

Part Numbering System

CL 10 A 106 M P 8 N N N C
1 2 3 4 5 6 7 8 9 10 11

1. SERIES CODE

CL = Multi layer Ceramic Capacitors

2. SIZE CODE — inch(mm)

02 = 01005(0402) 21 = 0805(2012) 43 = 1812(4532)
 03 = 0201(0603) 31 = 1206(3216) 55 = 2220(5750)
 05 = 0402(1005) 32 = 1210(3225)
 10 = 0603(1608) 42 = 1808(4520)

3. DIELECTRIC CODE

Class I	Class II
C = COG	A = X5R F = Y5V B = X7R X = X6S Y = X7S Z = X7T

4. CAPACITANCE CODE

Capacitance expressed in pF. 2 significant digits plus number of zeros.
 example) 106 = $10 \times 10^6 = 10000000\text{pF}$
 For Values < 10pF, Letter R denotes decimal point
 example) 1R5 = 1.5pF

5. TOLERANCE CODE

B = $\pm 0.1\text{pF}$ F = $\pm 1\text{pF}, \pm 1\%$ K = $\pm 10\%$
 C = $\pm 0.25\text{pF}$ G = $\pm 2\%$ M = $\pm 20\%$
 D = $\pm 0.5\text{pF}$ J = $\pm 5\%$ Z = $+80/-20\%$

*For Values $\leq 10\text{pF}$, F = $\pm 1\text{pF}$
 Values $> 10\text{pF}$, F = $\pm 1\%$

6. RATED VOLTAGE CODE

R = 4V O = 16V B = 50V E = 250V H = 630V K = 3000V
 Q = 6.3V A = 25V C = 100V F = 350V I = 1000V
 P = 10V L = 35V D = 200V G = 500V J = 2000V

7. THICKNESS CODE

2 = 0.20mm A = 0.65mm F = 1.25mm L = 3.20mm S = 1.35mm
 3 = 0.30mm C = 0.85mm H = 1.60mm M = 1.15mm U = 1.80mm
 5 = 0.50mm D = 1.00mm I = 2.00mm P = 1.15mm V = 2.50mm
 8 = 0.80mm E = 1.10mm J = 2.50mm Q = 1.25mm Y = 1.25mm
 9 = 0.90mm

8. INNER ELECTRODE / TERMINATION / PLATING CODE

A = Normal Product Pd / Ag / Ni barrier / Sn 100%
 N = Normal Product Ni / Cu / Ni barrier / Sn 100%
 G = Normal Product Cu / Cu / Ni barrier / Sn 100%
 L = Low profile Ni / Cu / Ni barrier / Sn 100%
 S = Normal Product Ni / Cu / Soft termination / Ni barrier / Sn 100%

9. PRODUCT CODE

N = Normal
 A = Array(4-element)
 B = Array(4-element)
 L = LICC
 J = SLIC

Size Code	*Size tolerance					
	01005(0402)	0201(0603)	0402(1005)	0603(1608)	0805(2012)	1206(3216)
S	± 0.03	± 0.05	± 0.07	± 0.07		± 0.30
Q	± 0.05	± 0.07	± 0.10	± 0.15	± 0.15	
R	± 0.07	± 0.09	± 0.15	± 0.20	± 0.20	
U	± 0.09		± 0.20	± 0.25	± 0.30	
Z			± 0.40	± 0.30		
9			± 0.30			

10. CONTROL CODE

N = Reserved for future use

11. PACKAGING CODE

B = Bulk
 P = Bulk Case
 C = Cardboard Tape, 7" Reel
 H = Cardboard Tape, 7" Reel(15,000ea)
 8 = Cardboard Tape, 7" Reel
 O = Cardboard Tape, 10" Reel
 D = Cardboard Tape, 13" Reel(10,000ea)
 L = Cardboard Tape, 13" Reel(15,000ea)
 Z = Cardboard Type, 7" Reel(Chip aligned for horizontal SMT)
 Y = Cardboard Type, 7" Reel(Chip aligned for vertical SMT)
 E = Embossed Type, 7" Reel
 G = Embossed Type, 7" Reel(3,000ea)
 F = Embossed Type, 13" Reel
 S = Embossed Type, 10" Reel

Class I (Temperature Compensation)

Symbol	EIA Code	Operation Temperature Range(°C)	Temperature Coefficient Range(ppm/°C)
C	C0G	-55 ~ +125	0 ± 30

* **Class II** (High Dielectric Constant)

