TMCC05 SMD Multilayer Ceramic Capacitor

Feature

- Stringent dimensional tolerance allow highly reliable, highly speed automatic chip placement on PCBs.
- Terminations are plated with Ni and solder, suited to flow and reflow soldering.
- High insulation resistance and high reliability.
- These capacitors have temperature characteristics ranging form COG to Y5V, applide to general electronic equipment, and instrument panel house electronic appliance.

Capacitor Selection

The choice of dielectric is largely determined by the temperature stability required.

• NPO(COG)

Ultra stable Class I dielectric, with predictable change of electrical properties on temperature, voltage, frequency and . time Used in circuits requiring stable performance.

• X7R

Stable Class II dielectric, with predictable change of properties with temperature, voltage, frequency and time, Used as blocking, coupling, by-passing and frequency discriminating elements. This dielectric is ferro electric and offers higher capacitance ranges than class I.

• Y5V(Z5U)

General purpose Class II dielectric with highest dielectric constant and greater variation of properties with temperature and test conditions. Very high capacitance per unit volume and suited for application as well as filtering, transient sup-pression blocking, and charge storage application.

General Specification

	COG(NPO)	X7R	Y5V(Z5U)
Capacitance Range	0.2pF~10nF	100pF~4.7uF	1000pF~10uF
Capacitance Tolerance	Preferred ±5% , ±10% For values≤10pf, Preferred tolerance is±5%pf, also available ±0.25pf	Preferred ±10%, ±20%	+80/~20℃
Operating Temperature Range	-55~125℃	-55~125℃	-30~85℃
Temperature Characteristic	0±30ppm℃	within ±15%	within+22/-82%
Rated Voltage	25V,50V,100V,200V	6.3V,10V,16V,25V,50V,100V	10V,16V,25V,50V
Dissipation Factor and "Q"	C_s≥30pF, Q≥1000 C_s≤30pF, Q≥400+20	For 6.3V:DF≤5.0% For 16V and 10V:DF≤3.5% For 25V min:DF≤2.5%	For 10V:12.5% max For 16V:9.0% max For 25Vmin:5.0% max
Insulation Resistance	more than 10GΩ	10GΩ min.or 500ΩF min Whichever is less	10GΩ min.or 500ΩF min Whichever is less
Dielectric withstanding Voltage	250% rated voltage	250% rated voltage	250% rated voltage
Test Voltage	250% rated voltage	1±0.2Vrms	1±0.2Vrms
Test Frequency	For values ≥ 1000pF:1KHz For values ≤ 1000pF:1MHz	1KHz	1KHz

Dimension, Capacitance, Voltage Table

Size	Dimension(mm)					Voltage	Capacitance		
	L	W	T	e	gmin		COG(NPO)	X7R	Y5V(Z5U)
0402	1.0±0.05	0.5±0.05	0.5±0.05	0.15±0.3	0.4	10V		100pF~0.1uf	1.0nF~0.22uf
						16V		100pF~47nf	1.0nF~0.1uf
						25V	0.2pF~100pf	100pF~22nf	1.0nF~22nf
						50V		100pF~22nf	1.0nF~10nf
						100V			
						200V			
0603	1.6±0.1	0.8±0.1	0.8±0.1	0.2±0.5	0.5	10V		100pF~0.22uf	2.2nF~1.0uf
						16V		100pF~0.1uf	2.2nF~0.33uf
						25V	0.2pF~1.0nf	100pF~47nf	2.2nF~0.22uf
						50V	0.2pF~1.0nf	100pF~15nf	2.2nF~56nf
						100V	0.2pF~300pf	100pF~47nf	
						200V			
0805	2.0±0.1	1.25±0.1	0.6±0.1	0.2±0.7	0.7	10V		1.0nF~2.2uf	10nF~47uf
						16V		100pF~0.47uf	10nF~2.2uf
			0.85±0.1			25V	0.5pF~4.7nf	100pF~0.22uf	10nF~1.0uf
						50V	0.5pF~2.2nf	100pF~0.1uf	10nF~0.33uf
			1.25±0.1			100V	0.5pF~1.0nf	100pF~22nf	
						200V	0.5pF~470pf		
1206	3.2±0.2	1.6±0.2	0.6±0.1	0.2±0.7	0.7	10V		1.0nF~4.7uf	10nF~10uf
			0.85±0.1			16V		1.0nF~1.0uf	10nF~4.7uf
			1.15±0.1			25V	0.5pF~10nf	1.0nF~1.0uf	10nF~2.2uf
						50V	0.5pF~4.7nf	1.0nF~2.2uf	10nF~1.0uf
			0.6±0.2			100V	0.5pF~2.2nf	1.0nF~0.1uf	
						200V	0.5pF~1.0nf		

