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EYANG TECHNOLOGY DEVELOPMENT CO.,LTD

**Multilayer Ceramic Chip Capacitors for General Purpose
Model selection reference book**

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Mark: The Model selection reference book is for design reference only.

Multilayer Ceramic Chip Capacitors for General Purpose

1. Scope

This specification applies to Multilayer Ceramic Chip Capacitors (MLCC), specifically intended for general consumer electronics such as: smartphones/smartwatches, laptops, home appliances, wireless communication devices, among others.

1.1 Temperature Characteristics:

Class1 (Temperature Compensating Type): C0G

Class2 (High dielectric constant type): X7R\X7T\X7S\X6S\X6T\X5R

1.2 Size Code: A8A4(008004)\0105(01005)\0201\0402\0603\0805\1206\1210

1.3 Capacitance: 0.1 pF to 220 μF

1.4 Rated Voltage: DC 2.5V to 63V

2. Part Number System

C	0402	C0G	120	J	500	N	T	B
①	②	③	④	⑤	⑥	⑦	⑧	⑨
Series Code	Size Code	Temperature Characteristic	Nominal Capacitance	Capacitance Tolerance	Rated Voltage	Termination Type	Packaging Code	Thickness Code

① Series Code C - Multilayer Ceramic Chip Capacitors for General Purpose

② Size Code (Unit:mm)

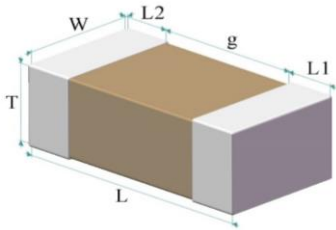


Fig.1 Structure & Dimension

Size Code	L	W	L1,L2	g	T	⑨ Thickness Code
A8A4	0.25 ± 0.013	0.125 ± 0.013	0.05 - 0.10	0.05 min	0.125 ± 0.013	1
0105	0.40 ± 0.02	0.20 ± 0.02	0.07 - 0.13	0.13 min	0.20 ± 0.02	Z
0105	0.40 ± 0.05	0.20 ± 0.05	0.07 - 0.13	0.13 min	0.20 ± 0.05	T
0201	0.60 ± 0.03	0.30 ± 0.03	0.10 - 0.20	0.20 min	0.30 ± 0.03	A
0201	0.60+0.05/ - 0.03	0.30+0.05/ - 0.03	0.10 - 0.20	0.20 min	0.30+0.05/ - 0.03	J
0201	0.60 ± 0.09	0.30 ± 0.09	0.10 - 0.20	0.20 min	0.30 ± 0.09	F

Size Code	L	W	L1,L2	g	T	◎ Thickness Code
0201	0.60+0.10/ - 0.03	0.30+0.10/ - 0.03	0.10 - 0.20	0.20 min	0.30+0.10/ - 0.03	X
0201	0.60 ± 0.09	0.30 ± 0.09	0.10 - 0.20	0.20 min	0.50 ± 0.05	B
0402	1.00+0.20/ - 0.05	0.50+0.20/ - 0.05	0.15 - 0.35	0.30 min	0.30 ± 0.03	A
0402	1.00 ± 0.05	0.50 ± 0.05	0.15 - 0.35	0.30 min	0.50 ± 0.05	B
0402	1.00+0.15/ - 0.05	0.50+0.15/ - 0.05	0.15 - 0.35	0.30 min	0.50+0.15/ - 0.05	N
0402	1.00+0.20/ - 0.05	0.50+0.20/ - 0.05	0.15 - 0.35	0.30 min	0.50+0.20/ - 0.05	C
0402	1.00+0.30/ - 0.05	0.50+0.30/ - 0.05	0.15 - 0.35	0.30 min	0.50+0.30/ - 0.05	U
0603	1.60+0.20/ - 0.10	0.80+0.20/ - 0.10	0.20 - 0.50	0.50 min	0.45 ± 0.05	S
0603	1.60 ± 0.10	0.80 ± 0.10	0.20 - 0.50	0.50 min	0.80 ± 0.10	D
0603	1.60+0.20/ - 0.10	0.80+0.20/ - 0.10	0.20 - 0.50	0.50 min	0.80+0.20/ - 0.10	K
0603	1.60 ± 0.25	0.80 ± 0.25	0.20 - 0.50	0.50 min	0.80 ± 0.25	4
0603	1.60+0.30/ - 0	0.80+0.30/ - 0	0.20 - 0.50	0.50 min	0.80+0.30/ - 0	W
0603	1.60 ± 0.30	0.80 ± 0.30	0.20 - 0.50	0.50 min	0.80 ± 0.30	6
0805	2.00 ± 0.10	1.25 ± 0.10	0.20 - 0.70	0.70 min	0.60 ± 0.10	C
0805	2.00 ± 0.20	1.25 ± 0.20	0.20 - 0.70	0.70 min	0.85 ± 0.15	K
0805	2.00 ± 0.20	1.25 ± 0.20	0.20 - 0.70	0.70 min	0.85+0.15/ - 0.35	Y
0805	2.00 ± 0.10	1.25 ± 0.10	0.20 - 0.70	0.70 min	1.25 ± 0.10	G
0805	2.00 ± 0.20	1.25 ± 0.20	0.20 - 0.70	0.70 min	1.25 ± 0.20	H
0805	2.00+0.25/ - 0.15	1.25+0.25/ - 0.15	0.20 - 0.70	0.50 min	1.25+0.25/ - 0.15	5
1206	3.20 ± 0.15	1.60 ± 0.15	0.30 - 0.80	1.50 min	0.85 ± 0.10	E
1206	3.20 ± 0.15	1.60 ± 0.15	0.30 - 0.80	1.50 min	0.85+0.15/ - 0.35	Y
1206	3.20 ± 0.20	1.60 ± 0.20	0.30 - 0.80	1.50 min	1.15 ± 0.15	O
1206	3.20 ± 0.20	1.60 ± 0.20	0.30 - 0.80	1.50 min	1.60 ± 0.20	L
1206	3.20 ± 0.30	1.60 ± 0.30	0.30 - 0.80	1.50 min	1.60 ± 0.30	P
1210	3.20 ± 0.30	2.50 ± 0.20	0.30 - 0.90	1.50 min	1.60 ± 0.20	L
1210	3.20 ± 0.30	2.50 ± 0.20	0.30 - 0.90	1.50 min	2.00 ± 0.20	Q
1210	3.20 ± 0.30	2.50 ± 0.20	0.30 - 0.90	1.50 min	2.50 ± 0.20	R
1210	3.20 ± 0.40	2.50 ± 0.30	0.30 - 0.90	1.50 min	2.50 ± 0.30	3

③ Temperature Characteristics

Temperature Characteristics	Operating Temp. Range	Temperature Characteristics		
		Temp. coeff. or Cap. Change	Temp. Range	Ref. Temp.
C0G	- 55 °C - 125 °C	0 ± 30 ppm/ °C	25 °C - 125 °C	25 °C
X7R	- 55 °C - 125 °C	± 15%	- 55 °C - 125 °C	25 °C
X7S	- 55 °C - 125 °C	± 22%	- 55 °C - 125 °C	25 °C
X7T	- 55 °C - 125 °C	+22%/ - 33%	- 55 °C - 125 °C	25 °C
X6S	- 55 °C - 105 °C	± 22%	- 55 °C - 105 °C	25 °C
X6T	- 55 °C - 105 °C	+22%/ - 33%	- 55 °C - 105 °C	25 °C
X5R	- 55 °C - 85 °C	± 15%	- 55 °C - 85 °C	25 °C

④ Nominal Capacitance （Unit: pF） $1\text{pF}=10^{-3}\text{nF}=10^{-6}\mu\text{F}$

Example :R47=0.47 pF ,2R2=2.2 pF ,120=12×10⁰=12pF, 104=10×10⁴=100000 pF=100 nF,

Class1(C0G) Capacitance Step in E24 series. Capacitance: See Table3 - 1

Class2(X7R\X7T\X7S\X6S\X6T\X5R) Capacitance Step in E12 series. Capacitance : See Table3 - 2

⑤ Capacitance Tolerance

Code	Capacitance Tolerance	Code	Capacitance Tolerance
P	± 0.02pF	K	± 10%
A	± 0.05pF	L	± 15%
B	± 0.1pF	M	± 20%
C	± 0.25pF	N	± 30%
D	± 0.5pF	X	± 40%
F	± 1%	S	+50%/ - 20%
G	± 2%	Z	+80%/ - 20%
J	± 5%	Y	+150%/ - 20%

⑥ Rated Voltage

Code	Voltage Values	Code	Voltage Values
2R5	2.5V	250	25V
4R0	4.0V	350	35V
6R3	6.3V	500	50V
100	10V	630	63V
160	16V		

⑦ Termination Type

Code	Terminal Electrodes	Plating Material
N	Cu	Ni/Sn

⑧ Packaging Code See Table 4.

Table 3-1 Capacitance Table (Class1-C0G)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
1	C	C0G	A8A4	25V	1	0.2pF~100pF
2	C	C0G	A8A4	16V	1	0.2pF~100pF
3	C	C0G	0105	50V	Z	0.2pF~220pF
4	C	C0G	0105	25V	Z	0.2pF~220pF
5	C	C0G	0105	16V	Z	0.2pF~220pF
6	C	C0G	0105	10V	Z	0.2pF~220pF
7	C	C0G	0201	50V	A	0.1pF~1nF
8	C	C0G	0201	25V	A	0.1pF~1nF
9	C	C0G	0201	16V	A	0.1pF~1nF
10	C	C0G	0402	50V	B	0.1pF ~ 4.7nF
11	C	C0G	0402	50V	N	2.4nF ~ 4.7nF
12	C	C0G	0402	25V	B	0.1pF ~ 4.7nF
13	C	C0G	0402	25V	N	2.4nF ~ 10nF
14	C	C0G	0402	16V	N	2.4nF ~ 10nF
15	C	C0G	0402	16V	B	0.1pF ~ 4.7nF
16	C	C0G	0603	50V	D	1pF~10nF
17	C	C0G	0603	25V	D	1pF~10nF
18	C	C0G	0603	16V	D	1pF~10nF
19	C	C0G	0805	50V	C	10pF~33nF
20	C	C0G	0805	50V	K	4.7nF~39nF
21	C	C0G	0805	50V	G	18nF ~ 47nF
22	C	C0G	0805	50V	H	18nF ~ 47nF
23	C	C0G	0805	25V	C	10pF~33nF
24	C	C0G	0805	25V	K	4.7nF~39nF
25	C	C0G	0805	25V	G	18nF ~ 68nF
26	C	C0G	0805	25V	H	18nF ~ 68nF
27	C	C0G	1206	50V	E	10nF~100nF
28	C	C0G	1206	50V	O	47nF

