

## 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.

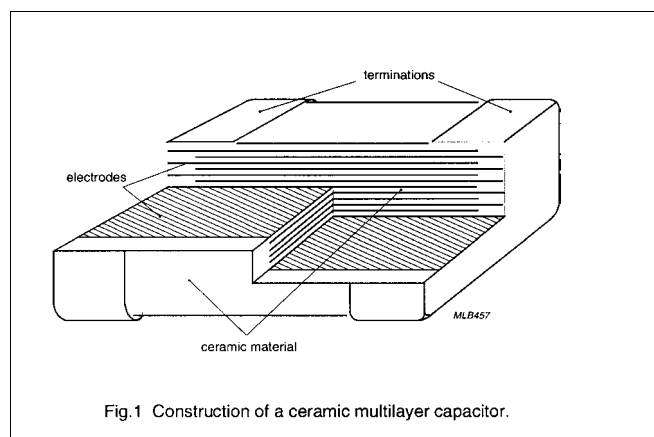
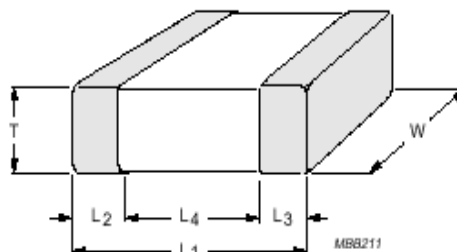


Fig.1 Construction of a ceramic multilayer capacitor.

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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

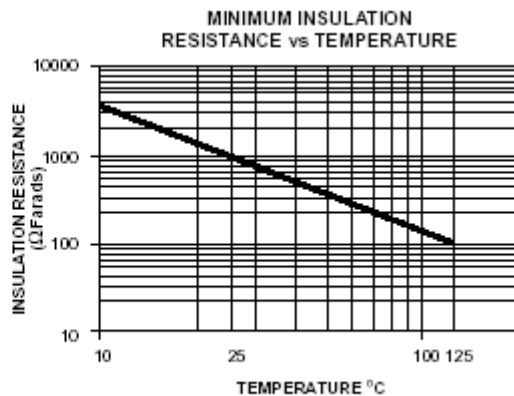
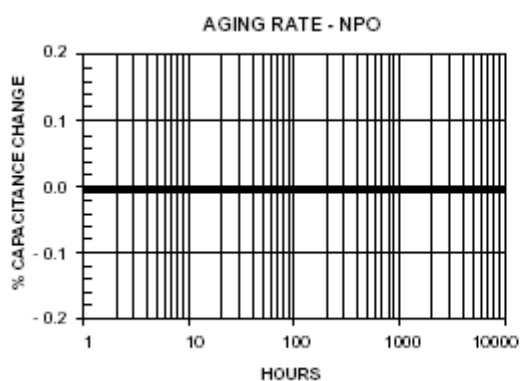
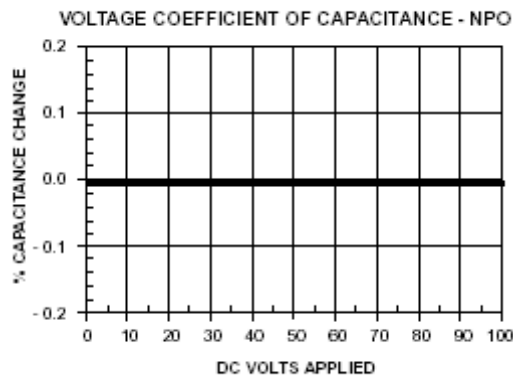
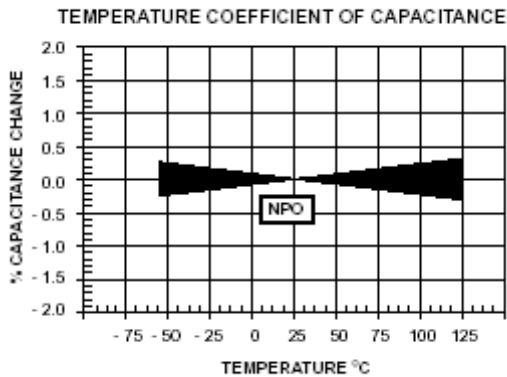
## NPO (CG) Dielectric

## 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 CHARACTERISTICS



## 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	Blue	Cyan		Blue	Green		Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
1R2	1.2pF	Blue	Cyan		Blue	Green		Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
1R5	1.5pF	Blue	Cyan		Blue	Green		Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
1R8	1.8pF	Blue	Cyan		Blue	Green		Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
2R2	2.2pF	Blue	Cyan		Blue	Green		Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
2R7	2.7pF	Blue	Cyan		Blue	Green		Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
3R3	3.3pF	Blue	Cyan		Blue	Green		Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
3R9	3.9pF	Blue	Cyan		Blue	Green		Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
4R7	4.7pF	Blue	Cyan		Blue	Green		Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
5R6	5.6pF	Blue	Cyan		Blue	Green		Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
6R8	6.8pF	Blue	Cyan		Blue	Green		Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
8R2	8.2pF	Blue	Cyan	Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
100	10pF	Blue		Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
120	12pF	Blue		Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
150	15pF	Blue		Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
180	18pF	Blue		Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
220	22pF	Blue		Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
270	27pF	Blue		Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
330	33pF	Blue		Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
390	39pF	Blue		Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
470	47pF	Blue		Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
560	56pF	Blue		Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
680	68pF	Blue		Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
820	82pF	Blue		Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
101	100pF	Blue		Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
121	120pF			Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
151	150pF			Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
181	180pF			Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
221	220pF			Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
271	270pF			Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
331	330pF			Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
391	390pF			Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
471	470pF			Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
561	560pF			Blue	Blue	Green	Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
681	680pF						Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
821	820pF						Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
102	1000pF						Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
122	1200pF						Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
152	1500pF						Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
182	1800pF						Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
222	2200pF						Blue	Blue	Cyan	Green	Blue	Cyan	Green	Blue	Cyan	
332	3300pF										Blue	Cyan	Green	Blue	Cyan	
472	4700pF										Blue	Cyan	Green	Blue	Cyan	
822	8200pF												Blue	Cyan	Green	
103	0.01uF													Blue	Cyan	

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