

RADIAL MULTILAYER CERAMIC CAPACITOR

CC4 CT4

FEATURE

- Miniature size, large capacitance, tape and reel packaging suitable for auto-placement
- Epoxy resin coating creates excellent performance in humidity resistance, mechanical strength and heat resistance
- Standard size, various lead configuration



Dielectric Type	Class I	Class II		
Dielectric Material	Temperature Compensating	X7R/X5R(B)	Z5U(E)	Y5V(Y/F)
Electrical Properties	The electrical properties is the most stable one and has little change with temperature, voltage and time.	X7R material has high dielectric constant, and its capacitance is higher than class I. These capacitors are classified as having a semi-stable T.C..	Temperature characteristic is between that of X7R and Y5V. The capacitance is unstable and sensible to temperature and voltage.	Y5V material has highest dielectric constant. Its capacitance and dissipation is sensible to temperature and voltage.
Application	Used in applications where low-losses and high stability are required, such as filters, oscillators, and timing circuits so on.	Used over a wide temperature range, such in these kinds of circuits, DC-blocking, coupling, bypassing, frequency discriminating etc.	Ideally suited for bypassing and coupling application circuits operating with low DC bias in the environment approaching to room	Used over a moderate temperature range in application where high capacitance is required.
Available capacitance range	0.5pF~0.1uF	100pF~100uF	1nF~100uF	

ORDERING CODE

CT4 - 0805 Y 104 Z 500 P F3
 ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑
 A B C D E F G H

Product Type	
CC4	Class I Dielectric Radial Leded MLCC
CT4	Class II Dielectric Radial Leded MLCC

Unit: inches

Nominal Body Size (Length × Width)			
0805	0.17 × 0.15	1812	0.34 × 0.26
1206	0.20 × 0.18	2225	0.41 × 0.37
1210	0.20 × 0.22	3035	0.50 × 0.41

Temperature Characteristics			
CG	C0G	0±30ppm/°C	-55~+125°C
N	NP0		
B	X7R	±15%	-55~+125°C
Y/F	Y5V	-80%~+30%	-25~+85°C
E	Z5U	-56%~+22%	+10~+85°C

Nominal Capacitance	
First two digits are significant, and the third digit is number of zero.	
For example: 104=100000pF 5R6=5.6pF	

Tolerance			
C	±0.25pF	K	±10%
D	±0.5pF	M	±20%
J	±5.0%	Z	-20~+80%

Rated Voltage	
First two digits are significant, and the third digit is number of zero.	
For example: 500=50V; 101=100V	

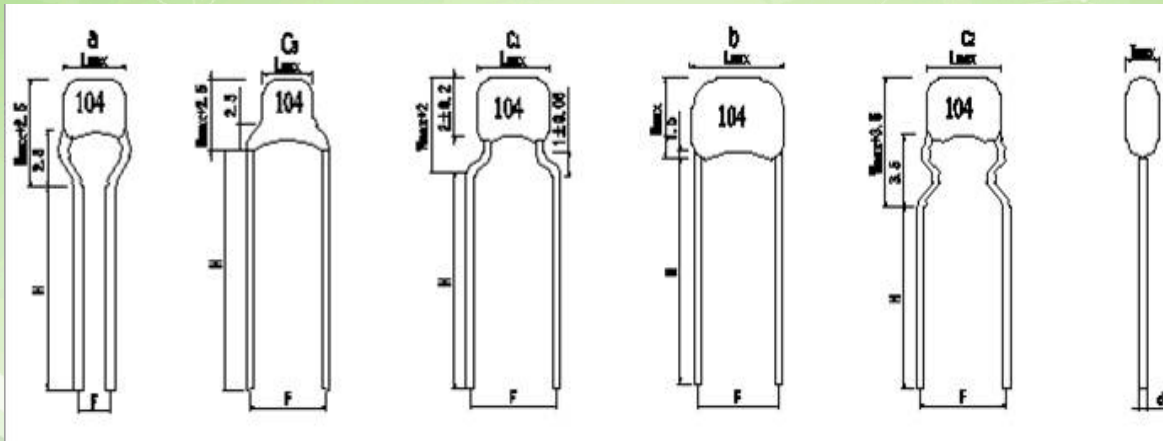
Packaging Style		
P	Ammo	Tape
T	Reel	
Blank	Bulk	

Lead Space (Unit:mm)			
F1	2.54	F4	7.50
F2	4.57	F5	3.50
F3	5.08		

SIZE CODE AND VOLTAGE VS CAPACITANCE

Size Code	Shape	Dimensions (Unit: mm)					Voltage	Available Capacitance Range				
		F±0.5	H±1	LMax	WMax	Tmax		C0G (NP0)	X7R	Y5V/Z5U		
0805	a	2.54/3.50	5	4.2	3.8	3.8	25	0R5~103	101~105	102~105		
	b		10									
	C1	5.08	5/10									
	C2	5.08	5									
	C3	5.08	5/10									
1206	A	2.54	10	5.0	4.5	3.8	25	0R5~473	101~475	102~106		
	b	3.50										
	C1	5.08									101~225	102~225
											101~105	102~105
1210	b	3.50	10	5.0	5.5	3.8	25	100~473	471~106	472~106		
	C1	5.08									101~475	472~475
											101~474	102~474
											5R0~103	
1812	b	4.57	10	8.5	6.5	3.8	25	100~224	471~476	103~476		
											471~106	103~106
											101~225	103~225
											5R0~103	
2225	b	5.50	10	10.5	9.5	4.2	25	100~474	102~476	103~476		
											102~106	103~106
											101~225	103~225
											5R0~273	
3035	B	7.50	10	12.5	10.5	4.2	25	100~474	102~476	103~476		
							50	100~473	102~106	103~225		

OTHERS ARE AVAILABLE, CONTACT J&P.