Table 3-1 Capacitance Table (Class1-C0G)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
29	C	C0G	1206	50V	L	56nF~220nF
30	C	C0G	1206	25V	E	10nF~100nF
31	C	C0G	1206	25V	O	47nF
32	C	C0G	1206	25V	L	56nF~220nF
33	C	C0G	1206	16V	E	10nF~100nF
34	C	C0G	1206	16V	O	47nF
35	C	C0G	1206	16V	L	56nF~220nF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
1	C	X7R	0105	50V	Z	51pF~330pF
2	C	X7R	0105	25V	Z	51pF~2.2nF
3	C	X7R	0105	16V	Z	51pF~2.2nF
4	C	X7R	0105	10V	Z	51pF~2.2nF
5	C	X7R	0201	50V	A	100pF~10nF
6	C	X7R	0201	25V	A	100pF~10nF
7	C	X7R	0201	16V	A	100pF~22nF
8	C	X7R	0201	10V	A	100pF~22nF
9	C	X7R	0201	6.3V	A	100pF~22nF
10	C	X7R	0402	50V	B	100pF~25nF
11	C	X7R	0402	50V	B	27nF~100nF
12	C	X7R	0402	50V	N	33nF~100nF
13	C	X7R	0402	50V	C	100nF
14	C	X7R	0402	25V	B	100pF~25nF
15	C	X7R	0402	25V	B	27nF~82nF
16	C	X7R	0402	25V	B	100nF~220nF
17	C	X7R	0402	25V	N	100nF
18	C	X7R	0402	25V	N	120nF~220nF
19	C	X7R	0402	25V	N	330nF~470nF
20	C	X7R	0402	16V	B	100pF~25nF
21	C	X7R	0402	16V	B	27nF~82nF
22	C	X7R	0402	16V	B	100nF~220nF
23	C	X7R	0402	16V	N	100nF
24	C	X7R	0402	16V	N	120nF~470nF
25	C	X7R	0402	10V	B	100pF~25nF
26	C	X7R	0402	10V	B	27nF~82nF
27	C	X7R	0402	10V	B	100nF
28	C	X7R	0402	10V	B	120nF~220nF
29	C	X7R	0402	10V	N	100nF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
30	C	X7R	0402	10V	N	120nF~470nF
31	C	X7R	0402	10V	C	2.2μF
32	C	X7R	0402	6.3V	B	100pF~25nF
33	C	X7R	0402	6.3V	B	27nF~82nF
34	C	X7R	0402	6.3V	B	100nF~220nF
35	C	X7R	0402	6.3V	B	1μF
36	C	X7R	0402	6.3V	N	100nF
37	C	X7R	0402	6.3V	N	120nF~470nF
38	C	X7R	0402	6.3V	N	1μF
39	C	X7R	0603	50V	D	220pF~25nF
40	C	X7R	0603	50V	D	27nF~100nF
41	C	X7R	0603	50V	D	120nF~1μF
42	C	X7R	0603	50V	K	220pF~25nF
43	C	X7R	0603	50V	K	27nF~100nF
44	C	X7R	0603	50V	K	120nF~1μF
45	C	X7R	0603	35V	D	1μF
46	C	X7R	0603	35V	K	1μF
47	C	X7R	0603	25V	D	10nF~25nF
48	C	X7R	0603	25V	D	27nF~100nF
49	C	X7R	0603	25V	D	120nF~1μF
50	C	X7R	0603	25V	K	100nF~470nF
51	C	X7R	0603	25V	K	1μF
52	C	X7R	0603	16V	D	100nF~1μF
53	C	X7R	0603	16V	K	1μF
54	C	X7R	0603	16V	K	2.2μF
55	C	X7R	0603	10V	D	100nF~1μF
56	C	X7R	0603	10V	D	2.2μF
57	C	X7R	0603	10V	K	2.2μF
58	C	X7R	0603	6.3V	D	100nF~1μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
59	C	X7R	0603	6.3V	D	2.2μF
60	C	X7R	0603	6.3V	K	1μF
61	C	X7R	0603	6.3V	K	2.2μF
62	C	X7R	0603	6.3V	K	4.7μF
63	C	X7R	0603	6.3V	K	10μF
64	C	X7R	0805	50V	Y	220pF~25nF
65	C	X7R	0805	50V	Y	27nF~100nF
66	C	X7R	0805	50V	H	100nF
67	C	X7R	0805	50V	H	120nF~1μF
68	C	X7R	0805	50V	H	2.2μF
69	C	X7R	0805	35V	H	4.7μF
70	C	X7R	0805	25V	H	220nF~2.2μF
71	C	X7R	0805	25V	H	4.7μF
72	C	X7R	0805	16V	H	1μF
73	C	X7R	0805	16V	H	2.2μF
74	C	X7R	0805	16V	H	4.7μF
75	C	X7R	0805	16V	H	10μF
76	C	X7R	0805	10V	H	2.2μF~4.7μF
77	C	X7R	0805	10V	H	10μF
78	C	X7R	0805	6.3V	H	10μF
79	C	X7R	1206	63V	L	1μF
80	C	X7R	1206	50V	Y	100nF
81	C	X7R	1206	50V	L	100nF~1μF
82	C	X7R	1206	50V	L	2.2μF~4.7μF
83	C	X7R	1206	35V	L	10μF
84	C	X7R	1206	25V	L	2.2μF
85	C	X7R	1206	25V	L	4.7μF
86	C	X7R	1206	25V	L	10μF
87	C	X7R	1206	16V	O	1μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
88	C	X7R	1206	16V	L	1μF
89	C	X7R	1206	16V	L	2.2μF~10μF
90	C	X7R	1206	6.3V	L	22μF
91	C	X7R	1210	50V	R	4.7μF
92	C	X7R	1210	50V	3	10μF
93	C	X7R	1210	25V	R	22μF
94	C	X7R	1210	25V	3	10μF
95	C	X7R	1210	16V	R	22μF
96	C	X7R	1210	10V	R	47μF
97	C	X7R	1210	6.3V	R	47μF
98	C	X5R	A8A4	10V	1	100pF~680pF
99	C	X5R	A8A4	6.3V	1	1nF~10nF
100	C	X5R	A8A4	6.3V	1	22nF
101	C	X5R	A8A4	4V	1	1nF~10nF
102	C	X5R	A8A4	4V	1	22nF
103	C	X5R	0105	16V	Z	51pF~1nF
104	C	X5R	0105	16V	Z	1.5nF~10nF
105	C	X5R	0105	10V	Z	51pF~1nF
106	C	X5R	0105	10V	Z	1.5nF~25nF
107	C	X5R	0105	10V	Z	27nF~100nF
108	C	X5R	0105	6.3V	Z	150pF~1nF
109	C	X5R	0105	6.3V	Z	1.5nF~25nF
110	C	X5R	0105	6.3V	Z	27nF~100nF
111	C	X5R	0105	6.3V	Z	220nF
112	C	X5R	0105	6.3V	Z	470nF
113	C	X5R	0105	6.3V	T	470nF
114	C	X5R	0105	6.3V	T	1μF
115	C	X5R	0105	4V	Z	15nF~25nF
116	C	X5R	0105	4V	Z	27nF~100nF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
117	C	X5R	0105	4V	Z	220nF
118	C	X5R	0105	4V	Z	470nF
119	C	X5R	0105	2.5V	Z	220nF
120	C	X5R	0201	50V	A	100pF~3.3nF
121	C	X5R	0201	50V	A	3.9nF~10nF
122	C	X5R	0201	50V	A	12nF~25nF
123	C	X5R	0201	35V	X	18nF~25nF
124	C	X5R	0201	35V	F	18nF~25nF
125	C	X5R	0201	35V	F	27nF~100nF
126	C	X5R	0201	35V	X	27nF~100nF
127	C	X5R	0201	25V	A	100pF~3.3nF
128	C	X5R	0201	25V	A	3.9nF~10nF
129	C	X5R	0201	25V	A	12nF~25nF
130	C	X5R	0201	25V	A	27nF~100nF
131	C	X5R	0201	25V	A	220nF
132	C	X5R	0201	25V	J	100nF~220nF
133	C	X5R	0201	25V	F	100nF~470nF
134	C	X5R	0201	25V	X	100nF~470nF
135	C	X5R	0201	16V	A	150pF~3.3nF
136	C	X5R	0201	16V	A	3.9nF~10nF
137	C	X5R	0201	16V	A	12nF~25nF
138	C	X5R	0201	16V	A	27nF~150nF
139	C	X5R	0201	16V	A	220nF
140	C	X5R	0201	16V	J	100nF~220nF
141	C	X5R	0201	16V	X	220nF~820nF
142	C	X5R	0201	16V	F	220nF~820nF
143	C	X5R	0201	16V	X	1μF
144	C	X5R	0201	10V	A	150pF~3.3nF
145	C	X5R	0201	10V	A	3.9nF~10nF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
146	C	X5R	0201	10V	A	12nF~25nF
147	C	X5R	0201	10V	A	27nF~220nF
148	C	X5R	0201	10V	J	100nF~470nF
149	C	X5R	0201	10V	J	1μF
150	C	X5R	0201	10V	F	1μF
151	C	X5R	0201	10V	F	2.2μF
152	C	X5R	0201	10V	X	330nF~820nF
153	C	X5R	0201	10V	F	330nF~820nF
154	C	X5R	0201	10V	X	1μF
155	C	X5R	0201	10V	X	2.2μF
156	C	X5R	0201	6.3V	A	150pF~3.3nF
157	C	X5R	0201	6.3V	A	3.9nF~10nF
158	C	X5R	0201	6.3V	A	12nF~25nF
159	C	X5R	0201	6.3V	A	27nF~220nF
160	C	X5R	0201	6.3V	A	330nF~470nF
161	C	X5R	0201	6.3V	A	2.2μF
162	C	X5R	0201	6.3V	J	100nF~820nF
163	C	X5R	0201	6.3V	J	1μF
164	C	X5R	0201	6.3V	J	2.2μF
165	C	X5R	0201	6.3V	F	680nF~820nF
166	C	X5R	0201	6.3V	F	1μF
167	C	X5R	0201	6.3V	F	2.2μF
168	C	X5R	0201	6.3V	X	680nF~820nF
169	C	X5R	0201	6.3V	X	1μF
170	C	X5R	0201	6.3V	X	2.2μF
171	C	X5R	0201	6.3V	B	4.7μF
172	C	X5R	0201	4V	J	470nF~680nF
173	C	X5R	0201	4V	J	1μF
174	C	X5R	0402	50V	B	100pF~25nF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
175	C	X5R	0402	50V	B	27nF~47nF
176	C	X5R	0402	50V	B	56nF~330nF
177	C	X5R	0402	50V	N	27nF~47nF
178	C	X5R	0402	50V	N	220nF~470nF
179	C	X5R	0402	50V	C	56nF~100nF
180	C	X5R	0402	50V	C	1μF
181	C	X5R	0402	35V	N	1μF
182	C	X5R	0402	35V	C	56nF~100nF
183	C	X5R	0402	35V	C	1μF
184	C	X5R	0402	25V	B	120pF~25nF
185	C	X5R	0402	25V	B	27nF~47nF
186	C	X5R	0402	25V	B	56nF~470nF
187	C	X5R	0402	25V	B	1μF
188	C	X5R	0402	25V	N	82nF~820nF
189	C	X5R	0402	25V	N	1μF
190	C	X5R	0402	25V	C	2.2μF
191	C	X5R	0402	25V	C	4.7μF
192	C	X5R	0402	25V	N	2.2μF
193	C	X5R	0402	16V	B	120pF~25nF
194	C	X5R	0402	16V	B	27nF~47nF
195	C	X5R	0402	16V	B	56nF~470nF
196	C	X5R	0402	16V	B	1μF
197	C	X5R	0402	16V	N	100nF~1μF
198	C	X5R	0402	16V	N	2.2μF
199	C	X5R	0402	16V	C	2.2μF
200	C	X5R	0402	16V	C	4.7μF
201	C	X5R	0402	16V	C	680nF
202	C	X5R	0402	10V	B	120pF~25nF
203	C	X5R	0402	10V	B	27nF~47nF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
204	C	X5R	0402	10V	B	56nF~820nF
205	C	X5R	0402	10V	B	1μF
206	C	X5R	0402	10V	B	2.2μF
207	C	X5R	0402	10V	N	100nF~820nF
208	C	X5R	0402	10V	N	2.2μF
209	C	X5R	0402	10V	N	4.7μF
210	C	X5R	0402	10V	C	1μF~2.2μF
211	C	X5R	0402	10V	C	4.7μF
212	C	X5R	0402	10V	C	10μF
213	C	X5R	0402	10V	U	10μF
214	C	X5R	0402	10V	U	22μF
215	C	X5R	0402	6.3V	A	4.7μF
216	C	X5R	0402	6.3V	B	120pF~25nF
217	C	X5R	0402	6.3V	B	27nF~47nF
218	C	X5R	0402	6.3V	B	56nF~1μF
219	C	X5R	0402	6.3V	B	2.2μF
220	C	X5R	0402	6.3V	N	100nF~2.2μF
221	C	X5R	0402	6.3V	N	4.7μF
222	C	X5R	0402	6.3V	C	1μF
223	C	X5R	0402	6.3V	C	2.2μF~4.7μF
224	C	X5R	0402	6.3V	C	10μF
225	C	X5R	0402	6.3V	C	22μF
226	C	X5R	0402	6.3V	U	10μF
227	C	X5R	0402	6.3V	U	22μF
228	C	X5R	0402	4V	C	10μF
229	C	X5R	0402	4V	C	22μF
230	C	X5R	0402	4V	U	10μF
231	C	X5R	0402	2.5V	C	22μF
232	C	X5R	0402	2.5V	U	22μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
233	C	X5R	0603	50V	D	220pF~25nF
234	C	X5R	0603	50V	D	27nF~1μF
235	C	X5R	0603	50V	D	2.2μF
236	C	X5R	0603	50V	K	2.2μF
237	C	X5R	0603	35V	D	680nF~1μF
238	C	X5R	0603	35V	K	4.7μF
239	C	X5R	0603	35V	K	10μF
240	C	X5R	0603	25V	S	680nF~2.2μF
241	C	X5R	0603	25V	D	100nF~3.9μF
242	C	X5R	0603	25V	K	4.7μF
243	C	X5R	0603	25V	K	10μF
244	C	X5R	0603	16V	S	680nF~2.2μF
245	C	X5R	0603	16V	D	220nF~3.9μF
246	C	X5R	0603	16V	D	10μF
247	C	X5R	0603	16V	K	4.7μF
248	C	X5R	0603	16V	K	10μF
249	C	X5R	0603	16V	6	22μF
250	C	X5R	0603	10V	S	4.7μF
251	C	X5R	0603	10V	D	680nF~4.7μF
252	C	X5R	0603	10V	K	3.3μF
253	C	X5R	0603	10V	K	5.6μF
254	C	X5R	0603	10V	K	10μF
255	C	X5R	0603	10V	K	22μF
256	C	X5R	0603	10V	4	22μF
257	C	X5R	0603	10V	W	22μF
258	C	X5R	0603	6.3V	D	1μF
259	C	X5R	0603	6.3V	D	2.2μF~10μF
260	C	X5R	0603	6.3V	K	4.7μF
261	C	X5R	0603	6.3V	K	10μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
262	C	X5R	0603	6.3V	K	22μF
263	C	X5R	0603	6.3V	K	47μF
264	C	X5R	0603	6.3V	W	22μF
265	C	X5R	0603	4V	K	10μF
266	C	X5R	0603	4V	K	22μF~47μF
267	C	X5R	0805	50V	Y	220pF~25nF
268	C	X5R	0805	50V	Y	27nF~100nF
269	C	X5R	0805	50V	Y	120nF~2.2μF
270	C	X5R	0805	50V	H	100nF~4.7μF
271	C	X5R	0805	50V	H	10μF
272	C	X5R	0805	35V	Y	680nF~2.2μF
273	C	X5R	0805	35V	H	680nF~4.7μF
274	C	X5R	0805	35V	H	10μF
275	C	X5R	0805	25V	Y	680nF~10μF
276	C	X5R	0805	25V	H	220nF~4.7μF
277	C	X5R	0805	25V	H	10μF
278	C	X5R	0805	25V	H	22μF
279	C	X5R	0805	16V	Y	1μF~10μF
280	C	X5R	0805	16V	Y	22μF
281	C	X5R	0805	16V	H	1μF~10μF
282	C	X5R	0805	16V	H	22μF
283	C	X5R	0805	10V	Y	2.2μF~10μF
284	C	X5R	0805	10V	Y	22μF
285	C	X5R	0805	10V	H	2.2μF~10μF
286	C	X5R	0805	10V	H	22μF
287	C	X5R	0805	10V	H	47μF
288	C	X5R	0805	6.3V	Y	2.2μF~10μF
289	C	X5R	0805	6.3V	Y	22μF~47μF
290	C	X5R	0805	6.3V	H	2.2μF~10μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
291	C	X5R	0805	6.3V	H	22μF~100μF
292	C	X5R	0805	4V	Y	22μF
293	C	X5R	0805	4V	Y	47μF
294	C	X5R	0805	4V	H	47μF~100μF
295	C	X5R	1206	50V	Y	680nF~4.7μF
296	C	X5R	1206	50V	L	680nF~10μF
297	C	X5R	1206	35V	Y	2.2μF
298	C	X5R	1206	35V	Y	4.7μF
299	C	X5R	1206	35V	L	22μF
300	C	X5R	1206	25V	P	47μF
301	C	X5R	1206	25V	L	4.7μF~10μF
302	C	X5R	1206	25V	L	22μF
303	C	X5R	1206	16V	Y	4.7μF~10μF
304	C	X5R	1206	16V	Y	22μF
305	C	X5R	1206	16V	L	4.7μF~10μF
306	C	X5R	1206	16V	L	22μF
307	C	X5R	1206	16V	P	47μF
308	C	X5R	1206	10V	O	22μF
309	C	X5R	1206	10V	L	22μF~47μF
310	C	X5R	1206	10V	P	100μF
311	C	X5R	1206	6.3V	O	22μF~47μF
312	C	X5R	1206	6.3V	L	22μF~100μF
313	C	X5R	1206	6.3V	P	220μF
314	C	X5R	1206	4V	P	220μF
315	C	X5R	1210	50V	R	10μF
316	C	X5R	1210	25V	L	680nF~10μF
317	C	X5R	1210	25V	Q	680nF~10μF
318	C	X5R	1210	25V	R	22μF
319	C	X5R	1210	25V	3	47μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
320	C	X5R	1210	16V	L	4.7μF~10μF
321	C	X5R	1210	16V	L	22μF
322	C	X5R	1210	16V	Q	4.7μF~10μF
323	C	X5R	1210	16V	Q	22μF
324	C	X5R	1210	16V	R	4.7μF~10μF
325	C	X5R	1210	16V	R	22μF
326	C	X5R	1210	16V	R	47μF
327	C	X5R	1210	16V	3	100μF
328	C	X5R	1210	10V	Q	680nF~10μF
329	C	X5R	1210	10V	R	22μF
330	C	X5R	1210	10V	R	47μF
331	C	X5R	1210	10V	3	100μF
332	C	X5R	1210	6.3V	3	100μF
333	C	X5R	1210	6.3V	3	220μF
334	C	X6S	0105	10V	Z	10nF~22nF
335	C	X6S	0105	6.3V	Z	100nF
336	C	X6S	0105	4V	Z	10nF
337	C	X6S	0201	25V	A	1nF~22nF
338	C	X6S	0201	25V	X	100nF
339	C	X6S	0201	25V	F	100nF
340	C	X6S	0201	16V	A	1nF~22nF
341	C	X6S	0201	16V	J	100nF
342	C	X6S	0201	10V	A	1.8nF~25nF
343	C	X6S	0201	10V	A	27nF~100nF
344	C	X6S	0201	10V	J	100nF~470nF
345	C	X6S	0201	10V	X	220nF~470nF
346	C	X6S	0201	10V	F	220nF~470nF
347	C	X6S	0201	10V	F	1μF
348	C	X6S	0201	10V	X	1μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
349	C	X6S	0201	6.3V	A	10nF~25nF
350	C	X6S	0201	6.3V	A	27nF~100nF
351	C	X6S	0201	6.3V	J	100nF~470nF
352	C	X6S	0201	6.3V	X	220nF~470nF
353	C	X6S	0201	6.3V	F	220nF~470nF
354	C	X6S	0201	6.3V	X	1μF
355	C	X6S	0201	6.3V	X	2.2μF
356	C	X6S	0201	6.3V	F	1μF
357	C	X6S	0201	4V	A	12nF~25nF
358	C	X6S	0201	4V	A	27nF~220nF
359	C	X6S	0201	4V	J	220nF~470nF
360	C	X6S	0201	4V	J	1μF
361	C	X6S	0201	4V	X	470nF~1μF
362	C	X6S	0201	4V	F	470nF~1μF
363	C	X6S	0201	4V	X	2.2μF
364	C	X6S	0201	2.5V	X	1μF
365	C	X6S	0201	2.5V	F	1μF
366	C	X6S	0402	50V	C	22nF~25nF
367	C	X6S	0402	50V	C	27nF~100nF
368	C	X6S	0402	35V	C	100nF
369	C	X6S	0402	25V	B	33nF~100nF
370	C	X6S	0402	25V	N	330nF
371	C	X6S	0402	25V	N	1μF
372	C	X6S	0402	25V	C	47nF~470nF
373	C	X6S	0402	25V	C	1μF
374	C	X6S	0402	25V	C	2.2μF
375	C	X6S	0402	16V	B	1μF
376	C	X6S	0402	16V	N	100nF
377	C	X6S	0402	16V	C	220nF~2.2μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
378	C	X6S	0402	10V	B	1μF
379	C	X6S	0402	10V	N	100nF~470nF
380	C	X6S	0402	10V	N	1μF~2.2μF
381	C	X6S	0402	10V	C	1μF~2.2μF
382	C	X6S	0402	10V	C	4.7μF
383	C	X6S	0402	6.3V	B	100nF~470nF
384	C	X6S	0402	6.3V	B	1μF
385	C	X6S	0402	6.3V	B	2.2μF
386	C	X6S	0402	6.3V	N	100nF~470nF
387	C	X6S	0402	6.3V	N	1μF
388	C	X6S	0402	6.3V	N	2.2μF
389	C	X6S	0402	6.3V	C	2.2μF~4.7μF
390	C	X6S	0402	6.3V	C	10μF
391	C	X6S	0402	4V	B	1μF
392	C	X6S	0402	4V	B	2.2μF
393	C	X6S	0402	4V	U	22μF
394	C	X6S	0402	4V	C	4.7μF
395	C	X6S	0402	4V	C	10μF
396	C	X6S	0402	2.5V	C	10μF
397	C	X6S	0603	35V	D	100nF~1μF
398	C	X6S	0603	35V	K	2.2μF
399	C	X6S	0603	25V	D	1μF
400	C	X6S	0603	25V	K	2.2μF~4.7μF
401	C	X6S	0603	16V	D	1μF~2.2μF
402	C	X6S	0603	16V	K	2.2μF~10μF
403	C	X6S	0603	10V	D	1μF~2.2μF
404	C	X6S	0603	10V	K	4.7μF~10μF
405	C	X6S	0603	10V	K	22μF
406	C	X6S	0603	6.3V	D	2.2μF~4.7μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
407	C	X6S	0603	6.3V	K	4.7μF~10μF
408	C	X6S	0603	6.3V	K	22μF
409	C	X6S	0603	6.3V	W	22μF
410	C	X6S	0603	4V	D	4.7μF
411	C	X6S	0603	4V	K	4.7μF~10μF
412	C	X6S	0603	4V	K	22μF
413	C	X6S	0603	4V	W	22μF
414	C	X6S	0603	2.5V	K	47μF
415	C	X6S	0805	50V	H	1μF
416	C	X6S	0805	35V	H	2.2μF~4.7μF
417	C	X6S	0805	35V	H	10μF
418	C	X6S	0805	25V	Y	1μF
419	C	X6S	0805	25V	H	1μF~4.7μF
420	C	X6S	0805	25V	H	10μF
421	C	X6S	0805	16V	H	1μF~4.7μF
422	C	X6S	0805	16V	H	10μF
423	C	X6S	0805	16V	H	22μF
424	C	X6S	0805	10V	H	1μF~10μF
425	C	X6S	0805	10V	H	22μF
426	C	X6S	0805	6.3V	Y	2.2μF~10μF
427	C	X6S	0805	6.3V	H	2.2μF~10μF
428	C	X6S	0805	6.3V	H	47μF
429	C	X6S	0805	6.3V	H	22μF
430	C	X6S	0805	4V	Y	10μF
431	C	X6S	0805	4V	Y	22μF~47μF
432	C	X6S	0805	4V	H	10μF
433	C	X6S	0805	4V	H	22μF
434	C	X6S	0805	4V	H	47μF
435	C	X6S	0805	4V	H	100μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
436	C	X6S	0805	2.5V	H	100μF
437	C	X6S	1206	50V	L	1μF~4.7μF
438	C	X6S	1206	35V	L	4.7μF~10μF
439	C	X6S	1206	25V	L	1μF~10μF
440	C	X6S	1206	25V	L	22μF
441	C	X6S	1206	16V	L	10μF
442	C	X6S	1206	16V	L	22μF
443	C	X6S	1206	10V	Y	1μF~10μF
444	C	X6S	1206	10V	Y	22μF
445	C	X6S	1206	10V	O	1μF~10μF
446	C	X6S	1206	10V	O	22μF
447	C	X6S	1206	10V	L	4.7μF~10μF
448	C	X6S	1206	10V	L	22μF
449	C	X6S	1206	10V	P	47μF
450	C	X6S	1206	6.3V	L	47μF
451	C	X6S	1206	6.3V	P	100μF
452	C	X6S	1206	4V	L	22μF~100μF
453	C	X6S	1210	50V	R	10μF
454	C	X6S	1210	25V	R	10μF
455	C	X6S	1210	25V	R	22μF
456	C	X6S	1210	16V	R	22μF
457	C	X6S	1210	16V	3	47μF
458	C	X6S	1210	10V	R	10μF
459	C	X6S	1210	10V	R	22μF~47μF
460	C	X6S	1210	6.3V	3	100μF
461	C	X6S	1210	4V	3	100μF
462	C	X6T	0105	6.3V	Z	100nF
463	C	X6T	0105	4V	Z	100nF
464	C	X6T	0105	2.5V	Z	220nF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
465	C	X6T	0201	25V	X	100nF
466	C	X6T	0201	16V	J	100nF
467	C	X6T	0201	10V	A	10nF~25nF
468	C	X6T	0201	10V	A	27nF~100nF
469	C	X6T	0201	10V	J	220nF
470	C	X6T	0201	10V	X	220nF
471	C	X6T	0201	6.3V	A	10nF~25nF
472	C	X6T	0201	6.3V	A	27nF~100nF
473	C	X6T	0201	6.3V	J	220nF
474	C	X6T	0201	6.3V	X	470nF~1μF
475	C	X6T	0201	4V	A	47nF~100nF
476	C	X6T	0201	4V	J	220nF~470nF
477	C	X6T	0201	4V	X	1μF
478	C	X6T	0201	4V	X	2.2μF
479	C	X6T	0402	50V	C	100nF
480	C	X6T	0402	35V	C	100nF
481	C	X6T	0402	25V	C	100nF~1μF
482	C	X6T	0402	16V	N	100nF~180nF
483	C	X6T	0402	16V	C	220nF~2.2μF
484	C	X6T	0402	10V	B	100nF~150nF
485	C	X6T	0402	10V	N	180nF~2.2μF
486	C	X6T	0402	10V	C	4.7μF
487	C	X6T	0402	6.3V	B	1μF
488	C	X6T	0402	6.3V	B	2.2μF
489	C	X6T	0402	6.3V	N	100nF~470nF
490	C	X6T	0402	6.3V	N	2.2μF
491	C	X6T	0402	6.3V	C	4.7μF~10μF
492	C	X6T	0402	4V	B	220nF~1μF
493	C	X6T	0402	4V	B	2.2μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
494	C	X6T	0402	4V	C	4.7μF~10μF
495	C	X6T	0402	2.5V	C	10μF
496	C	X6T	0402	2.5V	U	10μF
497	C	X6T	0603	35V	D	100nF~1μF
498	C	X6T	0603	35V	K	2.2μF
499	C	X6T	0603	25V	D	1μF
500	C	X6T	0603	25V	K	2.2μF~4.7μF
501	C	X6T	0603	16V	D	220nF~2.2μF
502	C	X6T	0603	16V	K	4.7μF~10μF
503	C	X6T	0603	10V	D	220nF~2.2μF
504	C	X6T	0603	10V	K	4.7μF~10μF
505	C	X6T	0603	6.3V	D	220nF~1μF
506	C	X6T	0603	6.3V	D	2.2μF~4.7μF
507	C	X6T	0603	6.3V	K	10μF
508	C	X6T	0603	6.3V	K	22μF
509	C	X6T	0603	6.3V	W	22μF
510	C	X6T	0603	4V	D	2.2μF~4.7μF
511	C	X6T	0603	4V	K	10μF
512	C	X6T	0603	4V	K	22μF
513	C	X6T	0603	2.5V	K	47μF
514	C	X6T	0805	50V	H	1μF
515	C	X6T	0805	35V	H	2.2μF~4.7μF
516	C	X6T	0805	25V	Y	330nF~2.2μF
517	C	X6T	0805	25V	H	330nF~10μF
518	C	X6T	0805	16V	Y	1μF~10μF
519	C	X6T	0805	16V	H	1μF~10μF
520	C	X6T	0805	16V	H	22μF
521	C	X6T	0805	10V	Y	1μF~10μF
522	C	X6T	0805	10V	H	1μF~10μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
523	C	X6T	0805	10V	H	22μF
524	C	X6T	0805	6.3V	Y	2.2μF~10μF
525	C	X6T	0805	6.3V	Y	22μF
526	C	X6T	0805	6.3V	H	2.2μF~10μF
527	C	X6T	0805	6.3V	H	22μF
528	C	X6T	0805	4V	Y	4.7μF~10μF
529	C	X6T	0805	4V	Y	22μF~47μF
530	C	X6T	0805	4V	H	4.7μF~10μF
531	C	X6T	0805	4V	H	22μF~47μF
532	C	X6T	1206	50V	L	1μF~4.7μF
533	C	X6T	1206	35V	L	4.7μF~10μF
534	C	X6T	1206	25V	L	1μF~10μF
535	C	X6T	1206	16V	L	1μF~10μF
536	C	X6T	1206	10V	Y	1μF~10μF
537	C	X6T	1206	10V	Y	22μF
538	C	X6T	1206	10V	O	1μF~10μF
539	C	X6T	1206	10V	O	22μF
540	C	X6T	1206	10V	L	2.2μF~10μF
541	C	X6T	1206	10V	L	22μF
542	C	X6T	1206	6.3V	L	4.7μF~10μF
543	C	X6T	1206	6.3V	L	22μF~47μF
544	C	X6T	1206	6.3V	P	100μF
545	C	X6T	1206	4V	L	10μF
546	C	X6T	1206	4V	L	22μF~100μF
547	C	X6T	1210	50V	R	10μF
548	C	X7S	0105	16V	Z	2.2nF~6.8nF
549	C	X7S	0105	10V	Z	2.2nF~22nF
550	C	X7S	0105	6.3V	Z	2.2nF~22nF
551	C	X7S	0201	25V	A	10nF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
552	C	X7S	0201	25V	A	22nF~47nF
553	C	X7S	0201	16V	X	100nF
554	C	X7S	0201	16V	F	100nF
555	C	X7S	0201	10V	A	22nF~100nF
556	C	X7S	0201	10V	J	100nF
557	C	X7S	0201	6.3V	A	22nF~100nF
558	C	X7S	0201	6.3V	J	100nF
559	C	X7S	0402	50V	B	100nF
560	C	X7S	0402	25V	N	470nF
561	C	X7S	0402	16V	N	470nF
562	C	X7S	0402	16V	N	1μF
563	C	X7S	0402	16V	C	1μF
564	C	X7S	0402	10V	B	33nF~47nF
565	C	X7S	0402	10V	B	1μF
566	C	X7S	0402	10V	N	470nF
567	C	X7S	0402	10V	C	2.2μF
568	C	X7S	0402	6.3V	B	1μF
569	C	X7S	0402	6.3V	N	1μF
570	C	X7S	0402	6.3V	N	2.2μF
571	C	X7S	0402	6.3V	C	1μF
572	C	X7S	0402	6.3V	C	2.2μF
573	C	X7S	0402	4V	B	1μF
574	C	X7S	0603	25V	K	1μF
575	C	X7S	0603	25V	K	2.2μF
576	C	X7S	0603	25V	D	2.2μF
577	C	X7S	0603	16V	D	1μF
578	C	X7S	0603	16V	D	2.2μF
579	C	X7S	0603	16V	K	1μF
580	C	X7S	0603	16V	K	4.7μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
581	C	X7S	0603	10V	D	1μF
582	C	X7S	0603	10V	K	4.7μF
583	C	X7S	0603	6.3V	K	4.7μF~10μF
584	C	X7S	0603	4V	K	10μF
585	C	X7S	0603	2.5V	K	10μF
586	C	X7S	0805	35V	H	4.7μF
587	C	X7S	0805	25V	H	2.2μF~10μF
588	C	X7S	0805	25V	5	10μF
589	C	X7S	0805	16V	H	4.7μF
590	C	X7S	0805	10V	H	22μF
591	C	X7S	0805	6.3V	H	10μF
592	C	X7S	0805	6.3V	H	22μF
593	C	X7S	1206	16V	L	10μF
594	C	X7S	1210	50V	3	10μF
595	C	X7S	1210	25V	R	22μF
596	C	X7S	1210	10V	R	47μF
597	C	X7S	1210	6.3V	R	100μF
598	C	X7T	0105	16V	Z	10nF ~ 22nF
599	C	X7T	0105	10V	Z	10nF ~ 47nF
600	C	X7T	0105	6.3V	Z	10nF
601	C	X7T	0105	4V	Z	10nF
602	C	X7T	0201	16V	F	100nF
603	C	X7T	0201	16V	X	100nF
604	C	X7T	0201	10V	A	12nF~25nF
605	C	X7T	0201	10V	A	27nF~100nF
606	C	X7T	0201	10V	J	100nF
607	C	X7T	0201	10V	F	220nF
608	C	X7T	0201	10V	X	220nF
609	C	X7T	0201	6.3V	A	10nF~25nF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
610	C	X7T	0201	6.3V	A	27nF~100nF
611	C	X7T	0201	6.3V	J	220nF
612	C	X7T	0201	6.3V	X	220nF~470nF
613	C	X7T	0201	6.3V	F	220nF~470nF
614	C	X7T	0201	6.3V	F	1μF
615	C	X7T	0201	6.3V	X	1μF
616	C	X7T	0201	4V	A	12nF~25nF
617	C	X7T	0201	4V	A	27nF~100nF
618	C	X7T	0201	4V	J	220nF
619	C	X7T	0201	4V	X	470nF~1μF
620	C	X7T	0201	4V	F	470nF~1μF
621	C	X7T	0201	2.5V	A	100nF
622	C	X7T	0201	2.5V	J	220nF~470nF
623	C	X7T	0201	2.5V	F	1μF
624	C	X7T	0201	2.5V	X	1μF
625	C	X7T	0201	2.5V	X	2.2μF
626	C	X7T	0402	50V	C	100nF
627	C	X7T	0402	35V	C	100nF
628	C	X7T	0402	25V	B	100nF
629	C	X7T	0402	25V	N	470nF
630	C	X7T	0402	25V	C	220nF
631	C	X7T	0402	16V	B	1μF
632	C	X7T	0402	16V	N	1μF
633	C	X7T	0402	16V	C	100nF~470nF
634	C	X7T	0402	16V	C	1μF
635	C	X7T	0402	16V	C	2.2μF
636	C	X7T	0402	10V	B	1μF
637	C	X7T	0402	10V	N	100nF~470nF
638	C	X7T	0402	10V	N	1μF~2.2μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
639	C	X7T	0402	10V	C	220nF~2.2μF
640	C	X7T	0402	6.3V	B	100nF
641	C	X7T	0402	10V	C	4.7μF
642	C	X7T	0402	6.3V	B	1μF
643	C	X7T	0402	6.3V	N	220nF~470nF
644	C	X7T	0402	6.3V	N	1μF~2.2μF
645	C	X7T	0402	6.3V	C	2.2μF
646	C	X7T	0402	4V	B	100nF,1μF
647	C	X7T	0402	4V	B	2.2μF
648	C	X7T	0402	4V	N	220nF~470nF
649	C	X7T	0402	4V	N	1μF~2.2μF
650	C	X7T	0402	4V	C	4.7μF
651	C	X7T	0402	2.5V	B	1μF~2.2μF
652	C	X7T	0603	35V	K	2.2μF
653	C	X7T	0603	25V	D	1μF
654	C	X7T	0603	25V	K	1μF~2.2μF
655	C	X7T	0603	16V	D	1μF~2.2μF
656	C	X7T	0603	16V	K	2.2μF
657	C	X7T	0603	10V	D	1μF~2.2μF
658	C	X7T	0603	10V	K	4.7μF~10μF
659	C	X7T	0603	6.3V	D	1μF
660	C	X7T	0603	6.3V	D	2.2μF
661	C	X7T	0603	6.3V	K	4.7μF~10μF
662	C	X7T	0603	4V	D	2.2μF~4.7μF
663	C	X7T	0603	4V	K	10μF
664	C	X7T	0603	2.5V	D	4.7μF
665	C	X7T	0603	2.5V	K	10μF
666	C	X7T	0603	2.5V	K	47μF
667	C	X7T	0805	50V	H	1μF

