



Issued No.:SPEC-CAB20230718

Date:2023-11-15

EYANG TECHNOLOGY DEVELOPMENT CO.,LTD

**Industrial Grade Multilayer Ceramic
Chip Capacitors Model selection reference book**

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

Industrial Grade Multilayer Ceramic Chip Capacitors**1. Scope**

This specification is applicable to the Industrial Grade Multilayer Ceramic Chip Capacitors (MLCC)

1.1 Temperature Characteristics

Class1 (Temperature Compensating Type): C0G

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

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

1.3 Capacitance : 0.1pF~100μF

2. Part Number System

B	0201	C0G	101	J	500	N	I	A
① Series Code	② Size Code	③Temperature Characteristics	④Nominal Capacitance	⑤Capacitance Tolerance	⑥Rated Voltage	⑦Termination Type	⑧Packaging Code	⑨Thickness Code

① **Series Code** **B** - Industrial Grade Multilayer Ceramic Chip Capacitors

② **Size Code** (Unit:mm)

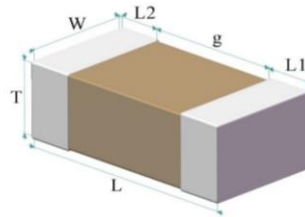


Fig.1 Structure & Dimension

Size Code	L	W	L1,L2	g	T	Thickness Code
0105	0.40±0.02	0.20±0.02	0.07~0.13	0.13min.	0.20±0.02	Z
0201	0.60±0.03	0.30±0.03	0.10~0.20	0.20min.	0.30±0.03	A
0201	0.60+0.05/-0.03	0.30+0.05/-0.03	0.10~0.20	0.20min.	0.30+0.05/-0.03	J
0201	0.60±0.09	0.30±0.09	0.10~0.20	0.20min.	0.30±0.09	F
0201	0.60+0.10/-0.03	0.30+0.10/-0.03	0.10~0.20	0.20min.	0.30+0.10/-0.03	X
0201	0.60±0.09	0.30±0.09	0.10~0.25	0.20min.	0.50±0.05	B
0402	1.00±0.05	0.50±0.05	0.15~0.35	0.30min.	0.50±0.05	B
0402	1.00+0.15/-0.05	0.50+0.15/-0.05	0.15~0.35	0.30min.	0.50+0.15/-0.05	N
0402	1.00+0.20/-0.05	0.50+0.20/-0.05	0.15~0.35	0.30min.	0.50+0.20/-0.05	C
0402	1.00+0.30/-0.05	0.50+0.30/-0.05	0.15~0.35	0.30min.	0.50+0.30/-0.05	U
0603	1.60+0.20/-0.10	0.80+0.20/-0.10	0.20~0.50	0.50min.	0.45±0.05	S
0603	1.60±0.10	0.80±0.10	0.20~0.50	0.50min.	0.80±0.10	D
0603	1.60+0.20/-0.10	0.80+0.20/-0.10	0.20~0.50	0.50min.	0.80+0.20/-0.10	K
0603	1.60+0.30/-0	0.80+0.30/-0	0.20~0.50	0.50min.	0.80+0.30/-0	W
0805	2.00±0.10	1.25±0.10	0.20~0.70	0.70min.	0.60±0.10	C
0805	2.00±0.20	1.25±0.20	0.20~0.70	0.70min.	0.85±0.15	K
0805	2.00±0.20	1.25±0.20	0.20~0.70	0.70min.	0.85+0.15/-0.35	Y
0805	2.00±0.10	1.25±0.10	0.20~0.70	0.70min.	1.25±0.10	G
0805	2.00±0.20	1.25±0.20	0.20~0.70	0.70min.	1.25±0.20	H
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±0.20	2.50±0.20	0.30~0.90	1.50 min.	1.60±0.20	L
1210	3.20±0.20	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±30ppm/°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
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 ,R2=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\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	160	16V
4R0	4.0V	250	25V
6R3	6.3V	350	35V
100	10V	500	50V

⑦ Termination Type

Code	Terminal Electrodes	Plating Material
N	Cu	Ni/Sn
P	Cu+AgPd or Cu+AgPdCu	-
C	Cu	Cu
K	Cu	Ni/Au
R	Cu/Ag (Resin)	Ni/Sn

⑧ Packaging Code See Table 4.

⑨ Thickness Code See ② Size Code

Table 3-1 Capacitance Table (Class1-C0G)

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
1	B	0105	C0G	25V	Z	0.2pF~220pF
2	B	0105	C0G	16V	Z	0.2pF~220pF
3	B	0201	C0G	50V	A	0.1pF~1nF
4	B	0201	C0G	25V	A	0.1pF~1nF
5	B	0201	C0G	16V	A	0.1pF~1nF
6	B	0402	C0G	50V	B	0.1pF~4.7nF
7	B	0402	C0G	50V	N	2.4nF~4.7nF
8	B	0402	C0G	25V	B	0.1pF~4.7nF
9	B	0402	C0G	25V	N	2.4nF~10nF
10	B	0402	C0G	16V	N	2.4nF~10nF
11	B	0402	C0G	16V	B	0.1pF~4.7nF
12	B	0603	C0G	50V	D	1pF~10nF
13	B	0603	C0G	25V	D	1pF~10nF
14	B	0603	C0G	16V	D	1pF~10nF
15	B	0805	C0G	50V	C	10pF~3.9nF
16	B	0805	C0G	50V	K	4.7nF~15nF
17	B	0805	C0G	50V	G	18nF~47nF
18	B	0805	C0G	50V	H	18nF~47nF
19	B	0805	C0G	25V	C	10pF~3.9nF
20	B	0805	C0G	25V	K	4.7nF~15nF
21	B	0805	C0G	25V	G	18nF~68nF
22	B	0805	C0G	25V	H	18nF~68nF
23	B	1206	C0G	50V	E	10nF~100nF
24	B	1206	C0G	50V	O	47nF
25	B	1206	C0G	50V	L	56nF~220nF
26	B	1206	C0G	25V	E	10nF~100nF
27	B	1206	C0G	25V	O	47nF
28	B	1206	C0G	25V	L	56nF~220nF
29	B	1206	C0G	16V	E	10nF~100nF
30	B	1206	C0G	16V	O	47nF
31	B	1206	C0G	16V	L	56nF~220nF

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

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
1	B	X7R	0105	16V	Z	51pF~1nF
2	B	X7R	0105	10V	Z	51pF~1nF
3	B	X7R	0201	50V	A	100pF~10nF
4	B	X7R	0201	25V	A	100pF~10nF
5	B	X7R	0201	16V	A	100pF~10nF
6	B	X7R	0201	10V	A	3.3nF~10nF
7	B	X7R	0201	6.3V	A	3.3nF~10nF
8	B	X7R	0402	50V	B	100pF~100nF
9	B	X7R	0402	50V	N	100nF
10	B	X7R	0402	50V	C	100nF
11	B	X7R	0402	25V	B	100pF~100nF
12	B	X7R	0402	25V	N	22nF~330nF
13	B	X7R	0402	25V	C	82nF~220nF
14	B	X7R	0402	16V	B	1nF~220nF
15	B	X7R	0402	16V	N	22nF~470nF
16	B	X7R	0402	10V	B	1nF~220nF
17	B	X7R	0402	10V	N	22nF~470nF
18	B	X7R	0402	6.3V	B	1nF~220nF
19	B	X7R	0402	6.3V	N	22nF~470nF
20	B	X7R	0402	6.3V	N	1μF
21	B	X7R	0603	50V	D	220pF~820nF
22	B	X7R	0603	50V	K	47nF~470nF
23	B	X7R	0603	25V	D	100nF~820nF
24	B	X7R	0603	25V	D	1μF
25	B	X7R	0603	25V	K	100nF~1μF
26	B	X7R	0603	16V	D	1nF~1μF
27	B	X7R	0603	16V	K	100nF~1μF
28	B	X7R	0603	10V	D	100nF~820nF
29	B	X7R	0603	10V	D	2.2μF
30	B	X7R	0603	10V	K	100nF~1μF
31	B	X7R	0603	10V	K	2.2μF
32	B	X7R	0603	6.3V	D	100nF~820nF
33	B	X7R	0603	6.3V	K	100nF~1μF
34	B	X7R	0603	6.3V	K	2.2μF
35	B	X7R	0603	6.3V	K	4.7μF
36	B	X7R	0805	50V	Y	220pF~100nF
37	B	X7R	0805	50V	H	100nF~1μF
38	B	X7R	0805	25V	Y	220pF~100nF
39	B	X7R	0805	25V	G	150nF~4.7μF
40	B	X7R	0805	25V	H	150nF~4.7μF
41	B	X7R	0805	16V	G	150nF~4.7μF
42	B	X7R	0805	16V	H	150nF~4.7μF
43	B	X7R	0805	10V	G	1μF~4.7μF
44	B	X7R	0805	10V	H	1μF~10μF
45	B	X7R	0805	6.3V	G	1μF~4.7μF
46	B	X7R	0805	6.3V	H	1μF~10μF
47	B	X7R	1206	50V	Y	100nF
48	B	X7R	1206	50V	L	100nF~1μF
49	B	X7R	1206	16V	O	1μF

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

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
50	B	X7R	1206	16V	L	10 μ F
51	B	X7R	1206	10V	P	100 μ F
52	B	X7R	1210	50V	R	4.7 μ F
53	B	X7R	1210	50V	3	10 μ F
54	B	X7R	1210	10V	Q	10 μ F
55	B	X5R	0105	10V	Z	51pF~10nF
56	B	X5R	0105	6.3V	Z	120pF~100nF
57	B	X5R	0201	25V	A	2.2nF~10nF
58	B	X5R	0201	25V	F	100nF~470nF
59	B	X5R	0201	16V	A	3.3nF~100nF
60	B	X5R	0201	16V	J	100nF~220nF
61	B	X5R	0201	16V	F	330nF~470nF
62	B	X5R	0201	10V	A	10nF~100nF
63	B	X5R	0201	10V	J	220nF~330nF
64	B	X5R	0201	10V	F	470nF~1 μ F
65	B	X5R	0201	6.3V	A	22nF~100nF
66	B	X5R	0201	6.3V	J	220nF~470nF
67	B	X5R	0201	6.3V	J	1 μ F
68	B	X5R	0201	6.3V	F	1 μ F
69	B	X5R	0201	6.3V	X	2.2 μ F
70	B	X5R	0201	4V	X	2.2 μ F
71	B	X5R	0402	50V	B	100pF~100nF
72	B	X5R	0402	50V	N	27nF~47nF
73	B	X5R	0402	50V	C	56nF~470nF
74	B	X5R	0402	35V	B	100pF~100nF
75	B	X5R	0402	35V	C	56nF~100nF
76	B	X5R	0402	25V	B	100pF~1 μ F
77	B	X5R	0402	25V	N	82nF~470nF
78	B	X5R	0402	25V	C	270nF~2.2 μ F
79	B	X5R	0402	16V	B	100pF~1 μ F
80	B	X5R	0402	16V	N	120nF~470nF
81	B	X5R	0402	16V	N	2.2 μ F
82	B	X5R	0402	10V	B	100pF~1 μ F
83	B	X5R	0402	10V	B	2.2 μ F
84	B	X5R	0402	10V	N	120nF~470nF
85	B	X5R	0402	10V	N	2.2 μ F
86	B	X5R	0402	10V	C	4.7 μ F
87	B	X5R	0402	6.3V	B	100pF~820nF
88	B	X5R	0402	6.3V	B	1 μ F
89	B	X5R	0402	6.3V	B	2.2 μ F
90	B	X5R	0402	6.3V	N	270nF~4.7 μ F
91	B	X5R	0402	6.3V	C	4.7 μ F
92	B	X5R	0402	6.3V	C	10 μ F
93	B	X5R	0402	6.3V	U	10 μ F
94	B	X5R	0402	4V	C	10 μ F
95	B	X5R	0402	4V	C	22 μ F
96	B	X5R	0603	50V	D	220pF~820nF
97	B	X5R	0603	50V	D	1 μ F
98	B	X5R	0603	50V	K	2.2 μ F

