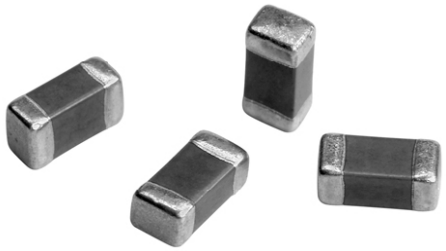
Surface Mount Multilayer Ceramic Chip Capacitors for Commodity Applications



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

RoHS COMPLIANT

APPLICATIONS

- Consumer electronics
- Telecommunications
- Data processing

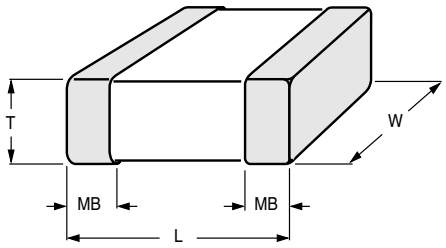
ELECTRICAL SPECIFICATIONS

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 Rating: 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 Withstand Voltage (DWV): This is the maximum voltage the capacitors are tested 1 to 5 s period and the charge/discharge current does not exceed 50 mA
≤ 50 Vdc: DWV at 250 % of rated voltage
100 Vdc: DWV at 300 % of rated voltage

DIMENSIONS in inches [millimeters]



SIZE CODE	L	W	T MAX.	MB
0402 (1002)	0.040 ± 0.002 [1.0 ± 0.05]	0.020 ± 0.002 [0.5 ± 0.05]	0.022 [0.55]	0.010 + 0.002/- 0.004 [0.25 + 0.05/- 0.10]
0603 (1608)	0.063 ± 0.004 [1.6 ± 0.10]	0.030 ± 0.004 [0.8 ± 0.10]	0.035 [0.87]	0.015 ± 0.006 [0.40 ± 0.15]
0805 (2012)	0.080 ± 0.006 [2.0 ± 0.15]	0.050 ± 0.004 [1.25 ± 0.10]	0.053 [1.35]	0.020 ± 0.008 [0.50 ± 0.20]
1206 (3216)	0.125 + 0.012/ - 0.004 [3.2 + 0.30/ - 0.10]	0.063 + 0.012/ - 0.004 [1.6 + 0.30/ - 0.10]	0.075 [1.90]	0.025 ± 0.008 [0.60 ± 0.20]

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 = COG (NP0)	Two significant digits followed by the number of zeros: 101 = 100 pF 102 = 1000 pF 152 = 1500 pF 103 = 10 000 pF	Cap. < 10pF B = ± 0.10 pF C = ± 0.25 pF D = ± 0.50 pF Cap. ≥ 10pF 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	

For technical questions, contact: MLCC@vishay.com
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SELECTION CHART

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

Letters indicate product thickness, see Packaging Quantities

PACKAGING QUANTITIES						
SIZE (inch/mm)	THICKNESS (mm)	THICKNESS SYMBOL	PAPER TAPE		PLASTIC TAPE	
			7" reel (C)	13" reel (P)	7" reel (T)	13" reel (R)
0402 (1002)	0.50 ± 0.05	N	10K	50K		
0603 (1608)	0.80 ± 0.07	S	4K	15K		
	0.80 + 0.15/- 0.10	X	4K	15K		
0805 (2012)	0.60 ± 0.10	A	4K	15K		
	0.80 ± 0.10	B	4K	15K		
	1.25 ± 0.10	D			3K	10K
1206 (3216)	0.80 ± 0.10	B	4K	15K		
	0.95 ± 0.10	C			3K	10K
	1.15 ± 0.15	J			3K	10K
	1.25 ± 0.10	D			3K	10K
	1.60 ± 0.20	G			2K	
	1.60 ± 0.30/- 0.10	P			2K	

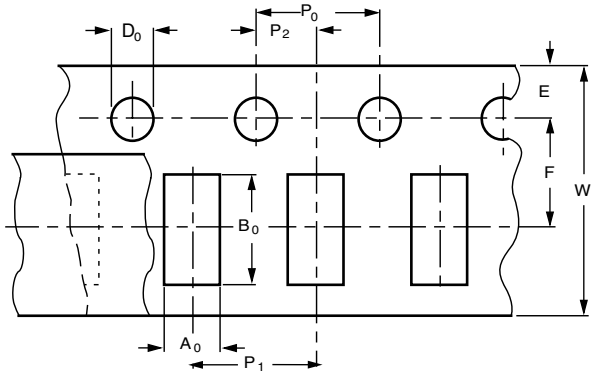
COVER TAPE (POLYESTER - ANTISTATIC)

