

Multilayer Ceramic Chip Capacitors

Voltage ≤ 50VDC

MA Series

FEATURE

- A wide selection of sized is available (0201 to 2225)
- High capacitance in given case size
- Capacitor with lead-free termination (pure Tin)
- RoHS and HALOGEN compliant.
- Application: DC to DC converter. General digital circuit. Power supply bypass capacitors. Consumer electronics. telecommunication



PART NUMBERING SYSTEM

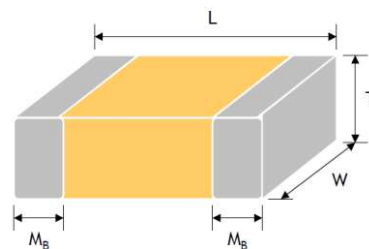
MA **1812** **XR** **102** **C** **250**
(1) (2) (3) (4) (5) (6)



No	Item	Code	Description	Series Reference
(1)	Meritek Series	MA	Multilayer Ceramic Chip Capacitors	Low voltage type, ≤ 50Vdc
(2)	Size	1812	1812 inch (4532 mm)	See dimension table for available size below
(3)	Dielectric	XR	XR: X7R	CG: C0G(NP0), XF: X5R, YV: Y5V
(4)	Capacitance	102	102: 10x10 ² pF = 1000pF	103: 10x10 ³ pF, 4R7: 4.7pF
(5)	Tolerance	C	C: ±0.50 pF	See capacitor tolerance ref. table below
(6)	Rated Voltage	250	250: 25x10 ⁰ VDC=25VDC	4R0: 4VDC, 6R3:6.3VDC, 500:50VDC

DIMENSIONS

Size Inch (mm)	L (mm)	W (mm)	Thickness	M _B min (mm)
			T (mm) code	
0201 (0603)	0.60±0.05	0.30±0.05	See Thickness Specification Reference Table below	0.15±0.05
0402 (1005)	1.00±0.15/-1.0	0.50±0.15/-1.0		0.25±0.05/-0.10
0603 (1608)	1.60±0.20	0.80±0.15		0.40±0.15
0805 (2012)	2.10±0.20	1.25±0.20		0.50±0.20
1206 (3216)	3.30±0.30	1.60±0.30/-0.10		0.60±0.20
1210 (3225)	3.30±0.40	2.50±0.30		0.75±0.35
1808 (4520)	4.60±0.50	2.00±0.20		0.75±0.35
1812 (4532)	4.60±0.50	3.20±0.30		0.75±0.35
1825 (4563)	4.60±0.50	6.30±0.40		0.75±0.35
2220 (5750)	5.70±0.50	5.00±0.40		0.85±0.35
2225 (5763)	5.70±0.50	6.30±0.40		0.85±0.35



CAPACITANCE TOLERANCE REFERENCE

Code	Description	Code	Description	Code	Description	Code	Description
A	±0.05 pF	G	±2 %	L	0%~10%	Z	-20%~80%
B	±0.10 pF	H	±3 %	M	±20 %	X	+10% ~ +20%
C	±0.25 pF	I	-10%~0%	N	-5%~10%	-	-
D	±0.50 pF	J	±5 %	P	±0.02 pF	-	-
F	±1 %	K	±10 %	Q	±0.03 pF	-	-

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THICKNESS SPECIFICATION REFERENCE

Code	Thickness (mm)	Code	Thickness (mm)	Code	Thickness (mm)
A	0.60 ± 0.10	I	1.25 ± 0.20	Q	0.50 + 0.02/-0.05
B	0.8 + 0.15/-0.10	J	1.15 ± 0.15	R	3.10 ± 0.30
C	1.25 ± 0.10	K	0.50 ± 0.20	S	0.80 ± 0.07
D	1.40 ± 0.15	L	0.30 ± 0.03	T	0.85 ± 0.10
E	1.60 ± 0.20	M	0.95 ± 0.10	U	0.50 ± 0.10
F	2.00 ± 0.20	N	0.50 ± 0.05	V	0.20 ± 0.02
G	2.50 ± 0.30	O	3.50 ± 0.20	X	0.80 ± 0.10
H	2.80 ± 0.30	P	1.60 +0.3/-0.10	Z	0.25 ± 0.03