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

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
99	B	X5R	0603	35V	D	680nF~820nF
100	B	X5R	0603	25V	S	680nF~820nF
101	B	X5R	0603	25V	D	100nF~820nF
102	B	X5R	0603	25V	D	1μF
103	B	X5R	0603	25V	D	2.2μF
104	B	X5R	0603	25V	K	1μF~10μF
105	B	X5R	0603	16V	S	680nF~820nF
106	B	X5R	0603	16V	D	220nF~2.2μF
107	B	X5R	0603	16V	K	4.7μF~10μF
108	B	X5R	0603	10V	S	4.7μF
109	B	X5R	0603	10V	D	680nF~4.7μF
110	B	X5R	0603	10V	K	5.6μF~10μF
111	B	X5R	0603	10V	K	22μF
112	B	X5R	0603	6.3V	D	1μF~10μF
113	B	X5R	0603	6.3V	K	8.2μF~10μF
114	B	X5R	0603	6.3V	K	22μF
115	B	X5R	0603	4V	K	10μF
116	B	X5R	0603	4V	K	22μF
117	B	X5R	0603	4V	K	47μF
118	B	X5R	0805	50V	Y	220pF~2.2μF
119	B	X5R	0805	50V	H	100nF~4.7μF
120	B	X5R	0805	35V	Y	680nF~2.2μF
121	B	X5R	0805	35V	H	680nF~4.7μF
122	B	X5R	0805	25V	Y	680nF~8.2μF
123	B	X5R	0805	25V	H	220nF~8.2μF
124	B	X5R	0805	25V	H	10μF
125	B	X5R	0805	25V	H	22μF
126	B	X5R	0805	16V	Y	2.2μF~8.2μF
127	B	X5R	0805	16V	H	1μF~10μF
128	B	X5R	0805	16V	H	22μF
129	B	X5R	0805	10V	Y	2.2μF~8.2μF
130	B	X5R	0805	10V	H	2.2μF~10μF
131	B	X5R	0805	10V	H	22μF
132	B	X5R	0805	10V	H	47μF
133	B	X5R	0805	6.3V	Y	2.2μF~8.2μF
134	B	X5R	0805	6.3V	H	2.2μF~8.2μF
135	B	X5R	0805	6.3V	H	10μF
136	B	X5R	0805	6.3V	H	22μF
137	B	X5R	0805	6.3V	H	47μF
138	B	X5R	0805	4V	Y	22μF~47μF
139	B	X5R	0805	4V	H	47μF~100μF
140	B	X5R	1206	50V	Y	680nF~4.7μF
141	B	X5R	1206	50V	L	680nF~8.2μF
142	B	X5R	1206	50V	L	10μF
143	B	X5R	1206	35V	Y	2.2μF
144	B	X5R	1206	35V	Y	4.7μF
145	B	X5R	1206	25V	L	4.7μF~10μF
146	B	X5R	1206	16V	Y	4.7μF~8.2μF
147	B	X5R	1206	16V	L	4.7μF~8.2μF

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

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
148	B	X5R	1206	16V	L	22μF
149	B	X5R	1206	10V	L	47μF
150	B	X5R	1206	6.3V	L	100μF
151	B	X5R	1210	25V	L	680nF~10μF
152	B	X5R	1210	25V	Q	680nF~10μF
153	B	X5R	1210	16V	L	4.7μF~10μF
154	B	X5R	1210	16V	L	22μF
155	B	X5R	1210	16V	Q	4.7μF~10μF
156	B	X5R	1210	16V	Q	22μF
157	B	X5R	1210	16V	R	4.7μF~10μF
158	B	X5R	1210	16V	R	22μF
159	B	X5R	1210	10V	Q	680nF~10μF
160	B	X5R	1210	10V	R	22μF
161	B	X5R	1210	6.3V	3	100μF
162	B	X7S	0105	10V	Z	2.2nF~22nF
163	B	X7S	0201	16V	A	22nF
164	B	X7S	0201	16V	F	100nF
165	B	X7S	0201	10V	A	100nF
166	B	X7S	0201	10V	J	100nF
167	B	X7S	0201	6.3V	A	100nF
168	B	X7S	0402	10V	C	1μF
169	B	X7S	0402	6.3V	C	1μF
170	B	X7S	0603	25V	K	1μF~2.2μF
171	B	X7S	0603	16V	K	1μF
172	B	X7S	0603	16V	K	2.2μF
173	B	X7S	0603	16V	K	4.7μF
174	B	X7S	0603	10V	K	4.7μF
175	B	X7S	0603	6.3V	K	4.7μF
176	B	X7S	0805	25V	G	1μF~4.7μF
177	B	X7S	0805	25V	H	1μF~4.7μF
178	B	X7S	0805	16V	G	1μF~4.7μF
179	B	X7S	0805	16V	H	1μF~4.7μF
180	B	X7S	0805	10V	G	1μF~4.7μF
181	B	X7S	0805	10V	H	1μF~4.7μF
182	B	X7S	0805	6.3V	G	1μF~4.7μF
183	B	X7S	0805	6.3V	G	10μF
184	B	X7S	0805	6.3V	H	1μF~4.7μF
185	B	X7S	0805	6.3V	H	10μF
186	B	X7S	1206	16V	L	10μF
187	B	X7T	0201	10V	F	220nF~470nF
188	B	X7T	0201	6.3V	A	15nF~100nF
189	B	X7T	0201	6.3V	J	220nF
190	B	X7T	0201	6.3V	F	330nF~470nF
191	B	X7T	0201	4.0V	F	1μF
192	B	X7T	0402	10V	B	1μF
193	B	X7T	0402	10V	C	2.2μF
194	B	X7T	0402	6.3V	B	1μF
195	B	X7T	0402	6.3V	N	2.2μF
196	B	X7T	0402	6.3V	C	4.7μF

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

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
197	B	X7T	0402	4.0V	N	4.7μF
198	B	X7T	0603	10V	K	2.2μF~10μF
199	B	X7T	0603	6.3V	K	10μF
200	B	X7T	0805	16V	H	4.7μF
201	B	X7T	0805	10V	H	10μF
202	B	X7T	0805	10V	H	22μF
203	B	X7T	0805	6.3V	H	22μF
204	B	X6S	0201	25V	A	10nF
205	B	X6S	0201	16V	A	1nF~1.5nF
206	B	X6S	0201	16V	J	100nF
207	B	X6S	0201	10V	A	1.8nF~100nF
208	B	X6S	0201	10V	J	100nF~470nF
209	B	X6S	0201	10V	F	330nF~470nF
210	B	X6S	0201	6.3V	A	10nF~100nF
211	B	X6S	0201	6.3V	J	100nF~470nF
212	B	X6S	0201	6.3V	F	330nF~470nF
213	B	X6S	0201	6.3V	F	1μF
214	B	X6S	0201	4.0V	F	1μF
215	B	X6S	0201	4.0V	X	2.2μF
216	B	X6S	0402	50V	B	15nF~47nF
217	B	X6S	0402	50V	C	100nF
218	B	X6S	0402	25V	B	68nF~100nF
219	B	X6S	0402	25V	C	220nF~1.0μF
220	B	X6S	0402	25V	N	220nF~470nF
221	B	X6S	0402	16V	B	100nF~1μF
222	B	X6S	0402	16V	N	220nF~470nF
223	B	X6S	0402	16V	C	220nF
224	B	X6S	0402	16V	C	1μF
225	B	X6S	0402	16V	C	2.2μF
226	B	X6S	0402	10V	B	1μF
227	B	X6S	0402	10V	N	220nF~470nF
228	B	X6S	0402	10V	N	4.7μF
229	B	X6S	0402	10V	C	2.2μF
230	B	X6S	0402	6.3V	B	1μF
231	B	X6S	0402	6.3V	N	220nF~470nF
232	B	X6S	0402	6.3V	N	2.2μF
233	B	X6S	0402	6.3V	C	1μF~4.7μF
234	B	X6S	0402	4.0V	B	1μF~2.2μF
235	B	X6S	0402	4.0V	C	10μF
236	B	X6S	0603	25V	K	2.2μF
237	B	X6S	0603	25V	K	4.7μF
238	B	X6S	0603	16V	D	1μF
239	B	X6S	0603	16V	K	2.2μF~10μF
240	B	X6S	0603	10V	K	10μF
241	B	X6S	0603	6.3V	D	4.7μF
242	B	X6S	0603	6.3V	K	4.7μF
243	B	X6S	0603	6.3V	K	10μF
244	B	X6S	0603	6.3V	W	22μF
245	B	X6S	0603	4.0V	K	10μF

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

NO.	Series Code	Temperature Characteristics	Size Code	Rated Voltage	Thickness code	Capacitance
246	B	X6S	0603	4.0V	K	22 μ F
247	B	X6S	0603	4.0V	W	22 μ F
248	B	X6S	0603	2.5V	K	47 μ F
249	B	X6S	0805	16V	H	10 μ F
250	B	X6S	0805	16V	H	22 μ F
251	B	X6S	0805	10V	H	10 μ F
252	B	X6S	0805	10V	H	22 μ F
253	B	X6S	0805	6.3V	H	10 μ F
254	B	X6S	0805	6.3V	H	22 μ F
255	B	X6S	0805	6.3V	H	47 μ F
256	B	X6S	0805	4.0V	H	47 μ F
257	B	X6S	1206	16V	L	22 μ F

Table 4 Packaging (Minimum Quantity)

NO.	Size Code	Thickness Code	Square hole spacing	Disc Size	Carrier Tape Type	QTY (Kpcs)	Packaging Code
1	0105	Z	2mm	7 #	Paper	20	T
2	0105	Z	2mm	7 #	Paper	15	H
3	0105	Z	1mm	7 #	Plastic	40	P
4	0201	A	2mm	7 #	Paper	15	T
5	0201	A	2mm	13 #	Paper	50	J
6	0201	A	1mm	13 #	Paper	100	D
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	100	D
14	0201	J	1mm	13 #	Paper	140	A
15	0201	J	2mm	13 #	Paper	70	M
16	0201	J	2mm	7 #	Paper	10	H
17	0201	J	1mm	7 #	Paper	30	L
18	0201	X	2mm	7 #	Paper	15	T
19	0201	X	2mm	13 #	Paper	50	J
20	0201	X	2mm	7 #	Paper	10	H
21	0201	F	2mm	7 #	Paper	15	T
22	0201	B	2mm	7 #	Paper	10	H
23	0201	B	2mm	7 #	Paper	15	T
24	0402	B	2mm	7 #	Paper	10	T
25	0402	B	2mm	13 #	Paper	50	J
26	0402	N	2mm	7 #	Paper	10	T
27	0402	N	2mm	13 #	Paper	50	J
28	0402	C	2mm	7 #	Paper	10	T
29	0402	C	2mm	13 #	Paper	50	J
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 #	Paper	3	W
41	0603	K	4mm	7 #	Plastic	4	Q
42	0603	K	4mm	7 #	Plastic	3	R
43	0603	W	4mm	7 #	Plastic	3	R
44	0603	W	4mm	13 #	Plastic	10	O
45	0603	W	4mm	7 #	Plastic	4	Q
46	0805	C	4mm	7 #	Paper	4	T
47	0805	C	4mm	7 #	Plastic	3	R
48	0805	K	4mm	7 #	Paper	4	T

Table 4 Packaging (Minimum Quantity)

