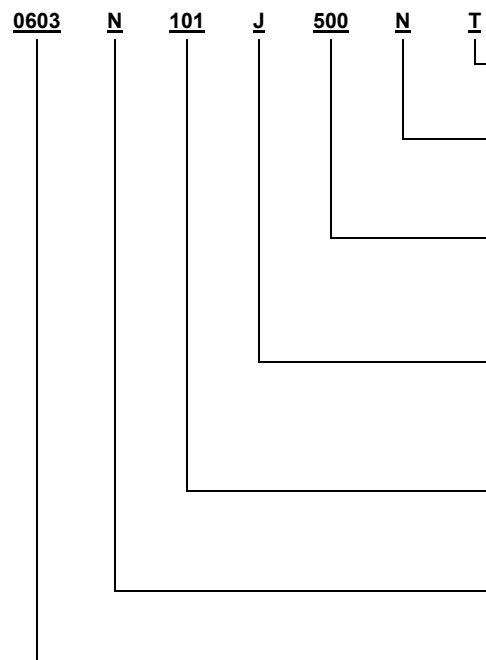


Multilayer Ceramic Chip Capacitors Products – NPO, X7R, Y5V

HOW TO ORDER



此商品编号的参数规格是： 1812B104K101NT/1812
100nF

Packaging Code

T = 7" reel/paper tape

B = Bulk

Termination

N = Ag/Ni/SnPb

L = Ag/Ni/Sn

B = Cu/Ni/SnPb

C = Cu/Ni/Sn

Voltage (VDCW)

100 = 10V 500 = 50V 251 = 250V
160 = 16V 101 = 100V 501 = 500V
250 = 25V 201 = 200V 102 = 1000V

Capacitance Tolerance (EIA Code)

B = $\pm 0.1\text{pF}$ F = $\pm 1\%$ K = $\pm 10\%$
C = $\pm 0.25\text{pF}$ G = $\pm 2\%$ M = $\pm 20\%$
D = $\pm 0.50\text{pF}$ J = $\pm 5\%$ Z = -20+80%

Capacitance

Two significant digits followed by # of zeros
(e.g. 101 = 100pF, 102 = 1000pF, 103 = 10nF)

Dielectric

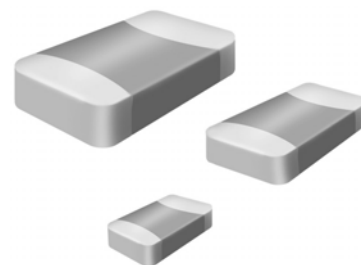
N = COG (NPO)

B = X7R

F = Y5V

Size Code

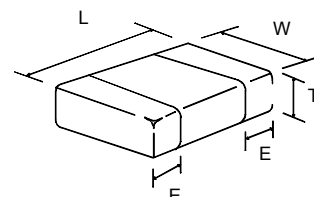
0402 0805 1210 1812
0603 1206 1804



APPLICATIONS

- * LC and RC tuned circuit
- * Filtering, Timing, & Blocking
- * Coupling & Bypassing
- * Frequency discriminating
- * Decoupling

SCHEMATIC



NPO

X7R

Y5V

- * Ultra-stable
- * Low dissipation factor
- * Tight tolerance available
- * Good frequency performance
- * No aging of capacitance

- * Semi-stable High K
- * High volumetric efficiency
- * Highly reliable in high temp. applications
- * High insulation resistance

- * High volumetric efficiency
- * Non-polar construction
- * General purpose, High K

