Part Number Code

0805 | N | 102 | J | 500 | N | T

Size Code
0402 = .04 X .02" 0603 = .06 X .03"
0805 = .08 X .05" 1206 = .12 X .06"
1210 = .12 X .10" 1808 = .18 X .08
1812 = .18 X .12" 2220 = .22 X .20

Dielectric
N (COG) B (X7R)
Y (Y5V) X (X5R)

Capacitance
Value in Pico farads: Two significant figures
Followed by number of zero. 0R5=0.5pF 2R0=2pF 102=1000pF.

Capacitance Tolerance
A = ±0.05pF B = ±0.10pF
C = ±0.25pF D = ±0.50pF (EIA Code)
F = ±1.0% G = ±2.0%
H = ±3.0% J = ±5.0%
K = ±10% M = ±20%
Z = -20%~+80% Tolerances may be restricted by dielectric type.

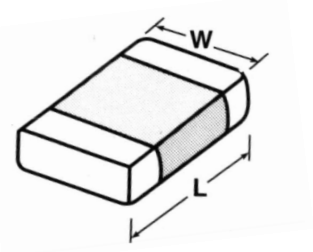
Voltage
VDC: Two significant figures followed by number of zeros
063 = 6.3 VDC 100 = 10 VDC 160 = 16 VDC 250 = 25 VDC
500 = 50 VDC 101 = 100 VDC 251 = 250 VDC 501 = 500VDC
102 = 1 KVDC 202 = 2 KVDC 302 = 3 KVDC

Termination
N = Nickel barrier with 100% Tin

Packing Code
B = Bulk in bag
05 = 500/Reel 1= 1K/Reel 2= 2K/Reel 3= 3K/Reel (for plastic tape only)
T= 4K/Reel U= 10K/ Reel V= 15K/ Reel W = 20K/Reel

Dimension : (unit mm)

	0402	0603	0805	1206	1210	1808	1812	2220
L	1.00±0.05	1.60±0.10	2.00±0.20	3.20±0.20	3.20±0.30	4.50±0.30	4.50±0.30	5.70±0.40
W	0.50±0.05	0.80±0.10	1.25±0.20	1.60±0.20	2.50±0.20	2.00±0.20	3.20±0.30	5.00±0.40



Storage

1. Storage condition :To be sure the ambient temperature is 40 Celsius maximum and humidity is 80% Relative Humidity Maximum.
2. Storage environment: Do not store where the soldering quality can be destroyed by harmful gas such as sulfurous gas, chlorine gas, etc.
3. Store period: Should be used within 6 months after unpacking from the original reel or bulk products. Otherwise, check the solder ability before applied.

Application

NPO (COG) dielectric properties; suited for precision circuits, requiring stable dielectric characteristics:

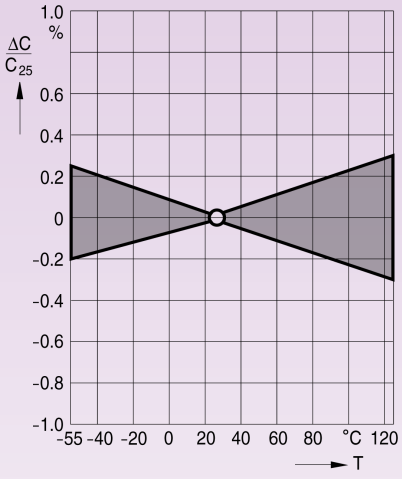
- Negligible dependence of capacitance and dissipation factor on time, voltage, and frequency
- Low-loss (High Q)
- Predictable linear temperature coefficient
- No piezoelectric behavior