Table 3-2 Capacitance Table (Class 2-X7R\X7T\X7S\X6S\X6T\X5R)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
668	C	X7T	0805	25V	H	4.7μF~10μF
669	C	X7T	0805	25V	5	10μF
670	C	X7T	0805	16V	Y	1μF
671	C	X7T	0805	16V	H	1μF~10μF
672	C	X7T	0805	10V	H	2.2μF~10μF
673	C	X7T	0805	10V	H	22μF
674	C	X7T	0805	6.3V	H	2.2μF~10μF
675	C	X7T	0805	6.3V	H	22μF
676	C	X7T	0805	4V	Y	2.2μF
677	C	X7T	0805	4V	Y	10μF
678	C	X7T	0805	4V	H	2.2μF~4.7μF
679	C	X7T	0805	2.5V	Y	10μF
680	C	X7T	0805	2.5V	Y	22μF~47μF
681	C	X7T	0805	2.5V	H	22μF~47μF
682	C	X7T	1206	63V	P	4.7μF
683	C	X7T	1206	50V	P	10μF
684	C	X7T	1206	25V	L	1μF
685	C	X7T	1206	25V	L	10μF
686	C	X7T	1206	16V	L	10μF
687	C	X7T	1206	6.3V	P	47μF
688	C	X7T	1206	6.3V	L	4.7μF~10μF
689	C	X7T	1206	6.3V	L	22μF
690	C	X7T	1206	4V	Y	22μF
691	C	X7T	1206	4V	O	1μF
692	C	X7T	1206	4V	L	22μF
693	C	X7T	1206	2.5V	L	22μF~100μF
694	C	X7T	1210	50V	R	10μF
695	C	X7T	1210	50V	3	10μF

