

# DATA SHEET

## MULTILAYER CERAMIC CAPACITORS

### CC Series

Y5V  
10V TO 50V

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 Y5V 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 **Y5V** X **BB** XXX  
 (1) (2) (3) (4) (5)

**(1) SIZE – INCH BASED (METRIC)**

- 0402 (1005)
- 0603 (1608)
- 0805 (2012)
- 1206 (3216)

**(2) TOLERANCE**

- M = ±20%
- Z = -20/+80%

**(3) PACKING STYLE**

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

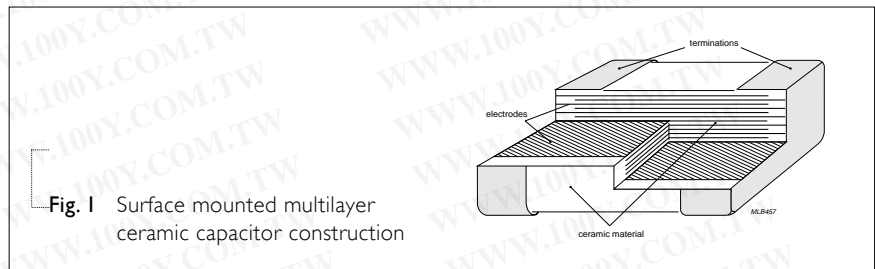
**(4) RATED VOLTAGE**

- 6 = 10V
- 7 = 16V
- 8 = 25V
- 9 = 50V

**(5) CAPACITANCE VALUE:**

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

**CONSTRUCTION**



**DIMENSION**

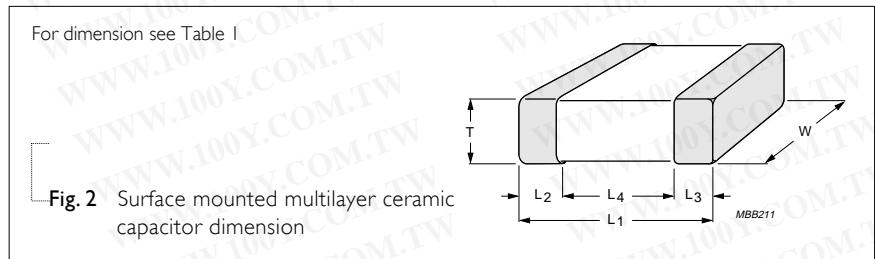


Table I

TYPE	CC0402	CC0603	CC0805	CC1206
L <sub>1</sub> (mm)	1.0±0.05	1.6±0.10	2.0±0.10	3.2±0.15
W (mm)	0.5±0.05	0.8±0.07	1.25±0.10	1.6±0.15
T (mm)	min.	0.45	0.73	0.50
	max.	0.55	0.87	1.35
L <sub>2</sub> /L <sub>3</sub> (mm)	min.	0.15	0.20	0.25
	max.	0.30	0.60	0.75
L <sub>4</sub> (mm)	min.	0.40	0.40	1.40

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**CAPACITANCE RANGE & THICKNESS FOR 10V & 16V**

Table 2

CAPACITANCE (nF)	10V 0603	0805	1206	16V 0402	0603	0805	1206
10							
22				0.5±0.05			
47							
100							
220					0.8±0.07		
470							0.85±0.1
1,000	0.8±0.07	0.85±0.1				1.25±0.1	0.85±0.1
2,200							
4,700							1.15±0.1
10,000			1.15±0.1				

**CAPACITANCE RANGE & THICKNESS FOR 25V & 50V**

Table 3

CAPACITANCE (nF)	25V 0603	0805	1206	50V 0603	0805	1206
10						
22	0.8±0.07			0.8±0.07		
47						0.6±0.1
100		0.6±0.1				
220		0.85±0.1	0.6±0.1		0.85±0.1	0.6±0.1
470			0.85±0.1			0.85±0.1
1,000		1.25±0.1	1.15±0.1			1.15±0.1