General Specification

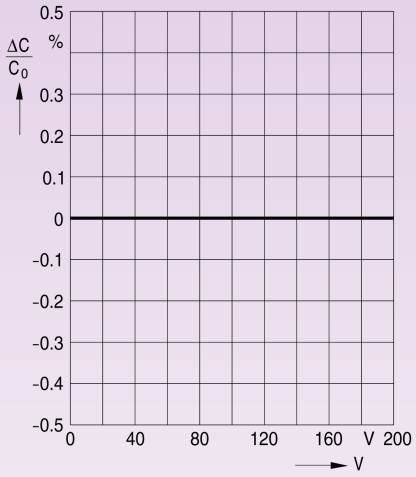
- Operating temperature range : –55℃ +125℃
- Temperature coefficient: 0 ±30ppm/℃
- Capacitance Range: 0.5pF 0.22uF (Test condition: 1.0 ±0.2 Vrms, 1KHz, for≦1000pF use 1 MHz)
- Capacitance Tolerance: Preferred ±1% , ±2% ±5%, ±10% . (10PF＜: ±0.05pF, ±0.1pF, ±0.25pF, ±0.5Pf)
- Rated Voltage: 25VDC, 50VDC, 100VDC, 250VDC, 500VDC, 1KVDC, 2KVDC, 3KVDC
- Q value : C＜30pF : Q≧400+20C, C≧30pF : Q≧1000 (Test condition: 1MHz, 1KHZ for C≧1000pF, 1Vrms, 25℃)
- Insulation resistance: 100,000 MΩ or 1,000 Ω-F min, whichever is less. (rated voltage applied at 25℃)
- Dielectric strength: > 250% of rated voltage for 10 100V, 200% for 200&250V, 150% for 500V, 120% for≧1000V

Characteristics

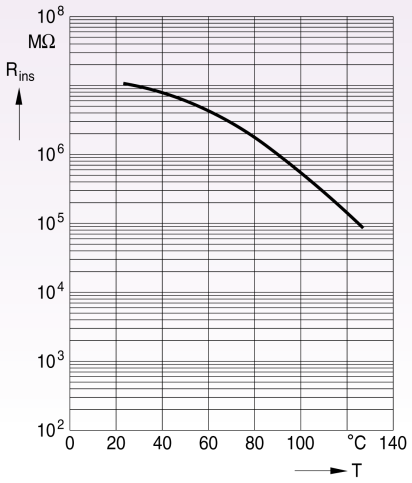
Capacitance change△C/C25 versus temperature T (tolerance range)



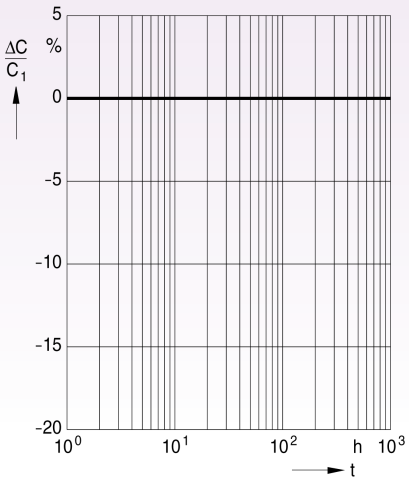
Capacitance change△C/C0 versus superimposed dc voltage V



Insulation resistance Rins versus Temperature T



Capacitance change△C/C1 versus time (aging rate)



Size And Values Available (NPO) 25v~100v

Size		0402		0603			0805			1206			1210		1812	
(L)Length	mm	1.00±0.05		1.60±0.10			2.00±0.20			3.20±0.20			3.20±0.30		4.50±0.30	
(W)Width	mm	0.50±0.05		0.80±0.10			1.25±0.20			1.60±0.20			2.50±0.20		3.20±0.30	
(T)Max. Thickness	mm	0.50±0.05		0.80±0.10			1.25±0.10			1.65±0.20			2.50±0.30		3.20±0.30	
(t)Terminal	mm	0.15±0.35		0.27~0.60			0.30~0.70			0.30~0.70			0.30~0.70		0.35~1.00	
Capacitance		25	50	25	50	100	25	50	100	25	50	100	50	100	50	100
0.47 - 0.82	pF		S		P	P		A	A		H	H				
1 - 9.1	pF		S		P	P		A	A		H	H				
10	pF		S		P	P		A	A		H	H				
12	pF		S		P	P		A	A		H	H				
15	pF		S		P	P		A	A		H	H				
18	pF		S		P	P		A	A		H	H				
22	pF		S		P	P		A	A		H	H				
27	pF		S		P	P		A	A		H	H				
33	pF		S		P	P		A	A		H	H				
39	pF		S		P	P		A	A		H	H				
47	pF		S		P	P		A	A		H	H				
56	pF		S		P	P		A	A		H	H				
68	pF		S		P	P		A	A		H	H				
82	pF		S		P	P		A	A		H	H				
100	pF		S		P	P		A	A		H	H				
120	pF		S		P	P		A	A		H	H				
150	pF		S		P	P		A	A		H	H				
180	pF		S		P	P		A	A		H	H				
220	pF		S		P	P		A	A		H	H				
270	pF		S		P	P		A	A		H	H				
330	pF	S	S		P	P		A	A		H	H				
390	pF	S	S		P	P		A	A		H	H				
470	pF	S	S		P	P		A	A		H	H				
560	pF	S			P	P		A	A		H	H				
680	pF	S			P			A	A		H	H				
820	pF	S			P			A	A		H	H				
1.0	nF	S			P			H	A		H	H				
1.2	nF				P			H	H		H	H				X
1.5	nF				P			H	H		H	H				X
1.8	nF				P			H	H		H	H				X
2.2	nF				P			H	H		H	H				X
2.7	nF				P			X	X		H	H				X
3.3	nF				P			X	X		H	H				X
3.9	nF			P			A	X	X		H	H				X
4.7	nF			P			A	X			H	H				X
5.6	nF			P			A	X			H	H				X
6.8	nF			P			A	X			C	C				X
8.2	nF			P			A	X		H	X	X		C		X
10	nF			P			A	X		H	X			C	X	X
15	nF						H			H	X		X	X	X	X
22	nF						X			H	X		X		X	X
33	nF						X			X	L		X		X	X
47	nF									X			Z		L	
68	nF									L			Z		L	
100	nF									L			G		Z	
220	nF														U	