Table 4 Packaging (Minimum Quantity)

NO.	Size Code	Thickness Code	Square hole spacing	Disc Size	Carrier Tape Type	QTY (Kpcs)	Packaging Code
1	A8A4	1	1mm	7 "	Plastic	50	P
2	0105	Z	2mm	7 "	Paper	20	T
3	0105	Z	1mm	7 "	Plastic	40	P
4	0105	T	2mm	7 "	Paper	20	T
5	0201	A	2mm	7 "	Paper	15	T
6	0201	A	2mm	13 "	Paper	50	J
7	0201	A	1mm	13 "	Paper	140	A
8	0201	A	2mm	13 "	Paper	70	M
9	0201	A	2mm	7 "	Paper	10	H
10	0201	A	1mm	7 "	Paper	30	L
11	0201	J	2mm	7 "	Paper	15	T
12	0201	J	2mm	13 "	Paper	50	J
13	0201	J	1mm	13 "	Paper	140	A
14	0201	J	2mm	13 "	Paper	70	M
15	0201	J	2mm	7 "	Paper	10	H
16	0201	J	1mm	7 "	Paper	30	L
17	0201	X	2mm	7 "	Paper	15	T
18	0201	X	2mm	13 "	Paper	50	J
19	0201	X	2mm	7 "	Paper	10	H
20	0201	F	2mm	7 "	Paper	15	T
21	0201	B	2mm	7 "	Paper	10	H
22	0402	B	2mm	7 "	Paper	10	T
23	0402	B	2mm	13 "	Paper	50	J
24	0402	N	2mm	7 "	Paper	10	T
25	0402	N	2mm	13 "	Paper	50	J
26	0402	C	2mm	7 "	Paper	10	T
27	0402	C	2mm	13 "	Paper	50	J
28	0402	A	2mm	7 "	Paper	10	T
29	0402	A	2mm	7 "	Paper	15	H