ELECTRICAL CHARACTERISTICS

Properties	Characteristics			
Dielectric	C0G(NP0)	X7R	X5R	Y5V
Chip Size	0201, 0402, 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225	0201, 0402, 0603, 0805, 1206, 1210, 1808, 1812, 1825, 2220, 2225	0201, 0402, 0603	0402, 0603, 0805, 1206, 1210, 1812
Rated Voltage	10V,16V, 25V, 50V	6.3V, 10V, 16V, 25V, 50V	4V, 6.3V, 10V, 16V, 25V, 50V	6.3V, 10V, 16V, 25V, 50V
Capacitance Range	0.1pF ~ 390nF	100pF ~ 820nF	100pF ~ 820nF	10nF ~ 680nF
Capacitance Tolerance	See Capacitance Tolerance Reference Table Above			
Dissipation Factor	Cap<30pF: Q≥400+20C Cap≥30pF: Q≥1000	See Dissipation Factor (Reliability)		
Insulation Resistance	≥10GΩ or R•C≥500Ω-F Whichever is smaller	≥10GΩ or R•C≥100Ω-F Whichever is smaller		
Operation Temperature	-55 ~ +125℃		-55 ~ +85℃	-25 ~ +85℃
Temperature Coefficient	±30ppm/°C	±15%		+30/-80%
Termination	Cu (or Ag)/Ni/Sn (lead-free termination)			

- Notes:
- 1. Measured at the condition of 30~70% related humidity.
 - 2. C0G(NP0): Apply 1.0±0.2Vrms, 1.0MHz±10% for Cap≤1000pF and 1.0±0.2Vrms, 1.0kHz±10% for Cap>1000pF, 25°C at ambient temperature
 - 3. X7R: Apply 1.0±0.2Vrms, 1.0kHz±10%, at 25°C ambient temperature.
 - 4. Y5V: Apply 1.0±0.2Vrms, 1.0kHz±10%, at 20°C ambient temperature.

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CAPACITANCE RANGE - C0G (NP0) Dielectric (0201~1206)

Dimension		0201			0402				0603				0805				1206			
Cap(pF)	code	10V	25V	50V	10V	16V	25V	50V	10V	16V	25V	50V	10V	16V	25V	50V	10V	16V	25V	50V
0.1	0R1	L	L	L	N	N	N	N												
0.2	0R2	L	L	L	N	N	N	N												
0.3	0R3	L	L	L	N	N	N	N												
0.4	0R4	L	L	L	N	N	N	N												
0.5	0R5	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A				
1	1R0	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A				X
1.2	1R2	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
1.5	1R5	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
1.8	1R8	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
2.2	2R2	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
2.7	2R7	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
3.3	3R3	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
3.9	3R9	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
4.7	4R7	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
5.6	5R6	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
6.8	6R8	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
8.2	8R2	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
10	100	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
12	120	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
15	150	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
18	180	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
22	220	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
27	270	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
33	330	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
39	390	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
47	470	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
56	560	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
68	680	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
82	820	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
100	101	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
120	121	L	L	L	N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
150	151				N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
180	181				N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
220	221				N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
270	271		L		N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
330	331		L		N	N	N	N	S	S	S	S	A	A	A	A	X	X	X	X
390	391		L		N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
470	471		L		N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
560	561		L		N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
680	681				N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
820	821				N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
1000	102				N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
1200	122								B	B	B	B	X	X	X	X	X	X	X	X
1500	152								B	B	B	B	X	X	X	X	X	X	X	X
1800	182								B	B	B	B	X	X	X	X	X	X	X	X
2200	222								B	B	B	B	X	X	X	X	X	X	X	X
2700	272								B	B	B	B	C	C	C	C	X	X	X	X
3300	332								B	B	B	B	C	C	C	C	X	X	X	X
3900	392								B	B	B	B	C	C	C	C	X	X	X	X
4700	472								B	B	B	B	C	C	C	C	X	X	X	X
5600	562								B	B	B	B	C	C	C	C	X	X	X	X
6800	682								B	B	B	B	C	C	C	C	M	M	M	M
8200	822								B	B	B	B	C	C	C	C	C	C	C	C
10000	103								B	B	B	B	C	C	C	C	C	C	C	C
12000	123												T	T	T	T	T	T	T	T
15000	153												T	T	T	T	T	T	T	T
18000	183												C	C	C	C	T	T	T	T
22000	223												C	C	C	C	T	T	T	T
27000	273																T	T	T	T
33000	333																T	T	T	T
39000	393																J	J	J	J
47000	473																J	J	J	J
56000	563																J	J	J	J
68000	683																E	E	E	E
82000	823																E	E	E	E
100000	104																E	E	E	E

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MA Series

CAPACITANCE RANGE - X7R Dielectric (0201~1206)