NO.	Size Code	Thickness Code	Square hole spacing	Disc Size	Carrier Tape Type	QTY (Kpcs)	Packaging Code
49	0805	K	4mm	7 "	Plastic	3	R
50	0805	K	4mm	13 "	Plastic	15	E
51	0805	Y	4mm	7 "	Paper	4	T
52	0805	Y	4mm	13 "	Plastic	15	E
53	0805	Y	4mm	7 "	Plastic	2	P
54	0805	Y	4mm	7 "	Plastic	3	R
55	0805	G	4mm	7 "	Plastic	3	R
56	0805	G	4mm	7 "	Plastic	2	P
57	0805	G	4mm	13 "	Plastic	10	O
58	0805	H	4mm	7 "	Plastic	3	R
59	0805	H	4mm	7 "	Plastic	2	P
60	0805	H	4mm	13 "	Plastic	10	O
61	1206	E	4mm	7 "	Plastic	3	R
62	1206	E	4mm	7 "	Plastic	2	P
63	1206	Y	4mm	7 "	Plastic	3	R
64	1206	Y	4mm	7 "	Plastic	4	Q
65	1206	O	4mm	7 "	Plastic	3	R
66	1206	O	4mm	7 "	Plastic	2	P
67	1206	L	4mm	7 "	Plastic	2	P
68	1206	L	4mm	7 "	Plastic	3	R
69	1206	L	4mm	13 "	Plastic	8	E
70	1206	P	4mm	7 "	Plastic	2	P
71	1210	L	4mm	7 "	Plastic	2	P
72	1210	Q	4mm	7 "	Plastic	1.5	F
73	1210	Q	4mm	7 "	Plastic	0.5	S
74	1210	Q	4mm	7 "	Plastic	1	Z
75	1210	R	4mm	7 "	Plastic	1	Z
76	1210	R	4mm	7 "	Plastic	0.5	S
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
COG/X7R/X7S/X7T	-55℃ ~ 125℃	≤95% (25℃)	86 KPa~106KPa
X6S	-55℃ ~ 105℃	≤95% (25℃)	86 KPa~106KPa
X5R	-55℃ ~ 85℃	≤95% (25℃)	86 KPa~106KPa

3.2 Reliability Test Specifications and Methods

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

Table 5: Specifications and Test Methods

No.	Item	Specification Class1 (Temperature Compensating Type)- COG Class 2 (High dielectric constant type)-X7R,X7T,X7S,X6S,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 ~ 28℃
4	Dissipation Factor (D.F.) or Q	Class 1	C≥30pF, Q≥1000	Relative Humidity	≤RH 80%
			C < 30pF, Q≥400+20C	Measurement Frequency	Class 1: C≤1nF, f=1.0±0.1MHz; C>1nF, f=1.0±0.1KHz
		Class 2	C: Nominal Capacitance (pF)	Measurement Voltage	Class 2: f=1.0±0.1KHz, 120±24Hz, See Table 5-1
			See Table 5-1	Post-treatment	Class 1: 1.0±0.2Vrms Class 2: U=1.0±0.2Vrms, 0.5±0.1Vrms , See Table 5-1 When the capacitor initial capacitance is lower than its tolerance value, the test sample need to Perform a heat treatment at 150℃+0/-10℃for 1hour and then sit for 24±2 hours at room temperature.then measure.
5	Insulation Resistance (I.R.)	Class 1	≥10,000MΩ or 500Ω·F, (Whichever is larger)	Measurement Temperature	18 ~ 28℃
		Class 2	See Table 5-1	Relative Humidity	≤RH 80%
				Measurement Voltage	Rated Voltage
				Charging Time	1min
6	Voltage proof	No defects or abnormalities.		Charge/discharge current	50mA or lower
				Test Voltage	Class 1: ≥3×U _R Class 2: ≥2.5×U _R
				Applied Time	t=1s~5s
7	Temperature Characteristics of Capacitance	Class 1	COG: α≤±30ppm/℃ (125℃); -72≤α≤+30ppm/℃ (-55℃)	Pre-treatment	Class 2: Perform a heat treatment at 150℃+0/-10℃ for 1 hour and then sit for 24±2 hours at room temperature. then measure.
		Class 2	X7R/X5R: ΔC/C≤±15% X7S/X6S: ΔC/C≤±22% X7T: -33%≤ΔC/C≤22%	Pre-drying	Class 1: 16-24 hours
				Measure the capacitance separately in 25℃, 81, 25℃, 82, 25℃, should satisfied related capacitance change characteristics.	
				COG(X7R,X7S,X7T)	81=-55℃, 82=125℃
				X6S	81=-55℃, 82=105℃
				X5R	81=-55℃, 82=85℃
				T.C Measurement Voltage	Class 1: 1.0±0.2Vrms Class 2: ≤1.0±0.2Vrms ※
					【※ 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	Class 2: Perform a heat treatment at 150℃+0/-10℃ for 1 hour and then sit for 24±2 hours at room temperature. then measure.
		Cap. Change	Class 1: ΔC/C≤±2.5% or ±0.25pF, (Whichever is larger) Class 2: See Table 5-1	Test Method	Solder bath method
		I.R.	initial specification	Pre-heating	Temp. : 120℃~150℃/Time: 60s
		D.F. or Q	initial specification	Solder alloy	Sn-3.0Ag-0.5Cu(Lead Free Solder)
		Voltage proof	No defects or abnormalities.	Solder temp.	(270±5)℃
				Duration of immersion	(10±1)s
				Depth of immersion	10 mm
				Post-treatment	Let sit for 24±2 hours at room temperature, then measure.
9	Solderability	Appearance	95% of the terminations is to be soldered evenly and continuously	Pre-heating	80℃~120℃,Time:10s~30s
				Test Method	Solder bath method
				Flux	Solution of rosin ethanol
				Solder alloy	Sn-Ag-Cu(Lead Free Solder)
				Solder temp.	(245±5)℃
				Duration of immersion	(2.0±0.5)s
				Depth of immersion	10 mm
10	Substrate Bending test	Appearance	No defects or abnormalities	Mounting method	Solder the capacitor on the test substrate shown in Fig.2
		Cap. Change	Class 1: ΔC/C≤±5% or ±0.5pF, (Whichever is larger) Class 2: See Table 5-1	Pressurization Method	Shown in Fig.3
				Flexure	1mm
				Holding Time	(5±1)s
				then measure the capacitance	

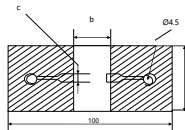


Fig 2

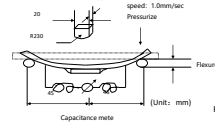
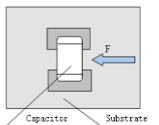


Fig 3

Table 5: Specifications and Test Methods

No.	Item	Specification Class1 (Temperature Compensating Type)- COG Class 2 (High dielectric constant type)-X7R,X7T,X7S,X6S,X5R		Test Method																
11	Adhesive Strength of Termination	Appearance	No defects or abnormalities	Mounting method Apply a pushing force of F for 10±1secs. Pushing force	Solder the capacitor on the test substrate shown in Fig.4 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	1.5mm															
		I.R.	initial specification	Kind of Vibration	A simple harmonic motion															
		D.F. or Q	initial specification	Frequency	10Hz-55Hz-10Hz															
				Vibration Time	1 min															
				Repeat this for 2hrs each in 3 perpendicular directions X, Y, Z, total 6hrs.																
13	Rapid change of temperature	Appearance	No defects or abnormalities	Pre-treatment	Class 2: Perform a heat treatment at 150°C+0/-10°C for 1 hour and then sit for 24±2 hours at room temperature. then measure.															
		Cap. Change	Class 1:ΔC/C≤±2.5% or ±0.25pF, (Whichever is larger) Class 2: See Table 5-1	Mounting method	Solder the capacitor on the test substrate															
		I.R.	initial specification	The number of cycles	100 cycles															
		D.F. or Q	initial specification	Temperature Step																
		Voltage proof	No defects or abnormalities.																	
				<table><tr><th>Step.</th><th>Temp.(°C)</th><th>Time (min.)</th></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	COG(X7R,X7S,X7T) θ1=-55°C, θ2=125°C X6S 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 hours at room temperature, then measure.																
14	Damp heat (steady state)	Appearance	No defects or abnormalities	Pre-treatment	Class 2: Perform a heat treatment at 150°C+0/-10°C for 1 hour and then sit for 24±2 hours at room temperature. then measure.															
		Cap. Change	Class 1: ΔC/C≤±7.5% or 0.75pF, (Whichever is larger) Class 2: See Table 5-1	Mounting method	Solder the capacitor on the test substrate															
		I.R.	Class 1: ≥500MΩ or 25Ω·F, (Whichever is smaller) Class 2: See Table 5-1	Test Temperature	60±2°C															
		D.F. or Q	Class 1: C≥30pF, Q≥200 C < 30pF, Q≥100+10C/3 C: Nominal Capacitance (pF) Class 2: See Table 5-1	Test Humidity	RH 90~95%															
				Test Time	500±12h															
				Post-treatment	Let sit for 24±2 hours at room temperature, then measure.															
15	High Temperature High Humidity (Steady)	Appearance	No defects or abnormalities	Pre-treatment	Class 2: Perform a heat treatment at 150°C+0/-10°C for 1 hour and then sit for 24±2 hours at room temperature. then measure.															
		Cap. Change	Class 1: ΔC/C≤±7.5% or 0.75pF, (Whichever is larger) Class 2: See Table 5-1	Mounting method	Solder the capacitor on the test substrate															
		I.R.	Class 1: ≥500MΩ or 25Ω·F, (Whichever is smaller) Class 2: See Table 5-1	Test Temperature	60±2°C															
		D.F. or Q	Class 1: C≥30pF, Q≥200 C < 30pF, Q≥100+10C/3 C: Nominal Capacitance (pF) Class 2: See Table 5-1	Test Humidity	RH 90~95%															
				Test Voltage	1.0×U _R															
				Test Time	500±12h															
				Charge/discharge current	50mA or lower															
				Post-treatment	Class 1: Set for 24±2 hours at room temperature, then measure. Class 2: Perform a heat treatment at 150°C+0/-10°C for 1 hour and then sit for 24±2 hours at room temperature. then measure.															
16	Endurance	Appearance	No defects or abnormalities	Pre-treatment	Class 2: Perform a heat treatment at 150°C+0/-10°C for 1 hour and then sit for 24±2 hours at room temperature. then measure.															
		Cap. Change	Class 1: ΔC/C≤±2% or ±0.2pF, (Whichever is larger) Class 2: See Table 5-1	Mounting method	Solder the capacitor on the test substrate															
		I.R.	Class 1: ≥1000MΩ or 50Ω·F, (Whichever is smaller) Class 2: See Table 5-1	Test Temperature	θ2±3°C [COG(X7R,X7S,X7T): θ2=125°C, X6S: θ2=105°C, X5R: θ2=85°C]															
		D.F. or Q	Class 1: C≥30pF, Q≥350 10pF < C < 30pF, Q≥275+5C/2 C≤10pF,Q≥200+10C C: Nominal Capacitance (pF) Class 2: See Table 5-1	Test Time	1000±12h															
				Test Voltage	Class 1: 2×U _R [0201COG:C≥270pF and U _R =50V: 1.5×U _R] Class 2: 1.5×U _R															
				Charge/discharge current	50mA or lower															
				Post-treatment	Class 1: Set for 24±2 hours at room temperature, then measure. Class 2: Perform a heat treatment at 150°C+0/-10°C for 1 hour and then sit for 24±2 hours at room temperature. then measure.															

