

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

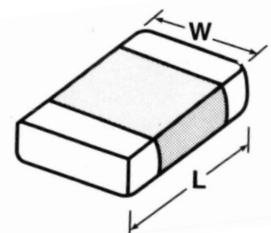
N = Nickel barrier with 100% Tin

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

The Hi-K (Y5V) dielectrics deliver high capacitance density and are ideally suited for applications where space is at a premium, or as replacement for tantalum capacitors. Typical applications include use as by-pass or decoupling elements. Best performance is obtained at or near room temperature, with low D.C. bias.

General Specification

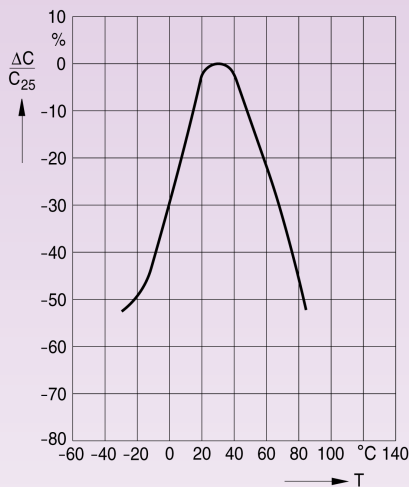
- Operating temperature range: $-30^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- Temperature coefficient: $+22\text{-}82\%$ maximum
- Capacitance Range: $10\text{nF} \sim 100\mu\text{F}$
- Capacitance Tolerance: $\pm 20\%$, $+80\text{-}20\%$ (Test condition : $C \leq 10\mu\text{F}$, $1 \pm 0.2\text{Vrms}$, 1KHz , $C > 10\mu\text{F}$, $0.5\text{V} \pm 0.2\text{Vrms}$, 120Hz)
- Rated Voltage: 6.3VDC , 10VDC , 16VDC , 25VDC , 50VDC
- Dissipation Factor: 5% Max(50V), 7% Max($16/25\text{V}$), 10% Max($10/6.3\text{V}$) (Test condition: same as Capacitance)

EXCEPTION : see details at <http://www.hitano.com.tw/pdf/MLCCApproval.pdf>

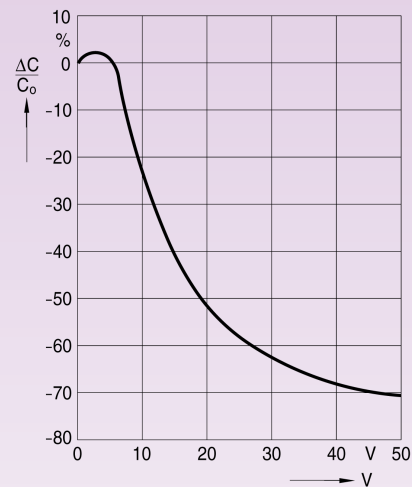
- Insulation resistance: $10,000\text{ MW}$ or 100 W-F min, whichever is less. (Test condition: rated voltage applied at 25°C)
- Dielectric strength : $>250\%$ of Rated Voltage, duration $1 \sim 5$ seconds, Charging and discharging current less than 50mA .

Characteristics

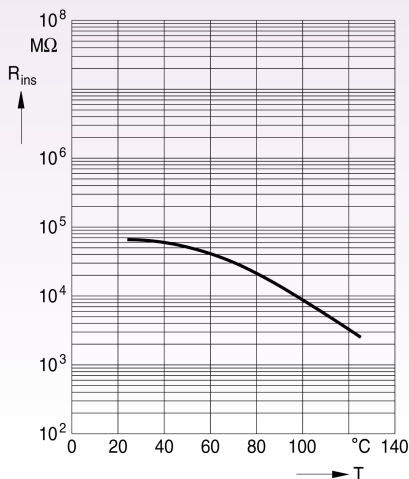
Capacitance change $\Delta C/C_{25}$ versus temperature T



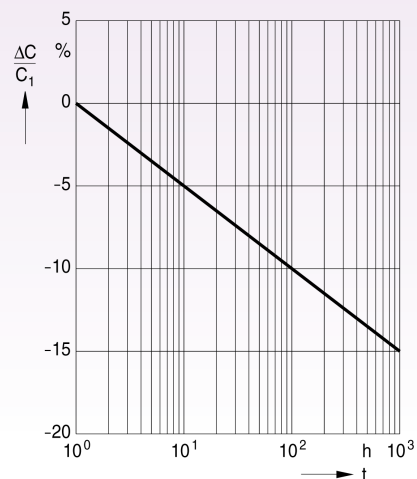
Capacitance change $\Delta C/C_0$ versus superimposed dc voltage V



