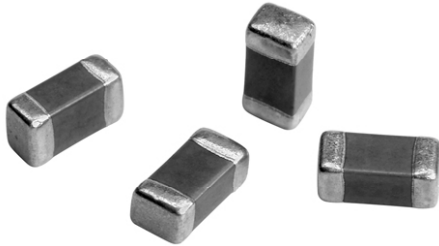


Surface Mount Multilayer Ceramic Chip Capacitors for Commodity Applications



FEATURES

- Ultra stable class 1 dielectric
- Four standard sizes
- High capacitance per unit volume
- Supplied in tape on reel
- For high frequency applications
- Ni-barrier with 100 % tin terminations
- Dry sheet manufacturing technology
- Halogen-free according to IEC 61249-2-21 definition
- Compliant to RoHS directive 2002/95/EC



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- Consumer electronics
- Telecommunications
- Data processing

ELECTRICAL SPECIFICATIONS

Note:

Electrical characteristics at + 25 °C unless otherwise specified

Operating Temperature: - 55 °C to + 125 °C

Capacitance Range: 0.5 pF to 0.039 μF

Voltage Range: 10 Vdc to 100 Vdc

Temperature Coefficient of Capacitance (TCC):

0 ± 30 ppm/°C from - 55 °C to + 125 °C

Dissipation Factor (DF):

Cap. < 30 pF: Q 400 + 20C

Cap. ≥ 30 pF: Q ≥ 1000

Test Conditions:

Cap. ≤ 1000 pF 1.0 ± 0.2 V_{rms}, 1 MHz ± 10 %

Cap. > 1000 pF 1.0 ± 0.2 V_{rms}, 1 kHz ± 10 %

Aging Rate: 0 % maximum per decade

Insulation Resistance (IR): after 120 s at U_R (DC):

10 GΩ or 500 ΩF whichever is less

Dielectric Strength Test:

This is the maximum voltage the capacitors are tested 1 s to 5 s period and the charge/discharge current does not exceed 50 mA

≤ 100 Vdc: 250 % of rated voltage

ORDERING INFORMATION							
VJ0402	A	101	J	X	Q	C	W1BC
SIZE CODE	DIELECTRIC	CAPACITANCE	TOLERANCE	TERMINATION	VOLTAGE	PACKAGING	PROCESS CODE FOR BASIC COMMODITY
0402 0603 0805 1206	A = C0G (NP0)	Two significant digits followed by the number of zeros: 101 = 100 pF 102 = 1000 pF 152 = 1500 pF 103 = 10 000 pF	Cap. < 10 pF B = ± 0.10 pF C = ± 0.25 pF D = ± 0.50 pF Cap. ≥ 10 pF F = ± 1 % G = ± 2 % J = ± 5 % K = ± 10 %	X = Ni Barrier	Q = 10 V J = 16 V X = 25 V A = 50 V B = 100 V	C = 7" reel/ paper tape P = 13" reel/ paper tape T = 7" reel/ plastic tape R = 13" reel/ plastic tape	

