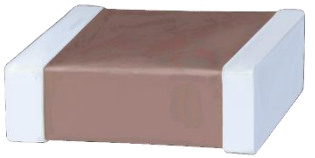
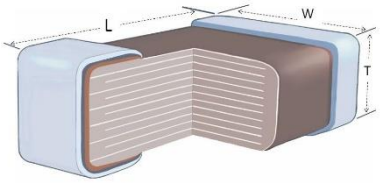
Multilayer Ceramic Chip Capacitors

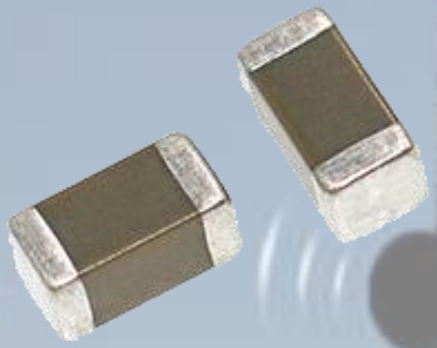
江苏芯声微电子科技有限公司

Jiangsu Holy Ram Electronics Technology Limited





CIA 系列 (工规等级，Industrial Grade)



材质	X7R	X5R	C0G	X6S
温度范围	-55℃--125℃	-55℃--85℃	-55℃--125℃	-55℃--105℃
容值变化率	±15%	±15%	±30ppm/℃	±22%

PRECAUTIONS FOR USE

Plz attach the purchase specification before using this product.

SAFETY INFORMATION

Plz pay attention to safety precautions when using this product.

Limitation of Applications

Plz contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property.

①Aircraft equipment ②Aerospace equipment ③Undersea equipment ④Power plant control equipment
⑤Medical equipment ⑥Transportation equipment(vehicles,trains,ships,etc.) ⑦Traffic signal equipment
⑧Disaster prevention / crime prevention equipment ⑨Data-processing equipment ⑩Application of similar complexity and/or reliability requirements to the applications listed in the above

Methods of transportation and storage

1.Transportation:

Packaged products suitable for modern transportation, in the process of transportation to prevent rain and acid and alkali corrosion, gravity throwing and force extrusion.

2.Storage:

The storage period to ensure good weldability of the product is one year from the date of production. Do not open the braid before use of the product (in the case of packaging and delivery). After the braid is opened, the product should be used within three months.
storage temperature: 0℃~35℃
Storage relative humidity:<70%

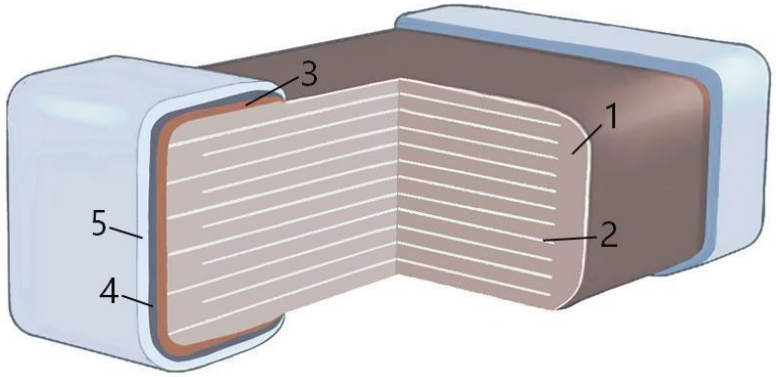
Characteristic

Conventional capacitors can be divided into temperature compensation type (Class Ⅰ) and high dielectric constant type (ClassⅡ) according to material characteristics.

Temperature compensation type: This kind of material capacitor has high stability to temperature, the best stability under different voltage and temperature, and its loss is the least. Its temperature coefficient is 30 ppm/°C, suitable for low loss, high stability requirements of the circuit, such as filters, resonators and timing circuits, common C0G series.

High dielectric constant type: capacitors of this kind of dielectric material have higher dielectric constant and higher capacity than those of temperature compensation type, but their accuracy and stability are poor. Between −55°C and 85°C (125 ℃) temperature range, capacitance error value will be within 15%, suitable for a wide range of capacity of the circuit, such as straight, coupling, bypass circuit, common X5R, X7R, X6S series.

Product Structure Diagram



Serial number	Designation
1	Dielectric ceramics
2	Inner electrode (nickel)
3	Outer electrode (copper)
4	Nickel layer
5	Tin layer

Application

Base station, manufacturing equipment, industrial robot equipment, measuring equipment and other industrial equipment

产品型号命名规则

EX: C IA 0402 X7R 104 K 500 G T

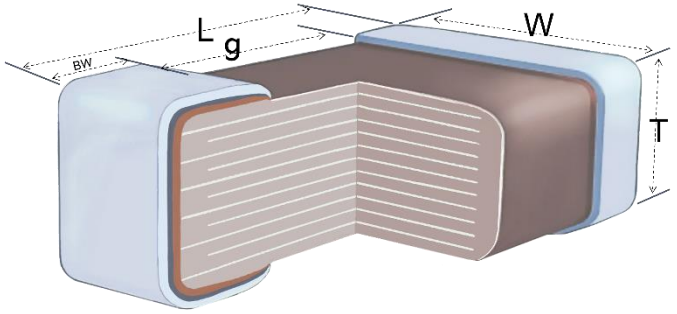
(1) (2) (3) (4) (5) (6) (7) (8) (9)