PROPERTIES OF COVER TAPE	
PARAMETER	WIDTH
	5.5 ± 0.1 mm
Breaking force	≥ 10.7 N
Elongation at break	≥ 63 %
Surface resistance	< 10^{10} Ω/sq.
Softening point	71 ± 5 °C
Thickness	62 µm

CARRIER TAPE (POLYCARBONATE)

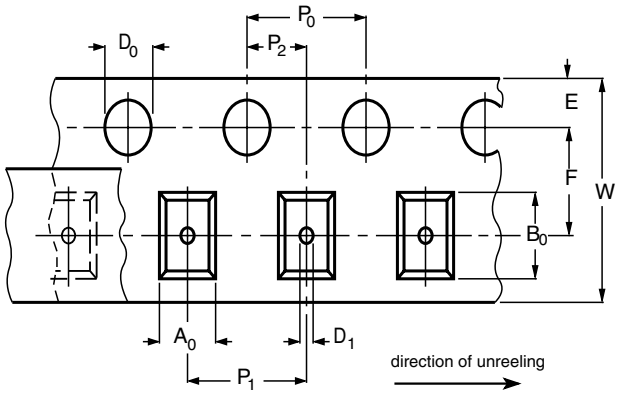
PROPERTIES OF CARRIER TAPE	
PARAMETER	WIDTH
	8.1 ± 0.2 mm
Thickness	190 to 280 µm
Tensile strength at break	> 60 N /mm^2
Elongation at break	100 to 150 %
Surface resistance	> 10^{12} Ω/sq.

PAPER TAPE SPECIFICATIONS



DIMENSIONS OF PAPER TAPE in millimeters								
SYMBOL	PRODUCT SIZE CODE							
	0402		0603		0805		1206	
	SIZE	TOL.	SIZE	TOL.	SIZE	TOL.	SIZE	TOL.
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	4.00	± 0.10	4.00	± 0.10	4.00	± 0.10
P_2	2.00	± 0.05	2.00	± 0.05	2.00	± 0.05	2.00	± 0.05

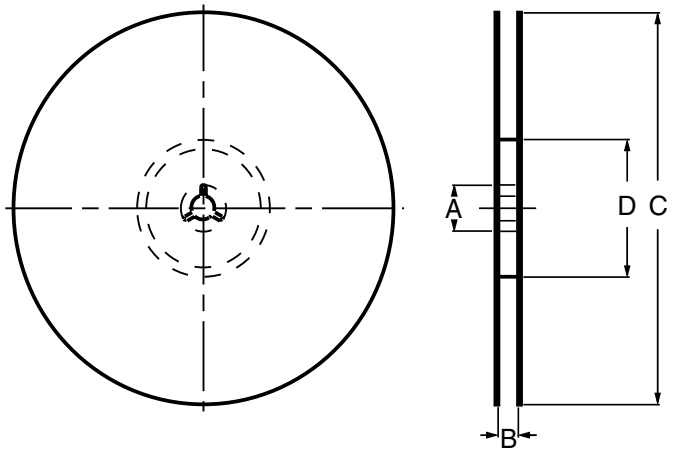
BLISTER TAPE SPECIFICATIONS



BLISTER TAPE SPECIFICATIONS

DIMENSIONS OF BLISTER TAPE in millimeters			
DIMENSION	PRODUCT		TOLERANCE
	0805	1206	
A_0	< 1.57	< 2.00	-
B_0	< 2.45	< 3.60	-
W	8.00	8.00	± 0.10
E	1.75	1.75	± 0.10
F	3.50	3.50	± 0.05
D_0	1.50	1.50	± 0.05
D_1	1.00	1.00	± 0.10
P_0	4.00	4.00	± 0.10
P_1	4.00	4.00	± 0.10
P_2	2.00	2.00	± 0.05

REEL SPECIFICATIONS



REEL DIMENSIONS AND TAPE WIDTH in millimeters		
	Ø 180 mm; 7 inch	Ø 330 mm; 13 inch
A	13.0 ± 1.0	13.0 ± 0.5
B	9.0 ± 1.0	9.0 ± 1.0
C	178.0 ± 1.0	330.0 ± 1.0
D	60.5 ± 1.0	100.0 ± 1.0

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