Symbol	EIA Code	Operation Temperature Range(°C)	Capacitance Change(Δ°C%)
A	X5R	-55 ~ + 85	± 15
B	X7R	-55 ~ +125	± 15
X	X6S	-55 ~ +105	± 22
F	Y5V	-30 ~ + 85	-82 ~ +22
Y	X7S	-55 ~ +125	± 22
Z	X7T	-55 ~ +125	-33 ~ +22

**

Series	TC	Capacitance Step															
		1.0			1.5			2.2			3.3			4.7			6.8
E-3	Y5V	1.0			2.2			4.7									
E-6	X5R																
	X7R																
	X6S	1.0	1.5		2.2	3.3		4.7	6.8								
	X7S																
E-12	C0G	1.0	1.2	1.5	1.8	2.2	2.7	3.3	3.9	4.7	5.6	6.8	8.2				

Size	Code	Thickness(mm)	Spec(mm)	Size	Code	Thickness(mm)	Spec(mm)
01005(0402)	2	0.20	±0.02	1210(3225)	C	0.85	±0.10*
0201(0603)	3	0.30	±0.03		9	0.90	±0.10*
0402(1005)	3	0.30	±0.03*		F	1.25	±0.20
	5	0.50	±0.05		S	1.35	±0.15
0603(1608)	5	0.50	+0.0/-0.1*		H	1.60	±0.20
	8	0.80	±0.10		U	1.80	±0.20*
0805(2012)	A	0.65	±0.10		I	2.00	±0.20
	C	0.85	±0.10		J	2.50	±0.20
	C	0.85	±0.10*		V	2.50	±0.30
	M	1.15	±0.10		1808(4520)	F	1.25
	F	1.25	±0.10	H		1.60	±0.20
	Q	1.25	±0.15	I		2.00	±0.20
Y	1.25	±0.20	F	1.25		±0.20	
1206(3216)	C	0.85	±0.15	1812(4532)	H	1.60	±0.20
	C	0.85	±0.10*		I	2.00	±0.20
	E	1.10	±0.15		J	2.50	±0.20
	E	1.10	±0.10*		L	3.20	±0.30
	P	1.15	±0.10*	2220(5750)	H	1.60	±0.20
	M	1.15	±0.15		I	2.00	±0.20
	F	1.25	±0.15		J	2.50	±0.20
	H	1.60	±0.20		L	3.00	±0.30

- * Mark is only applicable to "L" code, 12th code in part number.
- Please discuss with sales person with regard to Pd products.

Part Numbering System

Standard & High Capacitors

Super Small Size Capacitors

High-Q Capacitors

Medium-High Voltage Capacitors

Array Type Capacitors

Low ESL Capacitors

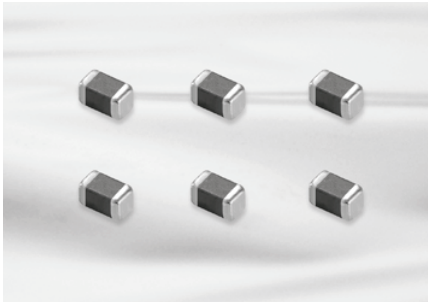
Reliability Test Condition

Premium Capacitors for Automotive Applications

Packaging Specification

Application Manual for Surface Mounting

Super Small Size Capacitors



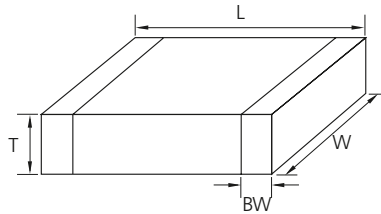
Feature

- Small chip size
- 02 and 03 series (High-Q) MLCC shows very low ESR value.
- 02 and 03 Series are suited to only reflow soldering
- 02 and 03 Series are suited to miniature RF module, portable equipment and high frequency circuit

Application

- VCO, Tuner, RF Module
- MCM Module
- Mobile phone, Wireless LAN, Note PC

Structure and Dimensions



Code	EIA Code	Dimension (mm)			
		L	W	T	BW
02	01005	0.4 ± 0.02	0.2 ± 0.02	0.2 ± 0.02	0.10 ± 0.03
03	0201	0.6 ± 0.03	0.3 ± 0.03	0.3 ± 0.03	0.15 ± 0.05

Super Small Size Capacitance Table (C0G)

TC	Size (mm)	Vr(V)	Capacitance (pF)							
			0.5	1	10	22	47	100	220	330
C0G	01005(0402)	6.3								
		16								
	0201(0603)	25								
		50								

Part Numbering System

Standard & High Capacitors

Super Small Size Capacitors

High-Q Capacitors

Super Small Size Capacitance Table (High-Q)

TC	Size (mm)	Vr(V)	Capacitance (pF)							
			0.2	1	10	15	27	33	47	100
C0G	01005(0402)	25								
		50								
	0201(0603)	25								