(1)	C:MLCC			(5) Capacitance Value	Cap.>=10pF: First Two×10^third 104=10×10^4=100nF 123=12×10^3=12nF Cap.<10pF: R30=0.3pF, 1R0=1pF						
(2) Application	IA:Industrial			(6) Capacitance Tolerance	A: ±0.05pF	B: ±0.1pF	C: ±0.25pF	D: ±0.5pF	F: ±1.0%		
(3) Product size (L*W)	Coding	inch	mm		G: ±2%	J: ±5%	K: ±10%	M: ±20%	Z: 80/-20%		
	00R4	008004	0201	(7) Rate Voltage Vdc	2R5:2.5	4R0:4.0	6R3:6.3	100:10	160:16	250:25	
	01R5	01005	0402		350:35	500:50	630:63	800:80	101:100	201:200	
	0201	0201	0603		251:250	401:400	451:450	501:500	631:630	102:1000	
	0402	0402	1005		202:2000	252:2500	302:3000	402:4000			
	0603	0603	1608	(8) Thickness (mm)	A:0.10	B:0.13	C:0.18	D:0.20	E:0.30	F:0.45	
	0805	0805	2012		G:0.50	H:0.60	J:0.80	K:0.85	L:1.15	M:1.25	
	1206	1206	3216		N:1.60	P:1.90	Q:2.00	R:2.50			
	1210	1210	3225								
	1808	1808	4520								
	1812	1812	4532								
(4) Temperature characteristic	X5R X6S X7R X7S C0G			(9) Packing	T: Finished product packaging (7" Reel)						

Size & Packing Specifications

Generally, a Φ180mm (7") tray is used for packing.

Each 5 disks is packed into a box, and each 12 boxes is a whole box.



Specification	Size（mm）				Packing（7”）	
	Length	Width	Thickness	g	Number(piece)	Method
0201	0.60±0.03	0.30±0.03	0.30±0.03	0.20	15,000	Paper tape
	0.60+0.10/-0.03	0.30+0.10/-0.03	0.30+0.10/-0.03			
0402	1.00±0.10	0.50±0.10	0.50±0.10	0.30	10,000	Paper tape
	1.00+0.20/-0.05	0.50+0.20/-0.05	0.50+0.20/-0.05			
0603	1.60±0.10	0.80±0.10	0.80±0.10	0.60	4,000	Paper tape
	1.60±0.20	0.80±0.20	0.80±0.20			
0805	2.00±0.10	1.25±0.10	0.60±0.10	0.70	4,000	Paper tape
			0.85±0.10			
	2.00±0.20	1.25±0.20	1.25±0.20		2,000	Plastic tape
1206	3.20±0.20	1.60±0.20	0.85±0.10	1.50	4,000	Paper tape
			1.25±0.20		2,000	Plastic tape
			1.60±0.20		2,000	Plastic tape
	3.20±0.30	1.60±0.30	1.60±0.30		2,000	Plastic tape
1210	3.20±0.30	2.50±0.20	1.25±0.20	1.50	2,000	Paper tape
					2,000	Plastic tape
			1.60±0.20		2,000	Plastic tape
			2.00±0.20		2,000	Plastic tape
	3.20±0.40	2.50±0.30	2.50±0.30		2,000	Plastic tape

Capacitance Range

【C0G】0201~120

尺寸	电压	0.1pF					1pF						10pF							100pF									1nF						10nF												100nF		容值范围
(inch)	(Vdc)	R10	R20	R30	R40	R50	1R0	1R5	2R2	3R3	4R7	6R8	100	150	220	330	390	470	680	101	121	151	181	221	271	331	391	471	561	681	821	102	152	222	332	472	682	103	123	153	183	223	273	333	393	473	563	683	823	104	124	
0201	25												■	■	■	■	■	■	■	■																																10pF~100pF
	50														■	■	■	■	■																																33pF~47pF
0402	50						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■																				0.5pF~1.0nF
0603	50						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	0.5pF~2.2nF
	100												■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■																				10pF~330pF
0805	50														■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	33pF~10nF
	100																								■	■	■	■	■	■	■	■																				330pF~1nF
	200																							■																												220pF~220pF
	250												■	■	■	■	■	■	■	■	■	■	■	■																												10pF~220pF
1206	25																																				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	10nF~10nF
	50																															■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	1.5nF~27nF
	100																														■																				1.0nF~1.0nF
	500												■	■	■	■	■	■	■																																10pF~39pF
	630																							■																												220pF~220pF