DIMENSIONS

Size	0402	0603	0805	1206	1210	1808	<u>1812</u>
Length (L)	.040 $\pm$ 0.0002	0.063 $\pm$ 0.004	0.080 $\pm$ 0.006	0.125 $\pm$ 0.006	0.125 $\pm$ 0.012	0.180 $\pm$ 0.015	0.180 $\pm$ 0.015
	1.00 $\pm$ 0.05	1.60 $\pm$ 0.10	2.00 $\pm$ 0.15	3.20 $\pm$ 0.15	3.20 $\pm$ 0.30	4.50 $\pm$ 0.40	4.50 $\pm$ 0.40
Width (W)	0.020 $\pm$ 0.002	0.03 $\pm$ 0.004	0.050 $\pm$ 0.006	0.063 $\pm$ 0.006	0.100 $\pm$ 0.008	0.081 $\pm$ 0.010	0.125 $\pm$ 0.012
	0.50 $\pm$ 0.05	0.80 $\pm$ 0.07	1.25 $\pm$ 0.15	1.60 $\pm$ 0.15	2.50 $\pm$ 0.20	2.03 $\pm$ 0.25	3.20 $\pm$ 0.30
Termination (E)	.010 $\pm$.002/- .004	0.015 $\pm$ 0.006	0.020 $\pm$ 0.008	0.025 $\pm$ 0.008	0.030 $\pm$ 0.010	0.030 $\pm$ 0.010	0.030 $\pm$ 0.010
	0.25 $\pm$ 0.05/-0.10	0.40 $\pm$ 0.15	0.50 $\pm$ 0.20	0.60 $\pm$ 0.20	0.75 $\pm$ 0.25	0.75 $\pm$ 0.25	0.75 $\pm$ 0.25

ELECTRICAL RATING

Dielectric	NPO (COG)	<u>X7R (BME)</u>	Y5V
Capacitance Range	0.5pF ~ 10nF	100pF ~ 1 μ F	10nF ~ 10 μ F
Capacitance Tolerance	$\pm 0.1\text{pF}$, $\pm 0.25\text{pF}$, $\pm 0.50\text{pF}$ $\pm 1\%$, $\pm 2\%$, $\pm 5\%$, $\pm 10\%$	$\pm 5\%$, $\pm 10\%$, $\pm 20\%$	$\pm 20\%$, -20+80%
Dissipation Factor	>30pF, 0.1% Max	6.3V: 5.0% 10V & 16V: 3.5% 25V & 50V: 2.5%	6.3V: 5.0% 10V & 16V: 3.5% 25V & 50V: 2.5%
T.C.C.	0 $\pm$ 30ppm/ $^{\circ}$ C	0 $\pm$ 15ppm/ $^{\circ}$ C	+30%/-80ppm/ $^{\circ}$ C
Test Parameters (@25 $^{\circ}$ C)	$\leq 100\text{pF}$ 1.0 $\pm$ 0.2Vrms, 1MHz $\pm 10\%$ >1000pF 1.0 $\pm$ 0.2Vrms, 1KHz $\pm 10\%$	1.0 $\pm$ 0.2Vrms, 1KHz $\pm 10\%$	1.0 $\pm$ 0.2Vrms, 1KHz $\pm 10\%$
Operating Temperature	-55 ~ +125 $^{\circ}$ C @ 25 $^{\circ}$ C	-55 ~ +125 $^{\circ}$ C @ 25 $^{\circ}$ C	-25 ~ +85 $^{\circ}$ C @ 20 $^{\circ}$ C
Insulation Resistance	+25 $^{\circ}$ C, 10G Ω min or 500 Ω -F min, whichever is less	+25 $^{\circ}$ C, 10G Ω min or 500 Ω -F min, whichever is less	+25 $^{\circ}$ C, 10G Ω min or 500 Ω -F min, whichever is less

