Data Sheet

Customer:	
Product:	**Multilayer Ceramic Chip Capacitor**
Sizes.:	**01005/0201/0402/0603/0805/1206/1210/1808/1812**
Issued Date:	**07-Aug-23**
Edition:	**REV.B4**

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07-Aug-23	07-Aug-23	07-Aug-23	07-Aug-23	
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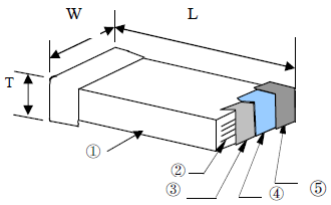
Multilayer Ceramic Chip Capacitor

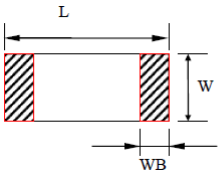
Multilayer Ceramic Chip Capacitor

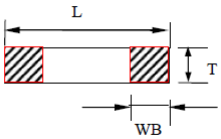
■Construction



①	Ceramic Dielectric	④	Nickel Layer:
②	Inner Electrodes	⑤	Tin Layer
③	Substrate Electrodes		

■Dimensions





Capacitance ≦ 50V **Unit: mm**

Type	Size (Inch)	L	W	T/Symbol		WB
E5	01005	0.40±0.02	0.20±0.02	0.20±0.02	V	0.10±0.03
01	0201	0.60±0.03	0.30±0.03	0.30±0.03	C	0.15±0.05
		0.60±0.05	0.30±0.05	0.30±0.05	D	
02	0402	1.00±0.05	0.50±0.05	0.50±0.05	E	0.25±0.05
		1.00±0.15	0.50±0.15	0.50±0.15	F	
		1.00±0.20	0.50±0.20	0.50±0.20	N	
03	0603	1.60±0.10	0.80±0.10	0.80±0.10	H	0.35±0.20
		1.60±0.20	0.80±0.20	0.80±0.20	B	
05	0805	2.00±0.20	1.25±0.20	0.80±0.20	B	0.50±0.20
				1.25±0.20	J	
06	1206	3.20±0.30	1.60±0.30	0.80±0.20	B	0.60±0.30
				1.00±0.20	I	
				1.25±0.20	J	
				1.60±0.30	L	
10	1210	3.20±0.30	2.50±0.30	1.25±0.20	J	0.60±0.30
				1.60±0.30	L	
				2	R	
				2.5	O	
08	1808	4.50±0.40	2.00±0.20	1.60±0.30	L	0.60±0.30
12	1812	4.50±0.40	3.20±0.30	1.25±0.20	J	0.60±0.30
				1.60±0.30	L	
				2.5	O	

Multilayer Ceramic Chip Capacitor

Capacitance ＞ 50V

Type	Size (Inch)	L	W	T/Symbol		WB
02	0402	1.00±0.05	0.50±0.05	0.50±0.05	E	0.25±0.05
03	0603	1.60±0.10	0.80±0.10	0.80±0.10	H	0.35±0.20
05	0805	2.00±0.20	1.25±0.20	0.80±0.20	B	0.50±0.20
				1.00±0.20	I	
				1.25±0.20	J	
06	1206	3.20±0.30	1.60±0.30	0.80±0.20	B	0.60±0.30
				1.00±0.20	I	
				1.25±0.20	J	
				1.60±0.30	L	
10	1210	3.20±0.30	2.50±0.30	1.25±0.20	J	0.60±0.30
				1.60±0.30	L	
08	1808	4.50±0.40	2.00±0.20	1.25±0.20	J	0.60±0.30
				1.60±0.30	L	
12	1812	4.50±0.40	3.20±0.30	1.25±0.20	J	0.60±0.30
				1.60±0.30	L	
				2	R	

■Part Numbering

MCF	03	J	T	N	250	3R9
Product Type	Dimensions (L×W)	Capacitance Tolerance	Packaging	Dielectric	Voltage (VDCW)	Capacitance
	E5: 01005 01: 0201 02: 0402 03: 0603 05: 0805 06: 1206 10: 1210 08: 1808 12: 1812	A: ±0.05pF (Cap≦10pF) B: ±0.1pF (Cap≦10pF) C: ±0.25pF (Cap≦10pF) D: ±0.5pF (Cap≦10pF) F: ±1% G: ±2% J: ±5% K: ±10% M: ±20% Z: +80/-20%	T: Taping Reel W: 13” Taping Reel	N: NPO (COG) B: X7R X: X5R	4V0: 4V 6V3: 6.3V 250: 25V 500: 50V 101: 100V 102: 1000V 202: 2000V 302: 3000V	3R9: 3.9pF 150: 15pF 181: 180pF 225: 2.2μF 106: 10μF

■Temperature Coefficient /Characteristics

Dielectric	Reference Temperature Point	Temperature Coefficient	Operation Temperature Range
NOP(COG)	20℃	0±30ppm/℃	-55~125℃
X7R	20℃	±15%	-55~125℃
X5R	20℃	±15%	-55~85℃

Note：Nominal temperature coefficient and allowed tolerance of class Ⅰ are decided by the changing of the capacitance between 20℃and 85℃. Nominal temperature coefficient of class Ⅱ are decided by the temperature of 20℃.

■Measurement method of dielectric withstanding Voltage for High Voltage MLCC

Rated Voltage Range	Measuring Method
100V≦Vr<500V	Force 200% Rated Voltage for 5 second. Max.Current should not exceed 50mA
500V≦Vr≦1000V	Force 150% Rated Voltage for 5 second. Max.Current should not exceed 50mA
1000V<Vr≦2000V	Force 120% Rated Voltage for 5 second. Max.Current should not exceed 50mA
2000V<Vr≦5000V	Force 120% Rated Voltage for 5 second. Max.Current should not exceed 10mA

■General Capacitance & Voltage

Capacitance & Voltage (NPO 6.3V~100V)

Dielectric		NPO																							
EIA	Size	0402						0603					0805					1206		1210		1808		1812	
Code	VDCW	6.3V	10V	16V	25V	50V	100V	10V	16V	25V	50V	100V	10V	16V	25V	50V	100V	50V	100V	50V	100V	50V	100V	50V	100V
0R1	0.1pF				E	E	E			H	H	H				B	B		B						
0R2	0.2				E	E	E			H	H	H				B	B		B						
0R3	0.3				E	E	E			H	H	H				B	B	B	B						
0R4	0.4				E	E	E			H	H	H				B	B	B	B						
0R5	0.5				E	E	E			H	H	H				B	B	B	B						
0R6	0.6				E	E	E			H	H	H				B	B	B	B						
0R7	0.7				E	E	E			H	H	H				B	B	B	B						
0R8	0.8				E	E	E			H	H	H				B	B	B	B						
0R9	0.9				E	E	E			H	H	H				B	B	B	B						
1R0	1.0				E	E	E			H	H	H				B	B	B	B		J				
1R2	1.2				E	E	E			H	H	H				B	B	B	B		J				
1R5	1.5				E	E	E			H	H	H				B	B	B	B		J				
1R8	1.8				E	E	E			H	H	H				B	B	B	B		J				
2R0	2.0				E	E	E			H	H	H				B	B	B	B		J		L		
2R2	2.2				E	E	E			H	H	H				B	B	B	B		J		L		
2R7	2.7				E	E	E			H	H	H				B	B	B	B		J		L		
3R0	3.0				E	E	E			H	H	H				B	B	B	B		J		L		J
3R3	3.3				E	E	E			H	H	H				B	B	B	B		J		L		J
3R9	3.9				E	E	E			H	H	H				B	B	B	B		J		L		J
4R7	4.7				E	E	E			H	H	H				B	B	B	B		J		L		J
5R0	5.0				E	E	E			H	H	H				B	B	B	B		J		L		J
5R6	5.6				E	E	E			H	H	H				B	B	B	B		J		L		J
6R8	6.8				E	E	E			H	H	H				B	B	B	B		J		L		J
8R2	8.2				E	E	E			H	H	H				B	B	B	B		J		L		J
9R0	9.0				E	E	E			H	H	H				B	B	B	B		J		L		J
100	10pF				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
120	12				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
150	15				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
180	18				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
200	20				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
220	22				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
270	27				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
300	30				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
330	33				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
390	39				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
470	47				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
560	56				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
680	68				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
750	75				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
820	82				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
101	100pF				E	E	E			H	H	H				B	B	B	B	J	J	L	L	J	J
121	120				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
151	150				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
181	180				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
201	200				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
221	220				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
271	270				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
301	300				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
331	330				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
361	360				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
391	390				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
471	470				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
561	560				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
681	680				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
751	750				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
821	820				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
102	1000pF				E	E				H	H	H				B	B	B	B	J	J	L	L	J	J
122	1200		E	E	E					H	H					B	B	B	B	J	J	L	L	J	J
152	1500		E	E						H	H					B	B	B	B	J	J	L	L	J	J
182	1800		E	E						H	H					B	B	B	B	J	J	L	L	J	J
202	2000		E	E						H	H					B	B	B	B	J	J	L	L	J	J
222	2200		E	E						H	H					B	B	B	B	J	J	L	L	J	J
272	2700		E	E						H	H					B	B	B	B	J	J	L	L	J	J
332	3300	E								H	H					B	B	B	B	J	J	L	L	J	J
392	3900	E								H	H					B		B		J	J	L	L	J	J
472	4700	E								H	H					B		B		J	J	L	L	J	J
562	5600									H	H					B		B		J	J	L		J	J
682	6800									H	H					B		B		J	J	L		J	J
822	8200								H							B		B		J		L		J	J
103	0.01uF								H				J	J	J	J		L		J		L		J	J
123	0.012							H					J	J	J	J		L		J		L		J	
153	0.015							H					J	J	J	J		L		J		L		J	
183	0.018							H					J	J	J	J		L		J		L		J	
223	0.022							H					J	J	J	J		L		J		L		J	
273	0.027												J	J	J			L		J		L		J	
333	0.033												J	J				L		J		L		J	
473	0.047												J					L		J		L		J	
563	0.056												J					L		J		L		J	
683	0.068												J					L		J		L		J	
823	0.083												J					L		J		L		J	
104	0.100												J					L		J		L		J	

