CT41 Multilayer Chip Ceramic Capacitors.

SINOCAPA®

TYPE CT41

Multilayer Chip Ceramic Capacitors

High capacitance has been achieved through precision technologies that enable the use of multiple thinner ceramic dielectric layers.

A monolithic structure ensures superior mechanical strength and reliability.

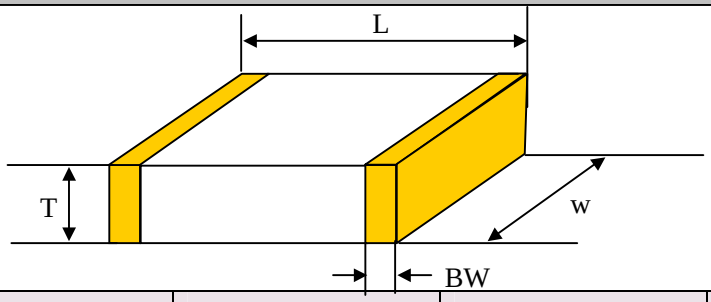
High-accuracy automatic mounting is facilitated through the maintenance of very precise dimensional tolerances. Composed of only ceramics and metals, these capacitors pro-vide extremely dependable performance, exhibiting virtually no degradation even when subjected to temperature extremes.

Low stray capacitance ensures high conformity with nominal values, thereby simplifying the circuit design process.

Low residual inductance assures superior frequency characteristics.

TEMPERATURE CHARACTERISTICS			
Symble	EIA Code	**Capacitance Change (C :%)**	**Operation Temperature Range**
C	COG	0 ± 30 PPM/°C	- 55°C to + 125°C
B	X7R	± 15%	- 55°C to + 125°C
X5R	X5R	±15%	–55 to +85°C
F	Y5V	+22, –82%	–30 to +85°C
Z	Z5U	+ 22%; - 56%	+ 10°C to + 85°C

DRAWING AND DIMENSIONS(UNIT MM)



EIA/IECQ	L	W	T(MAX)	BW
0201	0.6 +/- 0.03	0.3 +/- 0.03	0.3 +/- 0.03	0.15 +/- 0.05
0402	1.0 +/- 0.05	0.5 +/- 0.05	0.5 +/- 0.05	0.2 +0.15/-0.1
0603	1.6 +/- 0.1	0.8 +/- 0.1	0.8 +/- 0.1	0.3 +/- 0.2
0805	2.0 +/- 0.1	1.25 +/- 0.1	1.25 +/- 0.1	0.5+0.2/-0.3
1206	3.2 +/- 0.2	1.6 +/- 0.2	1.6 +/- 0.2	0.5+0.2/-0.3
1210	3.2 +/- 0.3	2.5 +/- 0.2	2.5 +/- 0.2	0.6 +/- 0.3
1812(1808)	4.5 +/- 0.4	3.2 +/- 0.3(2.0)	2.5 +/- 0.2	0.8 +/- 0.3
2220	5.7 +/- 0.4	5.0 +/- 0.3	2.5 +/- 0.3	1.0 +/- 0.3

