

DATA SHEET

MULTILAYER CERAMIC CAPACITORS

CC Series

NPO
16V TO 100V

勝特力材料 886-3-5753170
勝特力电子(上海) 86-21-54151736
勝特力电子(深圳) 86-755-83298787
[Http://www.100y.com.tw](http://www.100y.com.tw)



SCOPE

This specification describes Yageo CC NP0 series chip capacitors.

ORDERING INFORMATION

Part number is identified by the series, size, tolerance, packing style, temperature coefficient, rated voltage and capacitance value.

CC XXXX X X **NP0** X **BN** XXX
(1) (2) (3) (4) (5)

(1) SIZE

- 0402 (1005)
- 0603 (1608)
- 0805 (2012)
- 1206 (3216)
- 1210 (3225)
- 1812 (4832)

(2) TOLERANCE

- B = ±0.1pF
- C = ±0.25pF
- D = ±0.5pF
- F = ±1%
- G = ±2%
- J = ±5%

(3) PACKING STYLE

- R = 7" paper tape
- K = 7" blister tape
- P = 13" paper tape
- F = 13" blister tape
- C = Bulk case

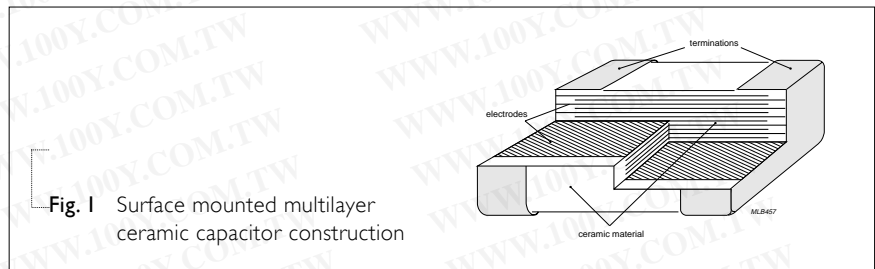
(4) RATED VOLTAGE

- 7 = 16V
- 8 = 25V
- 9 = 50V
- 0 = 100V

(5) CAPACITANCE VALUE:

First two for significant figures and 3rd for number of zero
Letter "R" for decimal point

CONSTRUCTION



DIMENSION

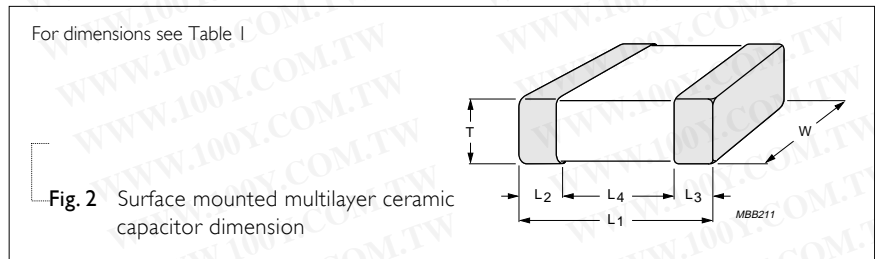


Table I

TYPE	CC0402	CC0603	CC0805	CC1206	CC1210	CC1812
L₁ (mm)	1.0±0.05	1.6±0.10	2.0±0.10	3.2±0.15	3.2±0.20	4.5±0.20
W (mm)	0.5±0.05	0.8±0.07	1.25±0.10	1.6±0.15	2.5±0.20	3.2±0.20
T (mm)	min.	0.45	0.73	0.50	0.50	0.50
	max.	0.55	0.87	1.35	1.35	1.80
L₂/L₃ (mm)	min.	0.15	0.20	0.25	0.25	0.25
	max.	0.30	0.60	0.75	0.75	0.75
L₄ (mm)	min.	0.40	0.40	0.55	1.40	2.20

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CAPACITANCE RANGE & THICKNESS FOR 16V & 25V