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**THICKNESS CLASSES AND PACKING QUANTITY**

Table 4

THICKNESS CLASSIFICATION (mm)	8mm TAPE WIDTH / AMOUNT PER REEL				AMOUNT PER BULK CASE		
	Ø180mm, 7"		Ø330mm, 13"		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
1.15±0.10	---	3,000	---	10,000	---	---	---
1.25±0.10	---	3,000	---	10,000	---	---	5,000

**ELECTRICAL CHARACTERISTICS**

Table 5

CHARACTERISTICS	TEST CONDITIONS	REQUIREMENT
Operation temperature range	---	-30°C to +85°C
Temperature characteristic/coefficient (TC)	With respect to 25°C within operation temperature range	+22% to -82%
Capacitance tolerance	1Vrms/1KHz at 25°C	±20%, -20%~+80%
Dissipation factor (Tan δ)	1Vrms/1KHz at 25°C	Tan δ ≤ 5% or ≤ 7%, 25V/50V (depending on capacitance value) Tan δ ≤ 9% or ≤ 12.5%, 16V (depending on capacitance value) Tan δ ≤ 12.5%, 10V
Insulation resistance (IR)	At Ur (rated voltage) for 1 minute	R <sub>ins</sub> ≥ 10GΩ or R <sub>ins</sub> × C ≥ 100s whichever is less
Dielectric withstanding Voltage	At 2.5×Ur 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 <sub>max</sub> (mm)	14.4	14.4	18.4

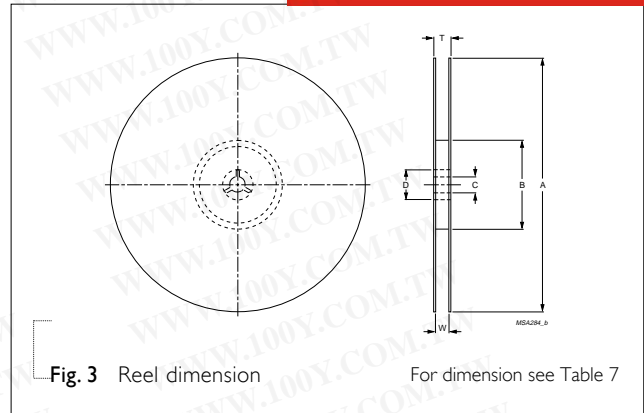


Fig. 3 Reel dimension

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 <sub>0</sub> (mm)	4±0.05	4±0.05	4±0.05	4±0.05
P <sub>1</sub> (mm)	2±0.05	4±0.1	4±0.1	4±0.1
P <sub>2</sub> (mm)	2±0.05	2±0.05	2±0.05	2±0.05
ØD <sub>0</sub> (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

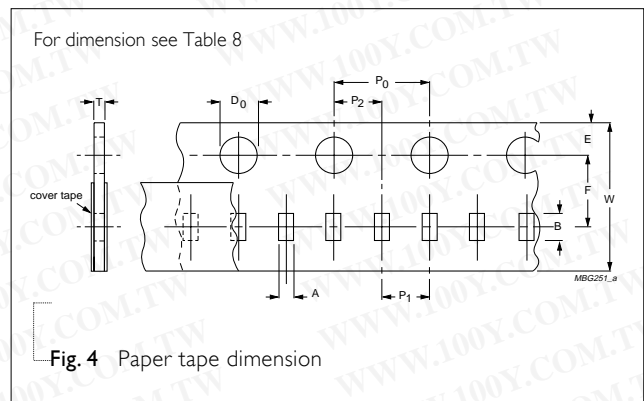


Fig. 4 Paper tape dimension

**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 <sub>0</sub> (mm)	4±0.1	4±0.1	4±0.1	4±0.1
P <sub>1</sub> (mm)	4±0.1	4±0.1	4±0.1	8±0.1
P <sub>2</sub> (mm)	2±0.05	2±0.05	2±0.05	2±0.05
ØD <sub>0</sub> (mm)	1.5+0.1/-0	1.5+0.1/-0	1.5+0.1/-0	1.5+0.1/-0
T <sub>max</sub> (mm)	3.5	3.5	3.5	3.5