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CAPACITANCE RANGE

SIZE CODE	TEMPERATURE CHARACTERISTICS	RATED VOLTAGE	Capacitance	Tolerance	Thickness (mm)
0201	C0G	25V	0.5pf-5pf	±0.25pF	0.3±0.03
0201	C0G	25V	5pf-10pf	±0.5pF	0.3±0.03
0201	C0G	25V	12pf-101	±5%	0.3±0.03
0201	X5R	25V	101-222	±10%	0.3±0.03
0201	X5R	16V	332-472	±10%	0.3±0.03
0201	X5R	10V	682	±10%	0.3±0.03
0201	X5R	6.3V	103	±10%	0.3±0.03
0201	Y5V	25V	102	+80, –20%	0.3±0.03
0201	Y5V	16V	103	+80, –20%	0.3±0.03
0402	C0G	50V	0.5pf-5pf	±0.25pF	0.5±0.05
0402	C0G	50V	5pf-10pf	±0.5pF	0.5±0.05
0402	C0G	50V	12pf-121	±5%	0.5±0.05
0402	X7R	50V	221-682	±10%	0.5±0.05
0402	X7R	25V	103-223	±10%	0.5±0.05
0402	X7R	16V	333-473	±10%	0.5±0.05
0402	X7R	10V	683-104	±10%	0.5±0.05
0402	Y5V	16V	104	+80, –20%	0.5±0.05
0402	Y5V	10V	224	+80, –20%	0.5±0.05
0603	C0G	50V	0.5pf-5pf	±0.25pF	0.8±0.1
0603	C0G	50V	5pf-10pf	±0.5pF	0.8±0.1
0603	C0G	50V	12pf-102	±5%	0.8±0.1
0603	X7R	50V	221-104	±10%	0.8±0.1
0603	X7R	25V	104-154	±10%/±20%	0.8±0.1
0603	X7R	16V	154-224	±10%/±20%	0.8±0.1
0603	X7R	10V	224-105	±10%/±20%	0.8±0.1
0603	Y5V	50V	104	+80, –20%	0.8±0.1
0603	Y5V	16V	224	+80, –20%	0.8±0.1
0603	Y5V	10V	474-105	+80, –20%	0.8±0.1
0805	C0G	50V	122-152	±5%	0.6±0.10
0805	C0G	50V	182-222	±5%	0.85±0.15
0805	C0G	50V	272-103	±5%	1.25±0.2
0805	X7R	50V	104-334	±10%/±20%	1.25±0.2
0805	X7R	25V	154-474	±10%/±20%	1.25±0.2
0805	X7R	16V	334-105	±10%/±20%	1.25±0.2
0805	X5R	10V	105-335	±10%/±20%	1.25±0.2
0805	X5R	6.3V	335-475	±10%/±20%	1.25±0.2
0805	Y5V	50V	224	+80, –20%	1.25±0.2
0805	Y5V	25V	224/474-105	+80, –20%	0.85±0.15/1.25±0.2

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SIZE CODE	TEMPERATURE CHARACTERISTICS	RATED VOLTAGE	Capacitance	Tolerance	Thickness (mm)
0805	Y5V	16V	474/105-225	+80, –20%	0.85±0.15/1.25±0.2
0805	Y5V	10V	335-475	+80, –20%	1.25±0.2
1206	C0G	50V	392/472-562/682-103	±5%	0.6/0.85/1.15±0.15
1206	X7R	50V	154-334/105	±10%/±20%	1.15±0.15/1.6±0.2
1206	X7R	25V	474/684-225	±10%/±20%	1.15±0.15/1.6±0.2
1206	X7R X5R	16V	155-335	±10%/±20%	1.6±0.2
1206	X5R	10V	225-335/475	±10%/±20%	1.15±0.15/1.6±0.2
1206	X5R	6.3V	685-106	±10%/±20%	1.6±0.2
1206	Y5V	50V	474/105	+80, –20%	0.85±0.15/1.3±0.2
1206	Y5V	25V	225	+80, –20%	1.3±0.2
1206	Y5V	16V	475	+80, –20%	1.3±0.2
1206	Y5V	10V	106-226	+80, –20%	1.6±0.3
0603	C0G	250V	101-681	±5%/±10%	0.8±0.1
0603	C0G	100V	101-122	±5%/±10%	0.8±0.1
0603	X7R	100v	102-103	±10%/±20%	0.8±0.1
0805	C0G	250V	821/102-152/182-272	±5%/±10%	0.6/0.8±0.1/1.25±0.2
0805	C0G	100V	102-152/182-222/272-472	±5%/±10%	0.6/0.8±0.1/1.25±0.2
0805	X7R	250V	102-472/682-223	±10%/±20%	0.85±0.15/1.25±0.2
0805	X7R	100V	102-103/153-473	±10%/±20%	0.85±0.15/1.25±0.2
1206	C0G	630V	101-391/471-122	±5%/±10%	0.6±0.1/0.85±0.15
1206	C0G	630V	152-222/272-332	±5%/±10%	1.15±0.15/1.6±0.2
1206	C0G	250V	332/392-562/682-822	±5%/±10%	0.85/1.15±0.15/1.6±0.2
1206	COG	100V	392/472-562/682-103	±10%/±20%	0.6±0.1/0.85/1.15±0.15
1206	X7R	630V	102-103/153-223/333	±10%/±20%	1.15±0.15/1.3/1.6±0.2
1206	X7R	250V	153-223/333-104	±10%/±20%	1.15±0.15/1.6±0.2
1206	X7R	100V	333-473/683-154	±10%/±20%	1.15±0.15/1.6±0.2
1210	C0G	630V	392/472-562/682	±5%/±10%	1.25/1.6/2.0±0.2
1210	C0G	250V	103/153	±5%/±10%	1.6±0.22.0±0.2
1210	C0G	100V	153/223/333	±5%/±10%	1.25/1.6/2.0±0.2
1210	X7R	630V	473-683	±10%/±20%	2.0±0.2
1210	X7R	250V	104-224	±10%/±20%	2.0±0.2
1210	X7R	100V	334-474	±10%/±20%	2.0±0.2
1812	C0G	630V	822-103/153/223	±5%/±10%	1.6±0.2/2.5/3.2±0.3
1812	C0G	250V	223/333/473	±5%/±10%	1.6±0.2/2.5/3.2±0.3
1812	C0G	100V	473/683/104	±5%/±10%	2.0±0.2/2.5/3.2±0.3
1812	X7R	630V	683/104	±10%/±20%	1.6±0.2/2.3±0.2
1812	X7R	250V	154/224-474	±10%/±20%	1.6±0.2/2.3±0.2
1812	X7R	100V	684-105	±10%/±20%	2.3±0.2

