

## Surface Mount Ceramic Capacitor

## NPO (CG) Dielectric

### FEATURES

- Ultra Stable TCC of  $0\pm 30$ ppm
- Excellent Hi-F Performance
- Low Dissipation Factor
- Ideal for Timed RC Circuits and Critical Tuning Applications

### APPLICATIONS

- Computer Industries
- Communication Electronics
- Consumer Electronics
- Automotive Electronics

### QUICK REFERENCE DATA

DESCRIPTION	PARAMETER
<b>Rated Voltage UR (DC):</b> NPO Dielectric	10V, 16V, 25V, 50 V & 100V
<b>Capacitance Range (E12 series):</b> NPO (CG)	1pF to 0.01uF
<b>Tolerance of Capacitance at Tamb=20°C:</b> NPO (CG): C < 5pF (standard is $\pm 0.25$ pF) 5pF $\leq$ C < 10pF (standard is $\pm 0.50$ pF) C $\geq$ 10pF (standard is $\pm 5\%$ )	$\pm 0.25$ pF, $\pm 0.1$ pF & $\pm 0.05$ pF $\pm 0.50$ pF, $\pm 0.25$ pF $\pm 5\%$ , $\pm 2\%$ & $\pm 1\%$
<b>Test Voltage (DC) for 1 Minute:</b>	2.5 $\times$ UR
<b>Sectional Specifications:</b>	IEC 60384-10, Second edition 1989-04; Also based on CECC 32 100
<b>Detailed Specification:</b>	Based on CECC 32 101-801

### CROSS-SECTION CONSTRUCTION

The ceramic capacitor consists of a rectangular block of ceramic dielectric in which a number of interleaved NME and BME metal electrodes are contained. This structure gives rise to a high capacitance per unit volume.

The inner electrodes are connected to the two terminations, silver dipped with a barrier layer of plated nickel and finally covered with a layer of plated tin (NiSn). A cross section of the structure is shown in Figure 1.

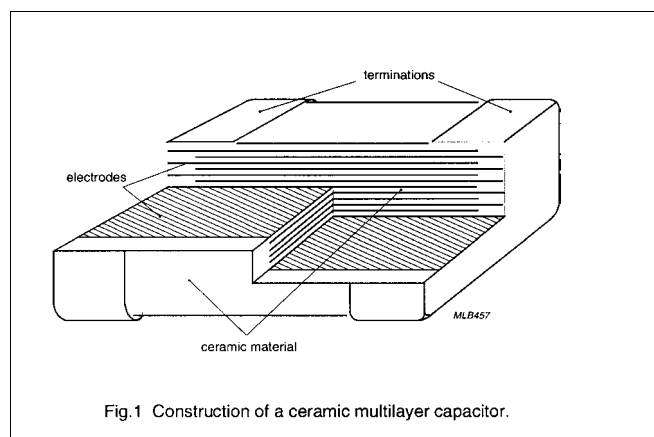
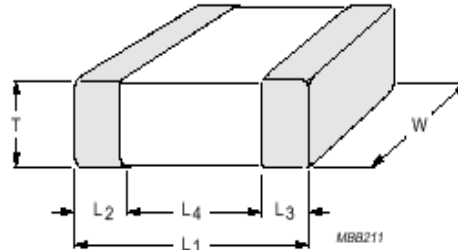


Fig.1 Construction of a ceramic multilayer capacitor.

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## SIZE &amp; DIMENSION



EIA Code	L1	W	L2/L3	T
0201	0.60±0.03	0.30±0.03	0.15±0.05	0.30 max
0402	1.02±0.10	0.50±0.10	0.25±0.15	0.61 max
0603	1.60±0.10	0.80±0.10	0.30±0.20	0.90 max
0805	2.00±0.10	1.20±0.10	0.50±0.25	1.35 max
1206	3.20±0.15	1.60±0.15	0.50±0.25	1.55 max
1210	3.20±0.20	2.55±0.20	0.50±0.25	1.65 max
1812	4.55±0.30	3.20±0.20	0.61±0.35	1.65 max
1825	4.55±0.30	6.40±0.38	0.61±0.35	2.03 max

## ORDERING INFORMATION FOR NPO (CG)

Components can be ordered by using Skywell part number illustrated as follows:

**Example: 0402CG101J500BA or 0402CG4R7C500BAQ**

0603	CG	101	J	500	B	A	□
Size Code	Dielectric	Capacitance	Tolerance	Voltage	Termination	Package	Reserved
0201	CG=NPO	3-Digit Code	A=±0.05pF	3-Digit	B=Ni/Sn	A: paper tape	Q: Hi-Q type
0402	2R=X7R	First two digits	B=±0.10pF	100=10v	A=Silver	L: plastic tape	C: low profile
0603	3R=X5R	are significant,	C=±0.25pF	160=16v	(lead free has	B: bulk	T: 13" reel
0805	2E=Y5V	third digit is the	D=±0.50pF	250=25v	been in effect	M: cassette	
1206	2F=Z5U	Multiple of 10s.	F=±1%	500=50v	since 1999)		
1210		(here is 100pF)	G=±2%	101=100			
1812			J=±5%				
2512			K=±10%				