MLCC Products – X7R Type

100 Volts – 3000 Volts

DIELECTRIC		X7R																										
EIA	SIZE	0603	0805					1206							1210					1812						1808		
CODE	VDCW	100	100	200	250	500	100	200	250	500	1000	1000	2000	100	200	250	500	1000	100	200	250	500	1000	2000	1000	1500	3000	
101	100pF	S	B	B	B	B																						
121	120	S	B	B	B	B																						
151	150	S	B	B	B	B																						
181	180	S	B	B	B	B	B	B	B	B	B	B	B															
221	220	S	B	B	B	B	B	B	B	B	B	B	B															
271	270	S	B	B	B	B	B	B	B	B	B	B	B															
331	330	S	B	B	B	B	B	B	B	B	B	B	B															
391	390	S	B	B	B	B	B	B	B	B	B	B	B															
471	470	S	B	B	B	B	B	B	B	B	B	B	B										D	D	C	C	C	
561	560	S	B	B	B	B	B	B	B	B	B	B	C										D	D	C	C	C	
681	680	S	B	B	B	B	B	B	B	B	B	B	C										D	D	C	C	C	
821	820	S	B	B	B	B	B	B	B	B	B	G	G										D	D	C	C	C	
102	1000pF	S	B	B	B	B	B	B	B	B	B	G	G	C	C	C	C	C	D	D	D	D	D	D	C	C	K	
122	1200	S	B	B	B	B	B	B	B	B	B	G	G	C	C	C	C	C	D	D	D	D	D	D	C	C	K	
152	1500	S	B	B	B	B	B	B	B	B	B	G		C	C	C	C	C	D	D	D	D	D	D	C	C		
182	1800	S	B	B	B	B	B	B	B	B	B	G		C	C	C	C	C	D	D	D	D	D	D	C	C		
222	2200	S	B	B	B	B	B	B	B	B	C	G		C	C	C	C	C	D	D	D	D	D	D	C	C		
272	2700	S	B	B	B		B	B	B	B	D	G		C	C	C	C	C	D	D	D	D	D	D	C	D		
332	3300	S	B	B	B		B	B	B	B	G	G		C	C	C	C	D	D	D	D	D	D	D	C	D		
392	3900	S	B	B	B		B	B	B	B	G	G		C	C	C	C		D	D	D	D	D	D	C			
472	4700	S	B	B	B		B	B	B	B	G	G		C	C	C	C		D	D	D	D	D	D	C			
562	5600	S	B				B	B	B	B	G			C	C	C	C		D	D	D	D	D	D	C			
682	6800	S	B				B	B	B	B	G			C	C	C	C		D	D	D	D	D	D	C			
822	8200	S	B				B	B	B	C				C	C	C	C		D	D	D	D	D	D				
103	.010μF	S	B				B	B	B	C				C	C	C	C		D	D	D	D	D	D				
123	.012	S	B				B	B	B					C	C	C	C		D	D	D	D						
153	.015	S	B				B	C	C					C	C	C	C		D	D	D	D						
183	.018		B				B	C	C					C	C	C	C		D	D	D	D						
223	.022						B	C	C					C	C	C	D		D	D	D	D						
273	.027						B	C	C					C	C	C			D	D	D	D						
333	.033						B							C	C	C			D	D	D	D						
393	0.39						B							C	C	C			D	D	D	D						
473	.047						B							C	D	D			D	D	D	D						
563	.056						B							C					D	D	D							
683	.068						C							C					D	D	D							
823	.082						C							C					D	D	D							
104	.100μF						D							C					D	D	D							
124	.120						D							C					D	D	D							
154	.150													C					D									
184	.180													C					D									
224	.220													C					D									
334	.330																		D									
474	.470																		D									
684	.680																											
824	.820																											
105	1.00μF																											

* Variations of size, capacitance, voltage, and 13" reel are available upon request.

TAPE/REEL PACKAGE TYPE, QUANTITY, AND AVAILABILITY

Thickness in mm	0603-0805-1206		1210		1808		1812	
	Type	Quantity	Type	Quantity	Type	Quantity	Type	Quantity
A = 0.65 + 0.05/-0.15	Paper	4K/Reel						
B = 0.85 + 0.5/-0.15	Paper	4K/Reel						
C = 1.00 + 0.05/-0.15	Plastic	3K/Reel	Plastic	3K/Reel	Plastic	3K/Reel		
D = 1.2 + 0.15	Plastic	3K/Reel	Plastic	3K/Reel	Plastic	3K/Reel	Plastic	1K/Reel
F = 1.40 + 0.05/-0.15	Plastic	2K/Reel	Plastic	2K/Reel	Plastic	1K/Reel	Plastic	1K/Reel
G = 1.60 + 0.05/-0.15	Plastic	2K/Reel	Plastic	2K/Reel	Plastic	1K/Reel	Plastic	1K/Reel
K = 2.00 ± 0.2					Plastic	1K/Reel	Plastic	1K/Reel
S = 0.8 + 0.07								
N = 0.5 ± 0.05								