■The letter in cell is expressed the symbol of product thickness

Multilayer Ceramic Chip Capacitor

Capacitance & Voltage (X7R 6.3V~100V)

Dielectric		X7R																	
EIA	Size	0402						0603						0805					
Code	VDCW	6.3V	10V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V	100V
101	100pF	E	E	E	E	E							H						B
121	120	E	E	E	E	E							H						B
151	150	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
181	180	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
201	200	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
221	220	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
241	240	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
271	270	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
301	300	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
331	330	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
361	360	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
391	390	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
471	470	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
501	500	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
511	510	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
561	560	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
621	620	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
681	680	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
751	750	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
821	820	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
102	1000pF	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
122	1200	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
152	1500	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
182	1800	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
202	2000	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
222	2200	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
242	2400	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
272	2700	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
302	3000	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
332	3300	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
362	3600	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
392	3900	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
472	4700	E	E	E	E	E	E	H	H	H	H	H	H	B	B	B	B	B	B
502	5000	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
512	5100	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
562	5600	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
682	6800	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
822	8200	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
103	0.01μF	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
123	0.012	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
153	0.015	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
183	0.018	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
203	0.020	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
223	0.022	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
273	0.027	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
303	0.030	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
333	0.033	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
393	0.039	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
473	0.047	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
513	0.051	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
563	0.056	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	B
683	0.068	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	J
823	0.082	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	J
104	0.10μF	E	E	E	E	E		H	H	H	H	H	H	B	B	B	B	B	J
124	0.12	E	E	E	E			H	H	H	H	H		B	B	B	B	B	J
154	0.15	E	E	E	E			H	H	H	H	H		B	B	B	B	B	J
184	0.18	E	E	E	E			H	H	H	H	H		B	B	B	B	B	J
224	0.22	E	E	E	E			H	H	H	H	H		B	B	B	B	B	J
274	0.27	E	E	E				H	H	H	H	H		B	B	B	B	B	J
334	0.33	E	E	E				H	H	H	H	H		B	B	B	B	B	J
394	0.39	E	E					H	H	H	H	H		B	B	B	B	B	J
474	0.47	E	E					H	H	H	H	H		B	B	B	B	B	J
564	0.56							H	H	H	H	H		J	J	J	J	J	J
684	0.68							H	H	H	H	H		J	J	J	J	J	J
824	0.82							H	H	H	H	H		J	J	J	J	J	J
105	1.0μF							H	H	H	H	H		J	J	J	J	J	J
155	1.5							H	H	H				J	J	J	J	J	
225	2.2							H	H	H				J	J	J	J	J	
335	3.3							H						J	J	J	J		
475	4.7							H						J	J	J	J	J	
685	6.8													J	J	J			
106	10μF													J	J	J			

■The letter in cell is expressed the symbol of product thickness

Multilayer Ceramic Chip Capacitor

Capacitance & Voltage (X7R 6.3V~100V)

Dielectric		X7R																					
EIA	Size	1206						1210						1808						1812			
Code	VDCW	6.3V	10V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V	100V	6.3V	10V	16V	25V	50V	100V	16V	25V	50V	100V
R47	0.47 pF																			L	L	L	
151	150						B						J							L	L	L	
181	180						B						J							L	L	L	
201	200	B	B	B	B	B	B						J							L	L	L	
221	220	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	
271	270	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L
331	330	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L
391	390	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L
471	470	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L
561	560	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L
681	680	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L
751	750	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L
821	820	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L
102	1000pF	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L
122	1200	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	O	O	O	L
152	1500	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	O	O	O	L
182	1800	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	O	O	O	L
202	2000	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	O	O	O	L
222	2200	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	O	O	O	L
272	2700	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	O	O	O	L
332	3300	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	O	O	O	L
392	3900	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	O	O	O	L
472	4700	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	O	O	O	L
562	5600	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	O			L
682	6800	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	O			L
822	8200	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L				L
103	0.01μF	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L				L
123	0.012	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L				L
153	0.015	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L				L
183	0.018	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L				L
203	0.020	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L				L
223	0.022	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L				L
273	0.027	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L				L
333	0.033	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L				L
393	0.039	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L				L
473	0.047	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L				L
563	0.056	B	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L				L
683	0.068	B	B	B	B	B	J	J	J	J	J	J	J	L	L	L	L	L	L				L
823	0.082	B	B	B	B	B	J	J	J	J	J	J	J	L	L	L	L	L	L				L
104	0.10μF	B	B	B	B	B	J	J	J	J	J	J	J	L	L	L	L	L	L				L
124	0.12	B	B	B	B	B	J	J	J	J	J	J	J	L	L	L	L	L	L				L
154	0.15	B	B	B	B	B	J	J	J	J	J	J	J	L	L	L	L	L	L				L
184	0.18	B	B	B	B	B	J	J	J	J	J	J	J	L	L	L	L	L	L				L
224	0.22	B	B	B	B	B	J	J	J	J	J	J	J	L	L	L	L	L	L				L
274	0.27	B	B	B	B	B	J	J	J	J	J	J		L	L	L	L	L	L				L
334	0.33	B	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L				L
394	0.39							J	J	J	J	J	L	L	L	L	L	L	L				L
474	0.47	J	J	J	J	J	L	J	J	J	J	J	L	L	L	L	L	L	L				L
564	0.56	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L	L				L
684	0.68	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L	L				R
824	0.82	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L	L				R
105	1.0μF	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L	L				R
125	1.2	J	J	J	J	J		L	L	L	L	L	L	L	L	L	L	L	L				R
155	1.5	J	J	J	J	J		L	L	L	L	L	L	L	L	L	L	L	L				R
225	2.2	L	L	L	L	L		L	L	L	L	L	L	L	L	L	L	L	L				R
335	3.3	L	L	L	L	L		L	L	L	L	L	L	L	L	L	L	L					
475	4.7	L	L	L	L	L		L	L	L	L	L	L	L	L	L	L	L					
685	6.8	L	L	L	L	L		L	L	L	L	L											
106	10	L	L	L	L	L		L	L	L	L	L											
226	22	L	L	L	L			L	L	L	L												
476	47							L	L														

■The letter in cell is expressed the symbol of product thickness

Multilayer Ceramic Chip Capacitor

Capacitance & Voltage (X5R 4V~50V)

Dielectric		X5R																	
EIA	Size	0402						0603						0805					
Code	VDCW	4V	6.3V	10V	16V	25V	50V	4V	6.3V	10V	16V	25V	50V	4V	6.3V	10V	16V	25V	50V
473	0.047μF						E												
563	0.056						E												
683	0.068						E												
823	0.082						E												
104	0.10μF	E	E	E	E	E	E												
124	0.12	E	E	E	E	E	E												
154	0.15	E	E	E	E	E	E												
184	0.18	E	E	E	E	E	E												
224	0.22	E	E	E	E	E	E												
334	0.33	E	E	E	E	E	E												
474	0.47	E	E	E	E	E	E	H	H	H	H	H	H						
564	0.56	E	E	E	E	E	E	H	H	H	H	H	H						
684	0.68	E	E	E	E	E	E	H	H	H	H	H	H						
105	1.0μF	F	F	F	F	F	F	H	H	H	H	H	H	J	J	J	J	J	J
155	1.5	F	F	F	F	F		H	H	H	H	H	H	J	J	J	J	J	J
225	2.2	F	F	F	F	F		H	H	H	H	H	H	J	J	J	J	J	J
335	3.3	F	F	F	F			H	H	H	H	H		J	J	J	J	J	J
475	4.7	F	F	F	F			H	H	H	H	H		J	J	J	J	J	J
685	6.8	F	F	F				H	H	H	H	H		J	J	J	J	J	
106	10μF	N	N	N				B	B	B	B	B		J	J	J	J	J	
156	15	N	N					B	B	B				J	J	J	J	J	
226	22	N	N					B	B	B				J	J	J	J	J	
476	47							B	B					J	J	J			

