

Features

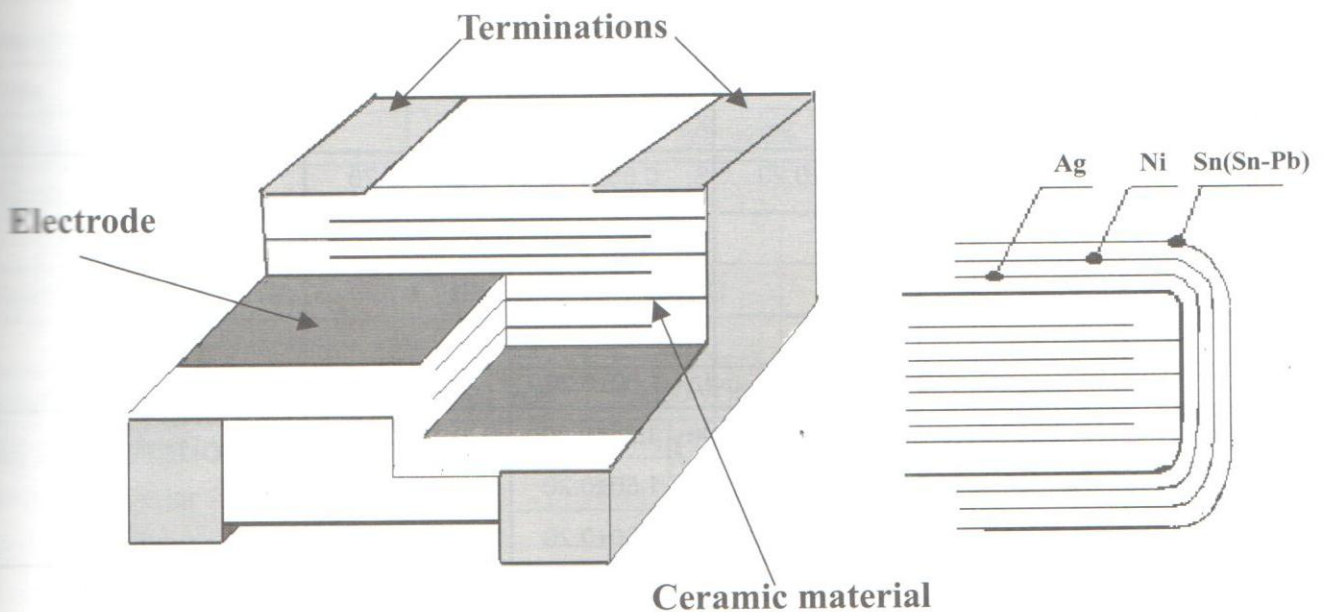
Various temperature characteristics cover a wide range in small size.
 Mounted either by flow or reflow soldering methods
 Excellent dielectric strength due to uniform structure of dielectric layers

Applications

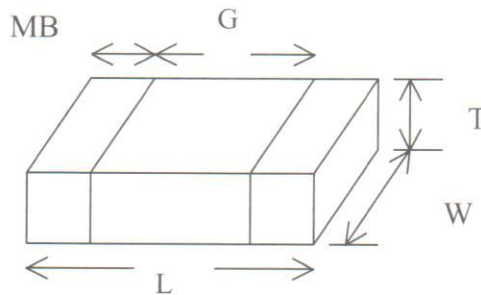
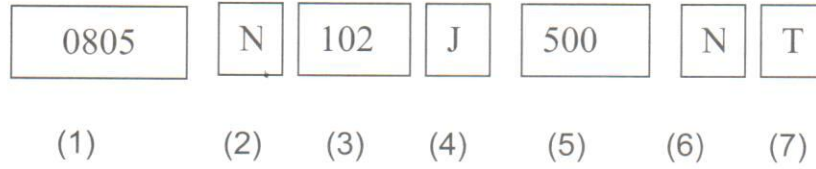
MLCC are becoming increasingly important key electronic applications, which are helpful in reducing the size of electronic circuitry. MLCC are used extensively in computers, communicative products, and the detail applications which including the followings:

- Discharge of Stored Energy
- Blockage of Direct Current
- Coupling of Circuit Components
- By-Passing of an AC Signal