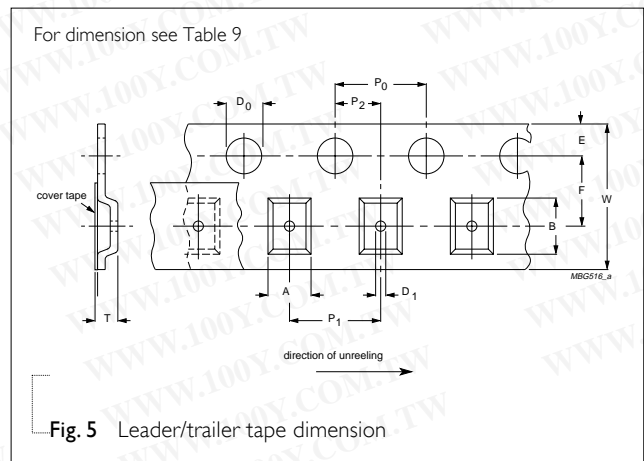


Fig. 5 Leader/trailer tape dimension

**PACKING METHOD**

**LEADER/TRAILER TAPE SPECIFICATION**

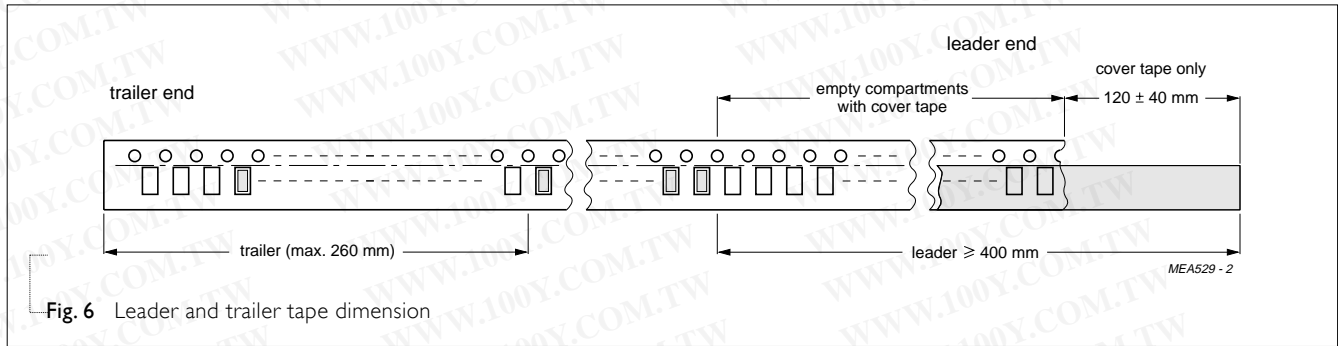


Fig. 6 Leader and trailer tape dimension

**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.

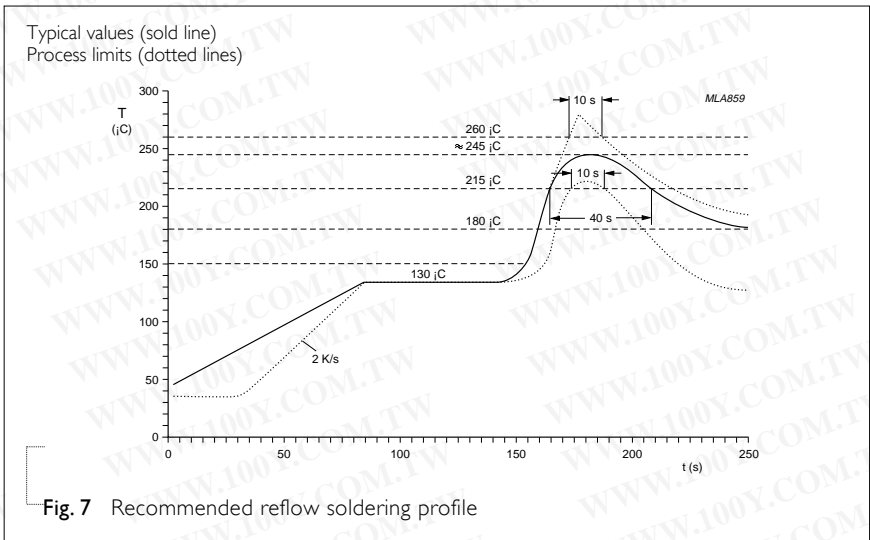


Fig. 7 Recommended reflow soldering profile

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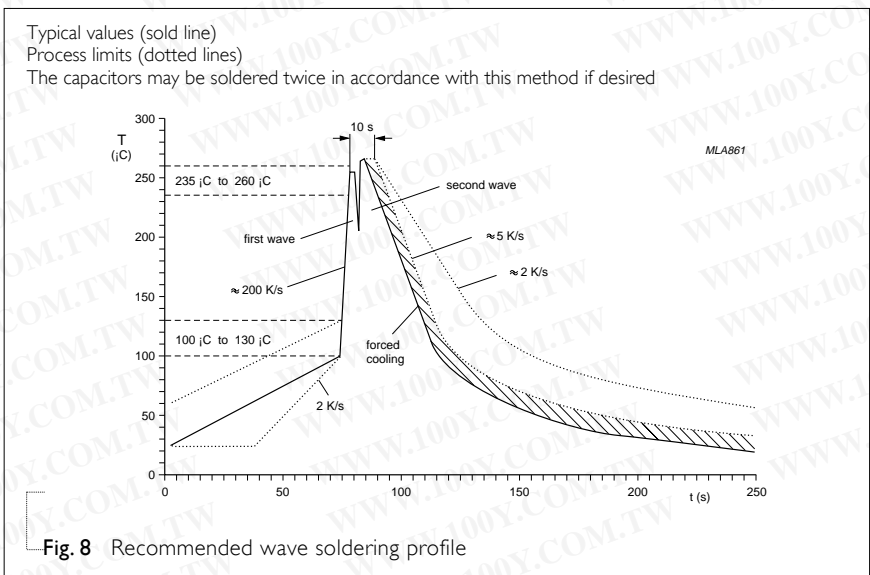


Fig. 8 Recommended wave soldering profile

**TEST AND REQUIREMENT**

Table 10

IEC384-10	TEST ITEMS	CONDITIONS	REQUIREMENTS
4.9	Bending	Bending rate 1mm/s, jig. radius 340mm	$\Delta C/C \leq 20\%$
4.10	Resistance to soldering heat	$260 \pm 5^\circ\text{C}$ for $10 \pm 0.5\text{s}$ in static solder bath	$-10\% \leq \Delta C/C \leq 20$
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	Y5V: $-30^\circ\text{C}$ to $+85^\circ\text{C}$ , 5 cycles	$\Delta C/C$ within 20%
4.14	Damp heat	Preconditioning	$\Delta C/C$ within $\pm 30\%$ or $-40\%$ to $+30\%$
		At $40^\circ\text{C}$ , 90 to 95% RH and $U_r$ applied for 500 hours	$\text{Tan } \delta \leq 7\%, 12.5\%, 15\%$ (depending on capacitance value) $IR \geq 500\text{M}\Omega$ or $RxC \geq 25\text{s}$ whichever is less
4.15	Endurance	Preconditioning	$\text{Tan } \delta \leq 7\%, 12.5\%, 15\%$ (depending on capacitance value)
		$2xU_r$ applied for 1,000 hours, at upper category temperature	$IR \geq 1,000\text{M}\Omega$ or $RxC \geq 50\text{s}$ whichever is less

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