MLCC Products – Y5V Type

10 Volts – 50 Volts

DIELECTRIC		Y5V																							
EIA Cap Code	SIZE	0402				0603				0805				1206				1210				1812			
	VDCW	10	16	25	50	10	16	25	50	10	16	25	50	10	16	25	50	10	16	25	50	10	16	25	50
103	.010μF	N	N	N		S	S	S	S	A	A	A	A	B	B	B	B								
123	.012	N	N	N		S	S	S	S	A	A	A	A	B	B	B	B								
153	.015	N	N	N		S	S	S	S	A	A	A	A	B	B	B	B								
183	.018	N	N	N		S	S	S	S	A	A	A	A	B	B	B	B								
223	.022	N	N	N		S	S	S	S	A	A	A	A	B	B	B	B								
273	.027	N	N	N		S	S	S	S	A	A	A	A	B	B	B	B								
333	.033	N	N	N		S	S	S	S	A	A	A	A	B	B	B	B								
393	.039	N	N	N		S	S	S	S	A	A	A	A	B	B	B	B								
473	.047	N	N	N		S	S	S	S	A	A	A	A	B	B	B	B								
563	.056	N	N			S	S	S	S	A	A	A	A	B	B	B	B								
683	.068	N	N			S	S	S	S	A	A	A	A	B	B	B	B								
823	.082	N	N			S	S	S	S	A	A	A	A	B	B	B	B								
104	.100μF	N	N			S	S	S	S	A	A	A	A	B	B	B	B	C	C	C	C	D	D	D	D
154	.150					S	S	S	S	A	A	A	A	B	B	B	B	C	C	C	C	D	D	D	D
224	.220					S	S	S		A	A	A	A	B	B	B	B	C	C	C	C	D	D	D	D
334	.330					S	S			B	B	B		B	B	B	B	C	C	C	C	D	D	D	D
474	.470					S	S			B	B	B		B	B	B	B	C	C	C		D	D	D	D
684	.680					S				B	B			B	B	B		C	C	C		D	D	D	D
105	1.00μF					S				B	B			C	C	C		C	C	C		D	D	D	D
155	1.50													C	C	C									
225	2.20													C	C	C									
335	3.30													D	D	D									
475	4.75													D	D	D									
106	10μF																								

* Variations of size, capacitance, voltage, and 13" reel are available upon request.

100 Volts – 500 Volts

DIELECTRIC		Y5V											
EIA Cap Code	SIZE	0805				1206				1812			
	VDCW	100	200	250	500	100	200	250	500	100	200	250	500
103	.010μF	B				B	B	B	B				
123	.012	B				B	B	B	B				
153	.015	B				B	B	B	B				
183	.018	B				B	B	B	B				
223	.022	B				B	B	B	B				
273	.027	B				B	B	B	B				
333	.033	B				B	B	B	B				
393	.039	B				B	B	B	B				
473	.047	B				B	B	B					
563	.056	B				B	B	B					
683	.068	B				B	B	B					
823	.082	B				C	C	C					
104	.100μF	B				C	C	C		D	D	D	
154	.150					C				D	D	D	
224	.220					C				D	D	D	
334	.330									D	D	D	
474	.470									D	D	D	

* Variations of size, capacitance, voltage, and 13" reel are available upon request.

TAPE/REEL PACKAGE TYPE, QUANTITY, AND AVAILABILITY

Thickness in mm	0402 – 0603		0805 – 1206		1210		1808		1812	
	Type	Quantity	Type	Quantity	Type	Quantity	Type	Quantity	Type	Quantity
A = 0.65 + 0.05/-0.15			Paper	4K/Reel						
B = 0.85 + 0.5/-0.15			Paper	4K/Reel						
C = 1.00 + 0.05/-0.15			Plastic	3K/Reel	Plastic	3K/Reel	Plastic	3K/Reel		
D = 1.2 + 0.15			Plastic	3K/Reel	Plastic	3K/Reel	Plastic	3K/Reel	Plastic	1K/Reel
F = 1.40 + 0.05/-0.15			Plastic	2K/Reel	Plastic	2K/Reel	Plastic	1K/Reel	Plastic	1K/Reel
G = 1.60 + 0.05/-0.15			Plastic	2K/Reel	Plastic	2K/Reel	Plastic	1K/Reel	Plastic	1K/Reel
K = 2.00+0.2mm									Plastic	1K/Reel
S = 0.8 + 0.07	Paper	4K/Reel								
N = 0.5 + 0.05	Paper	10K/Reel								