Dimension		0201				0402				0603				0805				1206			
Cap(pF)	Code	10V	16V	25V	50V	10V	16V	25V	50V	10V	16V	25V	50V	10V	16V	25V	50V	10V	16V	25V	50V
100	101	L	L	L	L	N	N	N	N	S	S	S	S	X	X	X	X				X
120	121	L	L	L	L	N	N	N	N	S	S	S	S	X	X	X	X				X
150	151	L	L	L	L	N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
180	181	L	L	L	L	N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
220	221	L	L	L	L	N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
270	271	L	L	L	L	N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
330	331	L	L	L	L	N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
390	391	L	L	L	L	N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
470	471	L	L	L	L	N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
560	561	L	L	L	L	N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
680	681	L	L	L	L	N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
820	821	L	L	L	L	N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
1000	102	L	L	L	L	N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
1200	122	L	L	L		N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
1500	152	L	L	L		N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
1800	182	L	L			N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
2200	222	L	L			N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
2700	272	L	L			N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
3300	332	L	L	L		N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
3900	392	L	L			N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
4700	472	L	L			N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
5600	562	L				N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
6800	682	L				N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
8200	822	L				N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
10000	103	L	L			N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
12000	123					N	N	N		S	S	S	S	X	X	X	X	X	X	X	X
15000	153					N	N	N		S	S	S	S	X	X	X	X	X	X	X	X
18000	183					N	N	N		S	S	S	S	X	X	X	X	X	X	X	X
22000	223					N	N	N	N	S	S	S	S	X	X	X	X	X	X	X	X
27000	273					N	N	N		S	S	S	S	X	X	X	X	X	X	X	X
33000	333					N	N	N	N	S	S	S	B	X	X	X	X	X	X	X	X
39000	393					N	N	N		S	S	S	B	X	X	X	X	X	X	X	X
47000	473					N	N	N	N	S	S	S	B	X	X	X	X	X	X	X	X
56000	563					N	N	N	N	S	S	S	B	X	X	X	X	X	X	X	X
68000	683					N	N		N	S	S	S	B	X	X	X	X	X	X	X	X
82000	823					N	N			S	S	S	B	X	X	X	X	X	X	X	X
100000	104					N	N	N	N	S	S	S	B	X	X	X	X	X	X	X	X
120000	124									S	S	B		X	X	X	C	X	X	X	X
150000	154									S	S	B		C	C	C	C	M	M	M	M
180000	184									S	S	B		C	C	C	C	M	M	M	M
220000	224					N	N	N		S	S	B	B	C	C	C	C	M	M	M	M
270000	274									B	B	B		C	C	C	I	M	M	M	C
330000	334									B	B	B		C	C	C	I	M	M	M	C
390000	394									B	B	B		C	C	C	I	M	M	J	P
470000	474					N				B	B	B	B	C	C	C	I	J	J	J	P
560000	564									B	B			C	C	C		J	J	J	P
680000	684									B	B			C	C	C		J	J	J	P
820000	824									B	B			C	C	C		J	J	J	P

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Voltage ≤ 50VDC

MA Series

CAPACITANCE RANGE - X7R Dielectric (1210~2225)