Construction of MLCC



4. Part number code



(1) Size Code					Unit: mm
Size Code	L	W	T	MB	G(min)
0402	1.00±0.05	0.50±0.05	S: 0.50±0.05	0.15~0.35	0.3
0603	1.60±0.15	0.80±0.12	P: 0.80±0.12	0.27~0.60	0.5
0805	2.0±0.2	1.25±0.20	S: 0.55±0.05	0.30~0.70	0.7
			M: 0.70±0.10		
			H: 0.85±0.15		
			X: 1.25±0.20:		
1206	3.2±0.2	1.60±0.20	S: 0.55±0.05	0.30~0.70	1.5
			M: 0.70±0.10		
			H: 0.85±0.15		
			X: 1.25±0.20		
			L: 1.60±0.20		
1808	4.5±0.3	2.0±0.20	X: 1.25±0.20	0.35~0.95	2.0
			F: 1.50±0.20		
			Z: 2.00±0.20		
1812	4.5±0.3	3.2±0.3	X: 1.25±0.20	0.35~1.00	2.0
			F: 1.50±0.20		
			Z: 2.00±0.20		
			E: 2.50±0.20		

(2) Temperature Characteristic

Code	N	B	Y
Dielectric type	COG	X7R	Y5V
Temp. range	-55~125°C	-55~125°C	-30~85°C
Cap. change	0±30ppm	±15%	+22~ -82

(3) Capacitance (Example)

*Two significant figures followed by number of zero. 102=1000pF

Code(EIA code)	Cap.(pF)	Code(EIA code)	Cap.(pF)
0R5	0.5	101	100
2R0	2.0	102	1000
100	10	103	10000

(4) Capacitance Tolerance

*Tolerances may be restricted by dielectric type

Product or capacitance	NPO, C < 10pF					
Code	A	B	C	D		
Tolerance	±0.05pF	±0.10pF	±0.25pF	±0.50pF		
Product or capacitance	NPO, C ≥ 10pF					
Code	F	G	J	K		
Tolerance	±1.0%	±2.0%	±5.0%	±10%		
Product or capacitance	X7R			Y5V		
Code	J	K	M	M	Z	
Tolerance	±5.0%	±10%	±20%	±20%	-20~+80%	

(5) Voltage

Code	100	160	250	500	101	251
Rated Voltage	10VDC	16VDC	25VDC	50VDC	100VDC	250VDC
Code	501	102	202	302		
Rated Voltage	500 VDC	10000 VDC	20000 VDC	3000 VDC		

(6) Termination

N= Nickel barrier

S= Silver(option)

T= Nickel barrier with 100% Tin (option)

(7) Packing Code

B= Bulk,

1=1K/Reel, 2=2K/Reel, 3=3K/Reel, (for plastic tape only)

T= 4K/Reel

U= 10K/ Reel

V= 16K/ Reel

W= 20K/ Reel

5. Capacitance range

5-1. NPO capacitance range

SIZE		0402		0603				0805					1206					1808				1812							
Cap.	EIA	Vr		25	50	25	50	100	200	250	25	50	100	200	250	25	50	100	200	250	50	100	200	250	50	100	200		
		25	50																										
0.5 pF	0R5	S	S			P	P	P	P			M	M	M	M			M	M	M	M								
		S	S			P	P	P	P			M	M	M	M			M	M	M	M								
10	100	S	S			P	P	P	P			M	M	M	M			M	M	M	M								
12	120	S	S			P	P	P	P			M	M	M	M			M	M	M	M								
15	150	S	S			P	P	P	P			M	M	M	M			M	M	M	M								
18	180	S	S			P	P	P	P			M	M	M	M			M	M	M	M								
22	220	S	S			P	P	P	P			M	M	M	M			M	M	M	M								
27	270	S	S			P	P	P	P			M	M	M	M			M	M	M	M								
33	330	S	S			P	P	P	P			M	M	M	M			M	M	M	M								
39	390	S	S			P	P	P	P			M	M	M	M			M	M	M	M								
47	470	S	S			P	P	P	P			M	M	M	M			M	M	M	M								
56	560	S	S			P	P	P	P			M	M	M	M			M	M	M	M								
68	680	S	S			P	P	P	P			M	M	M	M			M	M	M	M								
82	820	S	S			P	P	P	P			M	M	M	M			M	M	M	M								
100	101	S	S			P	P	P	P			M	M	M	M			M	M	M	M								
120	121	S	S			P	P					M	M	H	H			M	M	M	M								
150	151	S	S			P	P					M	M	H	H			M	M	M	M								
180	181	S	S			P	P					M	M	H	H			M	M	M	M								
220	221	S	S			P	P					M	M	H	H			M	M	M	M								
270	271	S				P	P					M	M	H	H			M	M	M	M								
330	331	S				P	P					M	M	H	H			M	M	M	M								
390	391	S				P	P					M	M	H	H			M	M	M	M								
470	471	S				P	P					M	M	H	H			M	M	M	M								
560	561					P	P					M	M	H	H			M	M	M	M								
620	621					P	P					H	H	H	H			M	M	M	M								
680	681					P	P					H	H	H	H			M	M	M	M								
820	821			P	P							H	H	H	H			M	M	H	H								
1000	102			P	P							H	H	H	H			M	M	H	H								
1200	122			P	P							H	H	X	X			M	H	H	H			X	X	X		X	X
1500	152			P	P							H	H	X	X			M	H	H	H			X	X	X		X	X
1800	182			P	P							H	X					M	H	H	H			X	X	X		X	X
2200	222			P								H	X					M	H	X	X			X	X	X		X	X
2700	272											H	X					M	H	X	X			X	X	X		X	X
3300	332											X						M	H	X	X			X	X	X		X	X
3900	392											X						H	H	X	X			X	X	X		X	X
4700	472											X						H	X				F	F	F	F	F	F	F
5600	562																	H	X				F	F	F	F	F	F	F
6800	682																	H	X				F	F	F	F	F	F	F
8200	822																	X					F	F			F	F	F
10000	103																	X					F	F			F	F	F
12000	123																						F	F			F	F	F
15000	153																						F	F			F	F	
18000	183																						F				F	F	
22000	223																						F				F	F	
27000	273																						F				F	F	
33000	333																										F	F	
47000	473																										F		
56000	563																												
68000	683																												
82000	823																												

