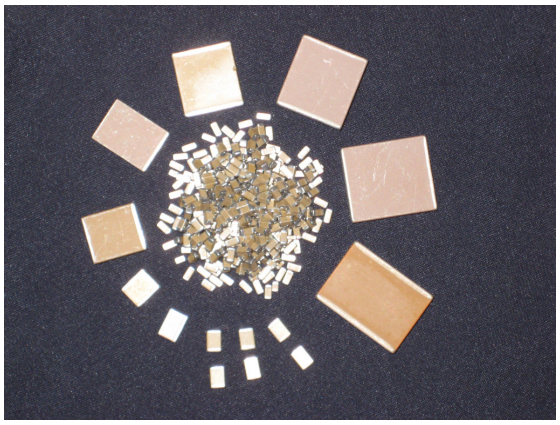
MULTILAYER CERAMIC CAPACITORS

+250°C COG / NPO – 25 Vdc to 5.0 KVdc



Eclipse NanoMed manufactures a leading edge line of Class I COG/NPO capacitors intended for operation at temperatures from -55 to +250°C. They are characterized by a near linear temperature coefficient, are non piezoelectric, exhibit low loss, no aging and negligible performance variation due to changes in working voltage and frequency.

Our proprietary dielectric material formulations achieve "best in class" dissipation factor levels, excellent volumetric efficiency and dielectric breakdown characteristics, while maintaining stable performance attributes related to variations in time, temperature, applied voltage and frequency.

Typical applications include timing circuits, RF oscillators and precision circuitry demanded by harsh environments associated with the down-hole oil industry, aerospace / automotive engine compartments and geophysical probes.

PERFORMANCE CHARACTERISTICS

Operating Temperature Range

-55 to +250°C

Temperature Coefficient

ΔC @ 0 ±30 ppm / °C Max, -55 to +250°C

Test Parameters

1KHz ± 100 Hz, 1.0 ± 0.2 VRMS @ +25°C

1 MHz ± 100 kHz, 1.0 ± 0.2 VRMS @ +25°C

IR test voltage @ wvdc or 500 vdc w/e less

Insulation Resistance

1000 ΩF or 100 GΩ w/e less @ +25°C

100 ΩF or 10 GΩ w/e less @ +125°C

5 ΩF or 500 MΩ w/e less @ +250°C

Dielectric Strength

2.5 x WVDC @ WVDC ≤ 200 Vdc

1.5 x WVDC @ 201 Vdc ≤ WVDC ≤ 500 Vdc

1.2 x WVDC @ WVDC >500 Vdc

Dissipation Factor

0.005% Max @ +25°C / 0.5% Max @ +250°C

1 MHz @ C ≤ 100 pF / 1 kHz @ C > 100 pF

Voltage Coefficient

Negligible

Aging Rate

None

MECHANICAL DIMENSIONS

Chip Size	Length	Tol	Width	Tol	Thickness	End Band	Tol
	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)	in (mm)
0805	0.080 (2.030)	± 0.008 (0.203)	0.050 (1.270)	± 0.008 (0.203)	0.055 (1.40) Max	0.020 (0.508)	± 0.010 (0.254)
1005	0.100 (2.540)	± 0.010 (0.254)	0.050 (1.270)	± 0.010 (0.254)	0.055 (1.40) Max	0.020 (0.508)	± 0.010 (0.254)
1206	0.125 (3.180)	± 0.010 (0.254)	0.060 (1.520)	± 0.010 (0.254)	0.065 (1.65) Max	0.020 (0.508)	± 0.010 (0.254)
1210	0.125 (3.180)	± 0.010 (0.254)	0.100 (2.54)	± 0.010 (0.254)	0.065 (1.65) Max	0.020 (0.508)	± 0.010 (0.254)
1515	0.150 (3.810)	± 0.015 (0.380)	0.150 (3.810)	± 0.015 (0.380)	0.140 (3.55) Max	0.030 (0.760)	± 0.015 (0.380)
1805	0.180 (4.570)	± 0.015 (0.380)	0.050 (1.270)	± 0.015 (0.380)	0.055 (1.40) Max	0.020 (0.508)	± 0.010 (0.254)
1808	0.180 (4.570)	± 0.015 (0.380)	0.080 (2.030)	± 0.015 (0.380)	0.080 (2.03) Max	0.020 (0.508)	± 0.010 (0.254)
1812	0.180 (4.570)	± 0.015 (0.380)	0.125 (3.180)	± 0.015 (0.380)	0.100 (2.54) Max	0.025 (0.640)	± 0.015 (0.380)
1825	0.180 (4.570)	± 0.015 (0.380)	0.250 (6.350)	± 0.015 (0.380)	0.140 (3.56 Max)	0.025 (0.640)	± 0.015 (0.380)
2020	0.200 (5.080)	± 0.015 (0.380)	0.200 (5.080)	± 0.015 (0.380)	0.180 (4.57) Max	0.025 (0.640)	± 0.015 (0.380)
2220	0.220 (5.590)	± 0.015 (0.380)	0.200 (5.080)	± 0.015 (0.380)	0.180 (4.57) Max	0.025 (0.640)	± 0.015 (0.380)
2225	0.225 (5.720)	± 0.015 (0.380)	0.250 (6.350)	± 0.015 (0.380)	0.200 (5.08) Max	0.030 (0.762)	± 0.015 (0.380)
2520	0.250 (6.350)	± 0.015 (0.380)	0.200 (5.080)	± 0.015 (0.380)	0.180 (4.57) Max	0.030 (0.762)	± 0.015 (0.380)
3333	0.330 (8.380)	± 0.017 (0.432)	0.330 (8.380)	± 0.017 (0.432)	0.200 (5.08) Max	0.030 (0.762)	± 0.015 (0.380)
3530	0.350 (8.890)	± 0.018 (0.457)	0.300 (7.620)	± 0.015 (0.380)	0.200 (5.08) Max	0.030 (0.762)	± 0.015 (0.380)
4040	0.400 (10.16)	± 0.020 (0.510)	0.400 (10.16)	± 0.020 (0.510)	0.200 (5.08) Max	0.040 (1.020)	± 0.020 (0.510)
4540	0.450 (11.43)	± 0.023 (0.584)	0.400 (10.16)	± 0.020 (0.510)	0.200 (5.08) Max	0.040 (1.020)	± 0.020 (0.510)
5550	0.550 (14.00)	± 0.028 (0.711)	0.500 (12.70)	± 0.025 (0.635)	0.200 (5.08) Max	0.040 (1.020)	± 0.020 (0.510)
6560	0.650 (16.50)	± 0.030 (0.762)	0.600 (15.20)	± 0.030 (0.762)	0.200 (5.08) Max	0.040 (1.020)	± 0.020 (0.510)
7565	0.750 (19.10)	± 0.030 (0.762)	0.650 (16.50)	± 0.030 (0.762)	0.200 (5.08) Max	0.040 (1.020)	± 0.020 (0.510)