Table 4 Packaging (Minimum Quantity)

NO.	Size Code	Thickness Code	Square hole spacing	Disc Size	Carrier Tape Type	QTY (Kpcs)	Packaging Code
30	0402	U	2mm	7 "	Paper	8	C
31	0402	U	2mm	7 "	Paper	10	T
32	0603	S	4mm	7 "	Paper	4	T
33	0603	D	4mm	7 "	Paper	4	T
34	0603	D	4mm	13 "	Paper	15	A
35	0603	D	4mm	13 "	Plastic	10	O
36	0603	D	4mm	7 "	Paper	3	W
37	0603	K	4mm	7 "	Paper	4	T
38	0603	K	4mm	13 "	Paper	15	A
39	0603	K	4mm	13 "	Plastic	10	O
40	0603	K	4mm	7 "	Plastic	4	Q
41	0603	K	4mm	7 "	Plastic	3	R
42	0603	W	4mm	7 "	Plastic	3	R
43	0603	W	4mm	13 "	Plastic	10	O
44	0603	W	4mm	7 "	Plastic	4	Q
45	0603	W	4mm	7 "	Paper	4	T
46	0603	6	4mm	7 "	Paper	4	T
47	0603	6	4mm	7 "	Plastic	3	R
48	0805	C	4mm	7 "	Paper	4	T
49	0805	C	4mm	7 "	Plastic	3	R
50	0805	K	4mm	7 "	Paper	4	T
51	0805	K	4mm	7 "	Plastic	3	R
52	0805	K	4mm	13 "	Plastic	15	E
53	0805	Y	4mm	7 "	Paper	4	T
54	0805	Y	4mm	13 "	Plastic	15	E
55	0805	Y	4mm	7 "	Plastic	2	P
56	0805	Y	4mm	7 "	Plastic	3	R
57	0805	G	4mm	7 "	Plastic	3	R
58	0805	G	4mm	7 "	Plastic	2	P

Table 4 Packaging (Minimum Quantity)

NO.	Size Code	Thickness Code	Square hole spacing	Disc Size	Carrier Tape Type	QTY (Kpcs)	Packaging Code
59	0805	G	4mm	13 "	Plastic	10	O
60	0805	H	4mm	7 "	Plastic	3	R
61	0805	H	4mm	7 "	Plastic	2	P
62	0805	H	4mm	13 "	Plastic	10	O
63	0805	5	4mm	7 "	Plastic	3	R
64	0805	5	4mm	7 "	Plastic	2	P
65	0805	5	4mm	13 "	Plastic	10	O
66	1206	E	4mm	7 "	Plastic	3	R
67	1206	Y	4mm	7 "	Plastic	3	R
68	1206	Y	4mm	7 "	Plastic	4	Q
69	1206	O	4mm	7 "	Plastic	3	R
70	1206	L	4mm	7 "	Plastic	2	P
71	1206	L	4mm	13 "	Plastic	8	E
72	1206	P	4mm	7 "	Plastic	2	P
73	1210	L	4mm	7 "	Plastic	2	P
74	1210	Q	4mm	7 "	Plastic	1.5	F
75	1210	Q	4mm	7 "	Plastic	1	Z
76	1210	R	4mm	7 "	Plastic	1	Z
77	1210	3	4mm	7 "	Plastic	1	Z

First packaging: Each multi-disc material is packed into a box.

The second packaging: the first packaged packaging box is loaded into the paper packaging box,and the remaining space in the box is filled with light auxiliary materials.

The above packaging forms can also be packaged according to user needs.

3. Technical Specifications and Test Methods

3.1 Operating Environment

Temp. Characteristics	Temp. Range	Relative Humidity	Atmospheric Pressure
C0G/X7R/X7S/X7T	-55°C-125°C	≤95% (25°C)	86 kPa - 106 kPa
X6S/X6T	-55°C-105°C	≤95% (25°C)	86 kPa - 106 kPa
X5R	-55°C-85°C	≤95% (25°C)	86 kPa - 106 kPa

3.2 Reliability Test Specifications and Methods

Without specific note, the “test method” in Table 5 is based on GB/T 21041/21042 IDT IEC60384 .

Table 5: Specifications and Test Methods

No.	Item	Specification Class1 (Temperature Compensating Type)- C0G Class 2 (High dielectric constant type)-X7R\X7T\X7S\X6S\X6T\X5R	Test Method	
1	Appearance	No obvious defects on ceramic body and termination.	Visual examination under a microscope.	
2	Size Code	See Fig.1 and ② Size Code	Measuring by gages which precision is not less than 0.01 mm .	
3	Capacitance	Within the specified tolerance	Measurement Temperature	18 °C-28 °C
			Relative Humidity	≤ 80% RH
4	Dissipation Factor (DF or Q)	Class 1 $C \geq 30 \text{ pF}$, $Q \geq 1000$ $C < 30 \text{ pF}$, $Q \geq 400 + 20C$ C: Nominal Capacitance (pF) Class 2 See Table 5-1	Measurement Frequency	Class 1: $C \leq 1 \text{ nF}$, $f = 1.0 \pm 0.1 \text{ MHz}$; $C > 1 \text{ nF}$, $f = 1.0 \pm 0.1 \text{ KHz}$ Class 2: $f = 1.0 \pm 0.1 \text{ KHz}$, $120 \pm 24 \text{ Hz}$ See Table 5-1
			Measurement Voltage	Class 1: $1.0 \pm 0.2 \text{ Vrms}$ Class 2: $U = 1.0 \pm 0.2 \text{ Vrms}$, $0.5 \pm 0.1 \text{ Vrms}$, See Table 5-1
			Post-treatment	Class 2: When the capacitor initial capacitance is lower than its tolerance value, the test sample need to perform a heat treatment at $(150 \pm 0/-10) ^\circ\text{C}$ for 1 h and then sit for $(24 \pm 2) \text{ h}$ at room temperature, then measure.
5	Insulation Resistance (IR)	Class 1 $\geq 10,000 \text{ M}\Omega$ or $500 \Omega \cdot \text{F}$, (Whichever is smaller) Class 2 See Table 5-1	Measurement Temperature	18 °C-28 °C
			Relative Humidity	≤ 80% RH
			Measurement Voltage	Rated Voltage
			Charging Time	1 min
			Charge/discharge current	≤ 50 mA
6	Voltage proof	No defects or abnormalities.	Test Voltage	Class 1: $\geq 3.0 \times U_R$ Class 2: $\geq 2.5 \times U_R$
			Applied Time	$t = 1 - 5 \text{ s}$
			Charge/discharge current	≤ 50 mA

Table 5: Specifications and Test Methods

No.	Item	Specification Class1 (Temperature Compensating Type)- C0G Class 2 (High dielectric constant type)-X7R\X7T\X7S\X6S\X6T\X5R		Test Method	
7	Temperature Characteristics of Capacitance	Class 1	C0G: $\alpha c \leq \pm 30 \text{ ppm/}^\circ\text{C}$ (125 $^\circ\text{C}$); $-72 \leq \alpha c \leq +30 \text{ ppm/}^\circ\text{C}$ (-55 $^\circ\text{C}$)	Pre-treatment Pre-drying Measure the capacitance separately in 25 $^\circ\text{C}$ 、 θ_1 、25 $^\circ\text{C}$ 、 θ_2 、25 $^\circ\text{C}$, should satisfied related capacitance change characteristics.	Class 2: Perform heat treatment at (150 +0/-10) $^\circ\text{C}$ for 1 h, then soak at room temperature for (24 $\pm$ 2) h, then measure. Class 1: 16 - 24 hours $\theta_1 = -55 \text{ }^\circ\text{C}$, $\theta_2 = 125 \text{ }^\circ\text{C}$ $\theta_1 = -55 \text{ }^\circ\text{C}$, $\theta_2 = 105 \text{ }^\circ\text{C}$ $\theta_1 = -55 \text{ }^\circ\text{C}$, $\theta_2 = 85 \text{ }^\circ\text{C}$ Class 1: 1.0 $\pm$ 0.2 Vrms Class 2: $\leq 1.0 \pm 0.2 \text{ Vrms}$ ※ [※ Please contact our technical support staff for more information.]
8	Resistance to Soldering Heat	Appearance	No visible damage and terminations uncovered shall be less than 25%.	Pre-treatment Pre-heating	Class 2: Perform heat treatment at (150 +0/-10) $^\circ\text{C}$ for 1 h, then soak at room temperature for (24 $\pm$ 2) h, then measure. 120 $^\circ\text{C}$ -150 $^\circ\text{C}$,Time: 60 s
		Cap. Change	Class 1: $\Delta C/C \leq \pm 2.5\%$ or $\pm 0.25 \text{ pF}$, (Whichever is larger) Class 2: See Table 5-1	Test Method Solder alloy	Solder bath method Sn-Ag-Cu (Lead Free Solder)
		IR	initial specification	Temperature	(270 $\pm$ 5) $^\circ\text{C}$
		DF or Q	initial specification	Duration of immersion	(10 $\pm$ 1) s
		Voltage proof	No defects or abnormalities.	Depth of immersion Post-treatment	10 mm Let sit for (24 $\pm$ 2) h at room temperature, then measure.
9	Solderability	Appearance	95% of the terminations is to be soldered evenly and continuously	Pre-heating Test Method Flux Solder alloy Solder temp. Duration of immersion Depth of immersion	80 $^\circ\text{C}$ -120 $^\circ\text{C}$,Time: 10-30 s Solder bath Solution of rosin ethanol Sn-Ag-Cu (Lead Free Solder) (245 $\pm$ 5) $^\circ\text{C}$ (2.0 $\pm$ 0.5) s 10 mm

Table 5: Specifications and Test Methods

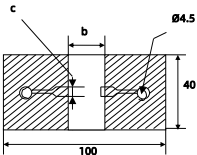
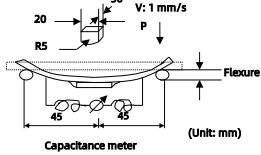
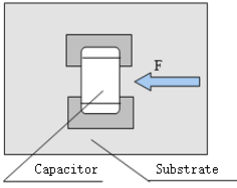
No.	Item	Specification Class1 (Temperature Compensating Type)- C0G Class 2 (High dielectric constant type)-X7R\X7T\X7S\X6S\X6T\X5R		Test Method	
10	Substrate Bending test	Appearance	No defects or abnormalities	Mounting method	Solder the capacitor on the test substrate as shown in Fig 2
		Cap. Change	Class 1: $\Delta C/C \leq \pm 5\%$ or ± 0.5 pF, (Whichever is larger) Class 2: See Table 5-1	Pressurization Method	as shown in Fig 3
				Flexure	1 mm
				Holding Time	(5 ± 1) s
				then measure the capacitance	
				  Fig. 2 Fig. 3	
11	Adhesive Strength of Termination	Appearance	No defects or abnormalities	Mounting method	Solder the capacitor to the test substrate and apply the normal force F
				Apply a pushing force of F for 10 ± 1 secs.	indicated in Fig. 4
				Holding Time	$t = (10 \pm 1)$ s
				Pushing force	A8A4/0105:F=1N 0201:F=2N 0402:F=5N Class1: 0603/0805/1206/1210:F=10N Class2: 0603/0805/1206/1210:F=5N
				 Fig 4	
12	Vibration	Appearance	No defects or abnormalities	Mounting method	Solder the capacitor on the test substrate
		Cap. Change	Class1: initial specification Class 2: See Table 5-1	Amplitude	1.5 mm
				Kind of Vibration	A simple harmonic motion
		IR	initial specification	Frequency	10 Hz-55 Hz-10 Hz
		DF or Q	initial specification	Vibration Time	1 min
				Repeat this for 2hrs each in 3 perpendicular directions X, Y, Z, total 6hrs.	

