15	150								
18	180								
22	220								
27	270								
33	330								
39	390								
47	470								
56	560								
68	680								
82	820								
100	101								
120	121								
150	151								
180	181								
220	221	0.5±0.05							
270	271								
330	331								
390	391								
470	471								
560	561								
680	681				0.8±0.1				
820	821								
1000	102								
1200	122					0.8±0.1			
1500	152								
1800	182								
2200	222								
2700	272								

In Columns :
Thickness Class

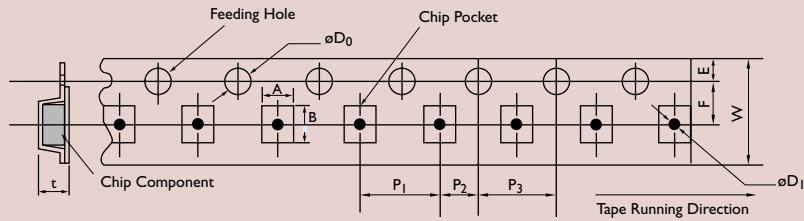
THICKNESS CLASS AND PACKAGING QUANTITIES

Thickness	180mm/7"		330mm/13"		Amount Per Bulk Case			
	Paper	Embossed	Paper	Embossed	CC0402	CC0603	CC0805	CC1206
0.5 ± 0.05	10000	–	50000	–	50000	–	–	–
0.6 ± 0.1	4000	–	15000	–	–	–	10000	4000
0.8 ± 0.1	4000	–	15000	–	–	15000	–	–
0.9 to 1.3	–	3000	–	10000	–	–	–	–
1.25 ± 0.1	–	3000	–	10000	–	–	–	2000



EMBOSED TAPING

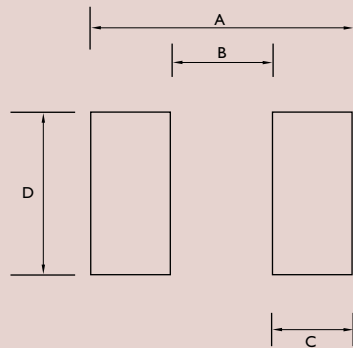
Unit : mm




STYLE	A	B	W	E	F	P ₀	P ₁	P ₂	øD ₀	øD ₁	T _{max}
CC0805	1.45±0.1	2.2±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4±0.1	4±0.1	2±0.05	1.5 ^{+0.1} ₀	≥1	2.0±0.1
CC1206	1.9±0.15	3.5±0.15	8.0±0.2	1.75±0.1	3.5±0.05	4±0.1	4±0.1	2±0.05	1.5 ^{+0.1} ₀	≥1	2.5±0.1

RECOMMENDED LAND PATTERN DESIGN

Unit : mm



 Soldering Pad

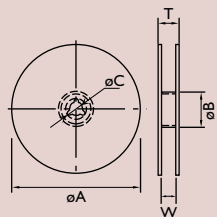
REFLOW SOLDERING

STYLE	FOOTPRINT DIMENSION (mm)				PLACEMENT ACCURACY (mm)
	A	B	C	D	
CC0402	1.5	0.5	0.5	0.5	±0.15
CC0603	2.3	0.5	0.9	0.9	±0.25
CC0805	2.8	0.9	0.95	1.4	±0.25
CC1206	4.0	2.0	1.0	1.8	±0.25

WAVE SOLDERING

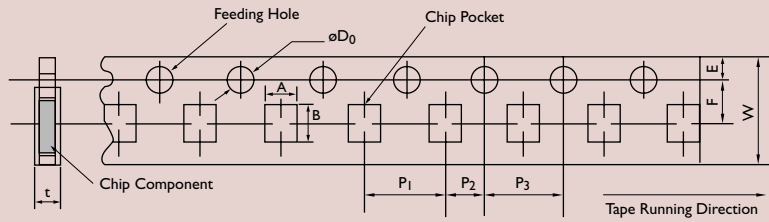
STYLE	FOOTPRINT DIMENSION (mm)				PLACEMENT ACCURACY (mm)
	A	B	C	D	
CC0603	2.7	0.9	0.9	0.8	±0.25
CC0805	3.4	1.3	1.05	1.3	±0.25
CC1206	4.8	2.3	1.25	1.7	±0.25