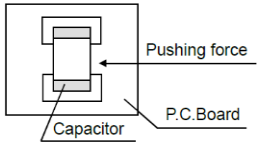
【X7R】0201~1210

尺寸 (inch)	电压 (Vdc)	100pF						1nF						10nF						100nF						1uF			10uF			100uF		容值范围
		101	151	221	331	471	681	102	152	222	332	472	682	103	153	223	333	393	473	683	104	154	224	334	474	684	105	225	475	106	226	476	107	227	
0201	10													■																					10nF~10nF
	16							■	■	■	■	■	■	■																					1nF~10nF
	25						■	■																											680pF~1.0nF
0402	6.3																						■	■	■	■	■	■							220nF~1.0μF
	10																■	■	■	■	■	■	■	■	■	■									33nF~220nF
	16							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									1.0nF~220nF
	25							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									1.0nF~220nF
	50			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									220pF~100nF
0603	10																						■	■	■	■	■	■							220nF~1.0μF
	16																				■	■	■	■	■	■	■	■							100nF~1.0μF
	25																	■	■	■	■	■	■	■	■	■	■	■							39nF~1.0μF
	50					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									680pF~220nF
	100							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■									1.0nF~100nF
0805	6.3																													■					10μF~10μF
	10																										■	■	■	■					2.2μF~10μF
	16																										■	■	■						2.2μF~4.7μF
	25																				■	■	■	■	■	■	■	■	■						100nF~4.7μF
	50							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■							1.0nF~2.2μF
	100													■																					10nF~10nF
1206	6.3																													■	■				22μF~22μF
	10																													■	■				22μF~22μF
	16																										■	■	■						1μF~2.2μF
	25																										■	■	■						1μF~2.2μF
	50																				■	■	■	■	■	■	■	■	■						100nF~2.2μF
	100																					■	■	■	■	■	■	■	■						2.2μF~2.2μF
	630													■																					10nF~10nF
1210	50																												■	■					4.7μF~10μF
	100																												■						4.7μF~4.7μF
	630																		■	■															47nF~47nF

Specifications and Test Methods

No	Item	Specification	Test Method(Ref. Standard:JIS C 5101, IEC60384)			
1	Appearance	No defects or abnormalities.	Visual inspection			
2	Dimension	Shown in Dimension.	Using Measuring instrument of dimension.			
3	Voltage proof	Withstand the test voltage No defects or abnormalities.	Material	Rate voltage(RV)		Test voltage
			C0G	RV≤50V		300% RV
				50V < RV≤250V		200% RV
				250V < RV≤500V		150% RV
				500V < RV≤1000V		130% RV
			X7R/X5R/X6S	RV≤50V		250% RV
				50V < RV≤250V		200% RV
				250V < RV≤630V		150% RV
				630V < RV≤1000V		120% RV
			Applied Time			Applied Time
			Charge/discharge current			50mA MAX
4	Insulation Resistance (I.R.)	Plz refer to the single specification	Test Temperature			Test Temperature
			Test Point			Test Point
			Test Voltage			Test Voltage
			Charging Time			Charging Time
			Charge/discharge current			Charge/discharge
5	Capacitance	Within the specified tolerance	Measurement Temperature			Measurement
			Material	Material	Material	Material
			C0G	C≤1000pF	1.0±0.1MHz	1.0±0.2Vrms
				1000pF < C≤10uF	1.0±0.1KHz	1.0±0.2Vrms
6	Q or Dissipation Factor (D.F.)	Plz refer to the single specification		C > 10uF	120Hz±24Hz	0.5V±0.1Vrms
			X7R/X5R/X6	X7R/X5R/X6S	X7R/X5R/X6S	X7R/X5R/X6S

Specifications and Test Methods

<table>
<tr><th>No</th><th>Item</th><th colspan="2">Specification</th><th colspan="2">Test Method(Ref. Standard:JIS C 5101, IEC60384)</th></tr>
<tr><td rowspan="5">7</td><td rowspan="5">Temperature Characteristics ofCapacitance</td><td>Material</td><td>Cap. Change</td><td colspan="2" rowspan="2">The capacitance change should be measured after 5 min at each specified temp. stage.
After reaching thermal equilibrium at each step, measure</td></tr>
<tr><td>C0G</td><td>Within ±30ppm/℃</td></tr>
<tr><td>X5R</td><td>±15%</td><td>Step</td><td>Temperature(℃)</td></tr>
<tr><td>X6S</td><td>±22%</td><td>1
2
3
4
5</td><td>Reference Temp.:25±2℃
Min.Operating Temp.:±3℃
Reference Temp:25±2℃
Max.Operating Temp.:±2℃
Reference Temp:25±2℃</td></tr>
<tr><td>X7R</td><td>±15%</td></tr>
<tr><td rowspan="5">8</td><td rowspan="5">Adhesive Strength of Termination</td><td colspan="2" rowspan="5">No removal of the terminations or other defect should occur.</td><td>Mounting</td><td>Solder the capacitor on the test substrate</td></tr>
<tr><td>Applied Force</td><td>5N (0402:2.5N / 0201:1N)</td></tr>
<tr><td>Holding Time</td><td>10±1s</td></tr>
<tr><td>Applied Direction</td><td>Thrust is gradually applied in the center of the specimen along the horizontal direction of the P.C. plate.
 