X7R capacitance range

		0402		0603			0805				1206				1210				1808				1812									
SIZE	Vr	25	50	25	50	100	200	250	25	50	100	200	250	25	50	100	200	250	10	16	25	50	250	50	100	200	250	50	100	200	250	
101	S	S																														
121	S	S																														
151	S	S	P	P	P	P	P	M	M	M	M	M																				
181	S	S	P	P	P	P	P	M	M	M	M	M	M	M																		
221	S	S	P	P	P	P	P	M	M	M	M	M	M	M	M																	
271	S	S	P	P	P	P	P	M	M	M	M	M	M	M	M																	
331	S	S	P	P	P	P	P	M	M	M	M	M	M	M	M	M	H	H														
391	S	S	P	P	P	P	P	M	M	M	M	M	M	M	M	M	M	H	H													
471	S	S	P	P	P	P	P	M	M	M	M	M	M	M	M	M	M	H	H													
561	S	S	P	P	P	P	P	M	M	M	M	M	M	M	M	M	M	H	H													
621	S	S	P	P	P	P	P	M	M	M	M	M	M	M	M	M	M	H	H													
681	S	S	P	P	P	P	P	M	M	M	M	M	M	M	M	M	M	H	H													
821	S	S	P	P	P	P	P	M	M	M	M	M	M	M	M	M	M	H	H													
102	S	S	P	P	P	P	P	M	M	M	M	M	M	M	M	M	M	H	H													
122	S		P	P	P	P	P	M	M	M	H	H	M	M	M	H	H															
152	S		P	P	P	P	P	M	M	M	H	H	M	M	M	H	H															
182	S		P	P	P	P	P	M	M	M	H	H	M	M	M	H	H															
222	S		P	P	P	P	P	M	M	M	H	H	M	M	M	H	H															
272	S		P	P	P	P	P	M	M	M	H	H	M	M	M	H	H															
332	S		P	P	P	P	P	M	M	M	H	H	M	M	M	H	H															
392	S		P	P	P	P	P	M	M	M	H	H	M	M	M	H	H															
472	S		P	P	P	P	P	M	M	M	H	H	M	M	M	H	H															
562	S		P	P	P			M	M	M	H	H	M	M	M	H	H															
682	S		P	P	P			M	M	M	H	H	M	M	M	H	H															
822	S		P	P	P			M	M	M	H	H	M	M	M	H	H															
103	S		P	P	P			M	M	M	H	H	M	M	M	H	H															
123			P	P				M	M	M	H	H	M	M	M	H	H															
153			P	P				M	M	M	H	H	M	M	M	H	H															
183			P	P				M	M	M	H	H	M	M	M	H	H															
223			P	P				M	M	H	H	H	M	M	M	H	H															
273			P	P				M	M				M	M	M	H	H														F	
333	X		P	P				M	M				M	M	M	X	X														F	
393	X		P	P				M	M				M	M	M	X	X														F	
473	X		P	P				M	M				M	M	M	X	X														F	
563	X		P	P				M	M				M	M	M	X	X														F	
683	X		P	P				M	M				M	M	M	X	X														F	
823	X		P	P				M	M				M	M	H																F	
104	X		P	P				H	H				H	H	H																F	
124	F							H					H	H	H										F	F		X	F	F		
154	F							H	X				H	H	X										F	F		X	F	F		
184	F							H	X				H	H	X										F	F		X	F	F		
224	F							H	X				H	H											F	F		X	F	F		
274	F												H	H					F	F	F	F			F	F	X	X	F	F		
334	F												H	H					F	F	F	Z			F	F	Z	X	X	F	F	
474													H	H					F	F	F	Z			F	Z		X	X	F	F	
564													H						F	F	F	Z			F	Z		F	F	Z	Z	
684													H						F	F	F	Z			F	Z		F	F	Z	Z	
824													H	X					F	F	F	Z			F			F	F			
105																			F	F	F	Z			F			F	Z			
125																			Z	Z	Z				Z			F	Z			
155																			Z	Z	Z				Z			F				
185																			Z	Z	Z							F				
225																			Z	Z	Z							Z				
106	100uF																		Z	Z	Z							Z				