TAPING REEL



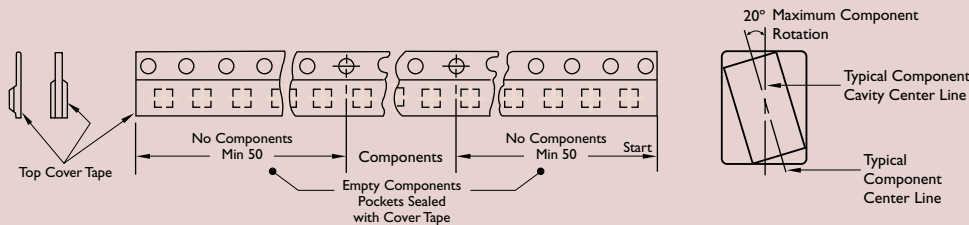
STYLE	TAPE WIDE	øA	øB	øC	W	T _{max}
CC0402/0603/0805/1206	8	180 ⁺⁰ ₋₃	60 ⁺¹ ₀	13±0.2	9.0±0.3	11.4±1
CC0402/0603/0805/1206	8	330±3	60 ⁺¹ ₀	13±0.2	9.0±0.3	11.4±1

TAPING REEL

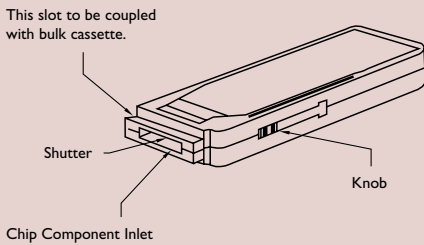


STYLE	A	B	W	E	F	P ₀	P ₁	P ₂	øD ₀	T _{max}
CC0402	0.62±0.05	1.12±0.05	8.0±0.2	1.75±0.1	3.5±0.05	4±0.05	2±0.05	2±0.05	1.5 ^{+0.1} ₀	0.6±0.05
CC0603	1.10±0.1	1.9±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4±0.1	4±0.1	2±0.05	1.5 ^{+0.1} ₀	1.0±0.05
CC0805	1.65±0.1	2.4±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4±0.1	4±0.1	2±0.05	1.5 ^{+0.1} ₀	1.0±0.05
CC1206	2.0±0.1	3.5±0.1	8.0±0.2	1.75±0.1	3.5±0.5	4±0.1	4±0.1	2±0.05	1.5 ^{+0.1} ₀	1.0±0.05

TAPING REEL

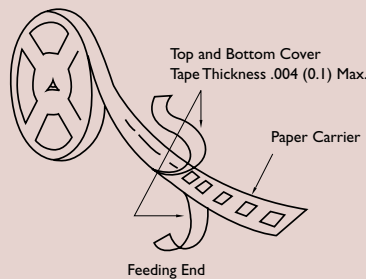


BULK CASSETTE

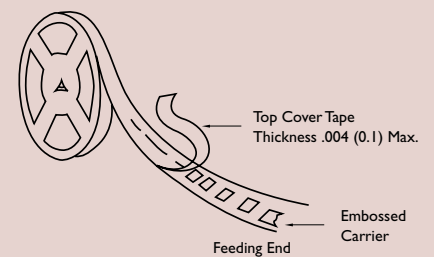


Dimension of Bulk Case
 110(L) x 36(W) x 12(T) mm
 Bulk case was standardized in Mar. 1992 (EIA-7201)

PAPER CARRIER



EMBOSSED PLASTIC CARRIER



1. SUBJECT : This specification applies on the chip capacitor made by Yageo Corporation.

2. PART NUMBER : Part number of the chip capacitor is identified by the size, tolerance, packing, material and capacitor value.

Example :