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

4.1.2 Carrier Tape size

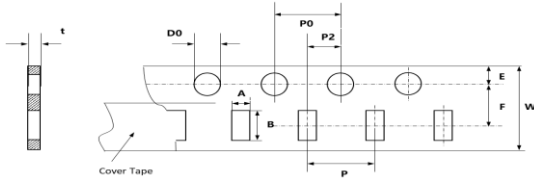


Fig. 5-1:0603,0805,1206,1210 (Paper tape)

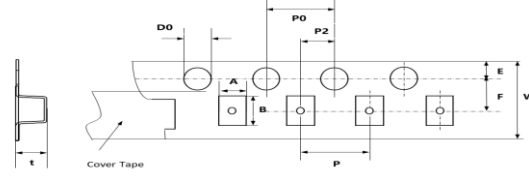


Fig. 5-2:0603,0805,1206,1210 (Plastic tape)

Table 6-1 Carrier size (Size Code:0603,0805,1206,1210)

Size Code	Thickness code	Carrier Tape Type	Packaging Code	A	B	F	P	E	D0	P2	K	W	P0	t
0603	S	Paper	T	1.10±0.10	1.90±0.10	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	0.70max
0603	D	Paper	T	1.00±0.10	1.80±0.10	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	1.15max
0603	D	Paper	A	1.00±0.10	1.80±0.10	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	1.15max
0603	D	Plastic	O	1.00±0.10	1.80±0.10	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	1.15max
0603	D	Paper	W	1.00±0.10	1.80±0.10	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	1.15max
0603	K	Paper	T	1.10±0.10	1.90±0.10	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	1.15max
0603	K	Paper	A	1.10±0.10	1.90±0.10	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	1.15max
0603	K	Plastic	O	1.10±0.10	1.90±0.10	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	1.15max
0603	K	Paper	W	1.10±0.10	1.90±0.10	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	1.15max
0603	K	Plastic	Q	1.10±0.10	1.90±0.10	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	1.15max
0603	K	Plastic	R	1.10±0.10	1.90±0.10	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	1.15max
0603	W	Plastic	R	1.10±0.20	1.90±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	1.35max
0603	W	Plastic	O	1.10±0.20	1.90±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	1.35max
0603	W	Plastic	Q	1.10±0.20	1.90±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	1.35max
0805	C	Paper	T	1.45±0.10	2.20±0.10	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	0.9max
0805	C	Plastic	R	1.45±0.10	2.20±0.10	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	0.9max
0805	K	Paper	T	1.45±0.20	2.20±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	1.15max
0805	K	Plastic	R	1.45±0.20	2.20±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	1.15max
0805	K	Plastic	E	1.45±0.20	2.20±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	1.15max
0805	Y	Paper	T	1.45±0.20	2.20±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	1.15max
0805	Y	Plastic	E	1.45±0.20	2.20±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	1.15max
0805	Y	Plastic	P	1.45±0.20	2.20±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	1.15max
0805	Y	Plastic	R	1.45±0.20	2.20±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	1.15max
0805	G	Plastic	R	1.45±0.10	2.20±0.10	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	1.75max
0805	G	Plastic	P	1.45±0.10	2.20±0.10	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	1.75max
0805	G	Plastic	O	1.45±0.10	2.20±0.10	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	1.75max
0805	H	Plastic	R	1.45±0.20	2.20±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	2.00max
0805	H	Plastic	P	1.45±0.20	2.20±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	2.00max
0805	H	Plastic	O	1.45±0.20	2.20±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	2.00max
1206	E	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	1.15max
1206	E	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	1.15max
1206	Y	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	1.35max
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	1.35max
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	1.45max
1206	O	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	1.45max
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	2.50max
1206	L	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	2.50max
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	2.50max
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	2.50max
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	2.00max
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	2.50max
1210	Q	Plastic	S	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	2.50max
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	2.50max
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	3.00max
1210	R	Plastic	S	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	3.00max
1210	3	Plastic	Z	2.70±0.30	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	3.10max

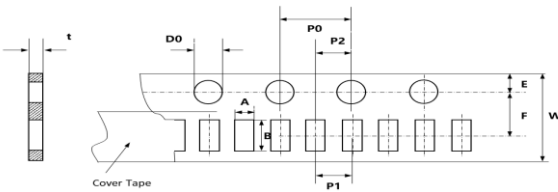


Fig. 5-3: 0402 (Paper tape/2mm pitch)

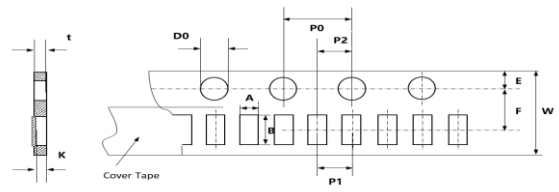


Fig. 5-4: 0105,0201 (Paper tape/2mm pitch)

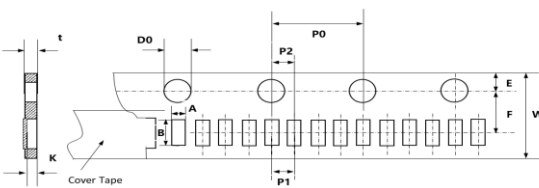


Fig. 5-5: 0201 (Paper tape/1mm pitch)

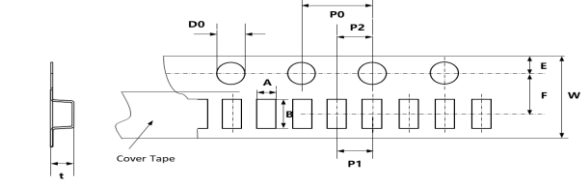


Fig. 5-6: 0105 (Plastic tape/1mm pitch)

EYANG

EYANG TECHNOLOGY DEVELOPMENT CO., LTD

Table 6-2 Carrier size (Size Code: 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
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	0.5max
0105	Z	Paper	H	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	0.5max
0105	Z	Plastic	P	0.24±0.02	0.45±0.02	1.80±0.05	1.00±0.05	0.90±0.1	0.80±0.05	1.00±0.05	0.24±0.02	4.00±0.10	2.00±0.1	0.5max
0201	A	Paper	T	0.38±0.02	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	0.5max
0201	A	Paper	J	0.38±0.02	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	0.5max
0201	A	Paper	D	0.38±0.02	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	0.5max
0201	A	Paper	A	0.38±0.02	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	0.5max
0201	A	Paper	M	0.38±0.02	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	0.5max
0201	A	Paper	H	0.38±0.02	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	0.5max
0201	A	Paper	L	0.38±0.02	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	0.5max
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	0.5max
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	0.5max
0201	J	Paper	D	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	0.5max
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	0.5max
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	0.5max
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	0.5max
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	0.5max
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	0.6max
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	0.6max
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	0.6max
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	0.6max
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	0.7max
0201	B	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	0.55±0.05	8.00±0.10	4.00±0.10	0.7max
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	0.8max
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	0.8max
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	0.8max
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	0.8max
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	0.8max
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	0.8max
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	0.95max
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	0.95max

4.1.3 Disc size

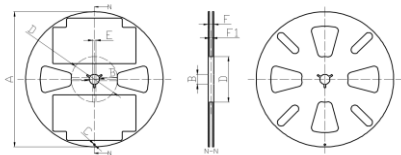


Fig. 6-1: disc (Width of carrier-4mm)

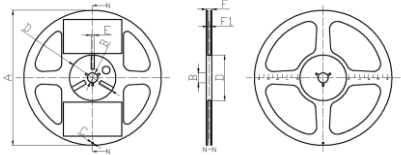


Fig. 6-2: disc (Width of carrier-8mm)

Table 7: 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±1.0	11.5±1.0	10±2	All
13"	8.00±0.10	Φ330±2.0	Φ13±1.0	Φ4.0±0.5	Φ108±2.0	4±1.0	13.5±2.0	10±2	All

4.1.4 Carrier Tape specifications

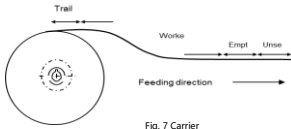


Fig. 7 Carrier

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

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

b. Top cover Tape

When a tensile force 1.02kgf 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 to 71.4 gf when the top cover tape is pulled at a speed of 300mm/min with the angle of 0 to 15°(see Fig.8).

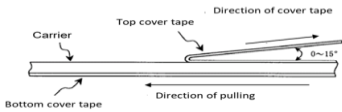


Fig.8 Cover tape peel-off force

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:

The recommended temperature is less than 30℃.

A temperature is +5℃ to +40℃ and a relative humidity is 20% to 70% as a standard condition.(MSL Level 1)

MLCC may be affected by the storage conditions. Please use them promptly after delivery.

High temperature and humidity conditions and/or prolonged storage may cause deterioration of the packaging materials.

If more than six months have elapsed since delivery, check packaging, mounting, etc. before use.

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.

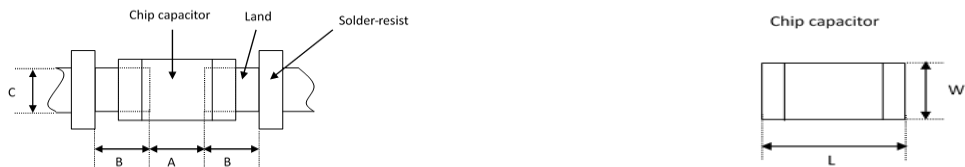
5.2 PCB Design

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



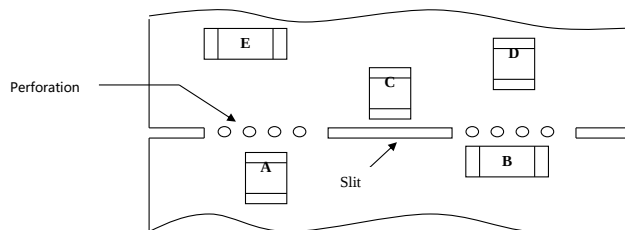
Recommended land dimensions for reflow-soldering

(unit: mm)

Size Code	Length	Width	Tolerance	A	B	C
0105	0.4	0.2	General	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	0.5	± 0.05	0.30~0.50	0.35~0.45	0.40~0.60
0402	1	0.5	± 0.15 or ± 0.20	0.40~0.60	0.40~0.50	0.50~0.70
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
0805	2.0	1.25	± 0.10 or ± 0.20	1.00~1.40	0.60~0.80	1.20~1.40
1206	3.2	1.6	± 0.20	1.80~2.00	0.90~1.20	1.50~1.70
1210	3.2	2.5	± 0.20	2.00~2.40	1.00~1.20	1.80~2.30

5.2.2 Capacitor Layout on PC Board

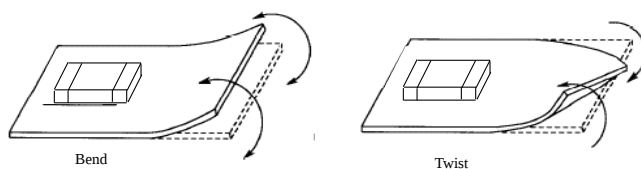
Mechanical stress varies according to the location of capacitors on PC board. The recommendation for better design is as follows



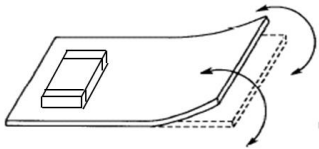
The stress in capacitors is in the following order: $A > B = C > D > E$

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 capacitor layout.

a. Not recommended

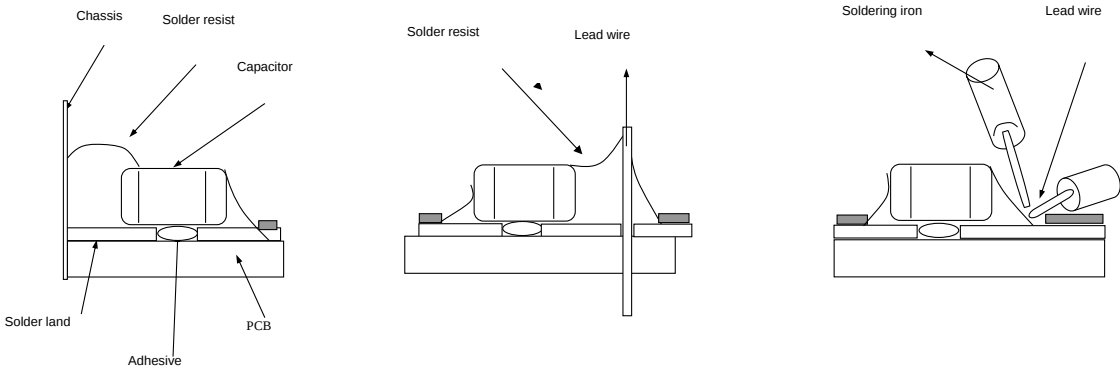


b.Recommended

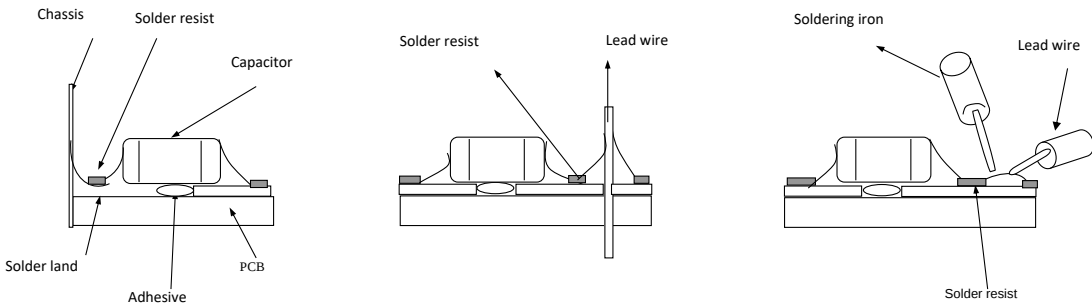


5.2.3Solder Buildup and Soldering

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

- a.Adjust the bottom dead center of the mounting head to reach on the PC board surface and not press it;
- b.Adjust the mounting head pressure to be 1N to 3N of static weight;
- c.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		
Double-sided Mounting		