5-3. Y5V capacitance range

SIZE		0402				0603				0805			1206			1210				1808				1812				
Cap	Vr EIA	10	16	25	50	10	16	25	50	16	25	50	16	25	50	10	16	25	50	50	100	200	250	50	100	200	250	
10 nF	103			S	S			P	P		S	S		S	S													
12	123			S	S			P	P		S	S		S	S													
15	153			S	S			P	P		S	S		S	S													
18	183			S	S			P	P		S	S		S	S													
22	223			S	S			P	P		S	S		S	S													
27	273			S	S			P	P		S	S		S	S													
33	333			S	S			P	P		S	S		S	S													
39	393			S	S			P	P		S	S		S	S													
47	473		S	S	S			P	P		S	S		S	S													
56	563		S	S	S			P	P		S	S		S	S													
68	683		S	S	S			P	P		S	S		S	S													
82	823		S	S	S			P	P		S	S		S	S													
0.1 uF	104	S	S	S				P	P		S	S		SH	SH						F	F			X	F	F	
0.15	154							P			S	S		S	S							F	F			X	F	F
0.22	224							P			S	S		S	S	F	F	F	F		F	F	F	X	X	F	F	
0.33	334					P	P	P		M	M	M		M	M	F	F	F	F	F	F	Z	Z	X	X	F	F	
0.47	474					P	P	P		H	H	H		H	H	F	F	F	F	F	Z				F	F	Z	Z
0.56	564					P	P			H	H			H	H	F	F	F	F	X	F				F	F	Z	Z
0.68	684					P	P			H	H			H	H	F	F	F	X	F					F	F		
1.0	105					P	P			H	H		H	H	H	F	F	F	X	Z					F	Z		
2.2	225					P				H			H			F	Z	Z	X						F			
3.3	335												H			F	Z	Z	X									
4.7	475												H			F	Z	Z	X									
10	106												H			F	Z	Z										

5-4. NPO capacitance range (High voltage series)

SIZE		0805		1206			1210	1808				1812					
Cap	EIA	Vr		500V	1KV	500V	1KV	2KV	250V	500V	1KV	2KV	3KV	500V	1KV	2KV	3KV
		3.9pF	3R9	H	H	H	H	H									
		H	H	H	H	H											
10	100	H	H	H	H	H	F	F	F	F	F	F	F	F	F	F	F
12	120	H	H	H	H	H	F	F	F	F	F	F	F	F	F	F	F
15	150	H	H	H	H	H	F	F	F	F	F	F	F	F	F	F	F
18	180	H	H	H	H	H	F	F	F	F	F	F	F	F	F	F	F
22	220	H	H	H	H	H	F	F	F	F	F	F	F	F	F	F	F
27	270	H	H	H	H	H	F	F	F	F	F	F	F	F	F	F	F
33	330	H	H	H	H	H	F	F	F	F	F	F	F	F	F	F	F
39	390	H	H	H	H	H	F	F	F	F	F	F	F	F	F	F	F
47	470	H	H	H	H	H	F	F	F	F	F	F	F	F	F	F	F
56	560	H	H	H	H	H	F	F	F	F	F	F	F	F	F	F	F
68	680	H	H	H	H	H	F	F	F	F	F	F	F	F	F	F	F
82	820	H	H	H	H	H	F	F	F	F	F	F	F	F	F	F	F
100	101	X	X	H	H	X	F	F	F	F	F	F	F	F	F	F	F
120	121	X	X	H	H	X	F	F	F	F	F	F	F	F	F	F	F
150	151	X	X	H	H	X	F	F	F	F	F	F	F	F	F	F	F
180	181	X	X	H	H	X	F	F	F	F	F	F	F	F	F	F	F
220	221	X	X	H	H		F	F	F	F	F	F	F	F	F	F	F
270	271	X	X	X	X		F	F	F	F	F	F	F	F	F	F	F
330	331			X	X		F	F	F	F	F	F	F	F	F	F	F
390	391			X	X		F	F	F	F		F	F	F	F	F	F
470	471			X	X		F	F	F	F		F	F	F	F	F	F
560	561			X	X		F	F	F	F		F	F	F	F	F	F
680	681			X	X		F	F	F			F	F	F	F		
820	821			X	X		F	F	F			F	F	F	F		
1000	102			X	X		F	F	F			F	F	F	F		
1200	122			X	X		F	F	F			F	F				
1500	152						F	F	F			F	F				
1800	182						F	F	F			F	F				
2200	222						F	F	F			F	F				
2700	272							F	F			F	F				
3300	332											F	F				
3900	392											F	F				
4700	472											F	F				
5600	562																
6800	682																
8200	822																
10000	103																
12000	123																
15000	153																
18000	183																
22000	223																
27000	273																
33000	333																
39000	393																
47000	473																