</td></tr>
</table>

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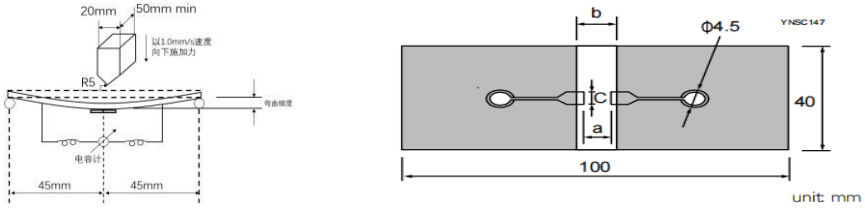
<tr><th>No</th><th>Item</th><th colspan="3">Specification</th><th colspan="2">Test Method(Ref. Standard:JIS C 5101, IEC60384)</th></tr>
<tr><td rowspan="2">9</td><td rowspan="2">Substrate Bending test</td><td colspan="3">Appearance:No defects or abnormalities.</td><td>Mounting method</td><td>Reflow solder the capacitor on the test substrate and bend 1mm</td></tr>
<tr><td colspan="3">ΔC/C
< Universal series >
X7R/X5R: ± 10%　　C0G:± 1% or 0.5 pF
<High capacitance>　　(Whichever is larger)
X7R/X5R: ± 12.5%</td><td colspan="2"> 
</td></tr>
<tr><td rowspan="4">10</td><td rowspan="4">Solderability</td><td colspan="3" rowspan="4">95% of the terminations is to be soldered evenly and continuously.</td><td colspan="2">Kind of Solder:Sn-3.0Ag-0.5Cu(Lead Free Solder)</td></tr>
<tr><td colspan="2">scaling powder :Isopropyl alcohol Rosin 25% solid solution.</td></tr>
<tr><td colspan="2">Test Temperature:245±5°C</td></tr>
<tr><td colspan="2">Test Time :2±0.5s.</td></tr>
<tr><td rowspan="8">11</td><td rowspan="8">Resistance to Soldering Heat</td><td>Appearance</td><td colspan="2">No defects or abnormalities.</td><td rowspan="2">Pre-treatment</td><td rowspan="2">Heat treatment:Perform a heat treatment at 150+0/-10°C for 1hour and then let sit for 24+/-2hours at room temperature, then measure.</td></tr>
<tr><td rowspan="3">Capacitance</td><td>Materia</td><td>Cap. Change</td></tr>
<tr><td>C0G</td><td rowspan="2">Plz refer to the single specification</td><td>Test Method</td><td>Solder bath method</td></tr>
<tr><td>X7R/X5</td><td>Kind of Solder</td><td>Sn-3.0Ag-0.5Cu(Lead Free Solder)</td></tr>
<tr><td>Q or D.F.</td><td colspan="2">Within the specified initial value.</td><td>Test Time</td><td>10±1s</td></tr>
<tr><td>I.R.</td><td colspan="2">Within the specified initial value.</td><td>Preheat Temperature</td><td>110℃ to 140℃</td></tr>
<tr><td rowspan="2">Voltage proof</td><td colspan="2" rowspan="2">No defects or abnormalities.</td><td>Preheat Time</td><td>1min</td></tr>
<tr><td>Post-treatment</td><td>Non treatment:Let sit for 24+/-2hours at room temperature, then measure.</td></tr>
</table>

Specifications and Test Methods

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<tr><th>No</th><th>Item</th><th colspan="3">Specification</th><th colspan="3">Test Method(Ref. Standard:JIS C 5101, IEC60384)</th></tr>
<tr><td rowspan="8">12</td><td rowspan="8">Temperature Cycle</td><td>Appearance</td><td colspan="2">No defects or abnormalities.</td><td>Mounting method</td><td colspan="2">Solder the capacitor on the test substrate</td></tr>
<tr><td rowspan="3">Capacitance</td><td>Material</td><td>Cap. Change</td><td>Pre-treatment</td><td colspan="2">Heat treatment:Perform a heat treatment at 150+0/-10°C for 1hour and then let sit for 24+/-2hours at room temperature, then measure.</td></tr>
<tr><td>COG</td><td rowspan="2">Plz refer to the single specification</td><td>Temperature Cycles</td><td colspan="2">C0G & X7R—100cycles X5R & X6S—5cycles</td></tr>
<tr><td>X7R/X5R/X6S</td><td>Step</td><td>Temperature(℃)</td><td>Time(min)</td></tr>
<tr><td rowspan="2">Q or D.F.</td><td colspan="2" rowspan="2">Within the specified initial value.</td><td>1</td><td>Min Operating Temp.:±3℃</td><td>30±3min</td></tr>
<tr><td>2</td><td>Room Temp.</td><td>2~5min</td></tr>
<tr><td rowspan="2">I.R.</td><td colspan="2" rowspan="2">Within the specified initial value.</td><td>3</td><td>Max Operating Temp.:±3℃</td><td>30±3min</td></tr>
<tr><td>4</td><td>Room Temp.</td><td>2~5min</td></tr>
<tr><td></td><td colspan="3"></td><td>Post-treatment</td><td colspan="2">Non treatment:Let sit for 24+/-2hours at room temperature, then measure.</td></tr>
<tr><td rowspan="8">13</td><td rowspan="8">High Temperature High Humidity</td><td>Appearance</td><td colspan="2">No defects or abnormalities.</td><td>Mounting method</td><td colspan="2">Solder the capacitor on the test substrate</td></tr>
<tr><td rowspan="2">Capacitance</td><td rowspan="2">Material</td><td>Cap. Change</td><td>Pre-treatment</td><td colspan="2">Heat treatment:Perform a heat treatment at 150+0/-10°C for 1hour and then let sit for 24+/-2hours at room temperature, then measure.</td></tr>
<tr><td>Plz refer to the single specification</td><td>Test Temperature</td><td colspan="2">40±2℃</td></tr>
<tr><td rowspan="4">Q or D.F. (COG)</td><td>Capacitance</td><td>Q</td><td>Test Humidity</td><td colspan="2">90%RH to 95%RH</td></tr>
<tr><td>C≥30pF</td><td rowspan="3">Plz refer to the single specification</td><td>Test Time</td><td colspan="2">500±24h</td></tr>
<tr><td>10pF ＜C＜ 30pF</td><td>Test Voltage</td><td colspan="2">Rate Voltage（Not more than 630V）</td></tr>
<tr><td>＜10pF</td><td>Charge/discharge current</td><td colspan="2">50mA max</td></tr>
<tr><td>Q or D.F. (X7R/X5R/X6S)</td><td colspan="2">Plz refer to the single specification</td><td colspan="3" rowspan="2">Voltage regulation "After voltage treatment of the capacitor at test temperature and voltage for 1 hour", place the electrical vessel under ambient conditions for 24±2 hours prior to measurement, using this measurement as the initial value.</td></tr>
<tr><td>I.R.</td><td colspan="2">Plz refer to the single specification</td></tr>
</table>