RELIABILITY AND TEST METHOD FOR GENERAL LEADED MLCC

Item	Technical Specification		Test Method and Remarks		
Capacitance(C)	Class I	within the specified tolerance.	Capacitance	Measuring Frequency	Measuring Voltage
			$\leq 1000\text{pF}$	$1\text{MHZ} \pm 10\%$	$1.0 \pm 0.2\text{V}$
			$> 1000\text{ pF}$	$1\text{KHZ} \pm 10\%$	
	ClassII	within the specified tolerance.	The capacitance should be pretreated before measured(only for class II) .		
			Measuring Frequency	Measuring Voltage	
			$1\text{KHZ} \pm 10\%$	B: $1.0 \pm 0.2\text{V}$	E/ Y (F) $0.3 \pm 0.2\text{V}$
Dissipation Factor(DF)	Class I	$C_R \geq 50\text{pF}$ $DF \leq 0.15\%$ $C_R < 50\text{pF}$ $DF \leq 1.5[(150/CR)+7] \times 10^{-4}$	Capacitance	Measuring Frequency	Measuring Voltage
			$\leq 1000\text{pF}$	$1\text{MHZ} \pm 10\%$	$1.0 \pm 0.2\text{V}$
			$> 1000\text{ pF}$	$1\text{KHZ} \pm 10\%$	
	ClassII	B	$DF \leq 3.5\%$	$1\text{KHZ} \pm 10\%$; Measuring Frequency $1.0 \pm 0.2\text{V}$ Measuring Voltage	
	E/ Y (F)	$\leq 7.5\%$ ($C_R \leq 0.1\mu\text{F}$) $\leq 10.0\%$ $(1\mu\text{F} > C_R > 0.1\mu\text{F})$ $\leq 15\%$ ($C_R \geq 1\mu\text{F}$)	$1\text{KHZ} \pm 10\%$ Measuring Frequency $0.3 \pm 0.2\text{V}$ Measuring Voltage		
Insulation Resistance	Class I	$C \leq 10\text{nF}$ $IR \geq 10000\text{M}\Omega$ $C > 10\text{nF}$ $R.C \geq 100\ \Omega\text{F}$	Measuring Voltage: Rated Voltage		
	ClassII	$C \leq 25\text{nF}$ $IR \geq 4000\text{M}\Omega$ $C > 25\text{nF}$ $R.C \geq 100\ \Omega\text{F}$	Duration: $60 \pm 5\text{s}$		

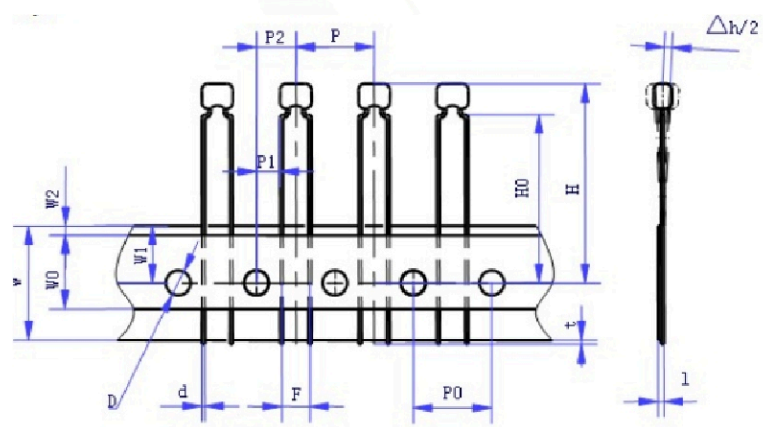
Item	Technical Specification		Test Method and Remarks		
Withstandi-ng Voltage	No breakdown or damage.		Between terminals: Measuring Voltage: Duration: $5 \pm 1\text{s}$ Class I :300% Rated voltage Class II :250% Rated voltage rrent is less than 50mA.		
			Between terminals and body: Voltage: 2.5 times rated voltage Duration: 1~5s Small metallic ball method Small metallic balls with 1mm diameters shall be put in a vessel and the test capacitor shall be submerged except 2mm from the top of its component body and the terminals. The test voltage shall be applied between the short-circuited terminals and the metallic balls.		
Solder ability	Lead wire shall be at least 75% covered with a new solder coating.		The terminal of capacitor is dipping into a 25% rosin solution of ethanol and then into molten solder(63Sn/37Pb) of $230 \pm 5^\circ\text{C}$ for $2 \pm 0.5\text{s}$. In both cases the depth of dipping is up to about 1.5~2mm from the terminal body.		
Resistance to Soldering Heat	Item	$\Delta C/C \leq$	● Solder temperature: $260 \pm 5^\circ\text{C}$ Duration: $10 \pm 1\text{s}$ ● Immersed conditions: Inserted into the PC board (with $t=1.6\text{mm}$, hole=1.0mm diameter) ● Recovery: For class I, 4 to 24 hours of recovery under the standard condition after test. ● Preconditioning (Class II) : 1 hour of preconditioning at $150(-10,+0)^\circ\text{C}$, followed by 48 ± 4 hours of recovery under the standard condition. ● Recovery (Class II) : 48 ± 4 hours of recovery under the standard condition after test.		
	Class I	$\pm 2.5\%$ or $\pm 0.25\text{pF}$			
	B	$\pm 10\%$			
	E / Y(F)	$\pm 20\%$			
		No significant abnormality in appearance.			