5-5.X7R capacitance range (High voltage series)

SIZE		0805		1206			1210			1808				1812					
Cap	EIA	Vr		500V	1KV	500V	1KV	2KV	100	250	500	500V	1KV	2KV	3KV	500V	1KV	2KV	
		500V	1KV																
100	101																		
120	121																		
150	151							X											
180	181	H	H	H	X	X						F	F						F
220	221	H	H	H	X	X						F	F	F	F				F
270	271	H	H	H	X	X						F	F	F	F				F
330	331	H	H	H	X	X						F	F	F	F				F
390	391	H	H	H	X	X						F	F	F	F	F	F		F
470	471	H	H	H	X	X						F	F	F	F	F	F		F
560	561	H	H	H	X	X						F	F	F	F	F	F		F
680	681	H	H	H	X	X						F	F	F	F	F	F		F
820	821	H	H	H	X	X						F	F	F	F	F	F		F
1000	102	H	H	H	X	X						F	F	F	F	F	F		F
1200	122	H	X	H	X							F	F	F		F	F		F
1500	152	H	X	H	X							F	F	F		F	F		F
1800	182	H	X	H	X							F	F	F		F	F		F
2200	222	H	X	H	X			F	F	F		F	F	F		F	F		F
2700	272	H	X	H	X			F	F	F		F	F	F		F	F		F
3300	332	H		H	X			F	F	F		F	F	F		F	F		F
3900	392	X		H				F	F	F		F	F	F		F	F		F
4700	472	X		H				F	F	F		F	F	F		F	F		F
5600	562	X		H				F	F	F		F	F	F		F	F		F
6800	682			H				F	F	F		F	F	F		F	F		F
8200	822			H				F	F	F		F	F	F		F	F		F
10000	103			X				F	F	F		F	F	F		F	F		F
12000	123							F	F	F		F	F	F		F	F		F
15000	153							F	F	F		F	F	F		F	F		F
18000	183							F	F	F		F	F	F		F	F		F
22000	223							F	F	F		F	F	F		F	F		F
27000	273							F	F	F		F	F	F		F	F		F
33000	333							F	F	F		F	F	F		F	F		F
39000	393							F	F	F		F	F	F		F	F		F
47000	473							F	F	F		F	F	F		F	F		F
56000	563							F	F	F		F	F	F		F	F		F
68000	683							F	F	F		F	F	F		F	F		F
82000	823							F	F	F		F	F	F		F	F		F
100000	104							F	F	F		F	F	F		F	F		F
120000	124							F	F	F		F	F	F		F	F		F
150000	154							F	F	F		F	F	F		F	F		F
220000	224							F	F	F		F	F	F		F	F		F
270000	274							F	F	F		F	F	F		F	F		F
330000	334							F	F	F		F	F	F		F	F		F
390000	394							F	F	F		F	F	F		F	F		F
470000	474							F	F	F		F	F	F		F	F		F
560000	564							F	F	F		F	F	F		F	F		F
680000	684							F	F	F		F	F	F		F	F		F
820000	824							F	F	F		F	F	F		F	F		F
1000000	105							F	F	F		F	F	F		F	F		F