Table 5: Specifications and Test Methods

No.	Item	Specification Class1 (Temperature Compensating Type)- C0G Class 2 (High dielectric constant type)-X7R\X7T\X7S\X6S\X6T\X5R		Test Method																
13	Rapid change of temperature	Appearance	No defects or abnormalities	Pre-treatment	Class 2: Perform heat treatment at (150 +0/−10) °C for 1 h, then soak at room temperature for (24 ± 2) h, then measure.															
		Cap. Change	Class 1: ΔC/C ≤ ± 2.5% or ± 0.25 pF, (Whichever is large) Class 2: See Table 5-1	Mounting method	Solder the capacitor on the test substrate															
		IR	initial specification	The number of cycles	5 cycles															
		DF or Q	initial specification	Temperature Step																
		Voltage proof	No defects or abnormalities.	<table><tr><td>Step.</td><td>Temp.(°C)</td><td>Time (min)</td></tr><tr><td>1</td><td>θ1</td><td>30 ± 3</td></tr><tr><td>2</td><td>25</td><td>2 - 5</td></tr><tr><td>3</td><td>θ2</td><td>30 ± 3</td></tr><tr><td>4</td><td>25</td><td>2 - 5</td></tr></table>	Step.	Temp.(°C)	Time (min)	1	θ1	30 ± 3	2	25	2 - 5	3	θ2	30 ± 3	4	25	2 - 5	C0G\X7R\X7S\X7T θ1 = -55 °C, θ2 = 125 °C X6S/X6T θ1 = -55 °C, θ2 = 105 °C X5R θ1 = -55 °C, θ2 = 85 °C
		Step.	Temp.(°C)	Time (min)																
		1	θ1	30 ± 3																
		2	25	2 - 5																
		3	θ2	30 ± 3																
		4	25	2 - 5																
		Post-treatment	Let sit for (24 ± 2) h at room temperature, then measure.																	
14	Damp heat (steady state)	Appearance	No defects or abnormalities	Pre-treatment	Class 2: Perform heat treatment at (150 +0/−10) °C for 1 h, then soak at room temperature for (24 ± 2) h, then measure.															
		Cap. Change	Class 1: ΔC/C ≤ ± 7.5% or 0.75 pF, (Whichever is large) Class 2: See Table 5-1	Mounting method	Solder the capacitor on the test substrate															
		IR	Class 1: ≥ 500 MΩ or 25 Ω·F, (Whichever is smaller) Class 2: See Table 5-1	Test Temperature	(40 ± 2) °C															
		DF or Q	Class 1: C ≥ 30 pF, Q ≥ 200 C < 30pF, Q≥100+10C/3 C: Nominal Capacitance (pF) Class 2: See Table 5-1	Test Humidity	90%-95% RH															
				Test Time	(500 ± 12) h															
				Post-treatment	Let sit for (24 ± 2) h at room temperature, then measure.															
15	High Temperature High Humidity (Steady)	Appearance	No defects or abnormalities	Pre-treatment	Class 2: Perform heat treatment at (150 +0/−10) °C for 1 h, then soak at room temperature for (24 ± 2) h, then measure.															
		Cap. Change	Class 1: ΔC/C ≤ ± 7.5% or 0.75 pF, (Whichever is large) Class 2: See Table 5-1	Mounting method	Solder the capacitor on the test substrate															
		IR	Class 1: ≥ 500 MΩ or 25 Ω·F, (Whichever is smaller) Class 2: See Table 5-1	Test Temperature	(40 ± 2) °C															
		DF or Q	Class 1: C ≥ 30 pF, Q ≥ 200 C < 30 pF, Q ≥ 100+10 C/3 C: Nominal Capacitance (pF) Class 2: See Table 5-1	Test Humidity	90%-95% RH															
				Test Voltage	1.0 × U _R															
				Test Time	(500 ± 12) h															
				Charge/discharge current	≤ 50 mA															
				Post-treatment	Class 1: Let sit for (24 ± 2) h at room temperature, then measure.															
					Class 2: Perform heat treatment at (150 +0/−10) °C for 1 h, then soak at room temperature for (24 ± 2) h, then measure.															

Table 5: Specifications and Test Methods

No.	Item	Specification Class1 (Temperature Compensating Type)- C0G Class 2 (High dielectric constant type)-X7R\X7T\X7S\X6S\X6T\X5R		Test Method	
16	Endurance	Appearance	No defects or abnormalities	Pre-treatment	Class 2: Perform heat treatment at (150 +0/-10) °C for 1 h, then soak at room temperature for (24 ± 2) h, then measure.
		Cap. Change	Class 1: $\Delta C/C \leq \pm 2\%$ or $\pm 0.2 \text{ pF}$, (Whichever is large	Mounting method	Solder the capacitor on the test substrate
			Class 2: See Table 5-1	Test Temperature	$\theta_2 \pm 3 \text{ }^{\circ}\text{C}$ [C0G\X7R\X7S\X7T: $\theta_2=125^{\circ}\text{C}$, X6S/X6T: $\theta_2=105^{\circ}\text{C}$, X5R: $\theta_2=85^{\circ}\text{C}$]
		IR	Class 1: $\geq 1000 \text{ M}\Omega$ or $50 \text{ }\Omega \cdot \text{F}$, (Whichever is smaller)	Test Time	(1000 ± 12) h
			Class 2: See Table 5-1	Test Voltage	Class 1: $2.0 \times U_R$ [0201C0G:C $\geq 270 \text{ pF}$ and $U_R=50\text{V}$: $1.5 \times U_R$, 1206:C $\geq 150 \text{ nF}$ and $U_R=50\text{V}$: $1.0 \times U_R$]
		DF or Q	Class 1: $C \geq 30 \text{ pF}$, $Q \geq 350$		Class 2: See Table 5-1
			$10 \text{ pF} < C < 30 \text{ pF}$, $Q \geq 275 + 5 \text{ C}/2$	Charge/discharge current	$\leq 50 \text{ mA}$
			$C \leq 10 \text{ pF}$, $Q \geq 200 + 10 \text{ C}$	Post-treatment	Class 1: Let sit for (24 ± 2) h at room temperature, then measure.
			C: Nominal Capacitance (pF)		Class 2: Perform heat treatment at (150 +0/-10) °C for 1 h, then soak at room temperature for (24 ± 2) h, then measure.
			Class 2: See Table 5-1		

4. Packaging, Shipment and storage

4.1 Packaging

4.1.1 packaging type

Reel Packaging (standard carrier tape disc packaging), single disc smallest package see Table 4 Packaging (Minimum Quantity)

4.1.2 Carrier Tape size

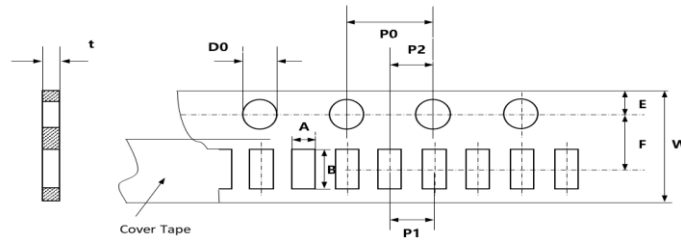


Fig. 5-1 0402 (Paper tape/ 2 mm pitch)

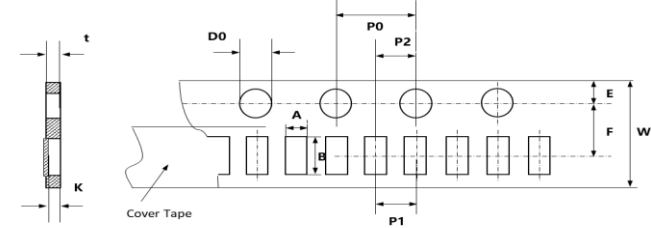


Fig. 5-2 0201 (Paper tape/ 2 mm pitch)

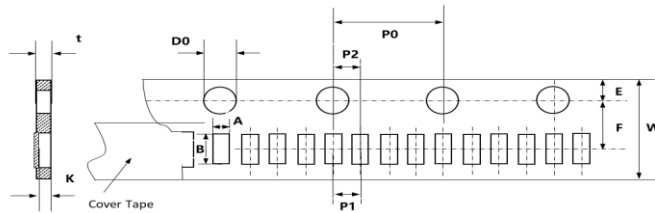


Fig. 5-3 0201 (Paper tape/ 1 mm pitch)

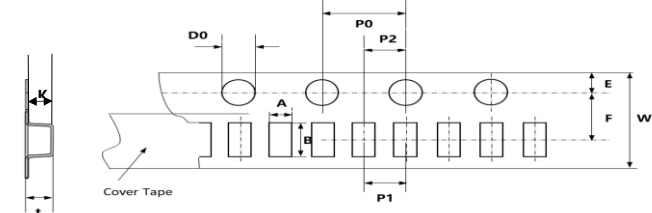


Fig. 5-4 A8A4/0105 (Plastic tape/ 1 mm pitch)

Table 2-1: Carrier size (Size Code:A8A4,0105,0201,0402)

(Unit:mm)

Size Code	Thickness code	Carrier Tape Type	Packaging Code	A	B	F	P1	E	D0	P2	K	W	P0	t
A8A4	1	Plastic	P	0.145 ± 0.007	0.270 ± 0.007	1.80 ± 0.05	1.00 ± 0.05	0.90 ± 0.10	0.80 ± 0.05	1.00 ± 0.05	0.145 ± 0.007	4.00 ± 0.10	2.00 ± 0.10	0.5 max
0105	Z	Paper	T	0.24 ± 0.02	0.45 ± 0.02	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.24 ± 0.02	8.00 ± 0.10	4.00 ± 0.10	0.5 max
0105	Z	Plastic	P	0.24 ± 0.02	0.45 ± 0.02	1.80 ± 0.05	1.00 ± 0.05	0.90 ± 0.10	0.80 ± 0.05	1.00 ± 0.05	0.24 ± 0.02	4.00 ± 0.10	2.00 ± 0.10	0.5 max
0105	T	Paper	T	0.25 ± 0.04	0.47 ± 0.04	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.25 ± 0.04	8.00 ± 0.10	4.00 ± 0.10	0.5 max
0201	A	Paper	T	0.38 ± 0.03	0.68 ± 0.03	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.36 ± 0.02	8.00 ± 0.10	4.00 ± 0.10	0.5 max
0201	A	Paper	J	0.38 ± 0.03	0.68 ± 0.03	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.36 ± 0.02	8.00 ± 0.10	4.00 ± 0.10	0.5 max
0201	A	Paper	A	0.38 ± 0.03	0.68 ± 0.03	3.50 ± 0.05	1.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	1.00 ± 0.05	0.36 ± 0.02	8.00 ± 0.10	4.00 ± 0.10	0.5 max
0201	A	Paper	M	0.38 ± 0.03	0.68 ± 0.03	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.36 ± 0.02	8.00 ± 0.10	4.00 ± 0.10	0.5 max
0201	A	Paper	H	0.38 ± 0.03	0.68 ± 0.03	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.36 ± 0.02	8.00 ± 0.10	4.00 ± 0.10	0.5 max
0201	A	Paper	L	0.38 ± 0.03	0.68 ± 0.03	3.50 ± 0.05	1.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	1.00 ± 0.05	0.36 ± 0.02	8.00 ± 0.10	4.00 ± 0.10	0.5 max
0201	J	Paper	T	0.40 ± 0.04	0.70 ± 0.04	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.38 ± 0.04	8.00 ± 0.10	4.00 ± 0.10	0.5 max

Table 2-1: Carrier size (Size Code:A8A4,0105,0201,0402)

(Unit:mm)

Size Code	Thickness code	Carrier Tape Type	Packaging Code	A	B	F	P1	E	D0	P2	K	W	P0	t
0201	J	Paper	J	0.40 ± 0.04	0.70 ± 0.04	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.38 ± 0.04	8.00 ± 0.10	4.00 ± 0.10	0.5 max
0201	J	Paper	A	0.40 ± 0.04	0.70 ± 0.04	3.50 ± 0.05	1.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	1.00 ± 0.05	0.38 ± 0.04	8.00 ± 0.10	4.00 ± 0.10	0.5 max
0201	J	Paper	M	0.40 ± 0.04	0.70 ± 0.04	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.38 ± 0.04	8.00 ± 0.10	4.00 ± 0.10	0.5 max
0201	J	Paper	H	0.40 ± 0.04	0.70 ± 0.04	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.38 ± 0.04	8.00 ± 0.10	4.00 ± 0.10	0.5 max
0201	J	Paper	L	0.40 ± 0.04	0.70 ± 0.04	3.50 ± 0.05	1.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	1.00 ± 0.05	0.38 ± 0.04	8.00 ± 0.10	4.00 ± 0.10	0.5 max
0201	X	Paper	T	0.44 ± 0.06	0.74 ± 0.06	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.40 ± 0.05	8.00 ± 0.10	4.00 ± 0.10	0.6 max
0201	X	Paper	J	0.44 ± 0.06	0.74 ± 0.06	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.40 ± 0.05	8.00 ± 0.10	4.00 ± 0.10	0.6 max
0201	X	Paper	H	0.44 ± 0.06	0.74 ± 0.06	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.40 ± 0.05	8.00 ± 0.10	4.00 ± 0.10	0.6 max
0201	F	Paper	T	0.44 ± 0.06	0.74 ± 0.06	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.40 ± 0.05	8.00 ± 0.10	4.00 ± 0.10	0.6 max
0201	B	Paper	H	0.44 ± 0.06	0.74 ± 0.06	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	0.55 ± 0.05	8.00 ± 0.10	4.00 ± 0.10	0.7 max
0402	A	Paper	H	0.63 ± 0.05	1.13 ± 0.05	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.10	4.00 ± 0.10	0.5 max
0402	B	Paper	T	0.63 ± 0.05	1.13 ± 0.05	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.10	4.00 ± 0.10	0.8 max
0402	B	Paper	J	0.63 ± 0.05	1.13 ± 0.05	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.10	4.00 ± 0.10	0.8 max
0402	N	Paper	T	0.70 ± 0.10	1.20 ± 0.10	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.10	4.00 ± 0.10	0.8 max
0402	N	Paper	J	0.70 ± 0.10	1.20 ± 0.10	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.10	4.00 ± 0.10	0.8 max
0402	C	Paper	T	0.75 ± 0.10	1.30 ± 0.10	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.10	4.00 ± 0.10	0.8 max
0402	C	Paper	J	0.75 ± 0.10	1.30 ± 0.10	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.10	4.00 ± 0.10	0.8 max
0402	U	Paper	C	0.85 ± 0.10	1.40 ± 0.10	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.10	4.00 ± 0.10	0.95 max
0402	U	Paper	T	0.85 ± 0.10	1.40 ± 0.10	3.50 ± 0.05	2.00 ± 0.05	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.10	4.00 ± 0.10	0.95 max