Medium-High Voltage Capacitors

Array Type Capacitors

Low ESL Capacitors

Reliability Test Condition

Super Small Size Capacitance Table (X7R,X6S)

TC	Size (mm)	Vr(V)	Capacitance (nF)							
			0.1	0.22	0.47	1	2.2	3.3	4.7	10
X7R	01005(0402)	10								
		10								
	0201(0603)	16								
		25								
		50								
X6S	0201(0603)	4								

Premium Capacitors for Automotive Applications

Packaging Specification

Super Small Size Capacitance Table (X5R, Y5V)

TC	Size (mm)	Vr(V)	Capacitance (μF)							
			0.01	0.1	0.22	0.47	1	2.2	4.7	10
X5R	01005(0402)	6.3								
		10								
		16								
	0201(0603)	4		X5R or X6S						
		6.3								
		10								
Y5V	0201(0603)	6.3								

Application Manual for Surface Mounting



Product Lineup (Super Small Size Capacitors-C0G)

	Part Number	Size L x W (mm)	Capacitance	Rated Voltage (Vdc)	Capacitance Tolerance	Thickness Max.(mm)	
1	CL02C0R5C02ANN □	0.40×0.20	0.5 pF	16	±0.25 pF	0.22	
2	CL02C010C02ANN □		1.0 pF	16	±0.25 pF	0.22	
3	CL02C1R2C02ANN □		1.2 pF	16	±0.25 pF	0.22	
4	CL02C1R5C02ANN □		1.5 pF	16	±0.25 pF	0.22	
5	CL02C1R8C02ANN □		1.8 pF	16	±0.25 pF	0.22	
6	CL02C020C02ANN □		2.0 pF	16	±0.25 pF	0.22	
7	CL02C2R2C02ANN □		2.2 pF	16	±0.25 pF	0.22	
8	CL02C2R7C02ANN □		2.7 pF	16	±0.25 pF	0.22	
9	CL02C030C02ANN □		3.0 pF	16	±0.25 pF	0.22	
10	CL02C3R3C02ANN □		3.3 pF	16	±0.25 pF	0.22	
11	CL02C3R9C02ANN □		3.9 pF	16	±0.25 pF	0.22	
12	CL02C4R7C02ANN □		4.7 pF	16	±0.25 pF	0.22	
13	CL02C5R6D02ANN □		5.6 pF	16	±0.5 pF	0.22	
14	CL02C6R8D02ANN □		6.8 pF	16	±0.5 pF	0.22	
15	CL02C8R2D02ANN □		8.2 pF	16	±0.5 pF	0.22	
16	CL02C090D02ANN □		9.0 pF	16	±0.5 pF	0.22	
17	CL02C100J02ANN □		10 pF	16	±5%	0.22	
18	CL02C150J02ANN □		15 pF	16	±5%	0.22	
19	CL02C180J02ANN □		18 pF	16	±5%	0.22	
20	CL02C220J02ANN □		22 pF	16	±5%	0.22	
21	CL02C270J02ANN □		27 pF	16	±5%	0.22	
22	CL02C330J02ANN □		33 pF	16	±5%	0.22	
23	CL02C390J02ANN □		39 pF	16	±5%	0.22	
24	CL02C470J02ANN □		47 pF	16	±5%	0.22	
25	CL02C560JQ2ANN □		56 pF	6.3	±5%	0.22	
26	CL02C680JQ2ANN □		68 pF	6.3	±5%	0.22	
27	CL02C820JQ2ANN □		82 pF	6.3	±5%	0.22	
28	CL02C101J02ANN □		100 pF	16	±5%	0.22	
29	CL02C101JQ2ANN □		100 pF	6.3	±5%	0.22	
1	CL02C0R5B02GNN □	0.40×0.20	0.5 pF	16	±0.25 pF	0.22	High-Q
2	CL02C010B02GNN □		1.0 pF	16	±0.25 pF	0.22	High-Q
3	CL02C1R2B02GNN □		1.2 pF	16	±0.25 pF	0.22	High-Q
4	CL02C1R5B02GNN □		1.5 pF	16	±0.25 pF	0.22	High-Q
5	CL02C1R8B02GNN □		1.8 pF	16	±0.25 pF	0.22	High-Q
6	CL02C2R2B02GNN □		2.2 pF	16	±0.25 pF	0.22	High-Q
7	CL02C2R7B02GNN □		2.7 pF	16	±0.25 pF	0.22	High-Q
8	CL02C3R3B02GNN □		3.3 pF	16	±0.25 pF	0.22	High-Q
9	CL02C3R9B02GNN □		3.9 pF	16	±0.25 pF	0.22	High-Q
10	CL02C4R7B02GNN □		4.7 pF	16	±0.25 pF	0.22	High-Q
11	CL02C5R6B02GNN □		5.6 pF	16	±0.25 pF	0.22	High-Q
12	CL02C6R8B02GNN □		6.8 pF	16	±0.25 pF	0.22	High-Q
13	CL02C8R2B02GNN □		8.2 pF	16	±0.25 pF	0.22	High-Q
14	CL02C100J02GNN □		10 pF	16	±5%	0.22	High-Q
15	CL02C120J02GNN □		12 pF	16	±5%	0.22	High-Q
16	CL02C150J02GNN □		15 pF	16	±5%	0.22	High-Q
17	CL02C180J02GNN □		18 pF	16	±5%	0.22	High-Q
18	CL02C220J02GNN □		22 pF	16	±5%	0.22	High-Q
19	CL02C270J02GNN □		27 pF	16	±5%	0.22	High-Q
1	CL03C0R5CA3GNN □	0.60×0.30	0.5 pF	25	±0.25 pF	0.33	High-Q
2	CL03C010CA3GNN □		1.0 pF	25	±0.25 pF	0.33	High-Q
3	CL03C1R2CA3GNN □		1.2 pF	25	±0.25 pF	0.33	High-Q
4	CL03C1R5CA3GNN □		1.5 pF	25	±0.25 pF	0.33	High-Q

