

# DATA SHEET

## MULTILAYER CERAMIC CAPACITORS

### CC Series

Y5V  
10 V TO 50 V

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

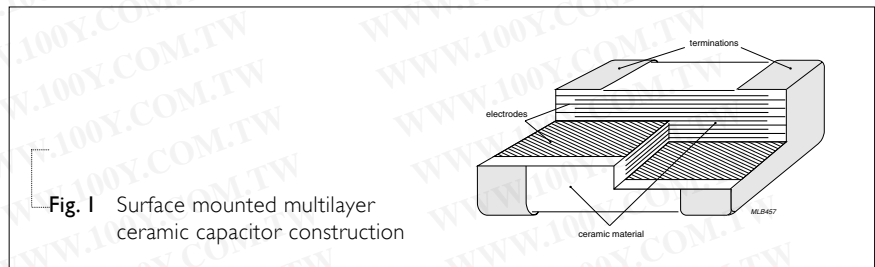
(4) RATED VOLTAGE

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

(5) CAPACITANCE VALUE:

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

CONSTRUCTION



DIMENSION

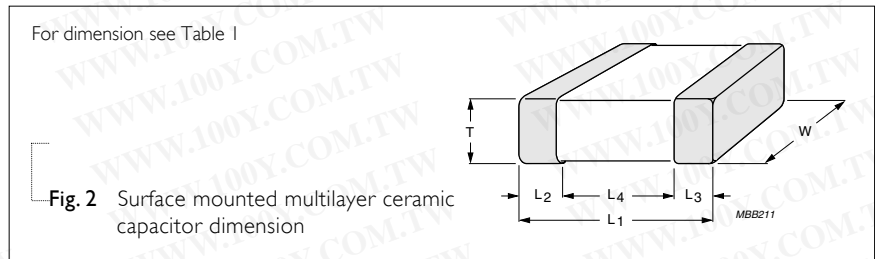


Table I

TYPE		0402	0603	0805	1206
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	0.50
	max.	0.55	0.87	1.35	1.35
L <sub>2</sub> /L <sub>3</sub> (mm)	min.	0.15	0.20	0.25	0.25
	max.	0.30	0.60	0.75	0.75
L <sub>4</sub> (mm)	min.	0.40	0.40	0.55	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					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						
47	0.8 ±0.07			0.8 ±0.07	0.6 ±0.1	
100		0.6 ±0.1				
220			0.6 ±0.1			0.6 ±0.1
470		0.85 ±0.1	0.85 ±0.1		0.85 ±0.1	0.85 ±0.1
1,000			1.15 ±0.1			1.15 ±0.1

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**THICKNESS CLASSES AND PACKING QUANTITY**

Table 4

THICKNESS CLASSIFICATION (mm)	8 mm TAPE WIDTH / AMOUNT PER REEL				AMOUNT PER BULK CASE		
	Ø180 mm, 7"		Ø330 mm, 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 (D.F.)	1Vrms/1KHz at 25 °C	See table 6
Insulation resistance (IR)	At U <sub>r</sub> (rated voltage) for 1 minute	R <sub>ins</sub> ≥ 10 GΩ or R <sub>ins</sub> × C ≥ 100 seconds whichever is less
Dielectric withstanding Voltage	At 2.5 × U <sub>r</sub> for 5 seconds	No breakdown

Table 6 D.F. specification for 0402 to 1206 sizes

DISSIPATION FACTOR (D.F.)	RATED VOLTAGE (U <sub>r</sub> )	CAPACITANCE VALUE OF SIZES			
		0402	0603	0805	1206
≤ 5%	25 V	---	< 100 nF	≤ 270 nF	< 1 μF
	50 V	---	< 100 nF	≤ 270 nF	< 1 μF
≤ 7%	25 V	---	≥ 100 nF	270 nF < Cap. Range < 470 nF	≥ 1 μF
	50 V	---	≥ 100 nF	> 270 nF	≥ 1 μF
≤ 9%	10 V	---	≤ 270 nF	≤ 1 μF	≤ 2.2μF
	16 V	---	≤ 270 nF	≤ 1 μF	≤ 2.2μF
	25 V	---	---	≥ 470 nF	---
≤ 12.5%	10 V	all	> 270 nF	> 1 μF	> 2.2μF
	16 V	all	> 270 nF	> 1 μF	> 2.2μF

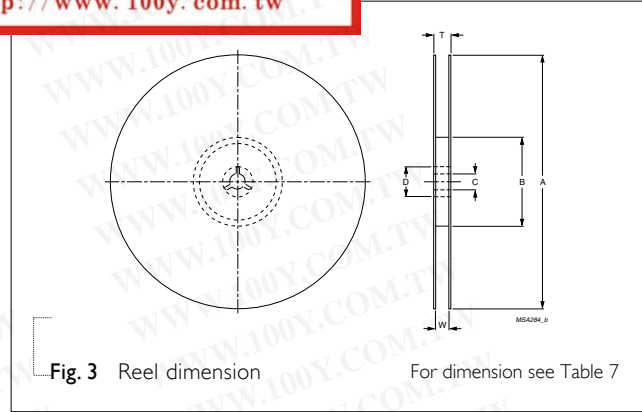
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**TAPING REEL**