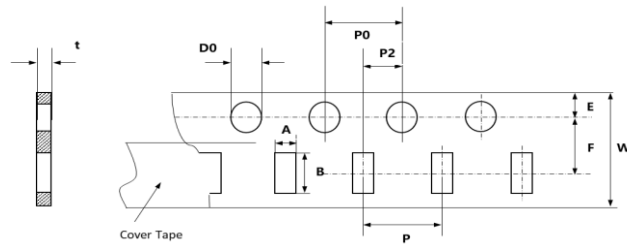


Fig. 5-5 0603, 0805, 1206, 1210 (Paper tape)

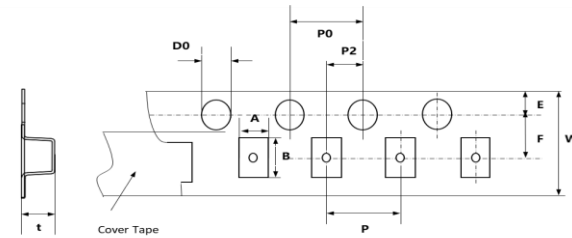


Fig. 5-6 0603,0805,1206,1210 (Plastic tape)

Table 2-2: Carrier size (Size Code:0603, 0805, 1206, 1210)

(Unit:mm)

[illegible]

Table 2-2: Carrier size (Size Code:0603, 0805, 1206, 1210)

(Unit:mm)

Size Code	Thickness code	Carrier Tape Type	Packaging Code	A	B	F	P	E	D0	P2	K	W	P0	t
1206	Y	Plastic	Q	1.80 ± 0.20	3.40 ± 0.20	3.50 ± 0.05	4.00 ± 0.10	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.20	4.00 ± 0.10	1.35 max
1206	O	Plastic	R	1.80 ± 0.20	3.40 ± 0.20	3.50 ± 0.05	4.00 ± 0.10	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.20	4.00 ± 0.10	1.45 max
1206	L	Plastic	P	1.80 ± 0.20	3.40 ± 0.20	3.50 ± 0.05	4.00 ± 0.10	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.20	4.00 ± 0.10	2.50 max
1206	L	Plastic	E	1.80 ± 0.20	3.40 ± 0.20	3.50 ± 0.05	4.00 ± 0.10	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.20	4.00 ± 0.10	2.50 max
1206	P	Plastic	P	1.90 ± 0.20	3.50 ± 0.20	3.50 ± 0.05	4.00 ± 0.10	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.20	4.00 ± 0.10	2.50 max
1210	L	Plastic	P	2.70 ± 0.20	3.50 ± 0.20	3.50 ± 0.05	4.00 ± 0.10	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.20	4.00 ± 0.10	2.00 max
1210	Q	Plastic	F	2.70 ± 0.20	3.50 ± 0.20	3.50 ± 0.05	4.00 ± 0.10	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.20	4.00 ± 0.10	2.50 max
1210	Q	Plastic	Z	2.70 ± 0.20	3.50 ± 0.20	3.50 ± 0.05	4.00 ± 0.10	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.20	4.00 ± 0.10	2.50 max
1210	R	Plastic	Z	2.70 ± 0.20	3.50 ± 0.30	3.50 ± 0.05	4.00 ± 0.10	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.20	4.00 ± 0.10	3.00 max
1210	3	Plastic	Z	2.70 ± 0.20	3.50 ± 0.40	3.50 ± 0.05	4.00 ± 0.10	1.75 ± 0.10	1.55 ± 0.05	2.00 ± 0.05	/	8.00 ± 0.20	4.00 ± 0.10	3.10 max

4.1.3 Disc size

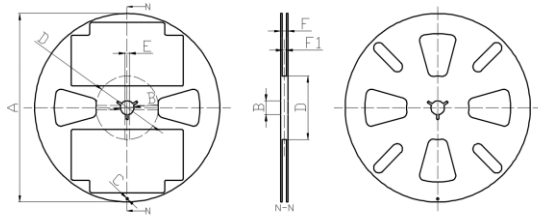


Fig. 6-1 Disc (Width of carrier-4 mm)

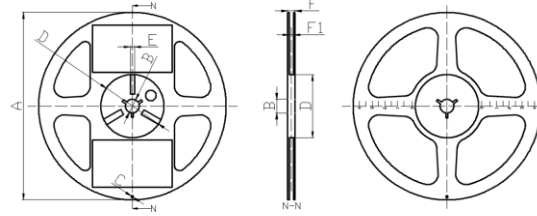


Fig. 6-2 Disc (Width of carrier-8 mm)

Table 3: Disc size

(Unit:mm)

Disc size	Width of carrier	A	B	C	D	E	F	F1	Size Code
7"	8.00 ± 0.10	Φ178 ± 2.0	Φ13 ± 1.0	Φ4.0 ± 0.5	Φ60 ± 2.0	4.0 ± 1.0	11.5 ± 1.0	10.0 ± 2.0	All
13"	8.00 ± 0.10	Φ330 ± 2.0	Φ13 ± 1.0	Φ4.0 ± 0.5	Φ108 ± 2.0	4.0 ± 1.0	13.5 ± 2.0	10.0 ± 2.0	All
7"	4.00 ± 0.10	Φ178 ± 2.0	Φ13 ± 1.0	Φ4.0 ± 0.5	Φ60 ± 2.0	3.5 ± 0.5	7.3 ± 0.5	4.5 ± 1.0	0105/A8A4

4.1.4 Carrier Tape specifications

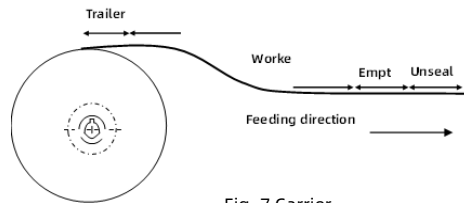


Fig. 7 Carrier

Packaging	The minimum length of the reserved spaces		
Carrier	Trailer	Empty	Unseal
	60 mm	200 mm	160 mm

4.1.5 Performance of Carrier Taping

4.1.5.1 Strength of Carrier Tape and Top Cover Tape

a. Carrier Tape

When a tensile force 1.02 kgf is applied in the direction to unreel the tape, the tape shall withstand this force.

b. Top cover Tape

When a tensile force 1.02 kgf is applied to the tape, the tape shall withstand this force.

4.1.5.2 Peeling Strength of Top Cover Tape

Unless otherwise specified, the peeling strength of top cover tape shall be within 10.2 gf to 71.4 gf when the top cover tape is pulled at a speed of 300 mm/min with the angle of 0° to 15° (see Fig. 8).

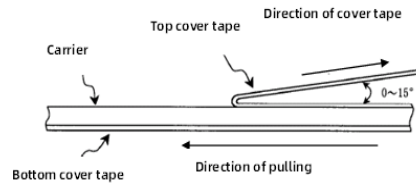


Fig. 8 Cover tape peel-off force

4.2 Shipment

Transport packaging products to adapt to the modern means of transport, but the product in the process of transport to prevent rain and acid and alkali corrosion, shall not be whipped extrusion casting and gravity.

4.3 Storage

4.3.1 Storage Conditions

Capacitors: Complies with MSL Level 1 standard. Floor Life: Unlimited time, under the condition of $\leq 30^{\circ}\text{C}$ and 85% RH.

Packaging Material: Standard temperature range: 5°C to 40°C , with a recommended temperature below 30°C ; Relative humidity: less than 70% RH.

Storage conditions for the packaged product should be used as the primary reference. High temperature, humidity, and/or prolonged storage may lead to deterioration of the packaging materials.

If the storage duration exceeds one year, solderability should be checked before use. The performance of the product may be affected by storage conditions; therefore, it should be used promptly after delivery.

4.3.2 Corrosive gas can react with the termination (external) electrodes or lead wires of capacitors, and result in poor solderability.

Do not store the capacitors in an atmosphere consisting of corrosive gas (e.g., hydrogen sulfide, sulfur dioxide, chlorine, ammonia gas etc.)

5. MLCC Application of Technical Requirements

5.1 Circuit Design

5.1.1 Operating Temperature

- Do not use capacitor above the maximum allowable operating temperature.
- Surface temperature including self-heating should be below maximum operating temperature.

5.1.2 Operating Voltage

The operating voltage for capacitors must always be lower than their rated voltage.

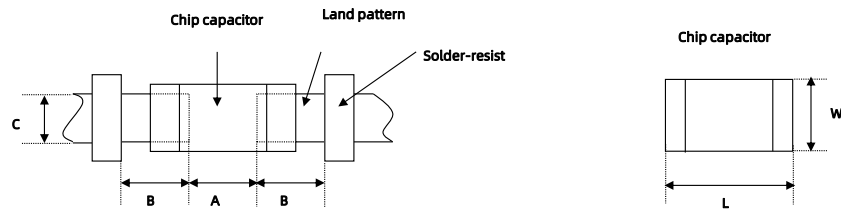
5.2 PCB Design

5.2.1 Design of Land-patterns

When the capacitors are mounted on a PCB, the amount of solder at the terminations has a direct effect on the performance of the capacitors.

The greater the amount of solder, the higher the stress on the capacitor. Therefore, when designing land-patterns, it is necessary to consider the appropriate size and configuration of the solder pads.

Size and recommended land dimensions are shown in the following figure and table.



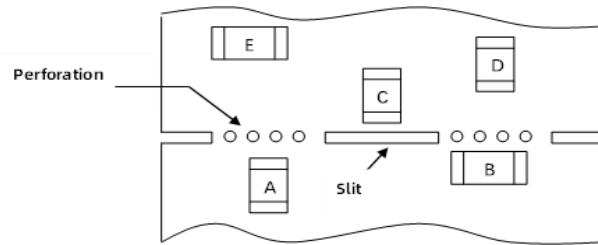
Recommended land dimensions for reflow-soldering

(unit: mm)

Size Code	Length	Width	Tolerance	A	B	C
A8A4	0.25	0.125	all	0.10 - 0.11	0.07 - 0.12	0.125 - 0.145
0105	0.4	0.2	all	0.16 - 0.20	0.12 - 0.18	0.20 - 0.23
0201	0.6	0.3	± 0.03	0.20 - 0.25	0.20 - 0.30	0.20 - 0.35
0201	0.6	0.3	± 0.05	0.20 - 0.25	0.25 - 0.35	0.30 - 0.40
0201	0.6	0.3	$\pm 0.09, \pm 0.1$	0.23 - 0.30	0.25 - 0.35	0.30 - 0.40
0402	1.0	0.5	± 0.05	0.30 - 0.50	0.35 - 0.45	0.40 - 0.60
0402	1.0	0.5	$\pm 0.15, \pm 0.20$	0.40 - 0.60	0.40 - 0.50	0.50 - 0.70
0402	1.0	0.5	± 0.30	0.40 - 0.60	0.40 - 0.50	0.50 - 0.80
0603	1.6	0.8	± 0.10	0.60 - 0.80	0.60 - 0.70	0.60 - 0.80
0603	1.6	0.8	± 0.20	0.70 - 0.90	0.70 - 0.80	0.80 - 1.00
0603	1.6	0.8	$\pm 0.25, \pm 0.30$	0.70 - 0.90	0.70 - 0.90	0.80 - 1.10
0805	2.0	1.25	$\pm 0.10, \pm 0.15, \pm 0.20$	1.00 - 1.40	0.60 - 0.80	1.20 - 1.40
0805	2.0	1.25	± 0.25	1.00 - 1.40	0.70 - 0.90	1.35 - 1.55
1206	3.2	1.6	$\pm 0.15, \pm 0.20$	1.80 - 2.00	0.90 - 1.20	1.50 - 1.70
1206	3.2	1.6	± 0.30	1.90 - 2.10	1.00 - 1.30	1.60 - 1.90
1210	3.2	2.5	± 0.20	2.00 - 2.40	1.00 - 1.20	2.50 - 2.70
1210	3.2	2.5	± 0.30	2.00 - 2.40	1.10 - 1.30	2.50 - 2.80

5.2.2 Capacitor Layout on PC Board

Mechanical stress varies according to the location of capacitors on PC board. The recommendation for better design is as follows

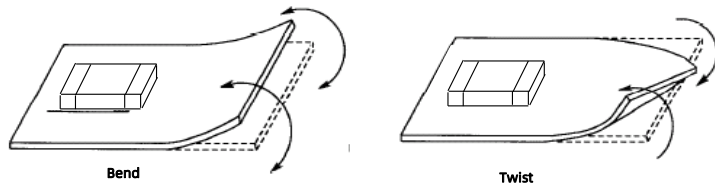


The stress in capacitors is in the following order: $A > B = C > D > E$

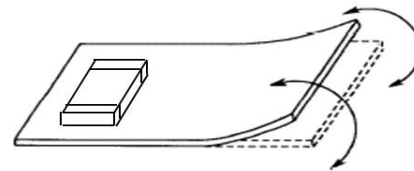
Pay attention not to bend or distort the PC board otherwise the capacitor may crack.