Dielectric		X5R																			
EIA	Size	1206						1210						1808				1812			
Code	VDCW	4V	6.3V	10V	16V	25V	50V	4V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	6.3V	10V	16V	25V
104	0.1μF	B																			
155	1.5	B																			
225	2.2	L	L	L	L	L	L														
335	3.3	L	L	L	L	L	L														
475	4.7	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L			O	O
685	6.8	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L			O	O
106	10μF	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	O	O	O	O
126	12	L	L	L	L	L		O	O	O	O	O		L	L	L		O	O	O	
156	15	L	L	L	L	L		O	O	O	O	O		L	L	L		O	O	O	
226	22	L	L	L	L	L		O	O	O	O	O		L	L	L		O	O	O	
336	33	L	L	L	L			O	O	O	O	O		L	L			O	O		
476	47	L	L	L	L			O	O	O	O	O		L	L			O	O		
686	68	L	L					O	O	O	O			L				O			
107	100μF	L	L					O	O	O	O			L				O			
337	330							O	O												

■The letter in cell is expressed the symbol of product thickness

■Middle and High Voltage

Capacitance & Voltage (NPO 200V~2KV)

Dielectric		NPO																			
EIA	Size	0603		0805			1206				1210				1808				1812			
Code	VDCW	200V	250V	200V 250V	500V 630V	1000V	200V 250V	500V 630V	1000V	2000V	200V 250V	500V 630V	1000V	2000V	200V 250V	500V 630V	1000V	2000V	200V 250V	500V 630V	1000V	2000V
0R1	0.1pF	H	H	B	B	J	B	B	I	I												
0R5	0.5	H	H	B	B	J	B	B	I	I												
0R6	0.6	H	H	B	B	J	B	B	I	I												
0R7	0.7	H	H	B	B	J	B	B	I	I												
0R8	0.8	H	H	B	B	J	B	B	I	I												
0R9	0.9	H	H	B	B	J	B	B	I	I												
1R0	1.0	H	H	B	B	J	B	B	I	I	J	J	J	J								
1R2	1.2	H	H	B	B	J	B	B	I	I	J	J	J	J								
1R5	1.5	H	H	B	B	J	B	B	I	I	J	J	J	J								
1R8	1.8	H	H	B	B	J	B	B	I	I	J	J	J	J								
2R0	2.0	H	H	B	B	J	B	B	I	I	J	J	J	J	L	L	L	L				
2R2	2.2	H	H	B	B	J	B	B	I	I	J	J	J	J	L	L	L	L				
2R7	2.7	H	H	B	B	J	B	B	I	I	J	J	J	J	L	L	L	L				
3R0	3.0	H	H	B	B	J	B	B	I	I	J	J	J	J	L	L	L	L	J	J	L	L
3R3	3.3	H	H	B	B	J	B	B	I	I	J	J	J	J	L	L	L	L	J	J	L	L
3R9	3.9	H	H	B	B	J	B	B	I	I	J	J	J	J	L	L	L	L	J	J	L	L
4R7	4.7	H	H	B	B	J	B	B	I	I	J	J	J	J	L	L	L	L	J	J	L	L
5R0	5.0	H	H	B	B	J	B	B	I	I	J	J	J	J	L	L	L	L	J	J	L	L
5R6	5.6	H	H	B	B	J	B	B	I	I	J	J	J	J	L	L	L	L	J	J	L	L
6R8	6.8	H	H	B	B	J	B	B	I	I	J	J	J	J	L	L	L	L	J	J	L	L
8R2	8.2	H	H	B	B	J	B	B	I	I	J	J	J	J	L	L	L	L	J	J	L	L
100	10pF	H	H	B	B	J	B	B	I	I	J	J	J	J	L	L	L	L	J	J	L	L
110	11	H	H	B	B	J	B	I	I	I	J	J	J	J	L	L	L	L	J	J	L	L
120	12	H	H	B	B	J	B	I	I	I	J	J	J	J	L	L	L	L	J	J	L	L
150	15	H	H	B	B	J	B	I	I	I	J	J	J	J	L	L	L	L	J	J	L	L
180	18	H	H	B	B	J	B	I	I	I	J	J	J	J	L	L	L	L	J	J	L	L
220	22	H	H	B	B	J	B	I	I	I	J	J	J	J	L	L	L	L	J	J	L	L
270	27	H	H	B	B	J	B	I	I	I	J	J	J	J	L	L	L	L	J	J	L	L
300	30	H	H	B	B	J	B	I	I	I	J	J	J	J	L	L	L	L	J	J	L	L
330	33	H	H	B	B	J	B	I	I	I	J	J	J	J	L	L	L	L	J	J	L	L
390	39	H	H	B	B	J	B	I	I	I	J	J	J	J	L	L	L	L	J	J	L	L
470	47	H	H	B	B	J	B	I	I	J	J	J	J	J	L	L	L	L	J	J	L	L
560	56	H	H	B	B	J	B	I	I	J	J	J	J	J	L	L	L	L	J	J	L	L
680	68	H	H	B	B	J	B	I	I	J	J	J	J	J	L	L	L	L	J	J	L	L
820	82	H	H	B	B	J	B	I	I	L	J	J	J	J	L	L	L	L	J	J	L	L
101	100pF	H	H	B	B	J	B	I	I	L	J	J	J	J	L	L	L	L	J	J	L	L
121	120	H	H	B	B		B	I	I	L	J	J	J	J	L	L	L	L	J	J	L	L
151	150	H	H	B	B		B	I	J	L	J	J	J	J	L	L	L	L	J	J	L	L
181	180	H	H	B	B		B	I	J	L	J	J	J	J	L	L	L	L	J	J	L	L
221	220	H	H	B	B		B	I	J	L	J	J	J	J	L	L	L	L	J	J	L	L
271	270	H	H	B	B		B	I	J	L	J	J	J	J	L	L	L	L	J	J	L	L
301	300	H	H	B	B		B	I	J		J	J	J	L	L	L	L	L	J	J	L	L
331	330	H	H	B	B		B	I	J		J	J	J	L	L	L	L	L	J	J	L	L
391	390	H	H	B			B	I	J		J	J	J	L	L	L	L	L	J	J	L	L
471	470	H	H	B	J		B	I	J		J	J	J	L	L	L	L	L	J	J	L	L
561	560			B	J		B	J	J		J	J	J		L	L	L		J	J	L	L
681	680			B			B	J	J		J	J	J		L	L	L		J	J	L	L
751	750			B			B	J	J		J	J			L	L	L		J	J	L	L
821	820			B			B	J	J		J	J	L		L	L	L		J	J	L	L
102	1000pF			B			B	J	J		J	J	L		L	L	L		J	J	L	L
122	1200			J			B	J			J	J	L		L	L			J	L	L	
152	1500			J			B	J			J	L			L	L			J	L		
182	1800						B				J	L			L	L			J	L		
202	2000						J				J	L			L	L			J	L		
222	2200						J				J	L			L	L			J	L		
272	2700						J				J				L	L			J	L		
332	3300										J				L				J	L		
392	3900														L				J	L		
472	4700																		J	L		
562	5600																		J			
682	6800																		J			

■The letter in cell is expressed the symbol of product thickness

Multilayer Ceramic Chip Capacitor

Capacitance & Voltage (NPO 3KV~5KV)

Dielectric		NPO					
EIA	Size	1808			1812		
Code	VDCW	3000V	4000V	5000V	3000V	4000V	5000V
0R1	0.1pF						
0R5	0.5						
0R6	0.6						
0R7	0.7						
0R8	0.8						
0R9	0.9						
1R0	1.0						
1R2	1.2						
1R5	1.5						
1R8	1.8						
2R0	2.0	L	L	L			
2R2	2.2	L	L	L			
2R7	2.7	L	L	L			
3R0	3.0	L	L	L	L	L	L
3R3	3.3	L	L	L	L	L	L
3R9	3.9	L	L	L	L	L	L
4R7	4.7	L	L	L	L	L	L
5R0	5.0	L	L	L	L	L	L
5R6	5.6	L	L	L	L	L	L
6R8	6.8	L	L	L	L	L	L
8R2	8.2	L	L	L	L	L	L
100	10pF	L	L	L	L	L	L
110	11	L	L	L	L	L	L
120	12	L	L	L	L	L	L
150	15	L	L	L	L	L	L
180	18	L	L	L	L	L	L
220	22	L	L	L	L	L	L
270	27	L	L	L	L	L	L
330	33	L	L	L	L	L	L
390	39	L			L	L	L
470	47	L			L	L	L
560	56	L			L	L	L
680	68	L			L	L	L
820	82	L			L	L	
101	100pF	L			L	L	
121	120	L			L	L	
151	150	L			L	L	
181	180	L			L	L	
221	220	L			L	L	
271	270	L			L		
301	300	L			L		
331	330	L			L		
391	390				L		
471	470				L		
561	560				L		
681	680						
751	750						
821	820						
102	1000pF						
122	1200						
152	1500						
182	1800						
222	2200						
272	2700						
332	3300						
392	3900						
472	4700						
562	5600						
682	6800						

■The letter in cell is expressed the symbol of product thickness

Multilayer Ceramic Chip Capacitor

Capacitance & Voltage (X7R 200V~4KV)