Insulation resistance R_{ins} versus Temperature T



Capacitance change $\Delta C/C_1$ versus time (aging rate)



Size And Values Available (Y5V)

Size		0402			0603					0805					1206					1210				1812			
(L)	mm	1.00±0.05			1.600±0.10					2.00±0.20					3.20±0.20					3.20±0.30				4.50±0.30			
(W)	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)	mm	0.50±0.05			0.80±0.12					1.25±0.20					1.65±0.20					2.00±0.20				2.50±0.20			
(t)	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			
Cap.//	W.V.	6.3	10	16	6.3	10	16	25	50	6.3	10	16	25	50	6.3	10	16	25	50	6.3	10	16	25	10	16	25	50
10	nF			S					P					A					H								
15	nF			S					P					A					H								
22	nF			S					P					A					H								
33	nF			S					P					A					H								
47	nF			S					P					A					H								
68	nF			S					P					A					H								
100	nF			S					P				A	A					H								
150	nF							P	P				A	A					H								
220	nF		S				P	P	P				A	A					H								
330	nF		S				P	P					H	H					H								
470	nF	S	S			P	P	P				H	H	H					H								
680	nF	S				P	P					X	X	X					H	X							
1.0	uF	S				P	P					X	X	X					X	X							
2.2	uF				P	P					X	X	X					X	X	X							
3.3	uF				P						X	X						X	X								
4.7	uF				P						X	X						X	X								
10	uF									X	X							H/X	L			Z	X	L			G
22	uF									X							L	L			Z	Z				G	G
47	uF																L				Z	Z			G	G	
100	uF																				G				G		

Thickness Code: Standard Packing Q'ty per reel

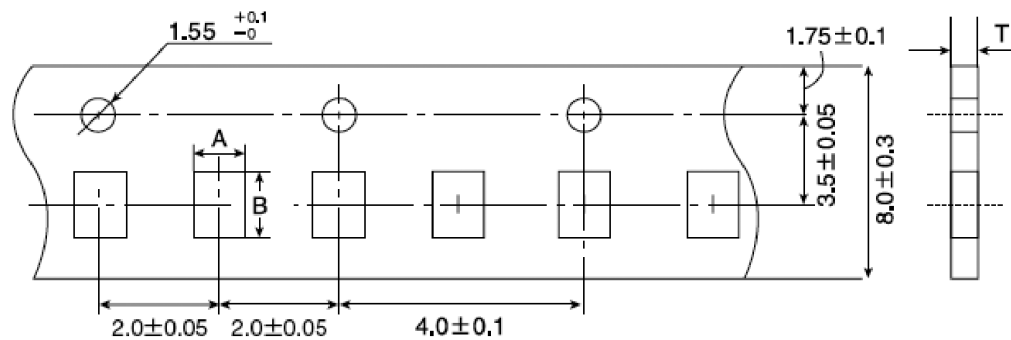
Thickness Code	Chip Size	Chip Thickness	Max Tape Thickness	Q'ty of carboard tape in		Q'ty of Embosses tape in	
				7" reel	13" reel	7" reel	13" reel
S	0402	0.50±0.05 mm	0.60 mm	10,000	50,000	--	--
P	0603	0.80±0.10 mm	0.95 mm	4,000	15,000	--	--
A	0805	0.60±0.10 mm	0.75 mm	4,000	15,000	--	--
H		0.85±0.10 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	--	--	2,000	--
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		1.40±0.20 mm	1.80 mm	--	--	2,000	--
L	1808	1.65±0.20 mm	1.80 mm	--	--	2,000	--
Z		2.00±0.20 mm	2.20 mm	--	--	2,000	--
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	--	--	500	--
G		2.50±0.20 mm	2.75 mm	--	--	500	--