5.4 Soldering

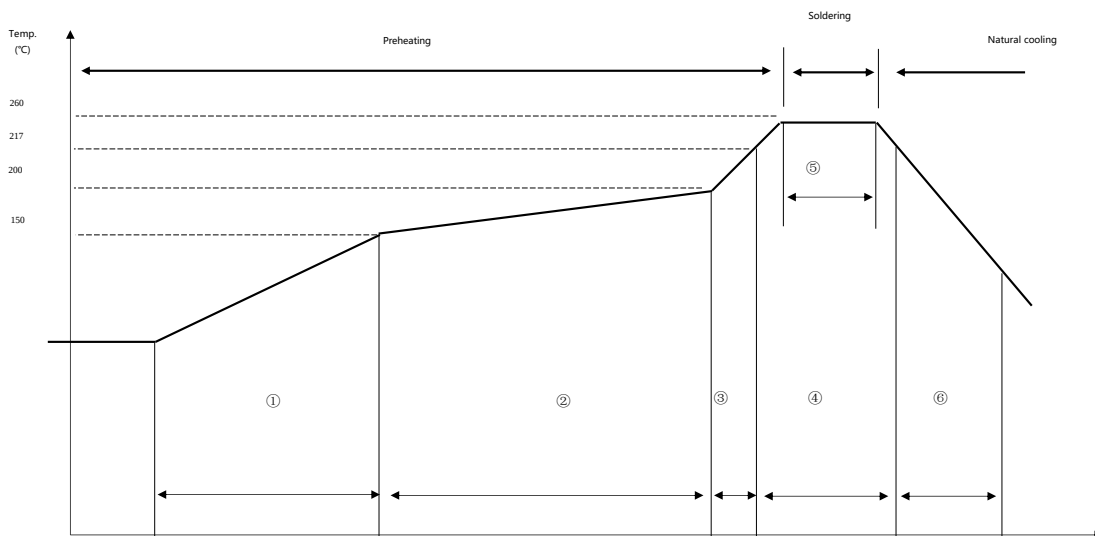
5.4.1 Flux Selection

a. It is recommended to use a mildly activated rosin flux (less than 0.1wt% chlorine). Strong flux is not recommended.

b. Please provide proper amount of flux. Excessive flux must be avoided.

c. When water-soluble flux is used, enough washing is necessary.

5.4.2 Recommended Soldering Profile



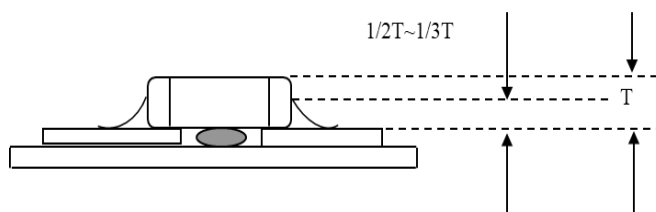
5.4.2.1 Reflow Soldering Condition

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

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 capacitor



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 $245 \pm 15^{\circ}\text{C}$.

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 Cap. \ D.F \ I.R. 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		
							D.F. [max.]	I.R. [min.]	Measurement Frequency	Measurement Voltage [Vrms]	Cap. [ΔC/C± %]	Cap. [ΔC/C± %]	Cap. [ΔC/C± %]	Cap. [ΔC/C± %]	Cap. [ΔC/C± %]	D.F. [max.]	I.R. [min.]	Cap. [ΔC/C± %]	D.F. [max.]	I.R. [min.]	Cap. [ΔC/C± %]	D.F. [max.]	I.R. [min.]
1	B	X7R	0105	16V	Z	51pF~1nF	0.035	10000MΩ	1.0±0.1KHz	1.0±0.2	7.5	10	7.5	7.5	12.5	0.05	500MΩ	12.5	0.05	500MΩ	12.5	0.05	1000MΩ
2	B	X7R	0105	10V	Z	51pF~1nF	0.035	10000MΩ	1.0±0.1KHz	1.0±0.2	7.5	10	7.5	7.5	12.5	0.05	500MΩ	12.5	0.05	500MΩ	12.5	0.05	1000MΩ
3	B	X7R	0201	50V	A	100pF~10nF	0.035	10000MΩ	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.07	500MQ or 12.5Ω-F	12.5	0.07	500MQ or 12.5Ω-F	12.5	0.07	1000MQ or 25Ω-F
4	B	X7R	0201	25V	A	100pF~10nF	0.035	10000MΩ	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.07	500MQ or 12.5Ω-F	12.5	0.07	500MQ or 12.5Ω-F	12.5	0.07	1000MQ or 25Ω-F
5	B	X7R	0201	16V	A	100pF~10nF	0.035	10000MΩ	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.07	500MQ or 12.5Ω-F	12.5	0.07	500MQ or 12.5Ω-F	12.5	0.07	1000MQ or 10Ω-F
6	B	X7R	0201	10V	A	3.3nF~10nF	0.035	10000MΩ	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.07	500MQ or 12.5Ω-F	12.5	0.07	500MQ or 12.5Ω-F	12.5	0.07	1000MQ or 10Ω-F
7	B	X7R	0201	6.3V	A	3.3nF~10nF	0.035	10000MΩ	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.07	500MQ or 12.5Ω-F	12.5	0.07	500MQ or 12.5Ω-F	12.5	0.07	1000MQ or 10Ω-F
8	B	X7R	0402	50V	B	100pF~100nF	0.035	C≤25nF:10000MΩ, C>25nF:50Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.07	500MQ or 12.5Ω-F	12.5	0.07	500MQ or 12.5Ω-F	15	0.07	1000MQ or 25Ω-F
9	B	X7R	0402	50V	N	100nF	0.035	50Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.07	500MQ or 12.5Ω-F	12.5	0.07	500MQ or 12.5Ω-F	15	0.07	1000MQ or 25Ω-F
10	B	X7R	0402	50V	C	100nF	0.035	50Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.07	500MQ or 12.5Ω-F	12.5	0.07	500MQ or 12.5Ω-F	15	0.07	1000MQ or 25Ω-F
11	B	X7R	0402	25V	B	100pF~100nF	0.035	C≤25nF:10000MΩ, C>25nF:50Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.07	500MQ or 12.5Ω-F	12.5	0.07	500MQ or 12.5Ω-F	15	0.07	1000MQ or 25Ω-F
12	B	X7R	0402	25V	N	22nF~330nF	C≤100nF:0.035, C>100nF:0.1	C≤25nF:10000MΩ, C>25nF:50Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 25Ω-F
13	B	X7R	0402	25V	C	82nF~220nF	C≤100nF:0.035, C>100nF:0.1	50Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 25Ω-F
14	B	X7R	0402	16V	B	1nF~220nF	C≤100nF:0.035, C>100nF:0.1	C≤25nF:10000MΩ, C>25nF:50Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 10Ω-F
15	B	X7R	0402	16V	N	22nF~470nF	C≤100nF:0.035, C>100nF:0.1	C≤25nF:10000MΩ, C>25nF:50Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 10Ω-F
16	B	X7R	0402	10V	B	1nF~220nF	C≤100nF:0.035, C>100nF:0.1	C≤25nF:10000MΩ, C>25nF:50Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 10Ω-F
17	B	X7R	0402	10V	N	22nF~470nF	C≤100nF:0.035, C>100nF:0.1	C≤25nF:10000MΩ, C>25nF:50Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 10Ω-F
18	B	X7R	0402	6.3V	B	1nF~220nF	C≤100nF:0.035, C>100nF:0.1	C≤25nF:10000MΩ, C>25nF:50Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 10Ω-F
19	B	X7R	0402	6.3V	N	22nF~470nF	C≤100nF:0.035, C>100nF:0.1	C≤25nF:10000MΩ, C>25nF:50Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 12.5Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 10Ω-F
20	B	X7R	0402	6.3V	N	1μF	0.1	50Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.2	500MQ or 12.5Ω-F	12.5	0.2	500MQ or 12.5Ω-F	15	0.2	1000MQ or 10Ω-F
21	B	X7R	0603	50V	D	220pF~820nF	C≤100nF:0.035, C>100nF:0.1	C≤25nF:10000MΩ, C>25nF:100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 50Ω-F
22	B	X7R	0603	50V	K	47nF~470nF	C≤100nF:0.035, C>100nF:0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 50Ω-F
23	B	X7R	0603	25V	D	100nF~820nF	C≤100nF:0.035, C>100nF:0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 50Ω-F
24	B	X7R	0603	25V	D	1μF	0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.2	500MQ or 25Ω-F	12.5	0.2	500MQ or 25Ω-F	15	0.2	1000MQ or 50Ω-F
25	B	X7R	0603	25V	K	100nF~1μF	0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.2	500MQ or 25Ω-F	12.5	0.2	500MQ or 25Ω-F	15	0.2	1000MQ or 50Ω-F
26	B	X7R	0603	16V	D	1nF~1μF	C≤100nF:0.035, C>100nF:0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 10Ω-F
27	B	X7R	0603	16V	K	100nF~1μF	C≤100nF:0.035, C>100nF:0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 50Ω-F
28	B	X7R	0603	10V	D	100nF~820nF	C≤100nF:0.035, C>100nF:0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 50Ω-F
29	B	X7R	0603	10V	D	2.2μF	0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.2	5Ω-F	12.5	0.2	5Ω-F	15	0.2	1000MQ or 10Ω-F
30	B	X7R	0603	10V	K	100nF~1μF	C≤100nF:0.035, C>100nF:0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 50Ω-F
31	B	X7R	0603	10V	K	2.2μF	0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.2	500MQ or 12.5Ω-F	12.5	0.2	500MQ or 12.5Ω-F	12.5	0.2	1000MQ or 25Ω-F
32	B	X7R	0603	6.3V	D	100nF~820nF	C≤100nF:0.035, C>100nF:0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 50Ω-F
33	B	X7R	0603	6.3V	K	100nF~1μF	C≤100nF:0.035, C>100nF:0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 50Ω-F
34	B	X7R	0603	6.3V	K	2.2μF	0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.2	5Ω-F	25	0.2	5Ω-F	25	0.2	10Ω-F
35	B	X7R	0603	6.3V	K	4.7μF	0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.2	5Ω-F	12.5	0.2	5Ω-F	15	0.2	1000MQ or 10Ω-F
36	B	X7R	0805	50V	Y	220pF~100nF	0.035	C≤25nF:10000MΩ, C>25nF:100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.07	500MQ or 25Ω-F	12.5	0.07	500MQ or 25Ω-F	15	0.07	1000MQ or 50Ω-F
37	B	X7R	0805	50V	H	100nF~1μF	C≤100nF:0.035, C>100nF:0.1	100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	12.5	C≤100nF:0.07, C>100nF:0.2	500MQ or 25Ω-F	15	C≤100nF:0.07, C>100nF:0.2	1000MQ or 50Ω-F
38	B	X7R	0805	25V	Y	220pF~100nF	0.035	C≤25nF:10000MΩ, C>25nF:100Ω-F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.07	500MQ or 25Ω-F	12.5	0.07	500MQ or 25Ω-F	15	0.07	1000MQ or 50Ω-F