## Surface Mount Ceramic Capacitor

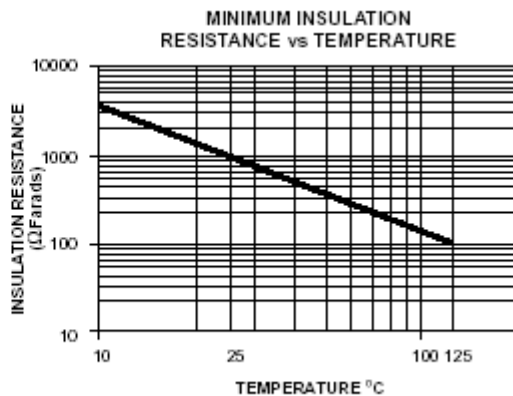
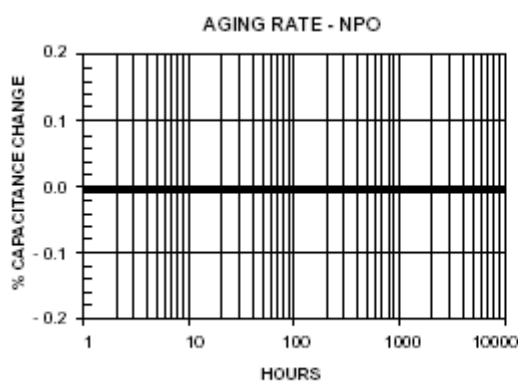
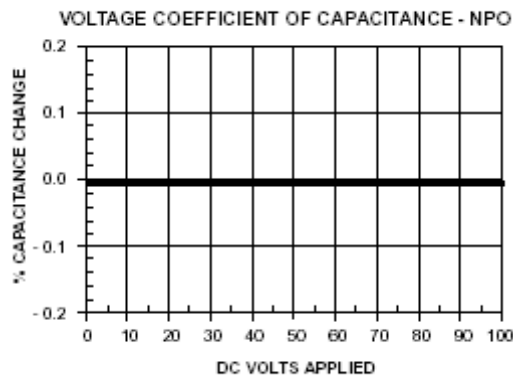
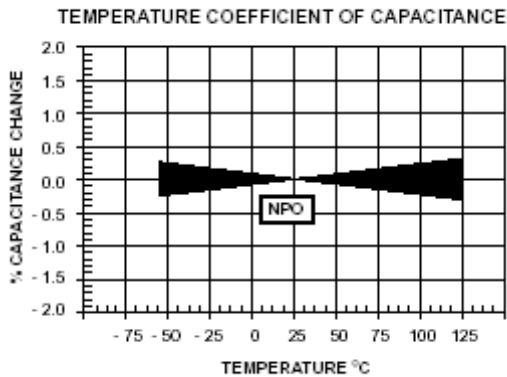
## NPO (CG) Dielectric

### ELECTRICAL CHARACTERISTICS

Class I Capacitors; NP0 Dielectric:

DESCRIPTION	PARAMETER
Capacitance Range (E12 Series):	0.5pF to 0.01uF
Tolerance on Capacitance at Tamb =20°C: C < 5.0pF 5.0pF C < 10pF C ≥10pF	±0.05pF, ±0.1pF & ±0.25pF ±0.50pF, ±0.25pF ±5%, ±2% & ±1%
Tan δ (D/F): C <10pF C ≥10pF	≤10(3/C+0.7) × 10 <sup>-4</sup> or 30×10 <sup>-4</sup> , whichever is smallest ≤10×10 <sup>-4</sup>
Insulation Resistance After 1 Minute at UR (DC):	IR <sub>ins</sub> >100 GΩ
Temperature Coefficient:	(0 ±30) × 10 <sup>-6</sup> /K (ppm)

### PERFORMANCE CHARATERISTICS



## Surface Mount Ceramic Capacitor

## NPO (CG) Dielectric

### SELECTION CHART NPO, 16V, 25V, 50V & 100V

EIA Size		0201		0402			0603				0805			1206		
Voltage (dc)		25	50	16	25	50	16	25	50	100	25	50	100	50	100	
EIA Code	Cap Value															
1R0	1.0pF	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
1R2	1.2pF	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
1R5	1.5pF	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
1R8	1.8pF	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
2R2	2.2pF	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
2R7	2.7pF	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
3R3	3.3pF	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
3R9	3.9pF	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
4R7	4.7pF	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
5R6	5.6pF	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
6R8	6.8pF	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
8R2	8.2pF	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
100	10pF	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
120	12pF	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
150	15pF	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
180	18pF	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
220	22pF	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
270	27pF	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
330	33pF	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
390	39pF	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
470	47pF	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
560	56pF	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
680	68pF	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
820	82pF	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
101	100pF	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
121	120pF			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
151	150pF			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
181	180pF			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
221	220pF			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
271	270pF			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
331	330pF			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
391	390pF			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
471	470pF			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
561	560pF			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
681	680pF						✓	✓	✓	✓	✓	✓	✓	✓	✓	
821	820pF						✓	✓	✓	✓	✓	✓	✓	✓	✓	
102	1000pF						✓	✓	✓	✓	✓	✓	✓	✓	✓	
122	1200pF						✓	✓	✓	✓	✓	✓	✓	✓	✓	
152	1500pF						✓	✓	✓	✓	✓	✓	✓	✓	✓	
182	1800pF						✓	✓	✓	✓	✓	✓	✓	✓	✓	
222	2200pF						✓	✓	✓	✓	✓	✓	✓	✓	✓	
332	3300pF										✓	✓	✓	✓	✓	
472	4700pF										✓	✓	✓	✓	✓	
822	8200pF												✓	✓	✓	
103	0.01uF													✓	✓	

For size, value & voltage not listed here, please contact email: [sales@skywellnet.com](mailto:sales@skywellnet.com)