Dimension		1210				1808	1812				1825	2220	2225
Cap(pF)	Code	10V	16V	25V	50V	50V	10V	16V	25V	50V	50V	50V	50V
100	101												
120	121												
150	151					C							
180	181					C							
220	221				M	C							
270	271				M	C				C			
330	331				M	C				C			
390	391				M	C				C			
470	471				M	C				C			
560	561				M	C				C			
680	681				M	C				C			
820	821				M	C				C			
1000	102	M	M	M	M	C	C	C	C	C	F	F	F
1200	122	M	M	M	M	C	C	C	C	C	F	F	F
1500	152	M	M	M	M	C	C	C	C	C	F	F	F
1800	182	M	M	M	M	C	C	C	C	C	F	F	F
2200	222	M	M	M	M	C	C	C	C	C	F	F	F
2700	272	M	M	M	M	C	C	C	C	C	F	F	F
3300	332	M	M	M	M	C	C	C	C	C	F	F	F
3900	392	M	M	M	M	C	C	C	C	C	F	F	F
4700	472	M	M	M	M	C	C	C	C	C	F	F	F
5600	562	M	M	M	M	E	C	C	C	C	F	F	F
6800	682	M	M	M	M	E	C	C	C	C	F	F	F
8200	822	M	M	M	M	E	C	C	C	C	F	F	F
10000	103	M	M	M	M	E	C	C	C	C	F	F	F
12000	123	M	M	M	M	E	C	C	C	C	F	F	F
15000	153	M	M	M	M	E	C	C	C	C	F	F	F
18000	183	M	M	M	M	E	C	C	C	C	F	F	F
22000	223	M	M	M	M	E	C	C	C	C	F	F	F
27000	273	M	M	M	M	E	C	C	C	C	F	F	F
33000	333	M	M	M	M	E	C	C	C	C	F	F	F
39000	393	M	M	M	M	E	C	C	C	C	F	F	F
47000	473	M	M	M	M	E	C	C	C	C	F	F	F
56000	563	M	M	M	M	E	C	C	C	C	F	F	F
68000	683	M	M	M	M	E	C	C	C	C	F	F	F
82000	823	M	M	M	M	E	C	C	C	C	F	F	F
100000	104	M	M	M	M	E	C	C	C	C	F	F	F
120000	124	M	M	M	M	E	C	C	C	C	F	F	F
150000	154	M	M	M	M	E	C	C	C	C	F	F	F
180000	184	M	M	M	M	E	C	C	C	C	F	F	F
220000	224	M	M	M	M	E	C	C	C	C	F	F	F
270000	274	M	M	M	M	F	C	C	C	C	F	F	F
330000	334	M	M	M	C	F	C	C	C	C	F	F	F
390000	394	M	M	M	C	F	C	C	C	C	F	F	F
470000	474	M	M	M	C	F	C	C	C	C	F	F	F
560000	564	C	C	C	C	F	C	C	C	C	F	F	F
680000	684	C	C	C	C	F	C	C	C	F	F	F	F
820000	824	C	C	C	C	F	C	C	C	F	F	F	F

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CAPACITANCE RANGE - X5R Dielectric (0201~0603)

Dimension		0201					0402					0603				
Cap (nF)	Code	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	6.3V	10V	16V	25V	50V
0.10	101			L	L	L										
0.12	121			L	L	L										
0.15	151			L	L	L										
0.18	181			L	L	L										
0.22	221			L	L	L										
0.27	271			L	L	L										
0.33	331			L	L	L										
0.47	471			L	L	L										
0.56	561			L	L	L										
0.68	681			L	L	L										
0.82	821			L	L	L										
1.0	102		L	L	L	L										
1.5	152		L	L												
2.2	222		L	L												
3.3	332		L	L												
4.7	472		L	L												
6.8	682		L													
10	103	L	L	L	L											
27	273	L	L						N							
33	333	L	L						N							
39	393	L	L						N							
47	473	L	L						N							
56	563	L	L					N	N							
68	683	L	L					N	N							
82	823	L	L				N	N	N							
100	104	L	L	L	L		N	N	N	N	N			S		
150	154						N	N	N	N						
220	224	L	L				N	N	N	N	N		B	B	B	B
270	274							N					B	B	B	
330	334						N	N				B	B	B	B	
390	394												B	B	B	
470	474	L					N	N	K	K	K	B	B	B	B	B
680	684						N	N				B	B	B	B	
820	824											B	B	B		

CAPACITANCE RANGE - Y5V Dielectric (0402~1812)

Dimension		0402				0603					0805				1206				1210				1812			
Cap (nF)	Code	10V	16V	25V	50V	6.3V	10V	16V	25V	50V	10V	16V	25V	50V	10V	16V	25V	50V	10V	16V	25V	50V	10V	16V	25V	50V
10	103	N	N	N	N		S	S	S	S	A	A	A	A	X	X	X	X								
15	153	N	N	N	N		S	S	S	S	A	A	A	A	X	X	X	X								
22	223	N	N	N	N		S	S	S	S	A	A	A	A	X	X	X	X								
33	333	N	N	N	N		S	S	S	S	A	A	A	A	X	X	X	X								
47	473	N	N	N			S	S	S	S	A	A	A	A	X	X	X	X								
68	683	N	N	N			S	S	S	S	A	A	A	A	X	X	X	X								
100	104	N	N	N			S	S	S	S	A	A	A	A	X	X	X	X	M	M	M	M	C	C	C	C
150	154	N	N				S	S	S	S	A	A	A	A	X	X	X	X	M	M	M	M	C	C	C	C
220	224	N	N			S	S	S	S	S	A	A	A	A	X	X	X	X	M	M	M	M	C	C	C	C
330	334	N	N			S	S	S	S	B	X	X	X	X	X	X	X	X	M	M	M	M	C	C	C	C
470	474	N	N			S	S	S	B	B	X	X	X	X/C	X	X	X	X	M	M	M	M	C	C	C	C
680	684	N				S	S	B	B		X	X	C	C	X	X	X	X	M	M	M	M	C	C	C	C