Please refer to the following examples of good and bad capacitors layout.

a. Not recommended

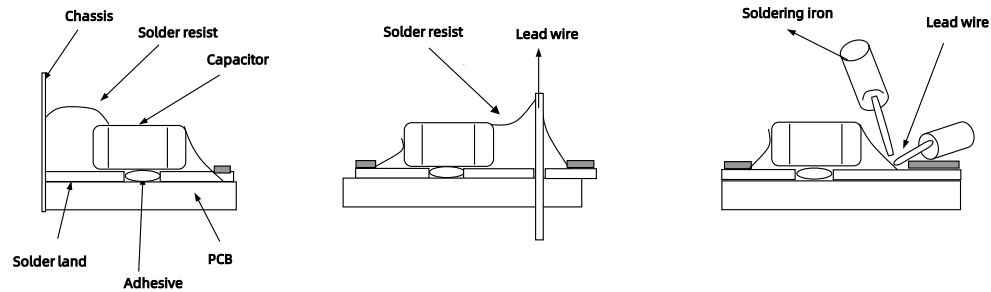


b. Recommended

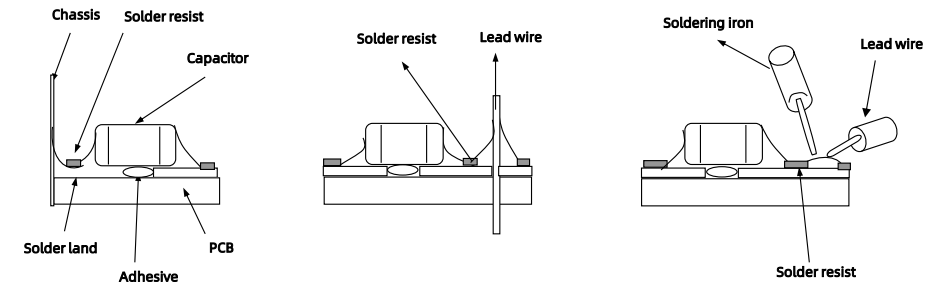


5.2.3 Solder Buildup and Soldering

a. Examples of soldering method not recommended



b. Examples of soldering method recommended

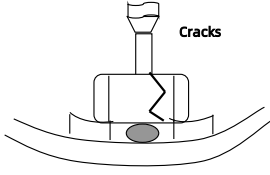
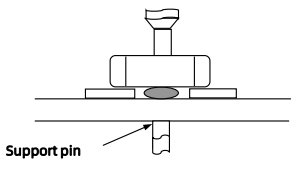
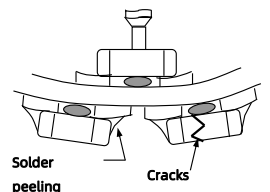
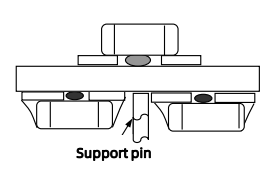


5.3 Consideration for Automatic Placement

If the mounting head is adjusted too low, it may induce excessive stress in the chip capacitor to result in cracking. Please take following precautions

- Adjust the bottom dead center of the mounting head to reach on the PC board surface and not press it;
- Adjust the mounting head pressure to be 1N to 3N of static weight;
- To minimize the impact energy from mounting head, it is important to provide support from the bottom side of the PC board.

Please refer to the following samples

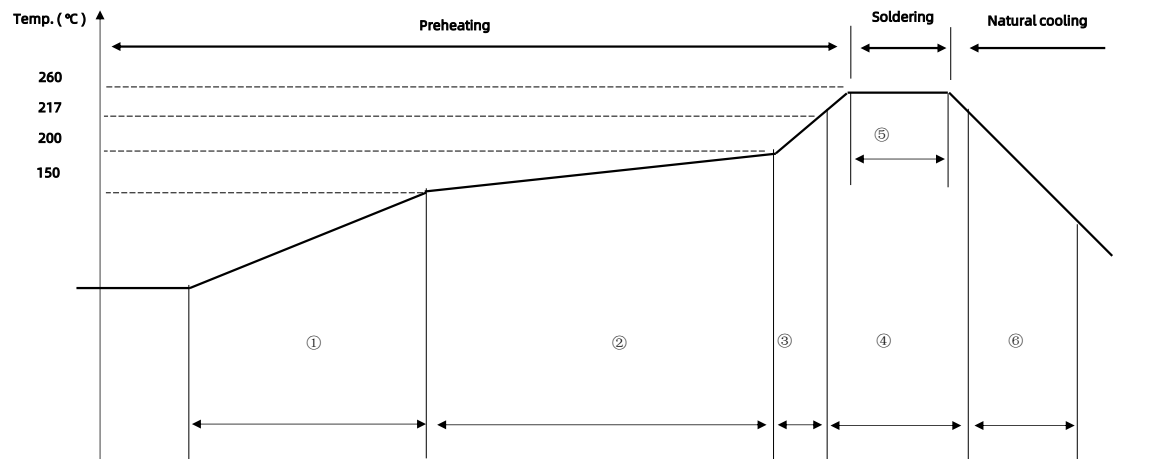
Mounting	Not recommended	Recommended
Singel-sided Mounting	 Cracks	 Support pin
Double-sided Mounting	 Solder peeling Cracks	 Support pin

5.4 Soldering

5.4.1 Flux Selection

- It is recommended to use a mildly activated rosin flux (less than 0.1wt% chlorine). Strong flux is not recommended.
- Please provide proper amount of flux. Excessive flux must be avoided.
- When water-soluble flux is used, enough washing is necessary.

5.4.2 Recommended Soldering Profile



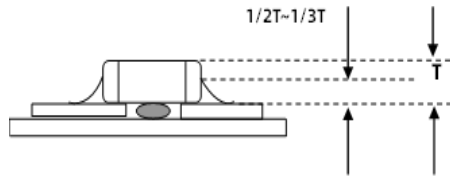
5.4.2.1 Reflow Soldering Condition

NO.	Reflow Soldering zone	Reflow Soldering Condition
①	Preheating 1	$\leq 3\text{ }^{\circ}\text{C/s}$, $\geq 60\text{ s}$
②	Constant temperature	$150^{\circ}\text{C}-200^{\circ}\text{C}$, $60\text{ s}-120\text{ s}$, $\leq 1\text{ }^{\circ}\text{C/s}$
③	Preheating 1	$1-5\text{ }^{\circ}\text{C/s}$
④	Soldering 1	Above $217\text{ }^{\circ}\text{C}$, $60-150\text{ s}$
⑤	Soldering 1	Above $260\text{ }^{\circ}\text{C}$, over 10 s
⑥	Natural cooling	$\leq 6\text{ }^{\circ}\text{C/s}$

Caution

a.Excessive solder will induce higher tensile force in chip capacitor when temperature changes and result in cracking. Insufficient solder may detach the capacitor from the PC board.

The ideal condition is to have solder mass controlled to 1/2 to 1/3 of the thickness of the capacitors.



b.Soldering duration should be kept as close to recommended times as possible, because excessive duration can detrimentally affect solderability.

c.The peak temperature of reflow soldering is $245\text{ }^{\circ}\text{C} \pm 15\text{ }^{\circ}\text{C}$.

6. All products in this specification comply with the EU RoHS directive

The EU RoHS Directive refers to the "Directive 2011/65/EU on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment" stipulated by the European Union.

Table 5-1 Electrical tests & Cap.\ D.F\ IR changes after test

No.	Series	Temp. Chara.	Size	Rated Voltage (DC)	Thickness Code	Capacitance	Electrical tests				Resistance to soldering heat	Substrate Bending test	Vibration	Rapid change of temperature	Damp heat (steady state)			High Temperature High Humidity (Steady)			Endurance			
							DF [max.]	IR [min.]	Measurement Frequency	Measurement Voltage [Vrms]					Cap. Change [ΔC/C≤±%]	DF [max.]	IR [min.]	Cap. Change [ΔC/C≤±%]	DF [max.]	IR [min.]	Cap. Change [ΔC/C≤±%]	DF [max.]	IR [min.]	Test Voltage [Vrms]
673	C	X7T	0805	10V	H	22μF	0.125	50 Ω·F	120±24Hz	0.5±0.1	15	12.5	15	15	12.5	0.2	12.5 Ω·F	12.5	0.2	12.5 Ω·F	12.5	0.2	10 Ω·F	1.0 × U _R
674	C	X7T	0805	6.3V	H	2.2μF~10μF	0.15	50 Ω·F	1.0±0.1KHz	0.5±0.1	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.5 × U _R
675	C	X7T	0805	6.3V	H	22μF	0.15	50 Ω·F	120±24Hz	0.5±0.1	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.5 × U _R
676	C	X7T	0805	4.0V	Y	2.2μF	0.15	50 Ω·F	1.0±0.1KHz	0.5±0.1	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.0 × U _R
677	C	X7T	0805	4.0V	Y	10μF	0.15	50 Ω·F	1.0±0.1KHz	0.5±0.1	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.0 × U _R
678	C	X7T	0805	4.0V	H	2.2μF~4.7μF	0.15	50 Ω·F	1.0±0.1KHz	0.5±0.1	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.5 × U _R
679	C	X7T	0805	2.5V	Y	10μF	0.15	50 Ω·F	1.0±0.1KHz	0.5±0.1	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.0 × U _R
680	C	X7T	0805	2.5V	Y	22μF~47μF	0.15	50 Ω·F	120±24Hz	0.5±0.1	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.0 × U _R
681	C	X7T	0805	2.5V	H	22μF~47μF	0.15	50 Ω·F	120±24Hz	0.5±0.1	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.5 × U _R
682	C	X7T	1206	63V	P	4.7μF	0.1	50 Ω·F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	10 Ω·F	15	0.2	10 Ω·F	15	0.2	10 Ω·F	1.5 × U _R
683	C	X7T	1206	50V	P	10μF	0.1	50 Ω·F	1.0±0.1KHz	1.0±0.2	7.5	10	10	15	12.5	0.2	12.5 Ω·F	12.5	0.2	12.5 Ω·F	12.5	0.2	25 Ω·F	1.2 × U _R
684	C	X7T	1206	25V	L	1μF	0.1	50 Ω·F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	50 Ω·F	1.5 × U _R
685	C	X7T	1206	25V	L	10μF	0.1	50 Ω·F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	50 Ω·F	1.5 × U _R
686	C	X7T	1206	16V	L	10μF	0.125	50 Ω·F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.5 × U _R
687	C	X7T	1206	6.3V	P	47μF	0.1	100 Ω·F	120±24Hz	0.5±0.1	12.5	12.5	10	15	30	0.2	10 Ω·F	30	0.2	5 Ω·F	30	0.2	10 Ω·F	1.0 × U _R
688	C	X7T	1206	6.3V	L	4.7μF~10μF	0.15	50 Ω·F	1.0±0.1KHz	0.5±0.1	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.5 × U _R
689	C	X7T	1206	6.3V	L	22μF	0.15	50 Ω·F	120±24Hz	0.5±0.1	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.5 × U _R
690	C	X7T	1206	4.0V	Y	22μF	0.15	50 Ω·F	120±24Hz	0.5±0.1	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.5 × U _R
691	C	X7T	1206	4.0V	O	1μF	0.15	50 Ω·F	1.0±0.1KHz	0.5±0.1	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.5 × U _R
692	C	X7T	1206	4.0V	L	22μF	0.15	50 Ω·F	120±24Hz	0.5±0.1	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.0 × U _R
693	C	X7T	1206	2.5V	L	22μF~100μF	0.15	50 Ω·F	120±24Hz	0.5±0.1	15	12.5	15	15	12.5	0.2	25 Ω·F	12.5	0.2	25 Ω·F	15	0.2	10 Ω·F	1.0 × U _R
694	C	X7T	1210	50V	R	10μF	0.1	50 Ω·F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	12.5	0.2	12.5 Ω·F	12.5	0.2	12.5 Ω·F	15	0.2	25 Ω·F	1.5 × U _R
695	C	X7T	1210	50V	3	10μF	0.1	100 Ω·F	1.0±0.1KHz	1.0±0.2	7.5	12.5	7.5	7.5	12.5	0.2	12.5 Ω·F	20	0.2	12.5 Ω·F	20	0.2	25 Ω·F	1.5 × U _R