Table 2

CAPACITANCE (pF)	16V 0402	0603	25V 0402	0603	0805	1206	1210
150			0.5±0.05				
180							
220							
270							
330	0.5±0.05						
390							
470							
560							
680							
820							
1,000				0.8±0.07			
1,200							
1,500							
1,800							
2,200		0.8±0.07					
2,700							
3,300					0.85±0.1		
3,900							
4,700					1.25±0.1		
5,600							
6,800							
8,200							
10,000						0.85±0.1	
12,000							
15,000							0.5 to 1.0
18,000							
22,000							0.9 to 1.3

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CAPACITANCE RANGE & THICKNESS FOR 50V & 100V

Table 3

CAPACITANCE (pF)	50V 0402	0603	0805	1206	1210	1812	100V 0603	0805	1206	1210	1812
0.47											
0.56											
0.68											
0.82											
1.0											
1.2											
1.5											
1.8											
2.2											
2.7											
3.3											
3.9											
4.7											
5.6											
6.8											
8.2											
10	0.5±0.05	0.8±0.07	0.6±0.1	0.6±0.1							
12											
15											
18											
22											
27											
33											
39											
47							0.8±0.07	0.6±0.1	0.6±0.1		
56											
82											
100											
120											
150											
180											
220											

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CAPACITANCE RANGE & THICKNESS FOR 50V & 100V (CONT.)

Table 4

CAPACITANCE (pF)	50V						100V					
	0402	0603	0805	1206	1210	1812	0603	0805	1206	1210	1812	
270												
330												
390		0.8±0.07						0.8±0.07				
470				0.6±0.1						0.6±0.1		
560												
680												
820				0.6±0.1					0.6±0.1			
1,000												
1,200												
1,500			0.85±0.1					0.85±0.1				
1,800												
2,200			1.25±0.1					1.25±0.1				
2,700												
3,300				0.5 to 1.0								
3,900				0.85±0.1				0.85±0.1				
4,700												
5,600						0.5 to 1.0			1.15±0.1			
6,800				1.15±0.1								
8,200												
10,000									0.5 to 1.0			
12,000												
15,000											0.5 to 1.0	
18,000												
22,000						0.9 to 1.3					0.9 to 1.3	

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THICKNESS CLASSES AND PACKING QUANTITY

Table 5

THICKNESS CLASSIFICATION (mm)	8mm TAPE WIDTH / AMOUNT PER REEL				12mm TAPE WIDTH / AMOUNT PER REEL		AMOUNT PER BULK CASE			
	Ø180mm, 7"		Ø330mm, 13"		Ø180mm, 7" Blister		1812	0402	0603	0805
	Paper	Blister	Paper	Blister						
0.5±0.05	10,000	---	50,000	---	---	50,000	---	---	---	
0.6±0.10	4,000	---	20,000	---	---	---	---	---	10,000	
0.8±0.07	4,000	---	15,000	---	---	---	---	15,000	---	
0.85±0.10	4,000	---	15,000	---	---	---	---	---	8,000	
0.5 to 1.0	---	4,000	---	10,000	---	2,000	---	---	---	
0.9 to 1.3	---	3,000	---	10,000	---	1,500	---	---	---	
1.15±0.10	---	3,000	---	10,000	---	---	---	---	---	
1.25±0.10	---	3,000	---	10,000	---	---	---	---	5,000	

ELECTRICAL CHARACTERISTICS

Table 6

CHARACTERISTICS	TEST CONDITIONS	REQUIREMENT
Operation temperature range	---	-55°C to +125°C
Temperature characteristic/coefficient (TC)	With respect to 20°C within operation temperature range	NP0 16V, 0±60ppm/K NP0>16V, 0±30ppm/K
Capacitance tolerance	With respect to 20°C C≤1000pF 1Vrms/1MHz C>1000pF 1Vrms/1KHz	C<5; ±0.1pF, ±0.25pF C≥5; ±0.25pF, ±0.5pF C≥10pF; ±2%, ±5%
Dissipation factor (Tan δ)	With respect to 20°C C≤1,000pF 1Vrms/1MHz C>1,000pF 1Vrms/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
Insulation resistance (IR)	At Ur (rated voltage) for 1 minute Ur>500V, at 500V(DC) for 1 minute	R _{ins} > 10GΩ or R _{ins} × C ≥ 500s whichever is less
Dielectric withstanding Voltage	At 2.5×Ur (for Ur≤100V) 1.5×Ur+100V (for Ur>100V) for 5sec	No breakdown