※ □ mark means packaging code. If you want to learn the code or quantity in detail, please see p74.

Product Lineup (Super Small Size Capacitors-C0G)

	Part Number	Size L x W (mm)	Capacitance	Rated Voltage (Vdc)	Capacitance Tolerance	Thickness Max.(mm)	
5	CL03C1R8CA3GNN □	0.60×0.30	1.8 pF	25	±0.25 pF	0.33	High-Q
6	CL03C020CA3GNN □		2.0 pF	25	±0.25 pF	0.33	High-Q
7	CL03C2R2CA3GNN □		2.2 pF	25	±0.25 pF	0.33	High-Q
8	CL03C2R7CA3GNN □		2.7 pF	25	±0.25 pF	0.33	High-Q
9	CL03C030CA3GNN □		3.0 pF	25	±0.25 pF	0.33	High-Q
10	CL03C3R3CA3GNN □		3.3 pF	25	±0.25 pF	0.33	High-Q
11	CL03C3R9CA3GNN □		3.9 pF	25	±0.25 pF	0.33	High-Q
12	CL03C4R7CA3GNN □		4.7 pF	25	±0.25 pF	0.33	High-Q
13	CL03C5R6DA3GNN □		5.6 pF	25	±0.5 pF	0.33	High-Q
14	CL03C6R8DA3GNN □		6.8 pF	25	±0.5 pF	0.33	High-Q
15	CL03C8R2DA3GNN □		8.2 pF	25	±0.5 pF	0.33	High-Q
16	CL03C090DA3GNN □		9.0 pF	25	±0.5 pF	0.33	High-Q
17	CL03C100JA3GNN □		10 pF	25	±5%	0.33	High-Q
18	CL03C150JA3ANN □		15 pF	25	±5%	0.33	
19	CL03C180JA3ANN □		18 pF	25	±5%	0.33	
20	CL03C220JA3ANN □		22 pF	25	±5%	0.33	
21	CL03C270JA3ANN □		27 pF	25	±5%	0.33	
22	CL03C330JA3ANN □		33 pF	25	±5%	0.33	
23	CL03C390JA3ANN □		39 pF	25	±5%	0.33	
24	CL03C470JA3ANN □		47 pF	25	±5%	0.33	
25	CL03C101JB3ANN □		100 pF	50	±5%	0.33	
26	CL03C101JA3ANN □		100 pF	25	±5%	0.33	

Part Numbering System

Standard & High Capacitors

Super Small Size Capacitors

High-Q Capacitors

Medium-High Voltage Capacitors

Array Type Capacitors

Low ESL Capacitors

Reliability Test Condition

Premium Capacitors for Automotive Applications

Packaging Specification

Application Manual for Surface Mounting

Product Lineup (Super Small Size Capacitors-X7R,X6S)