VJ....W1BC C0G (NP0) Dielectric



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SELECTION CHART																					
DIELECTRIC		NP0																			
EIA CAP. CODE	EIA SIZE CAP.	0402					0603					0805					1206				
		10 V	16 V	25 V	50 V	100 V	10 V	16 V	25 V	50 V	100 V	10 V	16 V	25 V	50 V	100 V	10 V	16 V	25 V	50 V	100 V
0R5	0.5 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A					
1R0	1.0 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A					
1R2	1.2 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A					
1R5	1.5 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
1R8	1.8 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
2R2	2.2 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
2R7	2.7 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
3R3	3.3 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
3R9	3.9 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
4R7	4.7 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
5R6	5.6 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
6R8	6.8 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
8R2	8.2 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
100	10 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
120	12 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
150	15 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
180	18 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
220	22 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
270	27 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
330	33 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
390	39 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
470	47 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
560	56 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
680	68 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
820	82 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
101	100 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
121	120 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
151	150 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
181	180 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
221	220 pF	N	N	N	N	N	S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
271	270 pF	N	N	N			S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
331	330 pF	N	N	N			S	S	S	S	S	A	A	A	A	A	B	B	B	B	B
391	390 pF	N	N	N			S	S	S	S	S	B	B	B	B	B	B	B	B	B	B
471	470 pF	N	N	N			S	S	S	S	S	B	B	B	B	B	B	B	B	B	B
561	560 pF						S	S	S	S	S	B	B	B	B	B	B	B	B	B	B
681	680 pF						S	S	S	S	S	B	B	B	B	B	B	B	B	B	B
821	820 pF						S	S	S	S	S	B	B	B	B	B	B	B	B	B	B
102	1000 pF						S	S	S	S	S	B	B	B	B	B	B	B	B	B	B
122	1200 pF						X	X	X	X		B	B	B	B	B	B	B	B	B	B
152	1500 pF						X	X	X	X		B	B	B	B	B	B	B	B	B	B
182	1800 pF						X	X	X	X		B	B	B	B	B	B	B	B	B	B
222	2200 pF						X	X	X	X		B	B	B	B	B	B	B	B	B	B
272	2700 pF						X	X	X	X		D	D	D	D	D	B	B	B	B	B
332	3300 pF						X	X	X	X		D	D	D	D	D	B	B	B	B	B
392	3900 pF											D	D	D	D	D	B	B	B	B	B
472	4700 pF											D	D	D	D		B	B	B	B	B
562	5600 pF											D	D				B	B	B	B	B
682	6800 pF											D	D				C	C	C	C	C
822	8200 pF											D	D				D	D	D	D	D
103	0.01 μF											D	D				D	D	D	D	
123	0.012 μF											D	D				D	D			
153	0.015 μF																D	D			
183	0.018 μF																D	D			
223	0.022 μF																D	D			
273	0.027 μF																D	D			
333	0.033 μF																D	D			
393	0.039 μF																G	G			
473	0.047 μF																				
563	0.056 μF																				
683	0.068 μF																				
823	0.082 μF																				
104	0.1 μF																				

Note

• Letters indicate product thickness, see Packaging Quantities



VJ...W1BC C0G (NP0) Dielectric

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DIMENSIONS in inches [millimeters]					
	SIZE CODE	L	W	T MAX.	MB
	0402 (1002)	0.040 ± 0.002 [1.00 ± 0.05]	0.020 ± 0.002 [0.50 ± 0.05]	0.022 [0.55]	0.010 ± 0.004 [0.25 ± 0.10]
	0603 (1608)	0.063 + 0.006/- 0.004 [1.60 + 0.15/- 0.10]	0.030 ± 0.004 [0.80 ± 0.10]	0.038 [0.95]	0.012 - 0.008/+ 0.010 [0.30 - 0.20/+ 0.25]
	0805 (2012)	0.080 ± 0.008 [2.00 ± 0.20]	0.050 ± 0.008 [1.25 ± 0.20]	0.057 [1.45]	0.020 - 0.012/+ 0.008 [0.50 - 0.30/+ 0.20]
	1206 (3216)	0.126 + 0.012/- 0.008 [3.20 + 0.30/- 0.20]	0.063 + 0.012/- 0.008 [1.60 + 0.30/- 0.20]	0.075 [1.90]	0.020 ± 0.012 [0.50 ± 0.30]

STORAGE AND HANDLING CONDITIONS

- (1) To store products at 5 °C to 40 °C ambient temperature and 20 % to 70 % related humidity conditions.
- (2) The product is recommended to be used within one year after shipment. Check solderability in case of shelf life extension is needed.

Cautions:

- a. Do not store products in a corrosive environment such as sulfide, chloride gas, or acid. It may cause oxidization of electrode, which easily be resulted in poor soldering.
- b. To store products on the shelf and avoid exposure to moisture.
- c. Do not expose products to excessive shock, vibration, direct sunlight and so on.