Table 5-1 Cap. \ D.F. \ I.R. 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		
							D.F. [max.]	I.R. [min.]	Measurement Frequency	Measurement Voltage [Vrms]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	D.F. [max.]	I.R. [min.]	Cap. [$\Delta C/C \leq \pm\%$]	D.F. [max.]	I.R. [min.]	Cap. [$\Delta C/C \leq \pm\%$]	D.F. [max.]	I.R. [min.]
39	B	X7R	0805	25V	G	150nF~4.7 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	1000MQ or 5 Ω .F
40	B	X7R	0805	25V	H	150nF~4.7 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	1000MQ or 5 Ω .F
41	B	X7R	0805	16V	G	150nF~4.7 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	1000MQ or 5 Ω .F
42	B	X7R	0805	16V	H	150nF~4.7 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	1000MQ or 5 Ω .F
43	B	X7R	0805	10V	G	1 μ F~4.7 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	1000MQ or 5 Ω .F
44	B	X7R	0805	10V	H	1 μ F~10 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	1000MQ or 5 Ω .F
45	B	X7R	0805	6.3V	G	1 μ F~4.7 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	1000MQ or 5 Ω .F
46	B	X7R	0805	6.3V	H	1 μ F~10 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	1000MQ or 5 Ω .F
47	B	X7R	1206	50V	Y	100nF	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 50 Ω .F
48	B	X7R	1206	50V	L	100nF~1 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 50 Ω .F
49	B	X7R	1206	16V	O	1 μ F	0.125	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	500MQ or 10 Ω .F	12.5	0.2	500MQ or 10 Ω .F	15	0.2	1000MQ or 10 Ω .F
50	B	X7R	1206	16V	L	10 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	25 Ω .F	20	0.2	25 Ω .F	20	0.2	5 Ω .F
51	B	X7R	1206	10V	P	100 μ F	0.1	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	25	0.2	5 Ω .F	25	0.2	5 Ω .F	25	0.2	10 Ω .F
52	B	X7R	1210	50V	R	4.7 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	1000MQ or 50 Ω .F
53	B	X7R	1210	50V	3	10 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	20	0.2	500MQ or 25 Ω .F	20	0.2	500MQ or 25 Ω .F	20	0.2	1000MQ or 50 Ω .F
54	B	X7R	1210	10V	Q	10 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	500MQ or 25 Ω .F	12.5	0.2	1000MQ or 50 Ω .F
55	B	X5R	0105	10V	Z	51pF~10nF	0.1	10000MQ	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	7.5	10	7.5	7.5	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	1000MQ or 25 Ω .F
56	B	X5R	0105	6.3V	Z	120pF~100nF	0.1	C $\leq$ 25nF:10000MQ, C>25nF:50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	7.5	10	7.5	7.5	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	1000MQ or 25 Ω .F
57	B	X5R	0201	25V	A	2.2nF~10nF	C $\leq$ 3.3nF:0.025, 3.3nF<C $\leq$ 10nF:0.035	C $\leq$ 25nF:10000MQ, C>25nF:50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	C $\leq$ 3.3nF:0.05, 3.3nF<C $\leq$ 10nF:0.07	500MQ or 25 Ω .F	15	C $\leq$ 3.3nF:0.05, 3.3nF<C $\leq$ 10nF:0.07	500MQ or 25 Ω .F	15	C $\leq$ 3.3nF:0.05, 3.3nF<C $\leq$ 10nF:0.07	500MQ or 25 Ω .F
58	B	X5R	0201	25V	F	100nF~470nF	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	15	0.2	1000MQ or 25 Ω .F
59	B	X5R	0201	16V	A	3.3nF~100nF	C $\leq$ 3.3nF:0.025 3.3nF<C $\leq$ 10nF:0.035 C>10nF:0.1	C $\leq$ 25nF:10000MQ, C>25nF:50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	C $\leq$ 3.3nF:0.05, 3.3nF<C $\leq$ 10nF:0.07, C>10nF:0.2	500MQ or 25 Ω .F	15	C $\leq$ 3.3nF:0.05, 3.3nF<C $\leq$ 10nF:0.07, C>10nF:0.2	500MQ or 25 Ω .F	15	C $\leq$ 3.3nF:0.05, 3.3nF<C $\leq$ 10nF:0.07, C>10nF:0.2	1000MQ or 10 Ω .F
60	B	X5R	0201	16V	J	100nF~220nF	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
61	B	X5R	0201	16V	F	330nF~470nF	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500MQ or 12.5 Ω .F	15	0.2	500MQ or 12.5 Ω .F	15	0.2	1000MQ or 10 Ω .F
62	B	X5R	0201	10V	A	10nF~100nF	C $\leq$ 3.3nF:0.025 3.3nF<C $\leq$ 10nF:0.035 C>10nF:0.1	C $\leq$ 25nF:10000MQ, C>25nF:50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	C $\leq$ 3.3nF:0.05, 3.3nF<C $\leq$ 10nF:0.07, C>10nF:0.2	500MQ or 25 Ω .F	15	C $\leq$ 3.3nF:0.05, 3.3nF<C $\leq$ 10nF:0.07, C>10nF:0.2	500MQ or 25 Ω .F	15	C $\leq$ 3.3nF:0.05, 3.3nF<C $\leq$ 10nF:0.07, C>10nF:0.2	1000MQ or 10 Ω .F
63	B	X5R	0201	10V	J	220nF~330nF	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
64	B	X5R	0201	10V	F	470nF~1 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
65	B	X5R	0201	6.3V	A	22nF~100nF	0.1	C $\leq$ 25nF:10000MQ, C>25nF:50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
66	B	X5R	0201	6.3V	J	220nF~470nF	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
67	B	X5R	0201	6.3V	J	1 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	5 Ω .F	15	0.2	5 Ω .F	15	0.2	5 Ω .F
68	B	X5R	0201	6.3V	F	1 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	5 Ω .F	15	0.2	5 Ω .F	15	0.2	5 Ω .F
69	B	X5R	0201	6.3V	X	2.2 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	0.5 Ω .F	15	0.2	0.5 Ω .F	15	0.2	0.5 Ω .F
70	B	X5R	0201	4V	X	2.2 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	0.5 Ω .F	15	0.2	0.5 Ω .F	15	0.2	0.5 Ω .F
71	B	X5R	0402	50V	B	100pF~100nF	C $\leq$ 47nF:0.035, C>47nF:0.1	C $\leq$ 25nF:10000MQ, C>25nF:50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	C $\leq$ 47nF:0.07, C>47nF:0.2	500MQ or 25 Ω .F	15	C $\leq$ 47nF:0.07, C>47nF:0.2	500MQ or 25 Ω .F	15	C $\leq$ 47nF:0.07, C>47nF:0.2	1000MQ or 50 Ω .F
72	B	X5R	0402	50V	N	27nF~47nF	0.035	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.07	500MQ or 25 Ω .F	15	0.07	500MQ or 25 Ω .F	15	0.07	1000MQ or 50 Ω .F
73	B	X5R	0402	50V	C	56nF~470nF	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 50 Ω .F
74	B	X5R	0402	35V	B	100pF~100nF	C $\leq$ 47nF:0.035, C>47nF:0.1	C $\leq$ 25nF:10000MQ, C>25nF:50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	C $\leq$ 47nF:0.07, C>47nF:0.2	500MQ or 25 Ω .F	15	C $\leq$ 47nF:0.07, C>47nF:0.2	500MQ or 25 Ω .F	15	C $\leq$ 47nF:0.07, C>47nF:0.2	1000MQ or 50 Ω .F
75	B	X5R	0402	35V	C	56nF~100nF	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 50 Ω .F

Table 5-1 Cap. \ D.F. \ I.R. 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		
							D.F. [max.]	I.R. [min.]	Measurement Frequency	Measurement Voltage [Vrms]	Cap. [ΔC/C± %]	Cap. [ΔC/C± %]	Cap. [ΔC/C± %]	Cap. [ΔC/C± %]	Cap. [ΔC/C± %]	D.F. [max.]	I.R. [min.]	Cap. [ΔC/C± %]	D.F. [max.]	I.R. [min.]	Cap. [ΔC/C± %]	D.F. [max.]	I.R. [min.]
76	B	XSR	0402	25V	B	100pF~1μF	C≤47nF,0.035, C>47nF,0.1	C≤25nF,10000MQ, C>25nF,50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	C≤47nF,0.07, C>47nF,0.2	500MQ or 25Ω.F	15	C≤47nF,0.07, C>47nF,0.2	500MQ or 25Ω.F	15	C≤47nF,0.07, C>47nF,0.2	1000MQ or 50Ω.F
77	B	XSR	0402	25V	N	82nF~470nF	0.1	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 50Ω.F
78	B	XSR	0402	25V	C	270nF~2.2μF	0.1	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 50Ω.F
79	B	XSR	0402	16V	B	100pF~1μF	C≤47nF,0.035, C>47nF,0.1	C≤25nF,10000MQ, C>25nF,50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	C≤47nF,0.07, C>47nF,0.2	500MQ or 25Ω.F	15	C≤47nF,0.07, C>47nF,0.2	500MQ or 25Ω.F	15	C≤47nF,0.07, C>47nF,0.2	1000MQ or 10Ω.F
80	B	XSR	0402	16V	N	120nF~470nF	0.1	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 10Ω.F
81	B	XSR	0402	16V	N	2.2μF	0.1	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	5Ω.F	15	0.2	5Ω.F	15	0.2	1000MQ or 10Ω.F
82	B	XSR	0402	10V	B	100pF~1μF	C≤47nF,0.035, C>47nF,0.1	C≤25nF,10000MQ, C>25nF,50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	C≤47nF,0.07, C>47nF,0.2	500MQ or 25Ω.F	15	C≤47nF,0.07, C>47nF,0.2	500MQ or 25Ω.F	15	C≤47nF,0.07, C>47nF,0.2	1000MQ or 10Ω.F
83	B	XSR	0402	10V	B	2.2μF	0.1	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	5Ω.F	15	0.2	5Ω.F	15	0.2	1000MQ or 10Ω.F
84	B	XSR	0402	10V	N	120nF~470nF	0.1	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 10Ω.F
85	B	XSR	0402	10V	N	2.2μF	0.125	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	25	0.2	5Ω.F	25	0.2	5Ω.F	25	0.2	10Ω.F
86	B	XSR	0402	10V	C	4.7μF	0.1	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	5Ω.F	15	0.2	5Ω.F	15	0.2	1000MQ or 10Ω.F
87	B	XSR	0402	6.3V	B	100pF~820nF	C≤47nF,0.035, C>47nF,0.1	C≤25nF,10000MQ, C>25nF,50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	C≤47nF,0.07, C>47nF,0.2	500MQ or 25Ω.F	15	C≤47nF,0.07, C>47nF,0.2	500MQ or 25Ω.F	15	C≤47nF,0.07, C>47nF,0.2	1000MQ or 10Ω.F
88	B	XSR	0402	6.3V	B	1μF	0.1	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 12.5Ω.F	15	0.2	500MQ or 12.5Ω.F	15	0.2	1000MQ or 25Ω.F
89	B	XSR	0402	6.3V	B	2.2μF	0.1	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	25	0.2	5Ω.F	25	0.2	5Ω.F	25	0.2	1000MQ or 10Ω.F
90	B	XSR	0402	6.3V	N	270nF~4.7μF	0.1	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 10Ω.F
91	B	XSR	0402	6.3V	C	4.7μF	0.15	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	5Ω.F	15	0.2	5Ω.F	25	0.3	1000MQ or 10Ω.F
92	B	XSR	0402	6.3V	C	10μF	0.15	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.25	500MQ or 3.5Ω.F	15	0.25	500MQ or 3.5Ω.F	15	0.25	1000MQ or 7Ω.F
93	B	XSR	0402	6.3V	U	10μF	0.15	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.25	500MQ or 3.5Ω.F	15	0.25	500MQ or 3.5Ω.F	15	0.25	1000MQ or 7Ω.F
94	B	XSR	0402	4V	C	10μF	0.15	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 10Ω.F
95	B	XSR	0402	4V	C	22μF	0.15	50Ω.F	120±24Hz	0.5±0.1	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 10Ω.F
96	B	XSR	0603	50V	D	220pF~820nF	0.1	C≤25nF,10000MQ, C>25nF,50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 50Ω.F
97	B	XSR	0603	50V	D	1μF	0.1	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 12.5Ω.F	15	0.2	500MQ or 12.5Ω.F	15	0.2	1000MQ or 25Ω.F
98	B	XSR	0603	50V	K	2.2μF	0.1	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 50Ω.F
99	B	XSR	0603	35V	D	680nF~820nF	0.1	100Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 50Ω.F
100	B	XSR	0603	25V	S	680nF~820nF	0.1	100Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 50Ω.F
101	B	XSR	0603	25V	D	100nF~820nF	0.1	100Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 25Ω.F
102	B	XSR	0603	25V	D	1μF	0.1	100Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 12.5Ω.F	15	0.2	500MQ or 12.5Ω.F	15	0.2	1000MQ or 25Ω.F
103	B	XSR	0603	25V	D	2.2μF	0.1	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	12.5	0.2	12.5Ω.F	12.5	0.2	12.5Ω.F	12.5	0.2	25Ω.F
104	B	XSR	0603	25V	K	1μF~10μF	0.15	50Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 50Ω.F
105	B	XSR	0603	16V	S	680nF~820nF	0.125	100Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 10Ω.F
106	B	XSR	0603	16V	D	220nF~2.2μF	0.1	100Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 10Ω.F
107	B	XSR	0603	16V	K	4.7μF~10μF	0.125	100Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 10Ω.F
108	B	XSR	0603	10V	S	4.7μF	0.15	100Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	30	0.2	2Ω.F	30	0.2	2Ω.F	30	0.2	2Ω.F
109	B	XSR	0603	10V	D	680nF~4.7μF	0.15	100Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 10Ω.F
110	B	XSR	0603	10V	K	5.6μF~10μF	0.15	100Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 10Ω.F
111	B	XSR	0603	10V	K	22μF	0.15	100Ω.F	120±24Hz	0.5±0.1	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 10Ω.F
112	B	XSR	0603	6.3V	D	1μF~10μF	0.15	100Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 10Ω.F
113	B	XSR	0603	6.3V	K	8.2μF~10μF	0.15	100Ω.F	1.0±0.1KHz	1.0±0.2	15	10	15	15	15	0.2	500MQ or 25Ω.F	15	0.2	500MQ or 25Ω.F	15	0.2	1000MQ or 10Ω.F