Size And Values Available (NPO) 250v~3000v

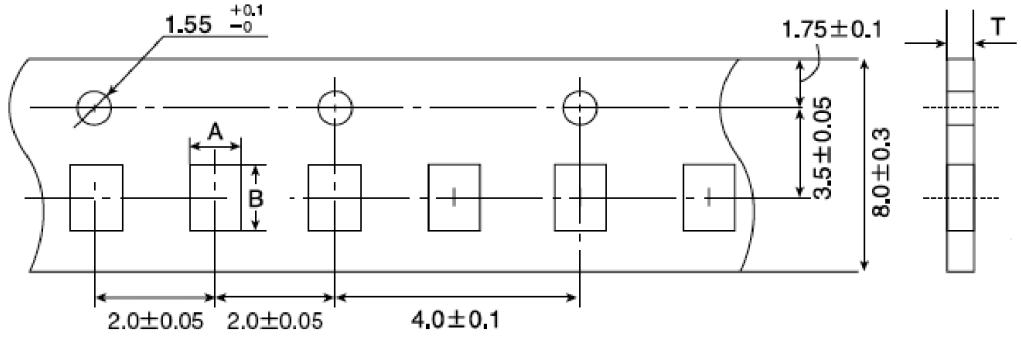
Size		0805		1206				1210					1808					1812				
(L)		2.00±0.20		3.20±0.20				3.20±0.30					4.50±0.30					4.50±0.30				
(W)		1.25±0.20		1.60±0.20				2.50±0.20					2.00±0.20					3.20±0.30				
(T)		0.80±0.10		1.65±0.20				1.65±0.20					2.00±0.20					2.00±0.20				
(t)		0.30~0.70		0.30~0.70				0.30~0.70					0.35~1.00					0.35~1.00				
Cap./ W.V.		250	500	250	500	1KV	2KV	250	500	1KV	2KV	3KV	250	500	1KV	2KV	3KV	250	500	1KV	2KV	3KV
10	pF	A	A	H	H	L	L			L	L	L			F	F	F			L	L	L
12	pF	A	A	H	H	L	L			L	L	L			F	F	F			L	L	L
15	pF	A	A	H	H	L	L			L	L	L			F	F	F			L	L	L
18	pF	A	A	H	H	L	L			L	L	L			F	F	F			L	L	L
22	pF	A	A	H	H	L	L			L	L	L			F	F	F			L	L	L
27	pF	A	A	H	H	L	L			L	L	L			F	F	F			L	L	L
33	pF	A	A	H	H	L	L			L	L	L			F	F	F			L	L	L
39	pF	A	A	H	H	L	L			L	L	L			F	F	F			L	L	L
47	pF	A	A	H	H	L	L			L	L	L			F	F	F			L	L	L
56	pF	A	A	H	H	L	L			L	L	L			F	F	F			L	L	L
68	pF	A	A	H	H	L	L			L	L	L			F	F	F			L	L	L
82	pF	A	H	H	H	L	L			L	L	L			F	F	F			L	L	L
100	pF	H	H	H	H	L	L			L	L	L			F	F	F			L	L	L
120	pF	H	X	H	H	L	L			L	L	L			F	F	F			L	L	L
150	pF	X	X	H	H	L	L			L	L	L			F	F	F			L	L	L
180	pF	X	X	H	H	L	L			L	L	L			F	F	F			L	L	L
220	pF	X	X	H	H	L	L			L	L	L			L	L	L			L	L	L
270	pF	X	X	C	C	L	L			L	L	L			L	L	L			L	L	L
330	pF	X	X	C	C	L				L	L				L	L	L			L	L	L
390	pF	X	X	C	C	L				L	L				Z	Z				L	L	Z
470	pF			C	C	L				L	L				Z	Z				L	L	
560	pF			X	X	L				L	L				Z	Z				L	L	
680	pF			X	X	L				L					Z					L	L	
820	pF			L	L	L				L					Z					L	L	
1000	pF			L	L	L		X	X	L					Z			X	X	L	L	
1200	pF							X	X						Z			X	X	L	L	
1500	pF							X	X									X	X	L		
1800	pF							X	X									X	X	L		
2200	pF							X										X	X	L		
2700	pF							X										X	X			
3300	pF																	X	X			
3900	pF																					
4700	pF																					
5600	pF																					
6800	pF																					
8200	pF																					