Table 7

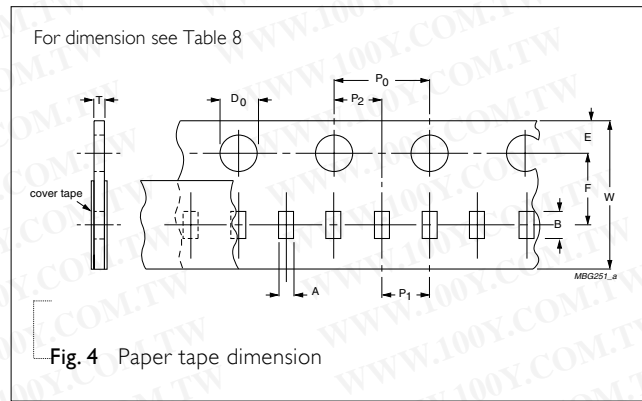
TAPE WIDE	8 mm	8 mm	12 mm
ØA (mm)	180	330	180
ØB (mm)	62±1.5	62±1.5	62±1.5
ØD (mm)	20.5	20.5	20.5
ØC (mm)	12.75±0.15/-0	12.75±0.15/-0	12.75±0.15/-0
W (mm)	8.4+1.5/-0	8.4+1.5/-0	12.4+2/-0
T <sub>max</sub> (mm)	14.4	14.4	18.4



**PAPER TAPE SPECIFICATION**

Table 8

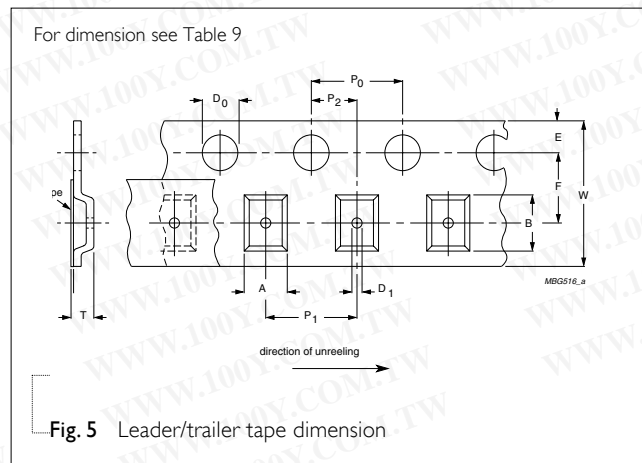
DIMENSION	0402	0603	0805	1206
A (mm)	0.62±0.05	1.10±0.05	1.65±0.05	2.0±0.1
B (mm)	1.12±0.05	1.90±0.05	2.4±0.05	3.5±0.1
W (mm)	8.0±0.2	8.0±0.2	8.0±0.2	8.0±0.2
E (mm)	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1
F (mm)	3.5±0.05	3.5±0.05	3.5±0.05	3.5±0.05
P <sub>0</sub> (mm)	4±0.05	4±0.05	4±0.05	4±0.05
P <sub>1</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