Dielectric		X7R																						
EIA	Size	0603	0805		1206				1210				1808						1812					
Code	VDCW	200V 250V	200V 250V	500V 630V	200V 250V	500V 630V	1000V	2000V	200V 250V	500V 630V	1000V	2000V	200V 250V	500V 630V	1000V	2000V	3000V	4000V	200V 250V	500V 630V	1000V	2000V	3000V	4000V
101	100pF		B																					
121	120		B																					
151	150	H	B	B	B	B	B	J	J	J	J	J			L	L	L	L						
181	180	H	B	B	B	B	B	J	J	J	J	J			L	L	L	L						
221	220	H	B	B	B	B	B	J	J	J	J	J	L	L	L	L	L	L						
271	270	H	B	B	B	B	B	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L
331	330	H	B	B	B	B	B	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L
391	390	H	B	B	B	B	B	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L
471	470	H	B	B	B	B	B	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L
561	560	H	B	B	B	B	B	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L
681	680	H	B	B	B	B	B	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L
751	750	H	B	B	B	B	B	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L
821	820	H	B	B	B	B	B	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L
102	1000pF	H	B	B	B	B	B	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L
112	1100	H	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L
122	1200	H	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L
152	1500	H	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L
182	1800	H	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L
222	2200	H	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L	L	L	L	L	L	L	L
272	2700	H	B	B	B	B	J	J	J	J	J	J	L	L	L	L	L		L	L	L	L	L	L
332	3300	H	B	B	B	J	J		J	J	J	L	L	L	L	L	L		L	L	L	L	L	L
392	3900	H	B	B	B	J	J		J	J	J	L	L	L	L	L	L		L	L	L	L	L	
472	4700	H	B	B	B	J	J		J	J	L	L	L	L	L	L	L		L	L	L	L	L	
562	5600	H	B	B	B	J	J		J	J	L	L	L	L	L	L			L	L	L	L		
682	6800	H	B	J	B	J	J		J	J	L	L	L	L	L	L			L	L	L	L		
822	8200	H	B	J	B	J	J		J	J	L	L	L	L	L	L			L	L	L	L		
103	0.010μF	H	B	J	B	J	J		J	J	L	L	L	L	L	L			L	L	L	L		
123	0.012		B		B	J	J		J	J	L		L	L	L				L	L	L	L		
153	0.015		B		B	J			J	J	L		L	L	L				L	L	L			
183	0.018		B		B	J			J	J	L		L	L	L				L	L	L			
203	0.020		J		B	J			J	J	L		L	L	L				L	L	L			
223	0.022		J		B	J			J	J	L		L	L	L				L	L	L			
273	0.027				B	J			J	J			L	L					L	L	L			
333	0.033				J	J			J	J			L	L					L	L	L			
393	0.039				J				J	J			L	L					L	L	L			
473	0.047				J				J	J			L	L					L	L	L			
563	0.056				J				J	J			L	L					L	L	R			
683	0.068				J				J	L			L	L					L	L				
823	0.082				J				J	L			L						L	L				
104	0.10μF				J				J	L			L						L	L				
124	0.12				J				J				L						L	R				
154	0.15				J				J				L						L	R				
184	0.18				L				L				L						L	R				
224	0.22				L				L				L						L	R				
274	0.27																							
334	0.33																		R					
394	0.39																		R					
474	0.47																		R					
564	0.56																		R					
105	1.0μF																		R					

■The letter in cell is expressed the symbol of product thickness

Multilayer Ceramic Chip Capacitor

■Ultra-small 01005 & 0201 Capacitors

Capacitance & Voltage

Dielectric		NPO			
EIA	Size	01005		0201	
Code	VDCW	10V	16V 25V	25V	50V
0R1	0.1pF	V	V	C	C
0R2	0.2	V	V	C	C
0R3	0.3	V	V	C	C
0R4	0.4	V	V	C	C
0R5	0.5	V	V	C	C
0R6	0.6	V	V	C	C
0R7	0.7	V	V	C	C
0R8	0.8	V	V	C	C
0R9	0.9	V	V	C	C
1R0	1.0	V	V	C	C
1R1	1.1	V	V	C	C
1R2	1.2	V	V	C	C
1R3	1.3	V	V	C	C
1R4	1.4	V	V	C	C
1R5	1.5	V	V	C	C
1R6	1.6	V	V	C	C
1R7	1.7	V	V	C	C
1R8	1.8	V	V	C	C
2R0	2.0	V	V	C	C
2R2	2.2	V	V	C	C
2R4	2.4	V	V	C	C
2R5	2.5	V	V	C	C
2R7	2.7	V	V	C	C
3R0	3.0	V	V	C	C
3R3	3.3	V	V	C	C
3R6	3.6	V	V	C	C
3R7	3.7	V	V	C	C
3R9	3.9	V	V	C	C
4R0	4.0	V	V	C	C
4R3	4.3	V	V	C	C
4R7	4.7	V	V	C	C
5R0	5.0	V	V	C	C
5R1	5.1	V	V	C	C
5R6	5.6	V	V	C	C
6R0	6.0	V	V	C	C
6R2	6.2	V	V	C	C
6R5	6.5	V	V	C	C
6R8	6.8	V	V	C	C
7R0	7.0	V	V	C	C
7R5	7.5	V	V	C	C
8R0	8.0	V	V	C	C
8R2	8.2	V	V	C	C
9R0	9.0	V	V	C	C
9R1	9.1	V	V	C	C
9R5	9.5	V	V	C	C
100	10pF	V	V	C	C
110	11	V		C	C
120	12	V		C	C
130	13	V		C	C
140	14	V		C	C
150	15	V		C	C
160	16	V		C	C
180	18	V		C	C
200	20	V		C	C
220	22	V		C	C
240	24			C	C
270	27			C	C
300	30			C	C
330	33			C	C
360	36			C	C
390	39			C	C
430	43			C	C
470	47			C	C
510	51			C	C
560	56			C	C
620	62			C	C
680	68			C	C
750	75			C	C
820	82			C	C
101	100pF			C	C
221	220			C	C
102	1000pF			C	

Dielectric		X7R				X5R					
EIA	Size	01005	0201			01005		0201			
Code	VDCW	10V 16V	10V 16V	25V	50V	4V 6.3V	10V 16V	4V 6.3V	10V	16V	25V	50V
101	100pF	V	C	C	C	V	V					
121	120	V	C	C	C	V	V					
151	150	V	C	C	C	V	V					
181	180	V	C	C	C	V	V					
201	200	V	C	C	C	V	V					
221	220	V	C	C	C	V	V					
271	270	V	C	C	C	V	V					
331	330	V	C	C	C	V	V					
391	390	V	C	C	C	V	V					
471	470	V	C	C	C	V	V					
561	560	V	C	C	C	V	V					
681	680	V	C	C	C	V	V					
821	820	V	C	C	C	V	V					
102	1000pF	V	C	C	C	V	V					
122	1200		C	C		V	V					
152	1500		C	C		V	V					
182	1800		C	C		V	V					
222	2200		C	C		V	V					
272	2700		C	C		V	V					
332	3300		C	C		V	V					
392	3900		C	C		V	V					
472	4700		C	C		V	V					C
562	5600		C	C		V	V					C
682	6800		C	C		V	V					C
822	8200		C	C		V	V					C
103	0.010μF		C	C		V	V					C
123	0.012					V	V					
153	0.015		C			V	V	C	C	C	C	
183	0.018		C			V	V	C	C	C	C	
203	0.020					V	V					
223	0.022		C			V	V	C	C	C	C	
273	0.027					V	V	C	C	C	C	
333	0.033					V	V	C	C	C	C	
393	0.039					V	V	C	C	C	C	
473	0.047					V	V	C	C	C	C	
563	0.056					V	V	C	C	C	C	
683	0.068					V	V	C	C	C	C	
823	0.082					V	V	C	C	C	C	
104	0.100μF					V	V	C	C	C	C	
124	0.120							C	C	C		
154	0.150							C	C	C		
224	0.220							D	D	D		
334	0.330							D	D			
474	0.470							D	D			
684	0.680							D	D			
105	1.0μF							D	D			
225	2.2							D	D			

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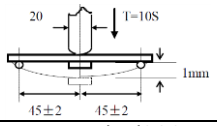
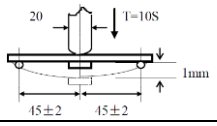
■Environmental Characteristics