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TAPING REEL

Table 7

TAPE WIDE	8mm	8mm	12mm
ØA (mm)	180	330	180
ØB (mm)	62±1.5	62±1.5	62±1.5
ØD (mm)	20.5	20.5	20.5
ØC (mm)	12.75±0.15/-0	12.75±0.15/-0	12.75±0.15/-0
W (mm)	8.4+1.5/-0	8.4+1.5/-0	12.4+2/-0
T _{max} (mm)	14.4	14.4	18.4

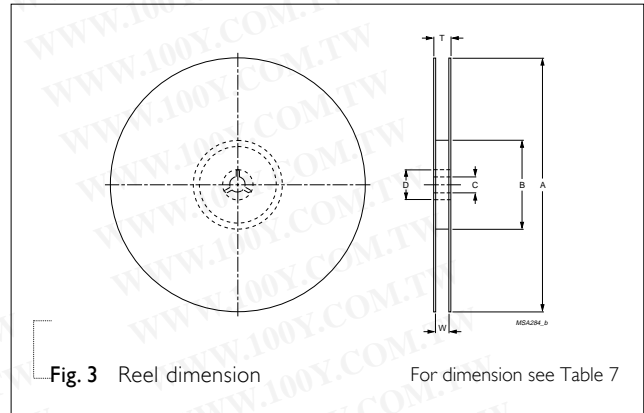


Fig. 3 Reel dimension

For dimension see Table 7

PAPER TAPE SPECIFICATION

Table 8

DIMENSION	0402	0603	0805	1206
A (mm)	0.62±0.05	1.10±0.05	1.65±0.05	2.0±0.1
B (mm)	1.12±0.05	1.90±0.05	2.4±0.05	3.5±0.1
W (mm)	8.0±0.2	8.0±0.2	8.0±0.2	8.0±0.2
E (mm)	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1
F (mm)	3.5±0.05	3.5±0.05	3.5±0.05	3.5±0.05
P ₀ (mm)	4±0.05	4±0.05	4±0.05	4±0.05
P ₁ (mm)	2±0.05	4±0.1	4±0.1	4±0.1
P ₂ (mm)	2±0.05	2±0.05	2±0.05	2±0.05
ØD ₀ (mm)	1.5+0.1	1.5+0.1	1.5+0.1/-0	1.5+0.1/-0
T (mm)	0.6±0.05	0.95±0.05	0.95±0.05	0.95±0.05

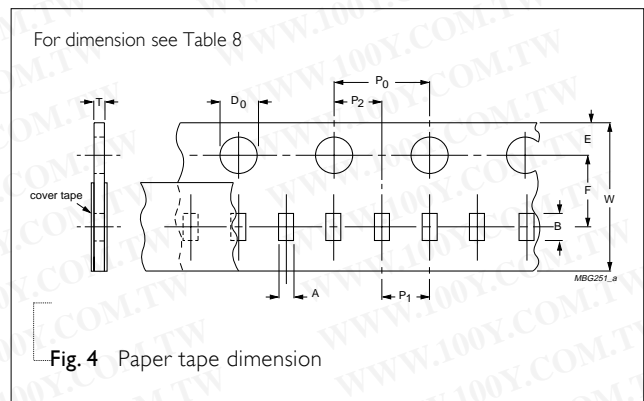


Fig. 4 Paper tape dimension

BLISTER TAPE SPECIFICATION

Table 9

DIMENSION	0805	1206	1210	1812
A (mm)	0.20	0.30	0.30	0.40
B (mm)	0.20	0.30	0.30	0.40
W (mm)	8.1±0.2	8.1±0.2	8.1±0.2	12.0±0.2
E (mm)	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1
F (mm)	3.5±0.05	3.5±0.05	3.5±0.05	5.5±0.05
P ₀ (mm)	4±0.1	4±0.1	4±0.1	4±0.1
P ₁ (mm)	4±0.1	4±0.1	4±0.1	8±0.1
P ₂ (mm)	2±0.05	2±0.05	2±0.05	2±0.05
ØD ₀ (mm)	1.5+0.1/-0	1.5+0.1/-0	1.5+0.1/-0	1.5+0.1/-0
T _{max} (mm)	3.5	3.5	3.5	3.5