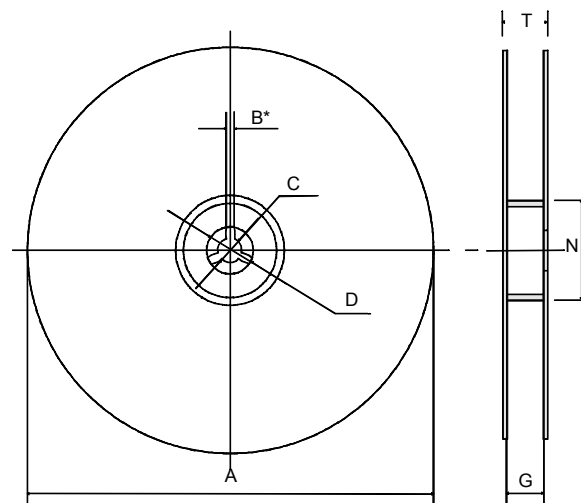
MLCC Products – Packaging

PACKAGING ON TAPE AND REEL

Size	T (mm)	Tape	Quantity
0603	0.90~0.70	Paper Tape	4,000/Reel
0805	0.70~0.50	Paper Tape	4,000/Reel
	0.90~0.70	Paper Tape	4,000/Reel
	1.05~0.85	Plastic Tape	3,000/Reel
	1.35~1.05	Plastic Tape	3,000/Reel
1206	0.90~0.70	Paper Tape	4,000/Reel
	1.05~0.85	Plastic Tape	3,000/Reel
	1.35~1.05	Plastic Tape	3,000/Reel
1210	1.05~0.85	Plastic Tape	3,000/Reel
	1.35~1.05	Plastic Tape	3,000/Reel
1808	1.05~0.85	Plastic Tape	3,000/Reel
	2.15~1.85	Plastic Tape	1,000/Reel
1812	1.35~1.05	Plastic Tape	1,000/Reel

REEL FOR TAPING

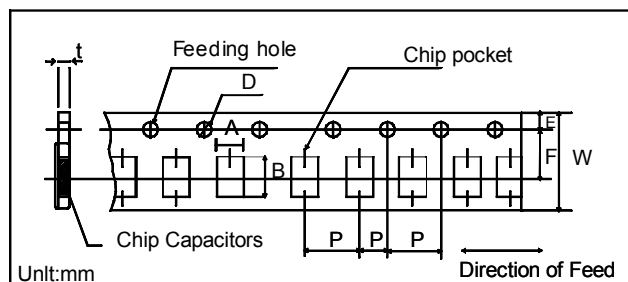
Taping is in accordance with EIA RS-481 or IEC 286-3



Unit: mm

Symbol	A	N	C	D	B	G	T
Dimension	178 ± 2.0	50 min	130 ± 0.5	20 min.	2.0 ± 0.5	10.0 ± 1.5	14.9max

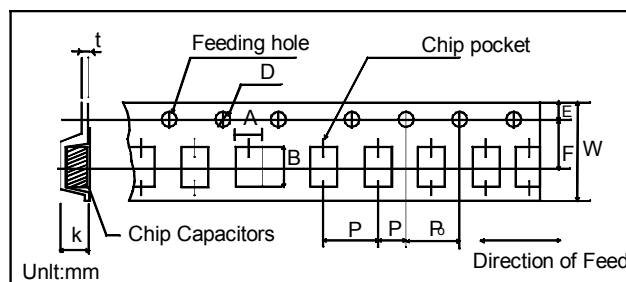
1. PAPER TAPE DIMENSIONS



PAPER TAPE

	Dimensions in mm
W	8.0 ± 0.3
F	3.5 ± 0.05
E	1.75 ± 0.1
P ₁	4.0 ± 0.1
P ₂	2.0 ± 0.05
P ₀	4.0 ± 0.1
ØP	$1.5 + 0.1 - 0$
t ₁	1.2 maximum

2. PLASTIC TAPE DIMENSIONS



PLASTIC TAPE

	Dimension in mm
W	8.0 ± 0.3
F	3.5 ± 0.05
E	1.75 ± 0.1
P ₁	4.0 ± 0.1
P ₂	2.0 ± 0.05
P ₀	4.0 ± 0.1
ØP	$1.5 + 0.1 - 0$
t ₁	0.3 maximum
K	2.0 maximum