<table>
<tr><th>Item</th><th colspan="10">Requirement</th><th>Test Method</th></tr>
<tr><td>Capacitance</td><td colspan="10">Should be within the specified tolerance</td><td>NPO: (Class I)
Cap≤ 1000pF 1.0±0.2Vrms, 1MHz±10%
Cap>1000pF 1.0±0.2Vrms, 1KHz±10%
X7R, X5R: (Class II)
Test Temperature:25℃±3℃
Cap≤ 10uF 1.0±0.2Vrms, 1KHz±10%
Cap>10uF 0.5±0.1Vrms, 120Hz±24 Hz</td></tr>
<tr><td rowspan="2">(DF, tanδ) Dissipation Factor (For 01005 Size)</td><td>NPO (Class Ⅰ)</td><td colspan="9">≤0.25%</td><td>Test Temperature:25℃±3℃
Test Frequency: 1.0±0.2Vrms, 1MHz±10%</td></tr>
<tr><td>X7R, X5R: (Class II)</td><td colspan="9">≤10%</td><td>Test Temperature:25℃±3℃
Test Frequency: 1.0±0.2Vrms, 1KHz±10%</td></tr>
<tr><td rowspan="15">(DF, tanδ) Dissipation Factor (For 0402-1812 Sizes)</td><td rowspan="4">NPO (Class Ⅰ)</td><td colspan="9">DF</td><td>Capacitance</td><td>Measuring Frequency</td><td>Measuring Voltage</td></tr>
<tr><td colspan="9">≤0.56%</td><td>Cr＜5 pF</td><td rowspan="3">1MHZ±10%</td><td rowspan="3">1.0±0.2Vrms</td></tr>
<tr><td colspan="9">1.5[(150/Cr)+7]×10^{-4}</td><td>5pF≤Cr<50 pF</td></tr>
<tr><td colspan="9">≤0.15%</td><td>50pF≤Cr≤1000 pF</td></tr>
<tr><td colspan="9">≤0.15%</td><td>＞1000 pF</td><td>1KHZ±10%</td></tr>
<tr><td rowspan="14">X7R, X5R: (Class II)</td><td>Voltage</td><td>DF</td><td>0201</td><td>0402</td><td>0603</td><td>0805</td><td>≧1206</td><td colspan="4" rowspan="14">Cap≤ 10uF 1.0±0.2Vrms, 1KHz±10%
Cap>10uF 0.5±0.1Vrms, 120Hz±24Hz</td></tr>
<tr><td rowspan="4">50V</td><td>≤250</td><td>≤3.3nF</td><td>≤10nF</td><td>≤100 nF</td><td>≤330 nF</td><td>≤680 nF</td></tr>
<tr><td>≤350</td><td>≤10nF</td><td>-</td><td>-</td><td>-</td><td>≤1μF</td></tr>
<tr><td>≤500</td><td>-</td><td>-</td><td>-</td><td>≤680 nF</td><td>-</td></tr>
<tr><td>≤1000</td><td>-</td><td>≤1μF</td><td>≤2.2μF</td><td>≤4.7μF</td><td>≤10μF</td></tr>
<tr><td rowspan="4">25V</td><td>≤250</td><td>≤3.3nF</td><td>≤10nF</td><td>≤150nF</td><td>≤330nF</td><td>≤680 nF</td></tr>
<tr><td>≤350</td><td>≤10nF</td><td>≤100nF</td><td>≤330nF</td><td>-</td><td>≤2.2μF</td></tr>
<tr><td>≤500</td><td>-</td><td>-</td><td>-</td><td>≤1μF</td><td>-</td></tr>
<tr><td>≤750</td><td>-</td><td>-</td><td>-</td><td>≤2.2μF</td><td>≤4.7μF</td></tr>
<tr><td rowspan="4">16V</td><td>≤1000</td><td>≤100nF</td><td>≤2.2μF</td><td>≤10μF</td><td>≤22μF</td><td>≤22μF</td></tr>
<tr><td>≤250</td><td>≤3.3nF</td><td>≤10nF</td><td>≤150nF</td><td>≤330nF</td><td>≤680 nF</td></tr>
<tr><td>≤350</td><td>≤15nF</td><td>≤100nF</td><td>≤330nF</td><td>-</td><td>≤2.2μF</td></tr>
<tr><td>≤500</td><td>≤47nF</td><td>≤220nF</td><td>≤680nF</td><td>≤2.2μF</td><td>-</td></tr>
<tr><td>≤750</td><td>-</td><td>-</td><td>-</td><td>≤4.7μF</td><td>≤4.7μF</td></tr>
<tr><td rowspan="4">10V</td><td>≤1000</td><td>≤100nF</td><td>≤4.7μF</td><td>≤10μF</td><td>≤22μF</td><td>≤47μF</td></tr>
<tr><td>≤250</td><td>≤3.3 nF</td><td>≤10nF</td><td>≤150nF</td><td>≤330nF</td><td>≤680 nF</td></tr>
<tr><td>≤350</td><td>≤15nF</td><td>≤100nF</td><td>≤330nF</td><td>-</td><td>≤2.2μF</td></tr>
<tr><td>≤500</td><td>≤47nF</td><td>-</td><td>≤680nF</td><td>≤2.2μF</td><td>-</td></tr>
<tr><td>≤750</td><td>-</td><td>≤1μF</td><td>≤2.2μF</td><td>≤4.7μF</td><td>≤10μF</td></tr>
<tr><td rowspan="5">≤6.3V</td><td>≤1000</td><td>≤2.2μF</td><td>≤10μF</td><td>≤22μF</td><td>≤47μF</td><td>≤100μF</td></tr>
<tr><td>≤250</td><td>≤3.3nF</td><td>-</td><td>≤150nF</td><td>-</td><td>≤680nF</td></tr>
<tr><td>≤350</td><td>≤15nF</td><td>≤100nF</td><td>≤330nF</td><td>-</td><td>≤2.2μF</td></tr>
<tr><td>≤500</td><td>≤47nF</td><td>≤220nF</td><td>≤680nF</td><td>-</td><td>-</td></tr>
<tr><td>≤750</td><td>-</td><td>≤1μF</td><td>-</td><td>10μF~22μF</td><td>≤10μF</td></tr>
<tr><td>≤1000</td><td>≤4.7μF</td><td>≤22μF</td><td>≤47μF</td><td>≤47μF</td><td>≤100μF</td></tr>
</table>

Multilayer Ceramic Chip Capacitor

Item	Requirement	Test Method
Dielectric Withstanding Voltage(DWV)	No breakdown or damage.	Measuring Voltage: Class Ⅰ:300% Rated voltage Class Ⅱ:250% Rated voltage Duration: 1～5s Charge/ Discharge Current: 50mA max. (This method excludes high-voltage MLCC)
Solderability	At least 95% of the terminal electrode is covered by new solder. Visual Appearance: No visible damage.	Preheating conditions:80 to 120℃; 10~30s. Solder Temperature: 235±5℃(Sn/Pb:63/37) Duration: 2±0.5s Solder Temperature: 245±5℃(Lead-free) Duration: 2±0.5s
Resistance to Flexure of Substrate (Bending Strength)	0201~1812 Sizes: Appearance: No visible damage ΔC/C: ≤±10%	Test Board: Al2O3 or PCB Warp: 1mm Speed: 1 mm/sec. Unit: mm The measurement should be made with the board in the bending position. 
	01005 Size: Appearance: No visible damage	Test Board: Al2O3 or PCB Warp: 1mm Speed: 0.5 mm/sec. Unit: mm The measurement should be made with the board in the bending position. 
Insulation Resistance	NPO (Class Ⅰ): C≤10 nF, Ri≥50000MΩ; C > 10 nF, Ri• C_R≥500S X7R, X5R: (Class II): C≤25 nF, Ri≥10000MΩ; C > 25 nF, Ri• C_R > 100S	Measuring Voltage: Rated Voltage(Max 500V) Duration: 60±5s Test Humidity: ≤75% Test Temperature: 25℃±3℃ Test Current: ≤50mA
Resistance to Soldering Heat	Item: NPO / X7R / X5R ΔC/C: ≤±0.5% or ±0.5pF whichever is larger / -5~+10% DF: Same to initial value IR: Same to initial value Appearance：No visible damage. At least 95% of the terminal electrode is covered by new solder.	Preheating conditions: 100 to 200℃; 10±2min. Solder Temperature: 265±5℃ Duration: 10±1s Clean the capacitor with solvent and examine it with a 10X(min.) microscope. Recovery Time: 24±2h Recovery condition: Room temperature
Termination Adhesion (For 0201~1812 Sizes:)	No visible damage	Applied Force: 5N Duration: 10±1S
Temperature Cycle	NPO: ΔC/C:≤±1% or ±1pF, whichever is larger. X7R/X5R: ΔC/C: ≤±10%	Preheating conditions: up-category temperature, 1h Recovery time: 24±1h Initial Measurement Cycling Times: 5 times, 1 cycle, 4 steps: Step 1: Low- category temp NPO/X7R/X5R : -55, 30 min Step 2: Normal temp. (+20), 2-3 min Step 3: Up- category temp NPO/X7R/ : +125 X5R: +85, 30 min Step 4: Normal temp. (+20), 2-3 min Recovery time after test: 24±2h