Table 5-1 Cap. \ D.F \ I.R. 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		
							D.F. [max.]	I.R. [min.]	Measurement Frequency	Measurement Voltage [Vrms]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	D.F. [max.]	I.R. [min.]	Cap. [$\Delta C/C \leq \pm\%$]	D.F. [max.]	I.R. [min.]	Cap. [$\Delta C/C \leq \pm\%$]	D.F. [max.]	I.R. [min.]
114	B	XSR	0603	6.3V	K	22 μ F	0.15	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500M Ω or 8.8 Ω .F	15	0.2	500M Ω or 8.8 Ω .F	15	0.2	1000M Ω or 17.7 Ω .F
115	B	XSR	0603	4V	K	10 μ F	0.15	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
116	B	XSR	0603	4V	K	22 μ F	0.15	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
117	B	XSR	0603	4V	K	47 μ F	0.15	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
118	B	XSR	0805	50V	Y	220pF~2.2 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 50 Ω .F
119	B	XSR	0805	50V	H	100nF~4.7 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 50 Ω .F
120	B	XSR	0805	35V	Y	680nF~2.2 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 50 Ω .F
121	B	XSR	0805	35V	H	680nF~4.7 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 50 Ω .F
122	B	XSR	0805	25V	Y	680nF~8.2 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 50 Ω .F
123	B	XSR	0805	25V	H	220nF~8.2 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 50 Ω .F
124	B	XSR	0805	25V	H	10 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	30	0.2	5 Ω .F	30	0.2	5 Ω .F	30	0.2	10 Ω .F
125	B	XSR	0805	25V	H	22 μ F	0.1	50 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500M Ω or 12.5 Ω .F	15	0.2	500M Ω or 12.5 Ω .F	15	0.2	1000M Ω or 25 Ω .F
126	B	XSR	0805	16V	Y	2.2 μ F~8.2 μ F	0.125	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
127	B	XSR	0805	16V	H	1 μ F~10 μ F	0.125	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
128	B	XSR	0805	16V	H	22 μ F	0.125	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
129	B	XSR	0805	10V	Y	2.2 μ F~8.2 μ F	0.15	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
130	B	XSR	0805	10V	H	2.2 μ F~10 μ F	0.15	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
131	B	XSR	0805	10V	H	22 μ F	0.15	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
132	B	XSR	0805	10V	H	47 μ F	0.15	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	25	0.2	5 Ω .F	25	0.2	5 Ω .F	25	0.2	10 Ω .F
133	B	XSR	0805	6.3V	Y	2.2 μ F~8.2 μ F	0.15	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
134	B	XSR	0805	6.3V	H	2.2 μ F~8.2 μ F	0.15	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
135	B	XSR	0805	6.3V	H	10 μ F	0.15	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	30	0.2	5 Ω .F	30	0.2	5 Ω .F	30	0.2	1000M Ω or 10 Ω .F
136	B	XSR	0805	6.3V	H	22 μ F	0.15	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500M Ω or 12.5 Ω .F	15	0.2	500M Ω or 12.5 Ω .F	15	0.2	1000M Ω or 25 Ω .F
137	B	XSR	0805	6.3V	H	47 μ F	0.15	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500M Ω or 12.5 Ω .F	15	0.2	500M Ω or 12.5 Ω .F	15	0.2	1000M Ω or 25 Ω .F
138	B	XSR	0805	4V	Y	22 μ F~47 μ F	0.15	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
139	B	XSR	0805	4V	H	47 μ F~100 μ F	0.15	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
140	B	XSR	1206	50V	Y	680nF~4.7 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 50 Ω .F
141	B	XSR	1206	50V	L	680nF~8.2 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 50 Ω .F
142	B	XSR	1206	50V	L	10 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 12.5 Ω .F	15	0.2	500M Ω or 12.5 Ω .F	15	0.2	1000M Ω or 25 Ω .F
143	B	XSR	1206	35V	Y	2.2 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 50 Ω .F
144	B	XSR	1206	35V	Y	4.7 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 50 Ω .F
145	B	XSR	1206	25V	L	4.7 μ F~10 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 12.5 Ω .F	15	0.2	500M Ω or 12.5 Ω .F	15	0.2	1000M Ω or 25 Ω .F
146	B	XSR	1206	16V	Y	4.7 μ F~8.2 μ F	0.125	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
147	B	XSR	1206	16V	L	4.7 μ F~8.2 μ F	0.125	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 10 Ω .F
148	B	XSR	1206	16V	L	22 μ F	0.125	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	12.5	0.2	500M Ω or 12.5 Ω .F	12.5	0.2	500M Ω or 12.5 Ω .F	12.5	0.2	1000M Ω or 25 Ω .F
149	B	XSR	1206	10V	L	47 μ F	0.1	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	30	0.2	5 Ω .F	30	0.2	5 Ω .F	20	0.2	1000M Ω or 10 Ω .F
150	B	XSR	1206	6.3V	L	100 μ F	0.1	50 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	12.5	0.25	500M Ω or 3.5 Ω .F	12.5	0.25	500M Ω or 3.5 Ω .F	12.5	0.25	1000M Ω or 7 Ω .F
151	B	XSR	1210	25V	L	680nF~10 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500M Ω or 25 Ω .F	15	0.2	500M Ω or 25 Ω .F	15	0.2	1000M Ω or 50 Ω .F

Table 5-1 Cap. \ D.F \ I.R. 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		
							D.F. [max.]	I.R. [min.]	Measurement Frequency	Measurement Voltage [Vrms]	Cap. [$\Delta C/C \leq \pm \%$]	Cap. [$\Delta C/C \leq \pm \%$]	Cap. [$\Delta C/C \leq \pm \%$]	Cap. [$\Delta C/C \leq \pm \%$]	Cap. [$\Delta C/C \leq \pm \%$]	D.F. [max.]	I.R. [min.]	Cap. [$\Delta C/C \leq \pm \%$]	D.F. [max.]	I.R. [min.]	Cap. [$\Delta C/C \leq \pm \%$]	D.F. [max.]	I.R. [min.]
152	B	X5R	1210	25V	Q	680nF~10 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 50 Ω .F
153	B	X5R	1210	16V	L	4.7 μ F~10 μ F	0.125	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
154	B	X5R	1210	16V	L	22 μ F	0.125	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
155	B	X5R	1210	16V	Q	4.7 μ F~10 μ F	0.125	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
156	B	X5R	1210	16V	Q	22 μ F	0.125	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
157	B	X5R	1210	16V	R	4.7 μ F~10 μ F	0.125	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
158	B	X5R	1210	16V	R	22 μ F	0.125	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
159	B	X5R	1210	10V	Q	680nF~10 μ F	0.15	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
160	B	X5R	1210	10V	R	22 μ F	0.15	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
161	B	X5R	1210	6.3V	3	100 μ F	0.1	100 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	10	15	15	15	0.2	500MQ or 12.5 Ω .F	15	0.2	500MQ or 12.5 Ω .F	15	0.2	1000MQ or 25 Ω .F
162	B	X7S	0105	10V	Z	2.2nF~22nF	0.1	2000MQ	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	7.5	10	7.5	7.5	12.5	0.2	500MQ	12.5	0.2	500MQ	12.5	0.2	1000MQ
163	B	X7S	0201	16V	A	22nF	0.075	10000MQ	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
164	B	X7S	0201	16V	F	100nF	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
165	B	X7S	0201	10V	A	100nF	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	10	15	7.5	12.5	0.2	12.5 Ω .F	12.5	0.2	12.5 Ω .F	12.5	0.2	25 Ω .F
166	B	X7S	0201	10V	J	100nF	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
167	B	X7S	0201	6.3V	A	100nF	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	5 Ω .F	15	0.2	5 Ω .F	15	0.2	5 Ω .F
168	B	X7S	0402	10V	C	1 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 10 Ω .F	15	0.2	500MQ or 10 Ω .F	15	0.2	1000MQ or 10 Ω .F
169	B	X7S	0402	6.3V	C	1 μ F	0.125	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.25	500MQ or 12.5 Ω .F	15	0.25	500MQ or 12.5 Ω .F	15	0.25	1000MQ or 10 Ω .F
170	B	X7S	0603	25V	K	1 μ F~2.2 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 12.5 Ω .F	15	0.2	500MQ or 12.5 Ω .F	15	0.2	1000MQ or 25 Ω .F
171	B	X7S	0603	16V	K	1 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 12.5 Ω .F	15	0.2	500MQ or 12.5 Ω .F	15	0.2	1000MQ or 25 Ω .F
172	B	X7S	0603	16V	K	2.2 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 12.5 Ω .F	15	0.2	500MQ or 12.5 Ω .F	15	0.2	1000MQ or 25 Ω .F
173	B	X7S	0603	16V	K	4.7 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	15	0.2	1000MQ or 25 Ω .F
174	B	X7S	0603	10V	K	4.7 μ F	0.125	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	15	0.2	1000MQ or 25 Ω .F
175	B	X7S	0603	6.3V	K	4.7 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	1000MQ or 25 Ω .F
176	B	X7S	0805	25V	G	1 μ F~4.7 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	1000MQ or 25 Ω .F
177	B	X7S	0805	25V	H	1 μ F~4.7 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	1000MQ or 25 Ω .F
178	B	X7S	0805	16V	G	1 μ F~4.7 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	1000MQ or 25 Ω .F
179	B	X7S	0805	16V	H	1 μ F~4.7 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	1000MQ or 25 Ω .F
180	B	X7S	0805	10V	G	1 μ F~4.7 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	1000MQ or 25 Ω .F
181	B	X7S	0805	10V	H	1 μ F~4.7 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	1000MQ or 25 Ω .F
182	B	X7S	0805	6.3V	G	1 μ F~4.7 μ F	0.125	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	1000MQ or 25 Ω .F
183	B	X7S	0805	6.3V	G	10 μ F	0.125	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	1000MQ or 25 Ω .F
184	B	X7S	0805	6.3V	H	1 μ F~4.7 μ F	0.125	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	500MQ or 12.5 Ω .F	12.5	0.2	1000MQ or 25 Ω .F
185	B	X7S	0805	6.3V	H	10 μ F	0.125	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	12.5	0.25	10 Ω .F	12.5	0.25	10 Ω .F	20	0.25	10 Ω .F
186	B	X7S	1206	16V	L	10 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	12.5	0.2	500MQ or 12.5 Ω .F	15	0.2	500MQ or 12.5 Ω .F	15	0.2	1000MQ or 25 Ω .F
187	B	X7T	0201	10V	F	220nF~470nF	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
188	B	X7T	0201	6.3V	A	15nF~100nF	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F
189	B	X7T	0201	6.3V	J	220nF	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω .F	15	0.2	500MQ or 25 Ω .F	15	0.2	1000MQ or 10 Ω .F