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CAPACITANCE RANGE

SIZE CODE	TEMPERATURE CHARACTERISTICS	RATED VOLTAGE	Capacitance	Tolerance	Thickness (mm)
2220	X7R	630V	154/224	±10%/±20%	1.6±0.2/2.3±0.2
2220	X7R	250V	334/474-105	±10%/±20%	1.6±0.2/2.3±0.2
2220	X7R	100V	684/105-225	±10%/±20%	1.6±0.2/2.3±0.2
1210	X7R X5R	50V	684-155//225-335(X5R)	±10%/±20%	1.6±0.2/2.5±0.3
1210	X7R X5R	25V	335/475	±10%/±20%	1.6±0.2/2.0±0.2
1210	X7R X5R	16V	685/106	±10%/±20%	2.0±0.2
1210	X5R	10V	156-226	±10%/±20%	2.3±0.2
1210	X5R	6.3V	226-476	±10%/±20%	2.5±0.3
1210	Y5V	50V	475	+80, –20%	1.6±0.2
1210	Y5V	25V	106	+80, –20%	1.6±0.2
1210	Y5V	16V	226	+80, –20%	1.6±0.2
1210	Y5V	10V	476	+80, –20%	2.0±0.2
1812	X7R X5R	50V	225/335	±10%/±20%	1.6±0.2/2.0±0.2
1812	X7R X5R	25V	475/685/106/156	±10%/±20%	1.0/2.0/2.5/2.8±0.3
1812	X7R X5R	16V	156-226	±10%/±20%	2.5±0.3
1812	X7R X5R	6.3V	476/686-107	±10%/±20%	2.5/2.8±0.3
1812	Y5V	50V	106	+80, –20%	2.0±0.2
1812	Y5V	25V	226	+80, –20%	2.0±0.2
1812	Y5V	16V	476	+80, –20%	2.5±0.3
1812	Y5V	10V	107	+80, –20%	2.5±0.3
2220	X7R X5R	50V	475/685/106	±10%/±20%	2.0/2.5/2.8±0.3
2220	X7R X5R	25V	106(X5R)/156-226	±10%/±20%	2.0/2.3/2.5±0.3
2220	X5R	16V	336-476	±10%/±20%	2.0±0.2/2.3±0.2
2220	X5R	10V	686	±20%	2.3±0.2
2220	X5R	6.3V	107	±20%	2.8±0.3
2220	Y5V	50V	226	+80, –20%	2.0±0.2
2220	Y5V	25V	476	+80, –20%	2.0±0.2
2220	Y5V	16V	107	+80, –20%	2.5±0.3
1808	C0G	3kV	10PF	±1pF	0.85±0.2
1808	C0G	3kV	12PF	±10%	0.85±0.2
1808	C0G	3kV	15PF-22PF	±10%	1.1±0.2
1808	C0G	3kV	27PF-47PF	±10%	1.6±0.2
1808	C0G	3kV	56PF-100PF	±10%	2.0±0.2