Capacitance range and operating voltage

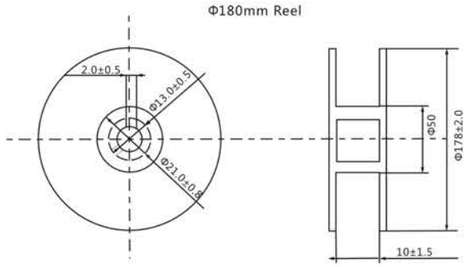
Size	Rated Voltage	Capacitance		
		NPO	X7R	Y5V
0603	100V	0.5~820	150~10000	2200~6800
	200V	0.5~470	150~6800	
0805	100V	0.5~1500	150~33000	10000~100000
	200V	0.1~1500	150~22000	10000~56000
	250V	0.1~1500	150~22000	10000~56000
	500V	0.1~560	150~10000	
	1000V	0.1~100		

1206	100V	0.5~3300	150~1000000	150~330000
	200V	0.1~2700	150~47000	150~150000
	250V	0.1~2700	150~3300	150~150000
	500V	0.1~1500	150~2200	
	1000V	0.1~1000	150~5600	
	2000V	0.1~270	150~1500	
1210	100V	1.0~4700	150~22000000	10000~820000
	200V	1.0~3300	150~100000	10000~390000
	250V	1.0~3300	150~82000	10000~390000
	500V	1.0~2000	150~100000	
	1000V	1.0~820	150~10000	
	2000V	1.0~470	150~6800	
1808	100V	2.0~4700	150~220000	150000~150000
	200V	2.0~3300	150~100000	10000~390000
	250V	2.0~3300	150~82000	10000~390000

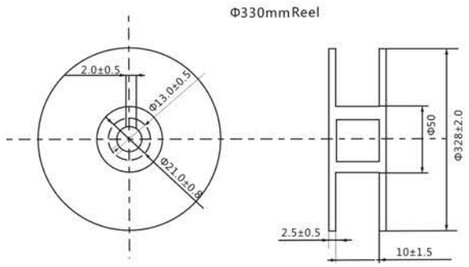
Packaging

a. Tape &Reel packaging

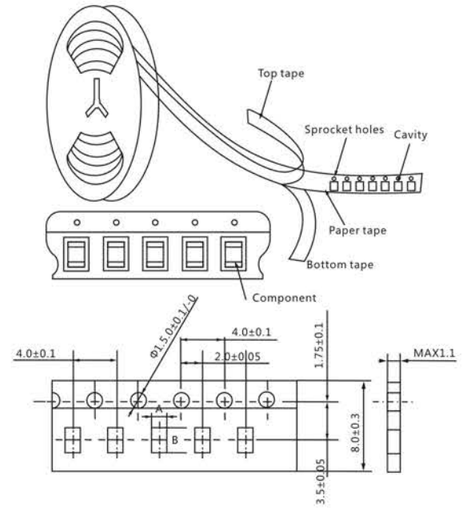
Φ180mm Reel



Φ330mmReel

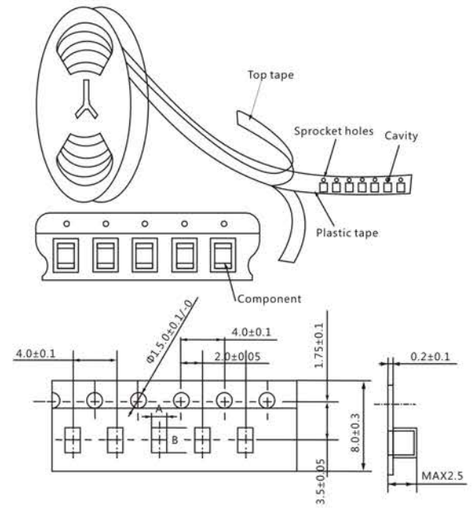


b. Paper tape



Type	A	B
0603	1.05±0.1	1.85±0.1
0805(T≤1.0mm)	1.55±0.15	2.3±0.15
1206(T≤1.0mm)	2.0±0.2	3.6±0.2

c. Embossed tape



Type	A	B
0805(T=1.25mm)	1.45±0.2	2.25±0.2
1206(T＞1mm)	1.9±0.2	3.5±0.2
1210(T＞1mm)	2.8±0.2	3.5±0.2

(1) Tapes for capacitors are wound clockwise. The sprocket holes are to the right as the tape is pulled toward the user.
(2) The top tape and base tape are Not, cover attached at the end of the tape for a minimum of 5 pitches.
(3) Part of the leader and part of the empty tape shall be attached to the end of the tape as follows.
(4) Number of missing capacitor is less than 0.1% of the total number quoted per reel or 1pcs; whichever is greater, and are not continuous.
(5) The top tape and bottom tape shall not protrude beyond the edges of the tape and shall not cover sprocket holes.
(6) Cumulative tolerance of sprocket holes, 10 pitches: ±0.3mm.
(7) Peeling off force: 0.1 to 0.6N in the direction shown down.