Table 5-1 Cap. \ D.F \ I.R. 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		
							D.F. [max.]	I.R. [min.]	Measurement Frequency	Measurement Voltage [Vrms]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	D.F. [max.]	I.R. [min.]	Cap. [$\Delta C/C \leq \pm\%$]	D.F. [max.]	I.R. [min.]	Cap. [$\Delta C/C \leq \pm\%$]	D.F. [max.]	I.R. [min.]
190	B	X7T	0201	6.3V	F	330nF~470nF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
191	B	X7T	0201	4.0V	F	1μF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	0.5Q-F	15	0.2	0.5Q-F	15	0.2	0.5Q-F
192	B	X7T	0402	10V	B	1μF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	20	0.2	25Q-F	20	0.2	25Q-F	15	0.2	50Q-F
193	B	X7T	0402	10V	C	2.2μF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	25	0.2	500MQ or 5Q-F	25	0.2	500MQ or 5Q-F	25	0.2	1000MQ or 10Q-F
194	B	X7T	0402	6.3V	B	1μF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
195	B	X7T	0402	6.3V	N	2.2μF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
196	B	X7T	0402	6.3V	C	4.7μF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
197	B	X7T	0402	4.0V	N	4.7μF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
198	B	X7T	0603	10V	K	2.2μF~10μF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	25	0.2	5Q-F	25	0.2	5Q-F	25	0.2	10Q-F
199	B	X7T	0603	6.3V	K	10μF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	25	0.2	5Q-F	25	0.2	5Q-F	25	0.2	10Q-F
200	B	X7T	0805	16V	H	4.7μF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	12.5	0.2	500MQ or 12.5Q-F	12.5	0.2	500MQ or 12.5Q-F	12.5	0.2	1000MQ or 25Q-F
201	B	X7T	0805	10V	H	10μF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	12.5	0.2	12.5Q-F	12.5	0.2	12.5Q-F	12.5	0.2	25Q-F
202	B	X7T	0805	10V	H	22μF	0.1	50Q.F	120±24Hz	0.5±0.1	15	12.5	15	15	12.5	0.2	12.5Q-F	12.5	0.2	12.5Q-F	12.5	0.2	25Q-F
203	B	X7T	0805	6.3V	H	22μF	0.15	50Q.F	120±24Hz	0.5±0.1	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
204	B	X6S	0201	25V	A	10nF	0.1	10000MQ	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 50Q-F
205	B	X6S	0201	16V	A	1nF~1.5nF	0.125	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
206	B	X6S	0201	16V	J	100nF	0.125	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
207	B	X6S	0201	10V	A	1.8nF~100nF	0.125	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
208	B	X6S	0201	10V	J	100nF~470nF	0.125	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
209	B	X6S	0201	10V	F	330nF~470nF	0.125	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
210	B	X6S	0201	6.3V	A	10nF~100nF	0.15	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
211	B	X6S	0201	6.3V	J	100nF~470nF	0.15	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
212	B	X6S	0201	6.3V	F	330nF~470nF	0.15	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
213	B	X6S	0201	6.3V	F	1μF	0.15	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	0.5Q-F	15	0.2	0.5Q-F	15	0.2	0.5Q-F
214	B	X6S	0201	4.0V	F	1μF	0.2	5MQ	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	25	0.4	0.5Q-F	25	0.4	0.5Q-F	25	0.2	0.5Q-F
215	B	X6S	0201	4.0V	X	2.2μF	0.2	5MQ	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	25	0.4	0.5Q-F	25	0.4	0.5Q-F	25	0.2	0.5Q-F
216	B	X6S	0402	50V	B	15nF~47nF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 50Q-F
217	B	X6S	0402	50V	C	100nF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 50Q-F
218	B	X6S	0402	25V	B	68nF~100nF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 50Q-F
219	B	X6S	0402	25V	C	220nF~1.0μF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	25	0.2	5Q-F	25	0.2	5Q-F	25	0.2	10Q-F
220	B	X6S	0402	25V	N	220nF~470nF	0.1	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	25	0.2	5Q-F	25	0.2	5Q-F	25	0.2	10Q-F
221	B	X6S	0402	16V	B	100nF~1μF	0.125	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
222	B	X6S	0402	16V	N	220nF~470nF	0.125	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
223	B	X6S	0402	16V	C	220nF	0.125	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
224	B	X6S	0402	16V	C	1μF	0.125	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	20	0.2	12.5Q-F	20	0.2	12.5Q-F	15	0.2	25Q-F
225	B	X6S	0402	16V	C	2.2μF	0.125	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
226	B	X6S	0402	10V	B	1μF	0.125	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F
227	B	X6S	0402	10V	N	220nF~470nF	0.125	50Q.F	1.0±0.1KHz	1.0±0.2	15	12.5	15	15	15	0.2	500MQ or 25Q-F	15	0.2	500MQ or 25Q-F	15	0.2	1000MQ or 10Q-F

Table 5-1 Cap. \ D.F \ I.R. 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		
							D.F. [max.]	I.R. [min.]	Measurement Frequency	Measurement Voltage [Vrms]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	Cap. [$\Delta C/C \leq \pm\%$]	D.F. [max.]	I.R. [min.]	Cap. [$\Delta C/C \leq \pm\%$]	D.F. [max.]	I.R. [min.]	Cap. [$\Delta C/C \leq \pm\%$]	D.F. [max.]	I.R. [min.]
228	B	X6S	0402	10V	N	4.7 μ F	0.15	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω -F	15	0.2	500MQ or 25 Ω -F	15	0.2	1000MQ or 10 Ω -F
229	B	X6S	0402	10V	C	2.2 μ F	0.125	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω -F	15	0.2	500MQ or 25 Ω -F	15	0.2	1000MQ or 10 Ω -F
230	B	X6S	0402	6.3V	B	1 μ F	0.125	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω -F	15	0.2	500MQ or 25 Ω -F	15	0.2	1000MQ or 10 Ω -F
231	B	X6S	0402	6.3V	N	220nF~470nF	0.125	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω -F	15	0.2	500MQ or 25 Ω -F	15	0.2	1000MQ or 10 Ω -F
232	B	X6S	0402	6.3V	N	2.2 μ F	0.125	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω -F	15	0.2	500MQ or 25 Ω -F	15	0.2	1000MQ or 10 Ω -F
233	B	X6S	0402	6.3V	C	1 μ F~4.7 μ F	0.125	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω -F	15	0.2	500MQ or 25 Ω -F	15	0.2	1000MQ or 10 Ω -F
234	B	X6S	0402	4.0V	B	1 μ F~2.2 μ F	0.15	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω -F	15	0.2	500MQ or 25 Ω -F	15	0.2	1000MQ or 10 Ω -F
235	B	X6S	0402	4.0V	C	10 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	25	0.2	5 Ω -F	25	0.2	5 Ω -F	25	0.2	10 Ω -F
236	B	X6S	0603	25V	K	2.2 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω -F	15	0.2	500MQ or 25 Ω -F	15	0.2	1000MQ or 50 Ω -F
237	B	X6S	0603	25V	K	4.7 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	12.5 Ω -F	15	0.2	12.5 Ω -F	15	0.2	25 Ω -F
238	B	X6S	0603	16V	D	1 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	30	0.125	12.5 Ω -F	30	0.125	12.5 Ω -F	20	0.125	25 Ω -F
239	B	X6S	0603	16V	K	2.2 μ F~10 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω -F	15	0.2	500MQ or 25 Ω -F	15	0.2	1000MQ or 50 Ω -F
240	B	X6S	0603	10V	K	10 μ F	0.125	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 12.5 Ω -F	15	0.2	500MQ or 12.5 Ω -F	15	0.2	1000MQ or 10 Ω -F
241	B	X6S	0603	6.3V	D	4.7 μ F	0.1	100 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	25	0.2	5 Ω -F	25	0.2	5 Ω -F	25	0.2	10 Ω -F
242	B	X6S	0603	6.3V	K	4.7 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 12.5 Ω -F	15	0.2	500MQ or 12.5 Ω -F	15	0.2	1000MQ or 25 Ω -F
243	B	X6S	0603	6.3V	K	10 μ F	0.15	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω -F	15	0.2	500MQ or 25 Ω -F	15	0.2	1000MQ or 10 Ω -F
244	B	X6S	0603	6.3V	W	22 μ F	0.1	50 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	12.5	15	15	25	0.2	5 Ω -F	25	0.2	5 Ω -F	25	0.2	10 Ω -F
245	B	X6S	0603	4.0V	K	10 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 25 Ω -F	15	0.2	500MQ or 25 Ω -F	15	0.2	1000MQ or 10 Ω -F
246	B	X6S	0603	4.0V	K	22 μ F	0.1	50 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	12.5	15	15	15	0.2	500MQ or 25 Ω -F	15	0.2	500MQ or 25 Ω -F	15	0.2	1000MQ or 10 Ω -F
247	B	X6S	0603	4.0V	W	22 μ F	0.1	50 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	12.5	15	15	15	0.25	500MQ or 8.8 Ω -F	15	0.25	500MQ or 8.8 Ω -F	15	0.25	1000MQ or 10 Ω -F
248	B	X6S	0603	2.5V	K	47 μ F	0.1	50 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	12.5	15	15	15	0.25	500MQ or 1 Ω -F	15	0.25	500MQ or 1 Ω -F	15	0.25	1000MQ or 1 Ω -F
249	B	X6S	0805	16V	H	10 μ F	0.125	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	15	0.2	500MQ or 12.5 Ω -F	15	0.2	500MQ or 12.5 Ω -F	15	0.2	1000MQ or 10 Ω -F
250	B	X6S	0805	16V	H	22 μ F	0.125	50 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	12.5	15	15	15	0.2	500MQ or 12.5 Ω -F	15	0.2	500MQ or 12.5 Ω -F	15	0.2	1000MQ or 10 Ω -F
251	B	X6S	0805	10V	H	10 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	20	0.2	5 Ω -F	20	0.2	5 Ω -F	20	0.2	10 Ω -F
252	B	X6S	0805	10V	H	22 μ F	0.125	50 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	12.5	15	15	15	0.2	500MQ or 12.5 Ω -F	15	0.2	500MQ or 12.5 Ω -F	15	0.2	1000MQ or 10 Ω -F
253	B	X6S	0805	6.3V	H	10 μ F	0.1	50 Ω .F	1.0 $\pm$ 0.1KHz	1.0 $\pm$ 0.2	15	12.5	15	15	20	0.2	5 Ω -F	20	0.2	5 Ω -F	20	0.2	10 Ω -F
254	B	X6S	0805	6.3V	H	22 μ F	0.15	50 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	12.5	15	15	15	0.2	500MQ or 12.5 Ω -F	15	0.2	500MQ or 12.5 Ω -F	15	0.2	1000MQ or 10 Ω -F
255	B	X6S	0805	6.3V	H	47 μ F	0.15	50 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	12.5	15	15	15	0.2	5 Ω -F	15	0.2	5 Ω -F	15	0.2	1000MQ or 10 Ω -F
256	B	X6S	0805	4.0V	H	47 μ F	0.15	50 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	12.5	15	15	15	0.2	5 Ω -F	15	0.2	5 Ω -F	15	0.2	1000MQ or 10 Ω -F
257	B	X6S	1206	16V	L	22 μ F	0.125	50 Ω .F	120 $\pm$ 24Hz	0.5 $\pm$ 0.1	15	12.5	15	15	15	0.2	500MQ or 12.5 Ω -F	15	0.2	500MQ or 12.5 Ω -F	15	0.2	1000MQ or 10 Ω -F