Specifications and Test Methods

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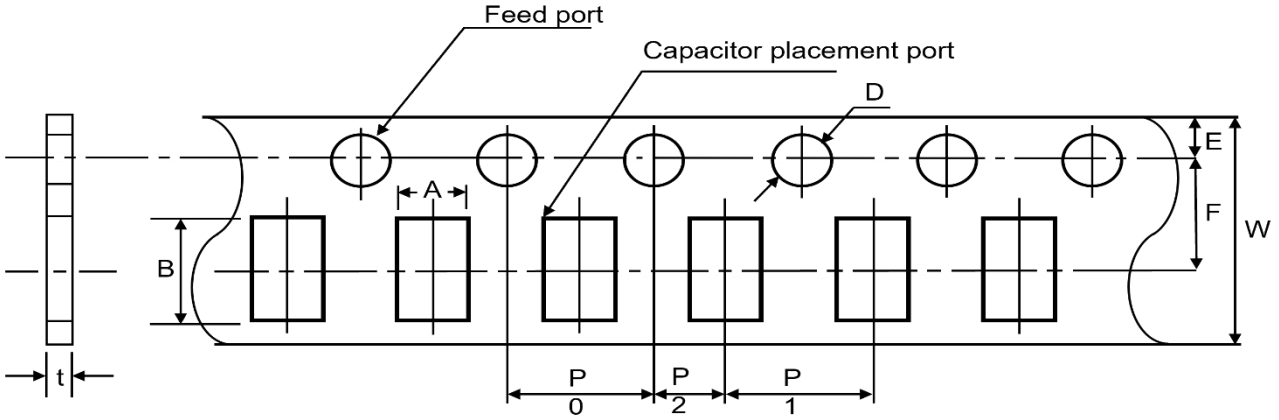
<tr><th>No</th><th>Item</th><th colspan="3">Specification</th><th colspan="2">Test Method(Ref. Standard:JIS C 5101, IEC60384)</th></tr>
<tr><td rowspan="11">14</td><td rowspan="11">Life</td><td>Appearance</td><td colspan="2">No defects or</td><td>Mounting method</td><td>Solder the capacitor on the test</td></tr>
<tr><td rowspan="3">Capacitance</td><td rowspan="3">Material</td><td>Cap.Change</td><td>Pre-treatment</td><td>Voltage treatment:Apply the test voltage at the test temperature for 1hour and then let sit for 24+/-2hours at room temperature, then measure.</td></tr>
<tr><td rowspan="2">Plz refer to the single specification</td><td>Test Temperature</td><td>Max. Operating Temp.:±3℃</td></tr>
<tr><td>Test Time</td><td>1000±12 h</td></tr>
<tr><td rowspan="4">Q or D.F.
(C0G)</td><td>Capacitance</td><td>Q</td><td>Test Voltage（life)</td><td>Plz refer to the single specification</td></tr>
<tr><td>C≥30pF</td><td rowspan="3">Plz refer to the single specification</td><td>Charge/discharge current</td><td>50mA max</td></tr>
<tr><td>10pF ＜C＜ 30pF</td><td rowspan="3" colspan="2">Voltage regulation "After voltage treatment of the capacitor at test temperature and voltage for 1 hour", place the electrical vessel under ambient conditions for 24±2 hours prior to measurement, using this measurement as the initial value.</td></tr>
<tr><td>＜10pF</td></tr>
<tr><td>Q or D.F.
(X7R/X5R/
X6S)</td><td colspan="2">Plz refer to the single specification</td></tr>
<tr><td>I.R.</td><td colspan="2">Plz refer to the single specification</td></tr>
</table>