<table>
<tr><th>Item</th><th>Requirement</th><th>Test Method</th></tr>
<tr><td>Humidity Load</td><td>NPO:
ΔC/C :±7.5% or ±0.75pF, whichever is larger.
X7R/X5R:
ΔC/C: ≤±12.5%
DF: Not more than twice of initial value.
IR:
NPO: Ri≥5000MΩ或 Ri• CR≥ 50S whichever is smaller
X7R/X5R: Ri≥1000MΩ或 Ri• CR≥10S whichever is smaller.
Appearance: No visible damage</td><td>Temperature：40±2℃
Humidity：90~95%RH
Voltage: Rated Voltage
Duration：500h
Recovery conditions：Room temperature
Recovery Time：24h (Class1) or 48h (Class2)</td></tr>
<tr><td>Life Test</td><td>NPO:
ΔC/C :≤±2% or ±1pF,whichever is larger.
X7R/X5R
ΔC/C ≤±20%
DF: Not more than twice of initial value.
IR:
NPO: Ri≥4000MΩ或 Ri• CR≥40S whichever is smaller
X7R/X5R: Ri≥2000MΩ或 Ri• CR≥50S whichever is smaller.
Visual Appearance: No visible damage</td><td>Low-Voltage（≤100V）
Applied Voltage: 2*Ur, except the table 1
Duration: 1000h
Temperature：125℃（NPO、X7R）85℃（X5R）
Charge/ Discharge Current: 50mA max.
Recovery Conditions: Room Temperature
Recovery Time: 24h (Class 1), or 48h (Class2)
<table>
<tr><td colspan="4">Table 1</td></tr>
<tr><td>Capacitance</td><td>Test Voltage</td><td>Capacitance</td><td>Test Voltage</td></tr>
<tr><td>0201≧ 47nF</td><td rowspan="3">1.5Ur</td><td>0805≧ 1uF</td><td rowspan="3">1.5 Ur</td></tr>
<tr><td>0402≧ 330nF</td><td>1206≧ 10uF</td></tr>
<tr><td>0603≧ 470nF</td><td>1210≧ 10uF</td></tr>
</table></td></tr>
<tr><td>Middle &high voltage Life Test</td><td>NPO:
ΔC/C :≤±2% or ±1pF,whichever is larger.
X7R/X5R
ΔC/C ≤±20%
DF: Not more than twice of initial value.
IR:
NPO: Ri≥4000MΩ或 Ri• CR≥40S whichever is smaller
X7R/X5R: Ri≥2000MΩ或 Ri• CR≥50S whichever is smaller.
Visual Appearance: No visible damage</td><td>Applied Voltage:
100V≤Rated Voltage≦ 200V：1.5 Multiple
200V<Rated Voltage≤500V：1.3 Multiple
500V< Rated Voltage：1.2 Multiple
Duration: 1000h
Charge/ Discharge Current: 50mA max.
Temperature：125℃（NPO X7R）; 85℃（X5R）
Recovery Conditions: Room Temperature
Recovery Time: 24h (Class 1), or 48h (Class2)</td></tr>
</table>

■Pretreatment (only for class 2 capacitor) is a method to treat the capacitor before measurement. First, place the capacitor in the up-category temperature or other specified higher temperature environment for 1 hour. Then recovery the capacitor at standard pressure conditions for 24±1 hours.

■Storage Temperature: 5 ~ 40℃; Relative Humidity 20 ~70 %RH

■Packaging

Packaging Quantity

Type	Dielectric	Voltage	Capacitance	Thickness / Symbol		Packaging (7" Reel)		Packaging (13" Reel)	
						Paper tape	Plastic tape	Paper tape	Plastic tape
01005	NPO	10V	0R1-220	0.20±0.02	V	20K	-	-	-
		16V / 25V	0R1-100	0.20±0.02	V	20K	-	-	-
0201	NPO	25V	0R1-102	0.30±0.03	C	15K	-	70K	-
		50V	0R1-221	0.30±0.03	C	15K	-	70K	-
0402	NPO	6.3V	332-472	0.50±0.05	E	10K	-	50K	-
		10V / 16V	122-272	0.50±0.05	E	10K	-	50K	-
		25V	0R1-122	0.50±0.05	E	10K	-	50K	-
		50V	0R1-102	0.50±0.05	E	10K	-	50K	-
		100V	0R1-101	0.50±0.05	E	10K	-	50K	-
0603	NPO	10V	123-223	0.80±0.10	H	4K	-	15K	-
		16V	822-103	0.80±0.10	H	4K	-	15K	-
		25V / 50V	0R1-682	0.80±0.10	H	4K	-	15K	-
		100V	0R1-102	0.80±0.10	H	4K	-	15K	-
		200V / 250V	0R1-471	0.80±0.10	H	4K	-	15K	-
0805	NPO	10V	103-104	1.25±0.20	J	-	2K	-	-
		16V	103-333	1.25±0.20	J	-	2K	-	-
		25V	103-273	1.25±0.20	J	-	2K	-	-
		50V	0R1-822	0.80±0.20	B	4K	-	15K	-
			103-223	1.25±0.20	J	-	2K	-	-
		100V	0R1-332	0.80±0.20	B	4K	-	15K	-
		200V / 250V	0R1-102	0.80±0.20	B	4K	-	15K	-
			122-152	1.25±0.20	J	-	2K	-	-
		500V / 630V	0R1-331	0.80±0.20	B	4K	-	15K	-
			471-561	1.25±0.20	J	-	2K	-	-
		1KV	0R1-101	1.25±0.20	J	-	2K	-	-
1206	NPO	50V	0R3-822	0.80±0.20	B	4K	-	15K	-
			103-104	1.60±0.30	L	-	2K	-	-
		100V	0R1-332	0.80±0.20	B	4K	-	15K	-
		200V / 250V	0R1-182	0.80±0.20	B	4K	-	15K	-
			202-272	1.25±0.20	J	-	3K	-	-
		500V / 630V	0R1-100	0.80±0.20	B	4K	-	15K	-
			110-471	1.00±0.20	I	-	3K	-	-
			561-152	1.25±0.20	J	-	3K	-	-
		1KV	0R1-121	1.00±0.20	I	-	3K	-	-
			151-102	1.25±0.20	J	-	3K	-	-
		2KV	0R1-390	1.00±0.20	I	-	3K	-	-
			470-680	1.25±0.20	J	-	3K	-	-
			820-271	1.60±0.30	L	-	2K	-	-
1210	NPO	50V	100-104	1.25±0.20	J	-	2K	-	8K
		100V	1R0-682	1.25±0.20	J	-	2K	-	8K
		200V / 250V	1R0-332	1.25±0.20	J	-	2K	-	8K
		500V / 630V	1R0-122	1.25±0.20	J	-	2K	-	8K
			152-222	1.60±0.30	L	-	2K	-	8K
		1KV	1R0-681	1.25±0.20	J	-	2K	-	8K
			821-122	1.60±0.30	L	-	2K	-	8K
		2KV	1R0-271	1.25±0.20	J	-	2K	-	8K
			301-471	1.60±0.30	L	-	2K	-	8K
1808	NPO	50V	100-104	1.60±0.30	L	-	2K	-	-
		100V	2R0-472	1.60±0.30	L	-	2K	-	-
		200V / 250V	2R0-392	1.60±0.30	L	-	2K	-	-
		500V / 630V	2R0-272	1.60±0.30	L	-	2K	-	-
		1KV	2R0-102	1.60±0.30	L	-	2K	-	-
		2KV	2R0-471	1.60±0.30	L	-	2K	-	-
		3KV	2R0-331	1.60±0.30	L	-	2K	-	-
		4KV	2R0-330	1.60±0.30	L	-	2K	-	-
		5KV	2R0-330	1.60±0.30	L	-	2K	-	-
1812	NPO	50V	100-104	1.25±0.20	J	-	1K	-	-
		100V	3R0-103	1.25±0.20	J	-	1K	-	-
		200V / 250V	3R0-682	1.25±0.20	J	-	1K	-	-
		500V / 630V	3R0-102	1.25±0.20	J	-	1K	-	-
			122-472	1.60±0.30	L	-	1K	-	-
		1KV	3R0-122	1.60±0.30	L	-	1K	-	-
		2KV	3R0-102	1.60±0.30	L	-	1K	-	-
		3KV	3R0-561	1.60±0.30	L	-	1K	-	-
		4KV	3R0-221	1.60±0.30	L	-	1K	-	-
		5KV	3R0-680	1.60±0.30	L	-	1K	-	-