**BLISTER TAPE SPECIFICATION**

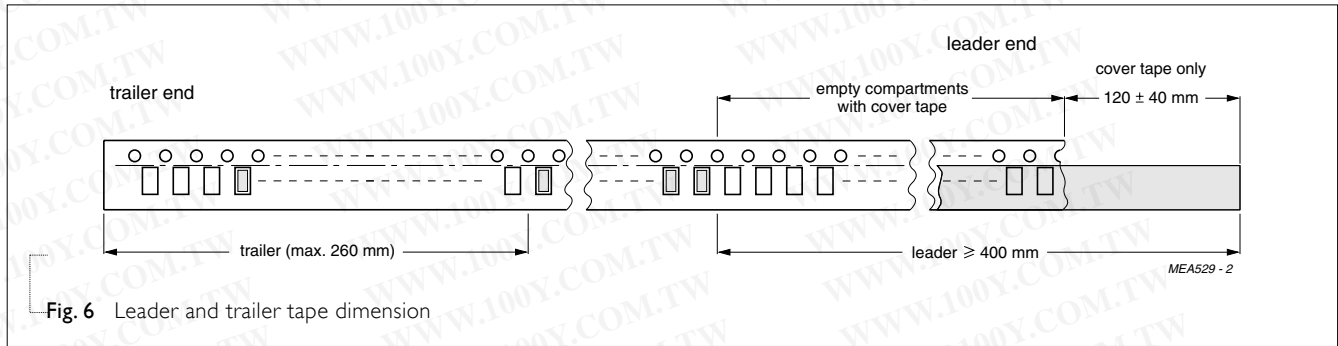
Table 9

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



**PACKING METHOD**

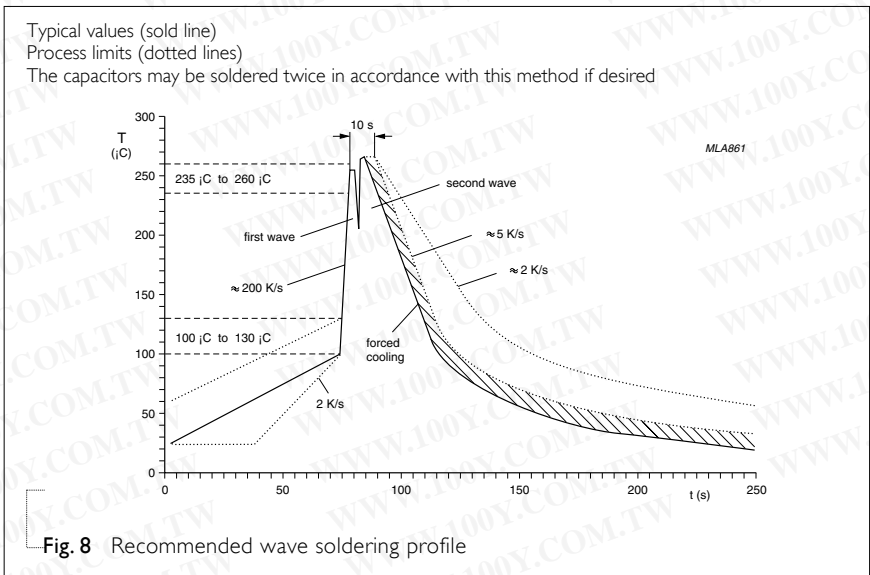
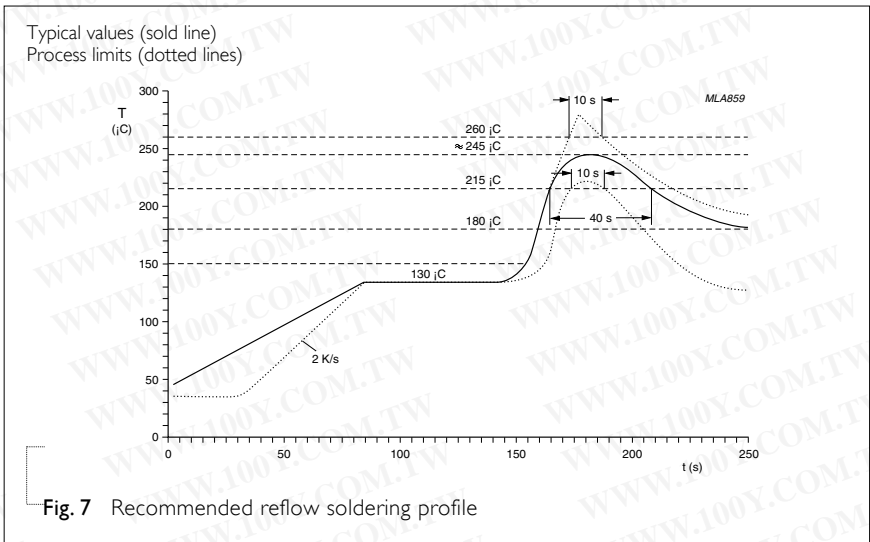
**LEADER/TRAILER TAPE SPECIFICATION**



**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 1 mm/s, jig. radius 340 mm	$\Delta C/C \leq 20\%$
4.10	Resistance to soldering heat	260±5 °C for 10±0.5 s in static solder bath	-10% ≤ $\Delta C/C \leq 20\%$
4.11	Solderability	235±5 °C for 2±0.5 s in a static solder bath	The termination shall be well tinned
4.12	Rapid change of temperature	Y5V: -30 °C to +85 °C, 5 cycles	$\Delta C/C \leq 20\%$
4.14	Damp heat	Preconditioning	$\Delta C/C$ within ±30% or -40% to +30%
		At 40 °C, 90 to 95% RH and $U_r$ applied for 500 hours	D.F. ≤ 7%, 12.5%, 15% (depending on capacitance value) IR ≥ 500 MΩ or R × C ≥ 25 s whichever is less
4.15	Endurance	Preconditioning	D.F. ≤ 7%, 12.5%, 15% (depending on capacitance value)
		2 × $U_r$ applied for 1,000 hours, at upper category temperature	IR ≥ 1,000 MΩ or R × C ≥ 50 s whichever is less

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REVISION HISTORY

REVISION	DATE	CHANGE NOTIFICATION	DESCRIPTION
Version 9	June 24, 2005	-	- Revised thickness of Y5V 1206 16 V 4.7 $\mu$ F to 10 $\mu$ F
Version 8	Jan 14, 2005	-	- Revised thickness of Y5V 0805 16/25 V 1 $\mu$ F
Version 7	Aug 16, 2004	-	- D.F. value added
Version 6	Mar 12, 2004	-	- Thickness and packing quantity amending
Version 5	Aug. 13, 2003	-	- Taping drawing amended

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