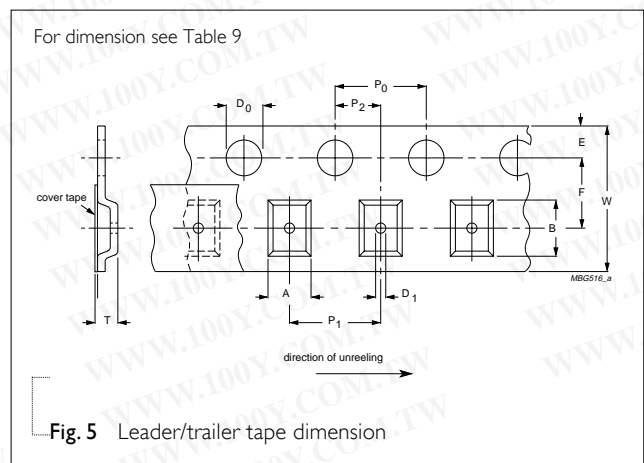
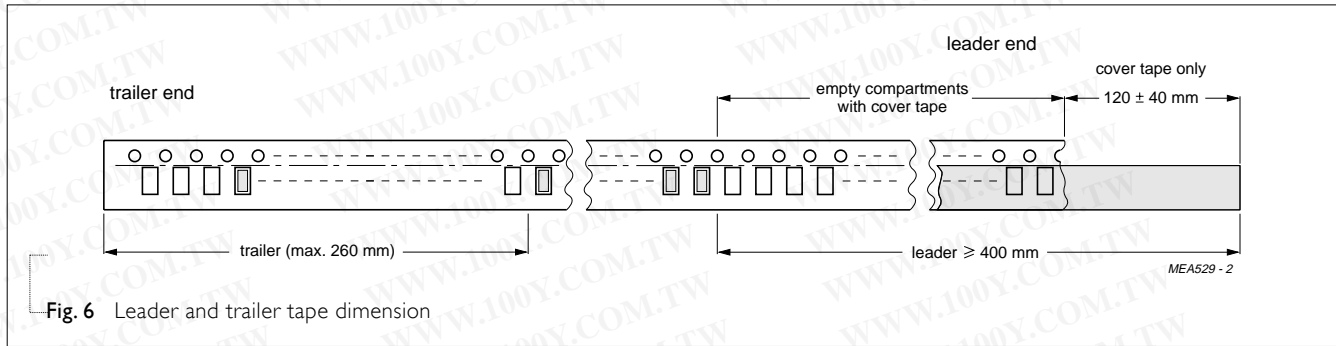