Multilayer Ceramic Chip Capacitor

Packaging Quantity

Type	Dielectric	Voltage	Capacitance	Thickness / Symbol		Packaging (7" Reel)		Packaging (13" Reel)	
						Paper tape	Plastic tape	Paper tape	Plastic tape
01005	X7R	10V / 16V	101-102	0.20±0.02	V	20K	-	-	-
0201	X7R	10V / 16V	101-223	0.30±0.03	C	15K	-	70K	-
		25V	101-103	0.30±0.03	C	15K	-	70K	-
		50V	101-102	0.30±0.03	C	15K	-	70K	-
0402	X7R	6.3V / 10V	101-474	0.50±0.05	E	10K	-	50K	-
		16V / 25V	101-224	0.50±0.05	E	10K	-	50K	-
		50V	101-104	0.50±0.05	E	10K	-	50K	-
		100V	151-472	0.50±0.05	E	10K	-	50K	-
0603	X7R	6.3V	151-475	0.80±0.10	H	4K	-	15K	-
		10V / 16V	151-225	0.80±0.10	H	4K	-	15K	-
		25V / 50V	151-105	0.80±0.10	H	4K	-	15K	-
		100V	101-104	0.80±0.10	H	4K	-	15K	-
		200V / 250V	151-103	0.80±0.10	H	4K	-	15K	-
0805	X7R	6.3V / 10V / 16V	151-474	0.80±0.20	B	4K	-	15K	-
			564-106	1.25±0.20	J	-	2K	-	-
		25V	151-474	0.80±0.20	B	4K	-	15K	-
			564-475	1.25±0.20	J	-	2K	-	-
		50V	151-474	0.80±0.20	B	4K	-	15K	-
			564-225	1.25±0.20	J	-	2K	-	-
			475	1.25±0.20	J	-	2K	-	-
		100V	101-563	0.80±0.20	B	4K	-	15K	-
			683-105	1.25±0.20	J	-	2K	-	-
		200V / 250V	101-183	0.80±0.20	B	4K	-	15K	-
			203-223	1.25±0.20	J	-	2K	-	-
		500V / 630V	151-562	0.80±0.20	B	4K	-	15K	-
			682-103	1.25±0.20	J	-	2K	-	-
1206	X7R	6.3V / 10V / 16V / 25V	201-334	0.80±0.20	B	4K	-	15K	-
			474-155	1.25±0.20	J	-	3K	-	-
			225-226	1.60±0.30	L	-	2K	-	-
		50V	201-334	0.80±0.20	B	4K	-	15K	-
			474-824	1.25±0.20	J	-	3K	-	-
			105	1.25±0.20	J	4K	-	-	-
			125-155	1.25±0.20	J	-	3K	-	-
			225-106	1.60±0.30	L	-	2K	-	-
		100V	151-563	0.80±0.20	B	4K	-	15K	-
			683-334	1.25±0.20	J	-	3K	-	-
			474-105	1.60±0.30	L	-	2K	-	-
		200V / 250V	151-273	0.80±0.20	B	4K	-	15K	-
			333-154	1.25±0.20	J	-	3K	-	-
			184-224	1.60±0.30	L	-	2K	-	-
		500V / 630V	151-272	0.80±0.20	B	4K	-	15K	-
			332-333	1.25±0.20	J	-	3K	-	-
		1KV	151-102	0.80±0.20	B	4K	-	15K	-
			112-123	1.25±0.20	J	-	3K	-	-
		2KV	151-272	1.25±0.20	J	-	3K	-	-
1210	X7R	6.3V / 10V	221-474	1.25±0.20	J	-	2K	-	-
			564-476	1.60±0.30	L	-	2K	-	-
		16V / 25V	221-474	1.25±0.20	J	-	2K	-	-
			564-226	1.60±0.30	L	-	2K	-	-
		50V	221-474	1.25±0.20	J	-	2K	-	-
			564-106	1.60±0.30	L	-	2K	-	-
		100V	151-224	1.25±0.20	J	-	2K	-	-
			334-475	1.60±0.30	L	-	2K	-	-
		200V / 250V	151-154	1.25±0.20	J	-	2K	-	-
			184-224	1.60±0.30	L	-	2K	-	-
		500V / 630V	151-563	1.25±0.20	J	-	2K	-	-
			683-104	1.60±0.30	L	-	2K	-	-
		1KV	151-392	1.25±0.20	J	-	2K	-	-
			472-223	1.60±0.30	L	-	2K	-	-
		2KV	151-272	1.25±0.20	J	-	2K	-	-
			332-103	1.60±0.30	L	-	2K	-	-

Packaging Quantity

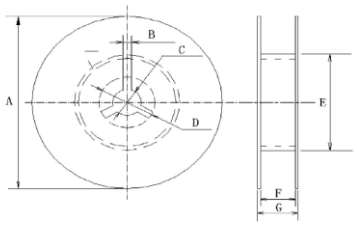
Type	Dielectric	Voltage	Capacitance	Thickness / Symbol		Packaging (7" Reel)		Packaging (13" Reel)	
						Paper tape	Plastic tape	Paper tape	Plastic tape
1808	X7R	6.3V / 10V / 16V / 25V / 50V	221-475	1.60±0.30	L	-	2K	-	-
		100V	221-225	1.60±0.30	L	-	2K	-	-
		200V / 250V	221-224	1.60±0.30	L	-	2K	-	-
		500V / 630V	221-683	1.60±0.30	L	-	2K	-	-
		1KV	151-223	1.60±0.30	L	-	2K	-	-
		2KV	151-103	1.60±0.30	L	-	2K	-	-
		3KV	151-472	1.60±0.30	L	-	2K	-	-
		4KV	151-222	1.60±0.30	L	-	2K	-	-
1812	X7R	16V	R47-102	1.60±0.30	L	-	1K	-	-
			122-682	2.5	O	-	0.5K	-	-
		25V / 50V	R47-102	1.60±0.30	L	-	1K	-	-
			122-472	2.5	O	-	0.5K	-	-
		100V	271-564	1.60±0.30	L	-	1K	-	-
			684-225	2	R	-	0.5K	-	-
		200V / 250V	271-224	1.60±0.30	L	-	1K	-	-
			334-105	2	R	-	0.5K	-	-
		500V / 630V	271-104	1.60±0.30	L	-	1K	-	-
			124-224	2	R	-	0.5K	-	-
		1K	271-473	1.60±0.30	L	-	1K	-	-
			563	2	R	-	0.5K	-	-
		2K	271-123	1.60±0.30	L	-	1K	-	-
		3K	271-472	1.60±0.30	L	-	1K	-	-
		4K	271-332	1.60±0.30	L	-	1K	-	-
01005	X5R	4V / 6.3V / 10V / 16V	101-104	0.20±0.02	V	20K	-	-	-
0201	X5R	4V / 6.3V / 10V	153-154	0.30±0.03	C	15K	-	70K	-
			224-225	0.30±0.05	D	15K	-	70K	-
		16V	153-154	0.30±0.03	C	15K	-	70K	-
			224	0.30±0.05	D	15K	-	70K	-
		25V	153-104	0.30±0.03	C	15K	-	70K	-
		50V	472-103	0.30±0.03	C	15K	-	70K	-
0402	X5R	4V / 6.3V	104-684	0.50±0.05	E	10K	-	50K	-
			105-685	0.50±0.15	F	10K	-	50K	-
			106-226	0.50±0.20	N	10K	-	50K	-
		10V	104-684	0.50±0.05	E	10K	-	50K	-
			105-685	0.50±0.15	F	10K	-	50K	-
			106	0.50±0.20	N	10K	-	50K	-
		16V	104-684	0.50±0.05	E	10K	-	50K	-
			105-475	0.50±0.15	F	10K	-	50K	-
		25V	104-684	0.50±0.05	E	10K	-	50K	-
			105-225	0.50±0.15	F	10K	-	50K	-
		50V	473-684	0.50±0.05	E	10K	-	50K	-
			105	0.50±0.15	F	10K	-	50K	-
0603	X5R	4V / 6.3V	474-685	0.80±0.10	H	4K	-	15K	-
			106-476	0.80±0.20	B	4K	-	15K	-
		10V	474-685	0.80±0.10	H	4K	-	15K	-
			106-226	0.80±0.20	B	4K	-	15K	-
		16V / 25V	474-685	0.80±0.10	H	4K	-	15K	-
			106	0.80±0.20	B	4K	-	15K	-
		50V	474-225	0.80±0.10	H	4K	-	15K	-
0805	X5R	4V / 6.3V / 10V	105-476	1.25±0.20	J	-	2K	-	-
		16V / 25V	105-226	1.25±0.20	J	-	2K	-	-
		50V	105-475	1.25±0.20	J	-	2K	-	-
1206	X5R	4V	104-155	0.80±0.20	B	4K	-	15K	-
			225-107	1.60±0.30	L	-	2K	-	-
		6.3V	225-107	1.60±0.30	L	-	2K	-	-
		10V / 16V	225-476	1.60±0.30	L	-	2K	-	-
		25V	225-226	1.60±0.30	L	-	2K	-	-
		50V	225-106	1.60±0.30	L	-	2K	-	-

Multilayer Ceramic Chip Capacitor

Packaging Quantity

Type	Dielectric	Voltage	Capacitance	Thickness / Symbol		Packaging (7" Reel)		Packaging (13" Reel)	
						Paper tape	Plastic tape	Paper tape	Plastic tape
1210	X5R	4V / 6.3V	475-106	1.60±0.30	L	-	2K	-	-
			126-337	2.50	O	-	1K	-	-
		10V / 16V	475-106	1.60±0.30	L	-	2K	-	-
			126-107	2.50	O	-	1K	-	-
		25V	475-106	1.60±0.30	L	-	2K	-	-
			126-476	2.50	O	-	1K	-	-
		50V	475-106	1.60±0.30	L	-	2K	-	-
1808	X5R	6.3V	475-107	1.60±0.30	L	-	2K	-	-
		10V	475-476	1.60±0.30	L	-	2K	-	-
		16V	475-226	1.60±0.30	L	-	2K	-	-
		25V	475-106	1.60±0.30	L	-	2K	-	-
1812	X5R	6.3V	106-107	2.50	O	-	0.5K	-	-
		10V	106-476	2.50	O	-	0.5K	-	-
		16V	475-226	2.50	O	-	0.5K	-	-
		25V	475-106	2.50	O	-	0.5K	-	-