HITANO MLCC THICKNESS CODE TABLE

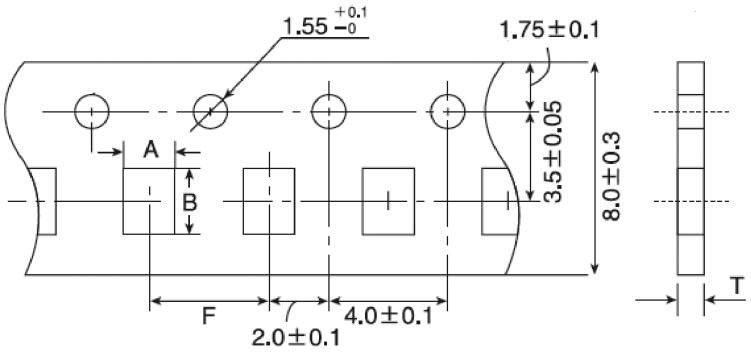
Thickness Code	Chip Size	Chip Thickness	Max Tape Thickness	Q'ty of carboard tape in		Q'ty of Embosses tape in	
				7" reel	13" reel	7" reel	13" reel
S	0402	0.50±0.05 mm	0.60 mm	10,000	50,000	--	--
P	0603	0.80±0.10 mm	0.95 mm	4,000	15,000	--	--
A	0805	0.60±0.10 mm	0.75 mm	4,000	15,000	--	--
H		0.85±0.10 mm	0.95 mm	4,000	15,000	--	--
X		1.25±0.10 mm	1.80 mm	--	--	3,000	10,000
H	1206	0.85±0.10 mm	0.90 mm	4,000	15,000	--	--
C		0.95±0.10 mm	1.80 mm			3,000	10,000
X		1.25±0.10 mm	1.80 mm	--	--	3,000	10,000
L		1.65±0.20 mm	1.80 mm	--	--	2,000	--
C	1210	0.95±0.10 mm	1.80 mm			3,000	10,000
X		1.25±0.10 mm	1.80 mm	--	--	3,000	--
L		1.65±0.20 mm	1.80 mm	--	--	2,000	--
Z		2.00±0.20 mm	2.20 mm	--	--	2,000	--
G		2.50±0.20 mm	2.75 mm	--	--	1,000	--
F	1808	1.40±0.20 mm	1.80 mm	--	--	2,000	--
L		1.65±0.20 mm	1.80 mm	--	--	2,000	--
Z		2.00±0.20 mm	2.20 mm	--	--	1,000	--
X	1812	1.25±0.20 mm	1.80 mm	--	--	1,000	--
L		1.65±0.20 mm	1.80 mm			1,000	
Z		2.00±0.20 mm	2.20 mm	--	--	1,000	--
G		2.50±0.20 mm	2.75 mm	--	--	500	--
N		2.80±0.30 mm	3.00 mm	--	--	500	--
Z	2220	2.00±0.20 mm	2.20 mm	--	--	1000	--
G		2.50±0.20 mm	2.75 mm	--	--	500	--

Surface Mount Chip Capacitors
Tape And Reel Packaging Information.
Dimension Of Paper Tape