Product Packaging

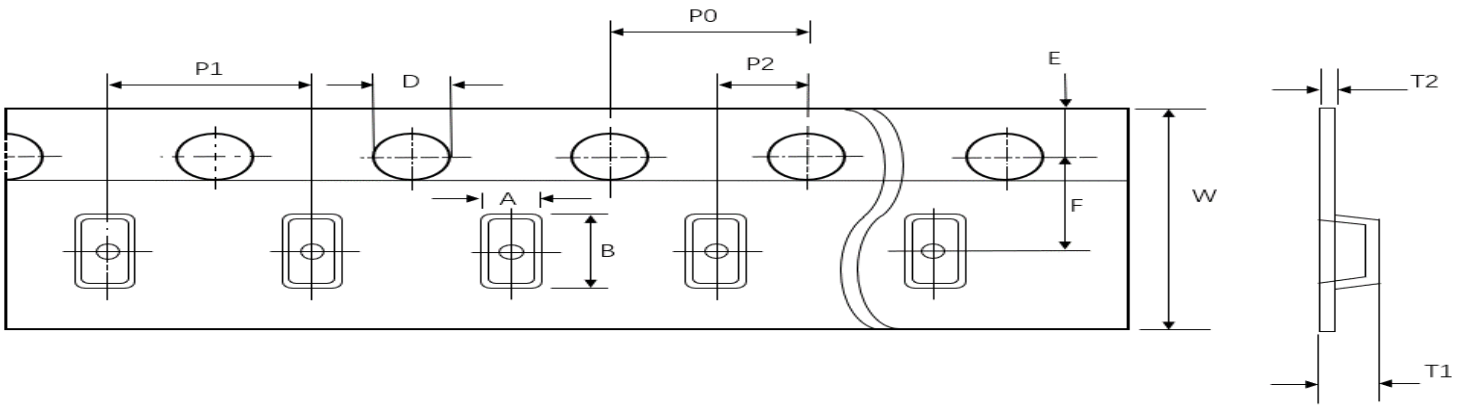
At present, the most common way of packaging is to carry coil packaging. A coil with a diameter of 180mm (7") can contain 1000~20000 capacitors, or coil packaging can be carried out according to customer requirements.

1. Tape Size



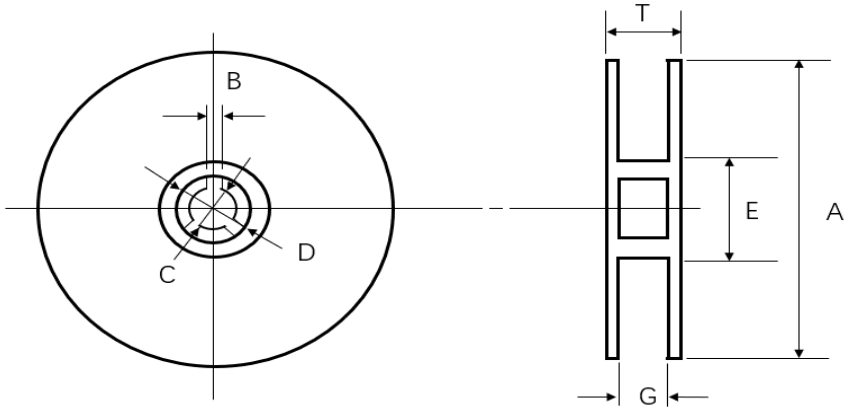
	01005 (0402)	0201 (0603)	0402 (1005)	0603 (1608)	0805 (2012)	1206 (3216)
P1	2.00±0.05(1.0 ±0.05)			4.00±0.10		
P0	4.00±0.10			4.00±0.10		
P2	2.00±0.05			2.00±0.05		
A	0.25±0.02	0.38±0.03	0.62±0.05	1.00±0.01	1.55±0.10	2.05±0.10
B	0.46±0.02	0.68±0.03	1.12±0.05	1.90±0.10	2.30±0.10	3.60±0.10
W	8.00±0.30			8.00±0.30		
E	1.75±0.10			1.75±0.10		
F	3.50±0.05			3.50±0.05		
D	φ1.50+0.10/-0.03			φ1.50+0.10/-0		
t	0.25±0.02	0.35±0.03	0.60±0.05	1.1Below		

2. Plastic Size



	0603 (1608)	0805 (2012)	1206 (3216)	1210 (3225)
P1	4±0.1	4±0.1	4±0.1	4±0.1
P0	4±0.1	4±0.1	4±0.1	4±0.1
P2	2±0.05	2±0.05	2±0.05	2±0.05
A	1.2±0.2	1.45±0.2	1.9±0.2	2.8±0.2
B	2.0±0.2	2.3±0.2	3.5±0.2	3.6±0.2
W	8±0.3	8±0.2	8±0.2	8±0.2
E	1.75±0.1	1.75±0.1	1.75±0.1	1.75±0.1
F	3.5±0.05	3.5±0.05	3.5±0.05	3.5±0.05
D	1.5 (+0.1/-0.0)	1.5 (+0.1/-0.0)	1.5 (+0.1/-0.0)	1.5 (+0.1/-0.0)
T1	1.4 max	2.5 max.	2.5 max.	2.5 max.
T2	0.25±0.1	0.305±0.1	0.30±0.1	0.30±0.1