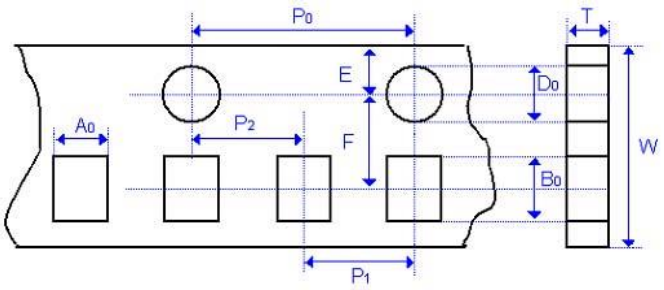
Tape and Reel



Unit: mm

Type	01005 / 0201 / 0402 / 0603 / 0805 / 1206 / 1210		1808 / 1812
Reel Size	7"	13"	7"
A	178±2.0	330±2.0	178±2.0
B	3.0	3.0	3.0
C	13.0±0.5	13.0±0.5	13.0±0.5
D	21.0±0.8	21.0±0.8	21.0±0.8
E	50 or more	50 or more	50 or more
F	10.0±1.5	10.0±1.5	10.0±1.5
G	12 max	12 max	12 max

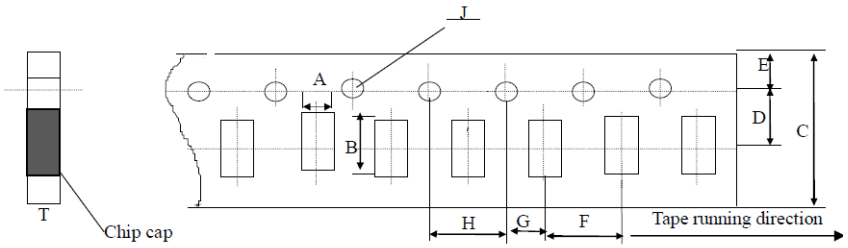
Paper Tape Size Specification



Unit: mm

Type	A0	B0	T	W	P0	P1	P2	D0	E	F
01005	0.24±0.20	0.45±0.02	0.30 Below	8.00±0.10	4.00±0.10	2.00±0.05	2.00±0.05	1.5-0/+0.10	1.75±0.10	3.50±0.05
0201	0.37±0.10	0.67±0.10	0.80 Below	8.00±0.10	4.00±0.10	2.00±0.05	2.00±0.05	1.5-0/+0.10	1.75±0.10	3.50±0.05
0402	0.65±0.10	1.15±0.10	0.80 Below	8.00±0.10	4.00±0.10	2.00±0.05	2.00±0.05	1.5-0/+0.10	1.75±0.10	3.50±0.05

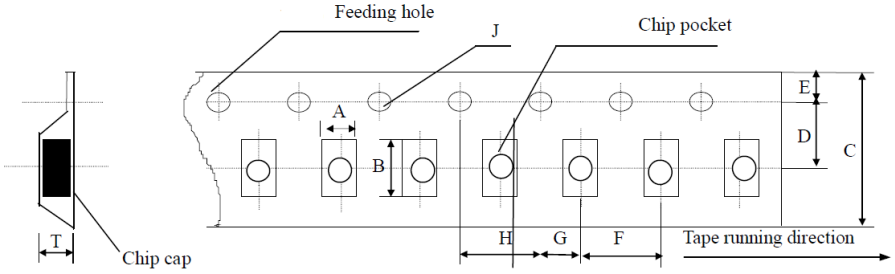
Multilayer Ceramic Chip Capacitor



Unit: mm

Type	A	B	C	D	E	F	G	H	J	T
0603	1.10±0.10	1.90±0.10	8.00±0.10	3.50±0.05	1.75±0.10	4.00±0.10	2.00±0.10	4.00±0.10	1.5-0/+0.10	1.10 Max
0805	1.45±0.15	2.30±0.15	8.00±0.15	3.50±0.05	1.75±0.10	4.00±0.10	2.00±0.10	4.00±0.10	1.5-0/+0.10	1.10 Max
1206	1.80±0.20	3.40±0.20	8.00±0.20	3.50±0.05	1.75±0.10	4.00±0.10	2.00±0.10	4.00±0.10	1.5-0/+0.10	1.10 Max

Plastic Tape Size Specification



Unit: mm

Type	A	B	C	D	E	F	G	H	J	T
0805	1.55±0.20	2.35±0.20	8.00±0.20	3.50±0.05	1.75±0.10	4.00±0.10	2.00±0.10	4.00±0.10	1.50-0/+0.10	1.50 Max
1206	1.95±0.20	3.60±0.20	8.00±0.20	3.50±0.05	1.75±0.10	4.00±0.10	2.00±0.10	4.00±0.10	1.50-0/+0.10	1.85 Max
1210	2.70±0.10	3.42±0.10	8.00±0.10	3.50±0.05	1.75±0.10	4.00±0.10	2.00±0.05	4.00±0.10	1.55-0/+0.10	3.20 Max
1808	2.20±0.10	4.95±0.10	12.00±0.10	5.50±0.05	1.75±0.10	4.00±0.10	2.00±0.05	4.00±0.10	1.50-0/+0.10	3.00 Max
1812	3.66±0.10	4.95±0.10	12.00±0.10	5.50±0.05	1.75±0.10	8.00±0.10	2.00±0.05	4.00±0.10	1.55-0/+0.10	4.00 Max

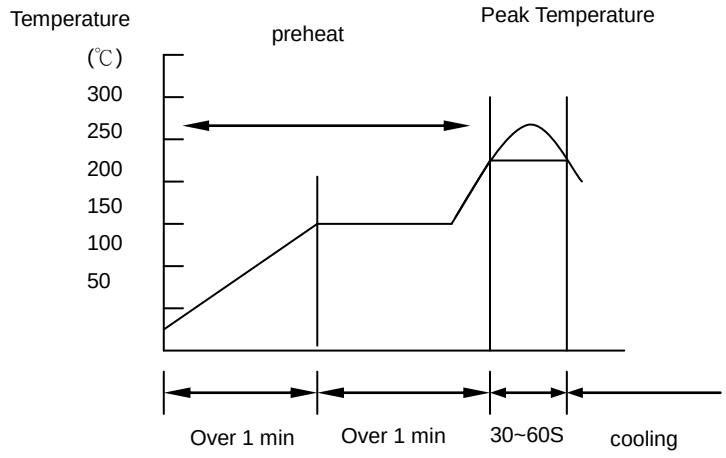
■Recommended Soldering Method

Type	Dielectric	Capacitance	Soldering Method
01005	NPO/ X7R/X5R	/	R
0201	NPO	/	R
	X7R/X5R	/	R
	Y5V	/	R
0402	NPO	/	R
	X7R/X5R	/	R
	Y5V	/	R
0603	NPO	/	R/W
	X7R/X5R	C≥1uF	R
		C＜1uF	R/W
	Y5V	C≥1uF	R
		C＜1uF	R/W
0805	NPO	/	R/W
	X7R/X5R	C≥4.7uF	R
		C＜4.7uF	R/W
	Y5V	C≥1uF	R
		C＜1uF	R/W
1206	NPO	/	R/W
	X7R/X5R	C≥10uF	R
		C＜10uF	R/W
	Y5V	C≥10uF	R
		C＜10uF	R/W
≥1210	NPO	/	R
	X7R/X5R	/	R
	Y5V	/	R

Soldering method：R－Reflow Soldering
W－Wave Soldering

■The temperature profile for soldering

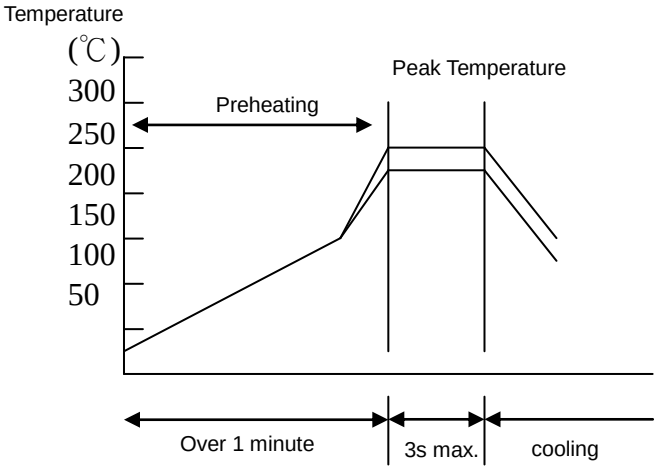
Re-flow soldering



	Pb-Sn soldering	Lead-free soldering
Peak temperature	230℃～250℃	240℃～260℃

While in preheating, please keep the temperature difference between soldering temperature and surface temperature of chips as: T≤150℃.

Wave soldering



	Pb-Sn soldering	Lead-free soldering
Peak temperature	230℃～260℃	240℃～270℃

While in preheating, please keep the temperature difference between soldering temperature and surface temperature of chips as: T≤150℃.