HITANO MLCC THICKNESS CODE TABLE

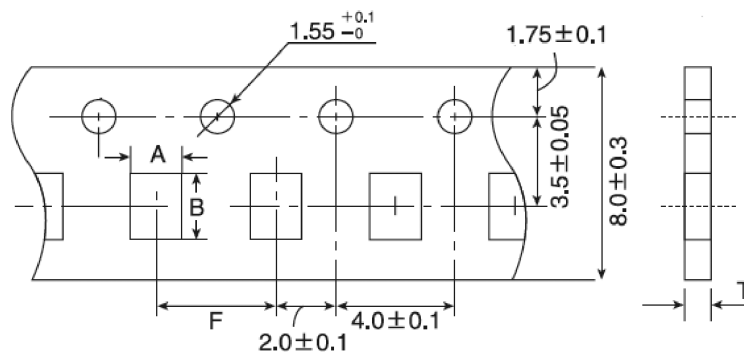
Thickness Code	Chip Size	Chip Thickness	Max Tape Thickness	Q'ty of carboard tape in		Q'ty of Embosses tape in	
				7" reel	13" reel	7" reel	13" reel
S	0402	0.50±0.05 mm	0.60 mm	10,000	50,000	--	--
P	0603	0.80±0.10 mm	0.95 mm	4,000	15,000	--	--
A	0805	0.60±0.10 mm	0.75 mm	4,000	15,000	--	--
H		0.85±0.10 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



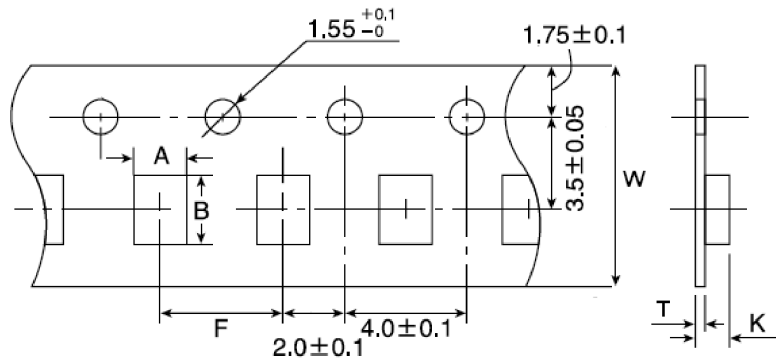
Unit: m/m

Chip size / Mark	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)

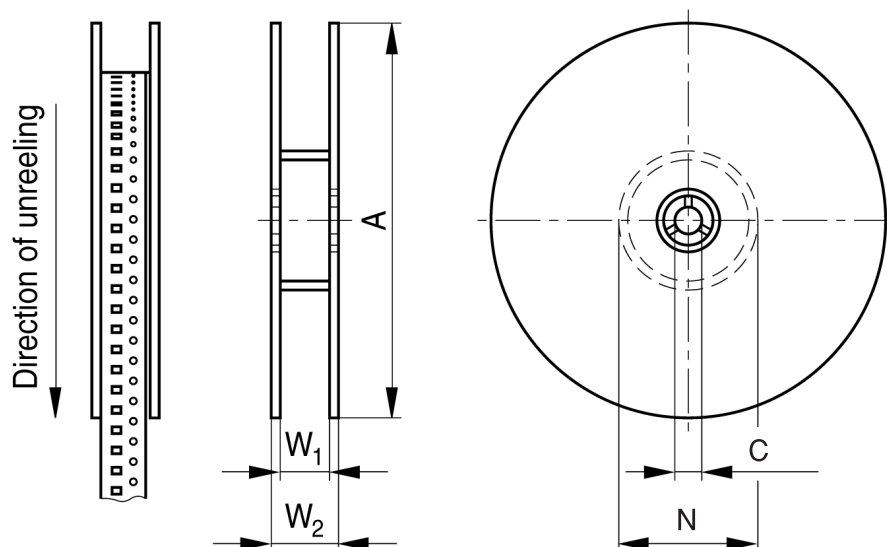


Chip size Mark	0805	1206	1210	1808	1812	2220
A	1.65±0.2	2.00±0.2	2.80±0.2	2.40±0.2	3.60±0.2	5.50±0.3
B	2.40±0.2	3.60±0.2	3.60±0.2	4.90±0.3	4.90±0.3	6.20±0.3
K	2.50 max	2.50 max	3.00 max	2.50 max	4.00 max	4.00 max
W	8.00±0.2	8.00±0.2	8.00±0.2	12.00±0.2	12.00±0.2	12.00±0.2
F	4.00±0.1	4.00±0.1	4.00±0.1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