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Parameter/Test		NP0 Specification Limits	Measuring Conditions
Capacitance		Within specified tolerance	Freq.: 1.0 MHz ± 10% for cap <=1000 pF 1.0 kHz ± 10% for cap > 1000 pF Voltage: 1.0Vrms ±0.2
Dissipation Factor		0.15%	
Insulation Resistance		100,00Mor 1000M- µF, whichever is less	Charge device with rated voltage for 60 ± 5 secs @ room temp/humidity
Dielectric Strength		No breakdown or visual defects	Charge device with 300% of rated voltage for 1-5 seconds, charge and discharge current limited to 50 mA this inspection excludes high voltage MLCC
Solderability		95% of each terminal should be Covered with fresh solder	Dip device in eutectic solder at 230 ± 5ºC for 5.0 ± 0.5 seconds
Load Life	Appearance	No visual defects	Charge device with twice rated voltage in test chamber set at 125ºC ± 2ºC for 1000 hours (+48, -0). Remove from test chamber and stabilize at room temperature for 24 hours before measuring.
	Capacitance Variation	<=±3.0% or ± .3 pF, whichever is greater	
	DF	0.3%	
	Insulation Resistance	>=Initial Value x 0.3 (See Above)	
	Dielectric Strength	Meets Initial Values (As Above)	
Parameter/Test		**X7R X5R Specification Limits**	**Measuring Conditions**
Capacitance		Within specified tolerance	Freq.: 1.0 kHz ± 10% Voltage: 1.0Vrms ± .2V For Cap > 10 µF, 0.5Vrms @ 120Hz
Dissipation Factor		<=2.5% fo>=50V DC rating <=3.0% for 25V DC rating <=3.5% for 16V DC rating <=5.0% for <=10V DC rating	
Insulation Resistance		100,00Mor 500M- µF, whichever is less	Charge device with rated voltage for 60 ± 5 secs @ room temp/humidity
Dielectric Strength		No breakdown or visual defects	Charge device with 300% of rated voltage for 1-5 seconds, charge and discharge current limited to 50 mA this inspection excludes high voltage MLCC
Solderability		95% of each terminal should be Covered with fresh solder	Dip device in eutectic solder at 230 ± 5ºC for 5.0 ± 0.5 seconds
Load Life	Appearance	No visual defects	Charge device with twice rated voltage in test chamber set at 125ºC ± 2ºC(**X5R** at 85ºC ± 2ºC)for 1000 hours (+48, -0). Remove from test chamber and stabilize at room temperature for 24 hours before measuring.
	Capacitance Variation	<=±12.5%	
	DF	<=Initial Value x 2.0 (See Above)	
	Insulation Resistance	>=Initial Value x 0.3 (See Above)	
	Dielectric Strength	Meets Initial Values (As Above)	

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Parameter/Test		Y5V Specification Limits	Measuring Conditions
Capacitance		Within specified tolerance	Freq.: 1.0 kHz ± 10% Voltage: 0.5Vrms ± .2V@ 120Hz
Dissipation Factor		<=5.0% for ε50V DC rating <=7.0% for 25V DC rating <=9.0% for 16V DC rating <=12.5% for <=10V DC rating	
Insulation Resistance		100,00Mor 500M- μF, whichever is less	Charge device with rated voltage for 60 ± 5 secs @ room temp/humidity
Dielectric Strength		No breakdown or visual defects	Charge device with 300% of rated voltage for 1-5 seconds, charge and discharge current limited to 50 mA this inspection excludes high voltage MLCC
Solderability		No breakdown or visual defects	Dip device in eutectic solder at 230 ± 5ºC for 5.0 ± 0.5 seconds
Load Life	Appearance	No visual defects	Charge device with twice rated voltage in test chamber set at 85ºC ± 2ºC for 1000 hours (+48, -0). Remove from test chamber and stabilize at room temperature for 24 hours before measuring.
	Capacitance Variation	<=±30%	
	DF	<=Initial Value x 1.5 (See Above)	
	Insulation Resistance	>=Initial Value x 0.1 (See Above)	
	Dielectric Strength	Meets Initial Values (As Above)	

HOW TO ORDER

CC41 **Tape**	**1206** **Size code**	**B** **Dielectric**	**474** **Capacitance**	**K** **Tolerance**	**500** **Voltage**	**T** **Packing style**
Surface Mount Multiplayer Ceramic capacitors	C=COG B=X7R F=Y5V Z=Z5U X5R=X5R		106= $10X10^6$(pF) This is expressed in picofarads. The first two digits are the significant figures. The third is the number of zeros to follow.	C=±0.25PF D=±0.5PF J=±5% K=±10% M=±20% Z=+80, –20%	Rated Voltage 6.3V=006 10V=010 16V=016 25V=025 50V=050 100V=101 250V=251 630V=631 3000V=302	T=tape And reel B=bulk