	Part Number	Size L x W (mm)	Capacitance	Rated Voltage (Vdc)	Capacitance Tolerance	Thickness Max.(mm)	
1	CL02B101KP2N NN □	0.40×0.20	100 pF	10	±10%	0.22	
2	CL02B221KP2N NN □		220 pF	10	±10%	0.22	
3	CL02B271KP2N NN □		270 pF	10	±10%	0.22	
4	CL02B331KP2N NN □		330 pF	10	±10%	0.22	
5	CL02B391KP2N NN □		390 pF	10	±10%	0.22	
6	CL02B471KP2N NN □		470 pF	10	±10%	0.22	
7	CL02B681KP2N NN □		680 pF	10	±10%	0.22	
8	CL02B102KP2N NN □		1 nF	10	±10%	0.22	
1	CL03B151KA3N NN □	0.60×0.30	150 pF	25	±10%	0.33	
2	CL03B221KA3N NN □		220 pF	25	±10%	0.33	
3	CL03B271KO3N NN □		270 pF	16	±10%	0.33	
4	CL03B331KA3N NN □		330 pF	25	±10%	0.33	
5	CL03B471KA3N NN □		470 pF	25	±10%	0.33	
6	CL03B561KO3N NN □		560 pF	16	±10%	0.33	
7	CL03B681KA3N NN □		680 pF	25	±10%	0.33	
8	CL03B821KO3N NN □		820 pF	16	±10%	0.33	
9	CL03B102KA3N NN □		1 nF	25	±10%	0.33	
10	CL03B152KP3N NN □		1.5 nF	10	±10%	0.33	
11	CL03B332KP3N NN □		3.3 nF	10	±10%	0.33	
12	CL03B392KP3N NN □		3.9 nF	10	±10%	0.33	
13	CL03B472KP3N NN □		4.7 nF	10	±10%	0.33	
14	CL03B682KP3N NN □		6.8 nF	10	±10%	0.33	
15	CL03B103KP3N NN □		10 nF	10	±10%	0.33	
1	CL03X104KQ3N NN □		100 nF	6.3	±20%	0.33	
2	CL03X105MR3CSN □		1 μF	4	±20%	0.35	
3	CL03X105MR3NRN □		1 μF	4	±20%	0.39	

※ □ mark means packaging code. If you want to learn the code or quantity in detail, please see p74.



Product Lineup (Super Small Size Capacitors-X5R)

	Part Number	Size L x W (mm)	Capacitance	Rated Voltage (Vdc)	Capacitance Tolerance	Thickness Max.(mm)
1	CL02A151KQ2NNN □	0.40×0.20	150 pF	6.3	±10%	0.22
2	CL02A221KQ2NNN □		220 pF	6.3	±10%	0.22
3	CL02A331KQ2NNN □		330 pF	6.3	±10%	0.22
4	CL02A471KQ2NNN □		470 pF	6.3	±10%	0.22
5	CL02A681KQ2NNN □		680 pF	6.3	±10%	0.22
6	CL02A102KQ2NNN □		1 nF	6.3	±10%	0.22
7	CL02A152KQ2NNN □		1.5 nF	6.3	±10%	0.22
8	CL02A222KQ2NNN □		2.2 nF	6.3	±10%	0.22
9	CL02A332KQ2NNN □		3.2 nF	6.3	±10%	0.22
10	CL02A472KQ2NNN □		4.7 nF	6.3	±10%	0.22
11	CL02A682KQ2NNN □		6.8 nF	6.3	±10%	0.22
12	CL02A103KQ2NNN □		10 nF	6.3	±10%	0.22
13	CL02A104KQ2NNN □		100 nF	6.3	±10%	0.22
14	CL02A224MR2NNN □		220 nF	4	±20%	0.22
15	CL02A224MQ2NNN □		220 nF	6.3	±20%	0.22
1	CL03A103KA3NNN □	0.60×0.30	10 nF	25	±10%	0.33
2	CL03A223KQ3NNN □		22 nF	6.3	±10%	0.33
3	CL03A473KQ3NNN □		47 nF	6.3	±10%	0.33
4	CL03A104MA3NNN □		100 nF	25	±20%	0.33
5	CL03A104KO3NNN □		100 nF	16	±10%	0.33
6	CL03A104KP3NNN □		100 nF	10	±10%	0.33
7	CL03A104KQ3NNN □		100 nF	6.3	±10%	0.33
8	CL03A224KQ3NNN □		220 nF	6.3	±10%	0.33
9	CL03A224KP3NNN □		220 nF	10	±10%	0.33
10	CL03A105MO3NRR □		1 nF	16	±20%	0.39
11	CL03A105MQ3CSN □		1 μF	6.3	±20%	0.35
12	CL03A105MP3NSN □		1 μF	10	±20%	0.35
13	CL03A225MR3CRN □		2.2 μF	4	±20%	0.39
14	CL03A225MQ3CRN □		2.2 μF	6.3	±20%	0.39

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