Chip Size 0402



Chip Size 0603 0805 1206



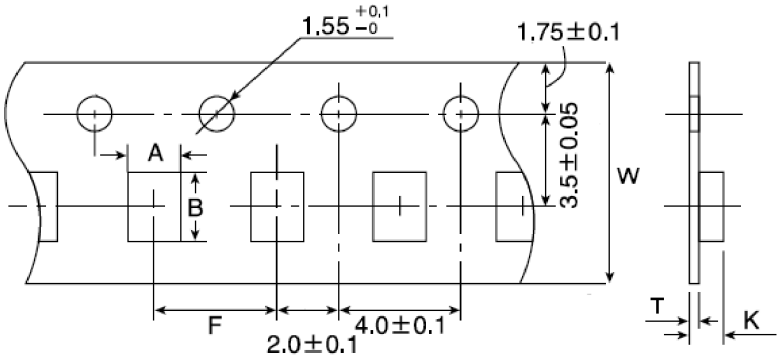
Unit: m/m

Mark \ Chip size	0402	0603	0805	1206
A	0.61±0.1	1.02±0.1	1.50±0.1	2.00±0.1
B	1.10±0.1	1.82±0.1	2.30±0.1	3.50±0.1
T	0.75±0.5	0.95±0.5	0.95±0.5	0.95±0.5

Note:

(1) The top tape and bottom tape shall not protrude beyond the edges of the tape, and shall not cover sprocket holes.
(2) Cumulative tolerance of sprocket holes 10 pitch : ±0.3mm

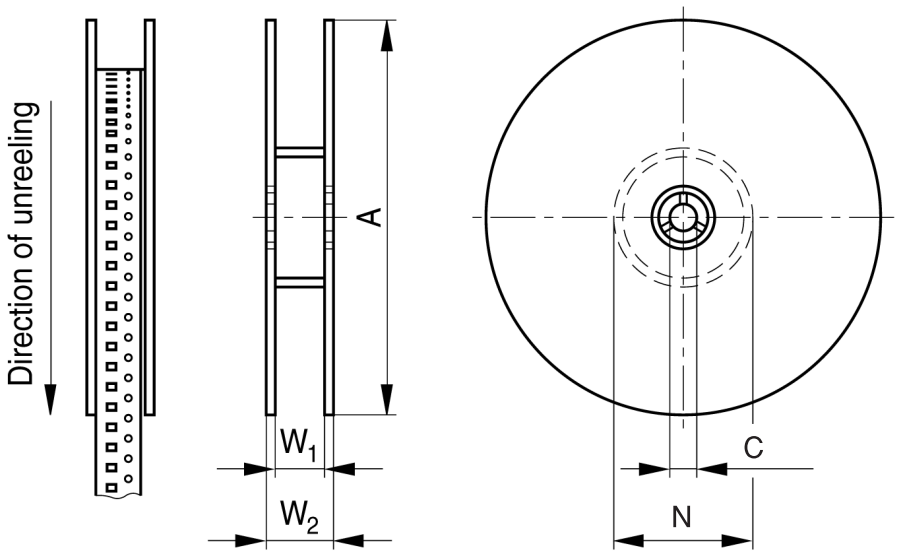
Surface Mount Chip Capacitors
Tape And Reel Packaging Information.
Dimension Of Embossed Packing (plastic Tape)



Chip size / Mark	0805	1206	1210	1808	1812	2220
A	1.65±0.2	2.00±0.2	2.80±0.2	2.40±0.2	3.60±0.2	5.50±0.3
B	2.40±0.2	3.60±0.2	3.60±0.2	4.90±0.3	4.90±0.3	6.20±0.3
K	2.50 max	2.50 max	3.00 max	2.50 max	4.00 max	4.00 max
W	8.00±0.2	8.00±0.2	8.00±0.2	12.00±0.2	12.00±0.2	12.00±0.2
F	4.00±0.1	4.00±0.1	4.00±0.1	4.00±0.1	8.00±0.1	8.00±0.1
T	0.23±0.05	0.23±0.05	0.23±0.05	0.23±0.05	0.25±0.1	0.25±0.1

Tape thickness: 0.25±0.05 mm
Emboss tape: for thickness code X,L,Z,G,N,U

Dimension of Reel.



unit: mm

Reel size	A	N	C	W1	W2
7" 0402~1210	178 ±0.5	60.5±1.0	13.0+0.5/-0.2	8.4+1.5/-0	14.4max
7" 1812~2220	178 ±0.5	60.5±1.0	13.0+0.5/-0.2	12.4+2.0/-0	16.0max
10"	250 ±0.5	100 ±1.0	13.0+0.5/-0.2	8.4+1.5/-0	14.4max
13"	330 ±0.5	100 ±1.0	13.0+0.5/-0.2	8.4+1.5/-0	14.4max