PACKAGING QUANTITIES						
SIZE CODE (inch/mm)	MAX. THICKNESS (mm)	THICKNESS SYMBOL	PAPER TAPE		PLASTIC TAPE	
			7" reel (C)	13" reel (P)	7" reel (T)	13" reel (R)
0402 (1002)	0.55	N	10K	50K		
0603 (1608)	0.90	S	4K	15K		
	0.95	X	4K	15K		
0805 (2012)	0.75	A	4K	15K		
	0.95	B	4K	15K		
	1.40	D			3K	10K
1206 (3216)	0.95	B	4K	15K		
	1.05	C			3K	10K
	1.30	J			3K	10K
	1.35	D			3K	10K
	1.80	G			2K	
	1.80	H			2K	8K
	1.90	P			2K	

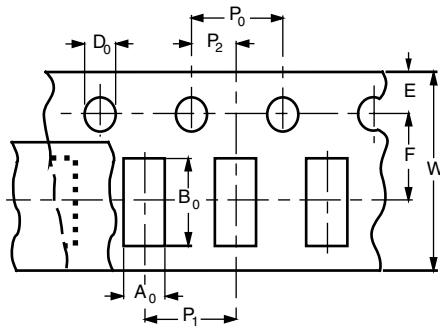
VJ....W1BC C0G (NP0) Dielectric



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PAPER TAPE SPECIFICATIONS

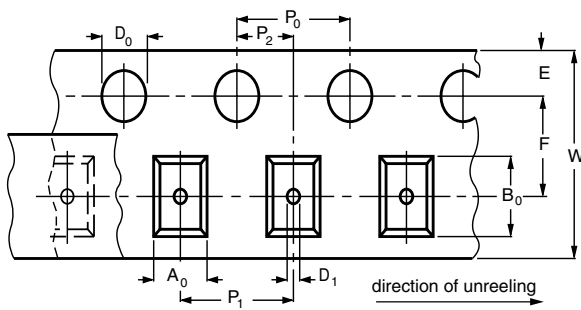


DIMENSIONS OF PAPER TAPE

in millimeters

SYM.	PRODUCT SIZE CODE			
	0402	0603	0805	1206
A_0	0.62 ± 0.05	1.02 ± 0.05	1.50 ± 0.10	2.00 ± 0.10
B_0	1.12 ± 0.05	1.82 ± 0.05	2.30 ± 0.10	3.50 ± 0.10
W	8.00 ± 0.10	8.00 ± 0.10	8.00 ± 0.10	8.00 ± 0.10
E	1.75 ± 0.05	1.75 ± 0.05	1.75 ± 0.05	1.75 ± 0.10
F	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05
D_0	1.55 ± 0.05	1.55 ± 0.05	1.55 ± 0.05	1.50 ± 0.05
P_0	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10
P_1	2.00 ± 0.05	2.00 ± 0.10	2.00 ± 0.10	4.00 ± 0.10
P_2	2.00 ± 0.05	2.00 ± 0.05	2.00 ± 0.05	2.00 ± 0.05

BLISTER TAPE SPECIFICATIONS

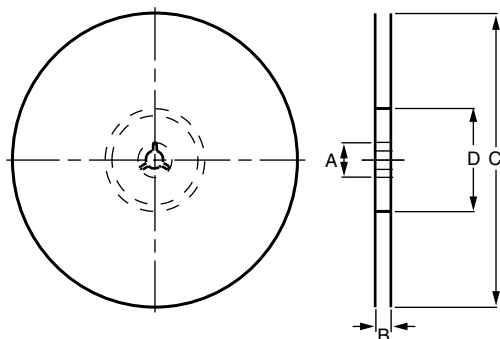


DIMENSIONS OF BLISTER TAPE

in millimeters

SYM.	PRODUCT SIZE CODE	
	0805	1206
A_0	< 1.57	< 2.00
B_0	< 2.45	< 3.70
W	8.00 ± 0.10	8.00 ± 0.10
E	1.75 ± 0.10	1.75 ± 0.10
F	3.50 ± 0.05	3.50 ± 0.05
D_0	1.50 ± 0.05	1.50 ± 0.05
D_1	1.00 ± 0.10	1.00 ± 0.10
P_0	4.00 ± 0.10	4.00 ± 0.10
P_1	4.00 ± 0.10	4.00 ± 0.10
P_2	2.00 ± 0.05	2.00 ± 0.05

REEL SPECIFICATIONS



REEL DIMENSIONS AND TAPE WIDTH

in millimeters

	$\varnothing 180 \text{ mm}; 7''$	$\varnothing 330 \text{ mm}; 13''$
A	13.0 ± 0.5	13.0 ± 0.5
B	9.0 ± 1.0	9.0 ± 1.0
C	178.0 ± 1.0	330.0 ± 1.0
D	60.0 ± 1.0	100.0 ± 1.0



Disclaimer

All product specifications and data are subject to change without notice.

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