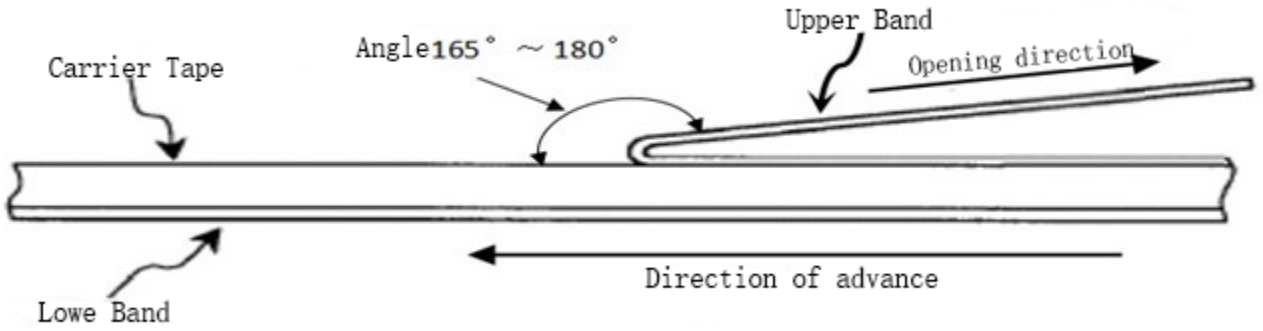
3. Disk Size



Disk Size	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	G (mm)	T (mm)
7"Reel	Φ178±2.0	2.0±0.5	Φ13±1.0	Φ21±0.8	Φ50 or More	10±1.0	13±1.0

4. Instructions for use of reel tape

When the finished product is in use, the upper band (film) is at a speed of 300±10mm/min, an Angle of 165° ~ 180° (as shown below), and the peeling strength is 0.1N ~ 0.7N (10g.f≤ peeling force ≤ 70g.f).



Precautions for use

Multi-layer Ceramic Chip Capacitors(MLCC) may have short circuit or open circuit under the harsh working environment beyond the use frequency described in this letter of admission or related instructions, or under the action of external mechanical force overpressure. Or it may smoke, burn or even explode, so when using, we should first consider to follow the relevant instructions in this acknowledgement, if there is anything unclear, Plz contact our technical department, Quality Control Department or production Department.

1. The amount of solder used in welding

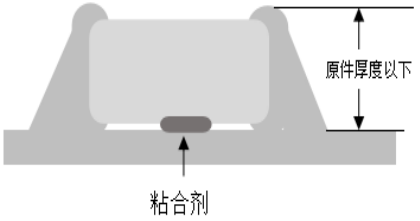
A. Too much solder will cause capacitor damage due to excessive pressure at the capacitor end.

B.Too little solder fixed force is insufficient, may cause capacitor chip and line contact is poor.

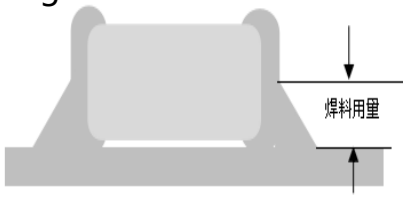
2.Recommended amount of solder:

A. Optimal amount of solder for reflow welding

B. Optimum amount of solder for wave soldering

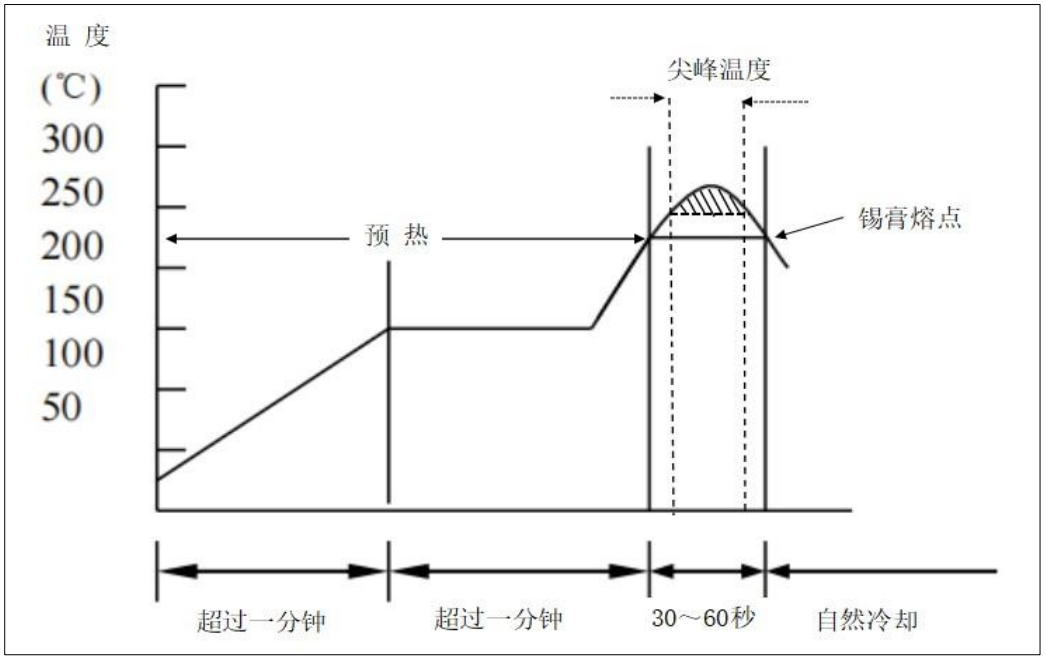


C. The optimal amount of solder used for repair with soldering iron



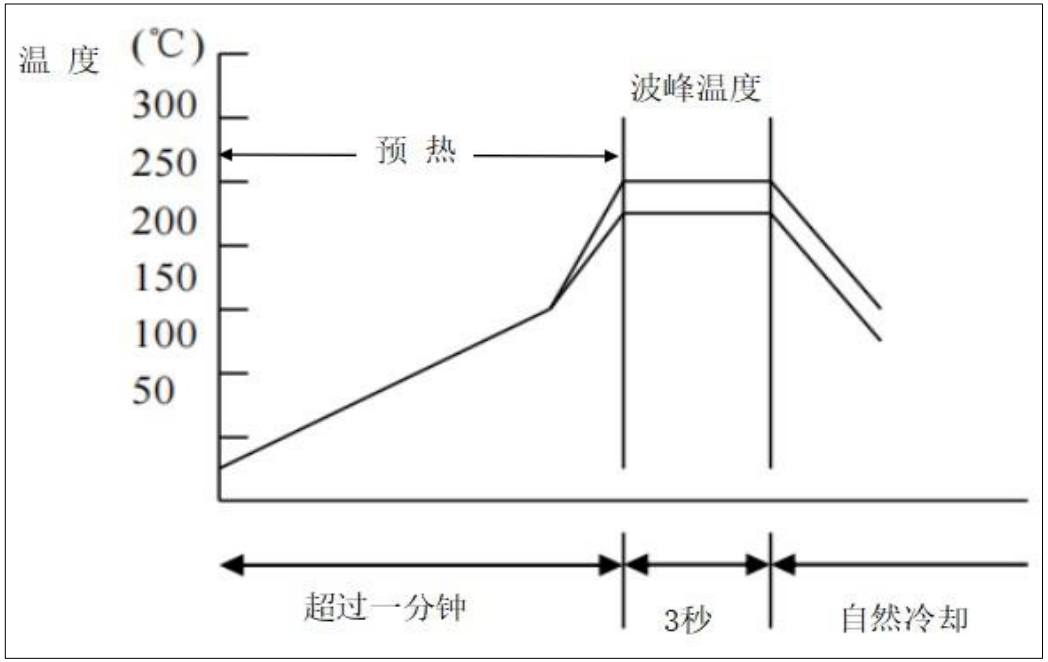
3.Recommended welding temperature curve:

Reflow welding



Solder type	Pb-Sn welding	Lead-free welding
Peak temperature	230℃～250℃	240℃～260℃
Peak time	3s～10s	3s～10s

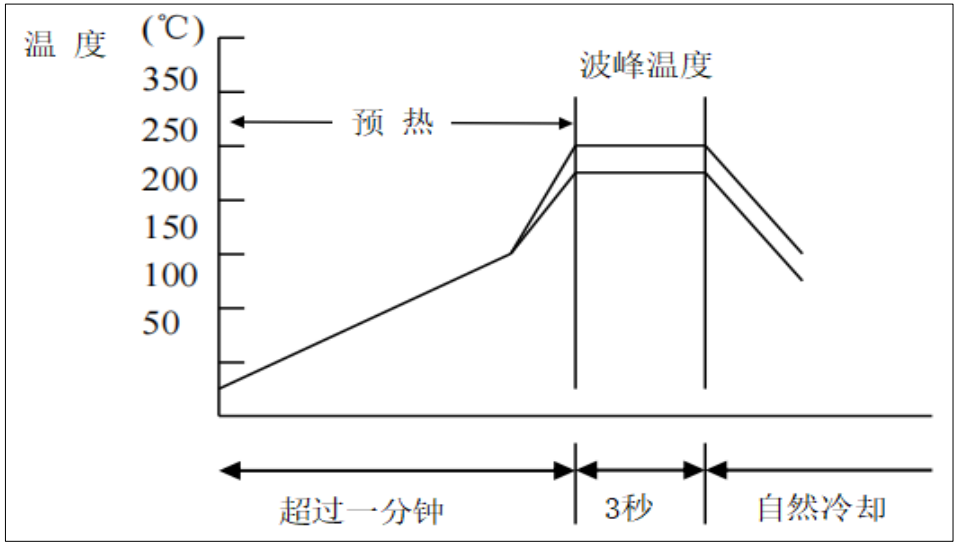
Wave soldering



Solder type	Pb-Sn welding	Lead-free welding
Peak temperature	230℃ ~ 260℃	240℃ ~ 270℃
Peak time	Within 3s	Within 3s

Hand welding

Manual welding is easy to cause micro-cracking or partial cracking of porcelain because of uneven local heating of capacitor. Therefore, the use of electric iron manual welding should be carefully operated, and the choice of the tip of the electric branding iron and tip temperature control should be more careful.



Preheat	Temperature	Power	Diameter	Time	Tin paste	Notice
▵≤130℃	≤350℃	≤20W	Recommended 1mm	≤3s	≤1/2 Capacitance height	Do not contact the iron head directly with the ceramic body

版本	修订日期	修订内容叙述
CIA-S-2023-01	2023/3/1	初始发行