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+250°C COG / NPO – 25 Vdc to 5.0 KVdc

CAPACITANCE & VOLTAGE SELECTION

Chip Size		0805	1005	1206	1210	1515	1805	1808	1812	1825	2020	2220	2225	2520	3333	3530	4040	4540	5550	6560	7565
Min Cap		1R0	1R0	1R0	5R0	100	5R0	5R0	100	270	100	100	150	150	470	470	101	101	101	101	101
Working Voltage DC	25	182	182	392	822	183	332	562	183	393	333	393	563	473	104	104	154	184	274	394	564
	50	182	182	392	822	183	332	562	183	393	333	393	563	473	104	104	154	184	274	394	564
	100	182	182	392	822	183	332	562	183	393	333	393	563	473	104	104	154	184	274	394	564
	200	182	182	392	822	183	332	562	183	393	333	393	563	473	104	104	154	184	274	394	564
	250	122	122	332	682	123	272	472	153	333	273	333	393	393	823	823	124	154	254	334	474
	300	102	102	272	562	103	222	332	123	273	223	273	333	333	683	683	104	124	184	274	394
	400	561	561	152	332	822	122	272	822	223	183	223	273	253	563	563	823	104	154	224	274
	500	331	331	102	182	682	681	182	682	183	123	153	223	183	393	393	683	823	124	184	224
	600	221	221	681	122	562	681	122	472	153	103	123	183	153	333	333	563	683	104	154	184
	750	121	121	391	821	392	271	681	272	103	822	103	123	123	273	273	473	473	823	124	154
	1000	470	470	151	331	222	121	331	152	562	562	682	822	822	183	183	333	273	473	683	823
	1500	120	120	560	101	821	270	121	561	222	222	272	332	332	682	682	103	123	183	273	333
	2000	•	•	8R2	150	391	•	470	221	102	102	122	182	152	332	332	562	562	103	123	183
	3000	•	•	•	•	121	•	•	470	331	331	471	561	471	122	122	182	182	332	472	562
	4000	•	•	•	•	330	•	•	•	820	121	151	221	181	471	391	681	821	122	182	222
	5000	•	•	•	•	•	•	•	•	•	270	330	390	390	820	820	121	151	251	331	471

Note:
1. Capacitors rated for 1000 Vdc and up may require conformal coating to preclude the possibility of surface arcing.
2. Leaded configurations recommended for those larger sizes where product is more susceptible to mechanical and thermal stress. Reference leaded catalog options or contact factory for additional information.

PART NUMBER DEFINITION / ORDERING INFORMATION

2220	NH	223	J	401	P	M	W

Case Size
22 = Length (0.220")
20 = Width (0.200")

Dielectric
NH = COG / NPO
Ultra Stable
+250°C Rated

Capacitance
Value in pF
Two significant figures
followed by number
of zeros. ie:
223 = 22,000 pF
= 0.022 µF

Tolerance
B = ±0.10 pF (<10 pF)
C = ±0.25 pF (<10 pF)
D = ±0.50 pF (<10 pF)
F = ±1%
G = ±2%
J = ± 5%
K = ±10%
M = ±20%
Z = +80 / -20%
P = +100 / -0%

Working Voltage
Value in Vdc
Two significant figures
followed by number
of zeros. ie:
401 = 400 Vdc
102 = 1000 Vdc

Termination
P = Pd / Ag
S = Ag
N = Ni barrier/100% Sn

Marking
M = Marked
Blank = Unmarked

Packaging
W = Waffle
Recommended
≥1515 Pkg Size
T = Tape & Reel
Blank = Bulk (Std)

APPLICATION SPECIFIC PRODUCTS

Eclipse NanoMed's experienced staff is ready to assist you with your application specific requirements. Our product is processed in a state-of-the-art facility, complete with a Class 10,000 clean room, a full service machine shop and extensive testing options, guaranteed to satisfy the most rigid requirements. Whether your application requires Industrial, Military or Automotive grade capacitors, or if your product will be exposed to even higher temperature environments, we can help.

Commercial • Military Grade • Industrial • Medical • Automotive • +300°C High Temperature

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