Item	Technical Specification	Test Method and Remarks			
	No significant abnormality in appearance.	Temperature			
High Temperature Loading Test	Capacitance Change: Class I: $\leq \pm 3\%$ or $\pm 0.3\text{pF}$ Whichever is larger. Class II: $\leq \pm 12.5\%$ E / F(Y): $\leq \pm 30\%$	CG(N)/	X7R	Y5V	Z5U
	Dissipation Factor: Class I: Not more than twice of initial value. Class II: $B: \leq 5.0\%$ E / F(Y): $\leq 12.5\%$ ($C_R \leq 0.1\mu\text{F}$) $\leq 15.0\%$ ($1\mu\text{F} > C_R > 0.1\mu\text{F}$) $\leq 17.5\%$ ($C_R \geq 1\mu\text{F}$)	125(-0,+3) °C		85(-0,+3) °C	
	Insulation Resistance: $\geq 500\text{M}\Omega$ or $25 \Omega \cdot \text{F}$ Whichever is smaller.	Applied voltage: 1.5 times rated voltage The charge/ discharge current is less than 50mA. Duration: 1000 (-0, +48) hours Recovery Time: Class I Dielectric: 24 ± 2 hours Class II Dielectric: 48 ± 4 hours			
Solvent Resistance	No defects or abnormalities in appearance and legible marking.	Solvent temperature: put the sample into solvent 1 Min, and then take it out and brush sample's notation area 10 times with pledget, repeat 3 times.			

* Note on standard condition: " standard condition " referred to herein should be defined as follows:
5 to 35°C of temperature, 45 to 75% of relative humidity, and 86 to 106kPa of atmospheric pressure.

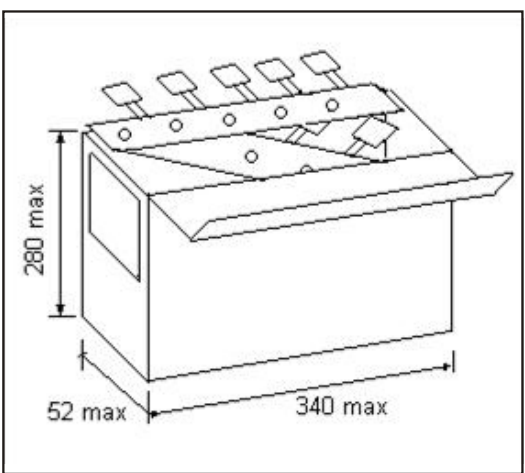
* When there are questions concerning measurement results:
In order to provide correlation data, the test should be conducted under a condition of 25 degrees plus/minus 1 centigrade of temperature, 48% through 52% of relative humidity and 86 through 106 kPa of atmospheric pressure.

PACKAGING STYLE

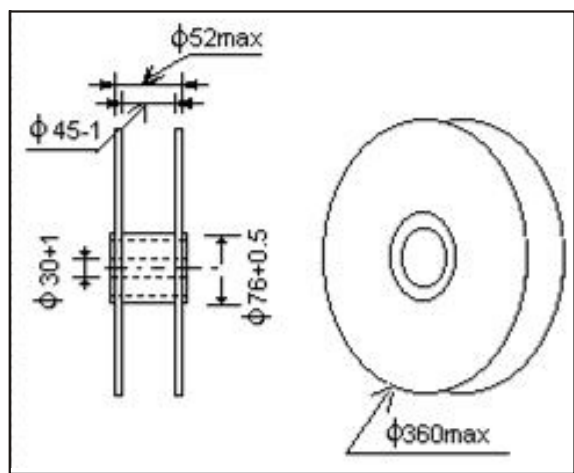


Code	P	P0		P2	d	Δh	W	W0	W1	W2	H	H0	D	t
Dim.	12.7	12.7	3.85 5.1	6.35	0.5	0	18.5	12	9	1.5	32.25	15~20	4.0	0.7
Tol.	±0.2	±0.2		±1.3	±0.1	±2	±1	±1	±0.5	±1.5	Max.	±0.5	±0.2	Max.

P1=3.85mm for F=5.08mm, P1=5.1mm for F=2.54mm.



Ammo Packaging



Tape and Reel Packaging