Fig. 5 Leader/trailer tape dimension

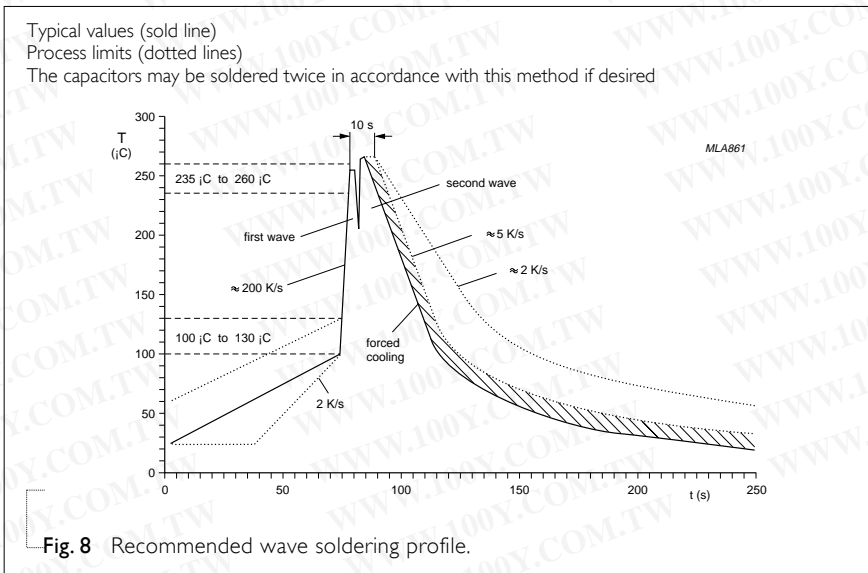
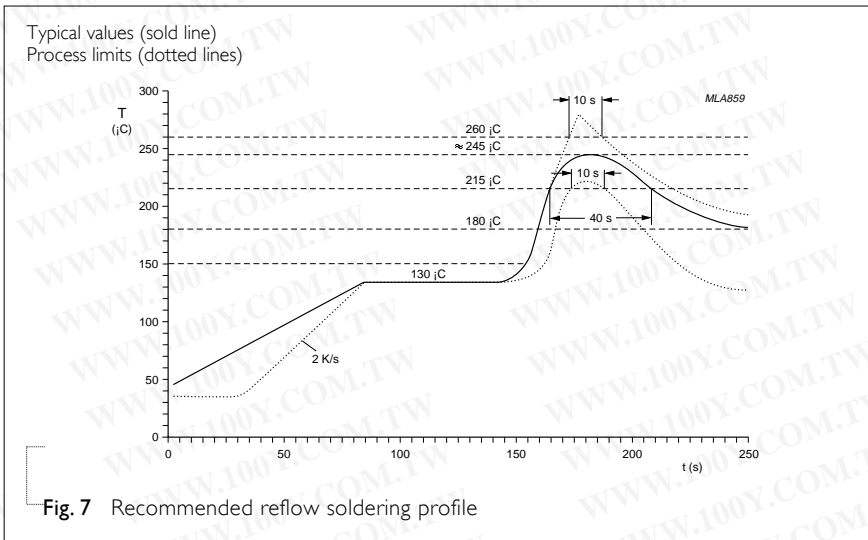
PACKING METHOD

LEADER/TRAILER TAPE SPECIFICATION



METHOD OF MOUNTING

For normal use the capacitors may be mounted on printed-circuit boards or ceramic substrates by applying wave soldering, reflow soldering (including vapor phase soldering) or conductive adhesive in accordance with CECC 00802 classification A.



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TEST AND REQUIREMENT

Table 10

IEC384-10	TEST ITEMS	CONDITIONS	REQUIREMENTS
4.9	Bending	Bending rate 1mm/s, jig. radius 340mm	$\Delta C/C \leq 1\%$
4.10	Resistance to soldering heat	$260 \pm 5^\circ\text{C}$ for $10 \pm 0.5\text{s}$ in static solder bath	$\Delta C/C$ within 0.5% or 0.5pF whichever is greater
4.11	Solderability	$235 \pm 5^\circ\text{C}$ for $2 \pm 0.5\text{s}$ in a static solder bath	75% minimum coverage of metallic area
4.12	Rapid change of temperature	-55°C to $+125^\circ\text{C}$, 5 cycles	$\Delta C/C$ within 1% or 1pF, whichever is greater
4.14	Damp heat	At 40°C , 90 to 95% RH and U_r applied for 500 hours	$\Delta C/C$ within 2% or 1pF whichever is greater Tan $\delta \leq 2 \times$ specified value $IR \geq 2,500\text{M}\Omega$ or $RxC \geq 25\text{s}$, whichever is less
4.15	Endurance	At upper category temperature $2 \times U_r$ applied ($1.5 \times U_r$ for $U_r > 50\text{V}$) for 1,000 hours	$\Delta C/C$ within 2% or 1pF whichever is greater Tan $\delta \leq 2 \times$ specified value $IR \geq 4,000\text{M}\Omega$ or $RxC \geq 40\text{s}$, whichever is less

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