HITANO
ENTERPRISE CORP. ®

CERAMIC CHIP CAPACTIORS NPO (COG) DIELECTRIC

APPLICATION

NPO (COG) dielectric properties; suited for precision circuits, requiring stable dielectric characteristics:

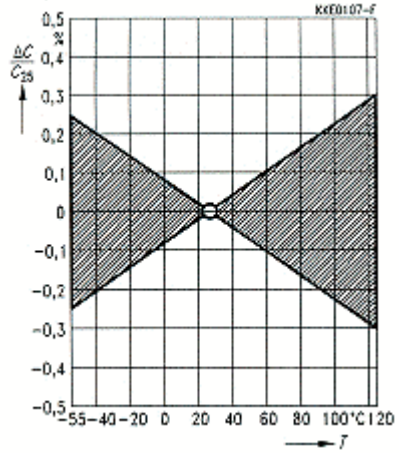
- ✧ **Negligible dependence of capacitance and dissipation factor on time, voltage, and frequency**
- ✧ **Low-loss (High Q)**
- ✧ **Predictable linear temperature coefficient**
- ✧ **No piezoelectric behavior**

General Specification

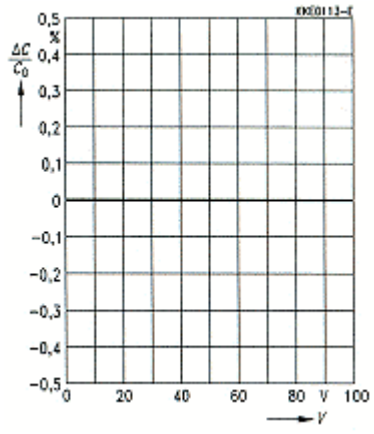
- **Operating temperature range** : –55℃ ~ +125℃
- **Temperature coefficient:** 0±30ppm/℃
- **Capacitance Range:** 0.5pF ~ 0.22uF (Test condition: 1.0 ±0.2 Vrms, 1KHz, for≦1000pF use 1 MHz)
- **Capacitance Tolerance:** Preferred ±5%, ±10% . Others available: ±0.05pF, ±0.1pF, ±0.25pF, ±0.5pF, ±1% , ±2%
- **Rated Voltage:** 25VDC, 50VDC, 100VDC
- **Q value :** C＜30pF : Q≧400+20C, C≧30pF : Q≧1000 (Test condition: 1MHz, 1KHZ for C≧1000pF, 1Vrms, 25℃)
- **Insulation resistance:** 100,000 MΩ or 1,000 Ω-F min, whichever is less. (rated voltage applied at 25℃)
- **Dielectric strength:** >250% of Rated Voltage, duration 1～5 seconds, Charging and discharging current less than 50mA.

Characteristics

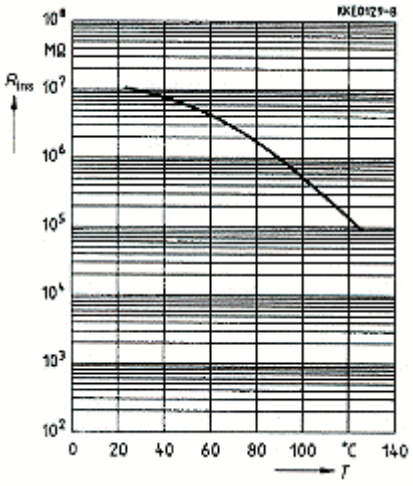
Capacitance change $\Delta C/C_{25}$ versus temperature T (tolerance range)



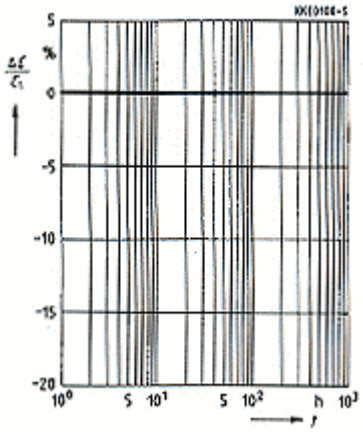
Capacitance change $\Delta C/C_0$ versus superimposed dc voltage V



Insulation resistance R_{ins} versus Temperature T



Capacitance change $\Delta C/C_1$ versus time (aging rate)



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CERAMIC CHIP CAPACTIORS NPO (COG) DIELECTRIC

SIZE AND VALUES AVAILABLE (NPO) 25V – 100V

Size		0402		0603			0805			1206			1210		1812	
(L)Length	mm	1.00±0.05		1.60±0.10			2.00±0.20			3.20±0.20			3.20±0.30		4.50±0.30	
(W)Width	mm	0.50±0.05		0.80±0.10			1.25±0.20			1.60±0.20			2.50±0.20		3.20±0.30	
(T)Max. Thickness	mm	0.50±0.05		0.80±0.10			1.25±0.10			1.65±0.20			2.50±0.30		3.20±0.30	
(t)Terminal	mm	0.15±0.35		0.27~0.60			0.30~0.70			0.30~0.70			0.30~0.70		0.35~1.00	
Capacitance W.V.(DC)		**25**	**50**	**25**	**50**	**100**	**25**	**50**	**100**	**25**	**50**	**100**	**50**	**100**	**50**	**100**
0.47 – 0.82	pF		S		P	P		A	H		P	P				
1 – 9.1	pF		S		P	P		A	H		P	P				
10	pF		S		P	P		A	H		P	P				
12	pF		S		P	P		A	H		P	P				
15	pF		S		P	P		A	H		P	P				
18	pF		S		P	P		A	H		P	P				
22	pF		S		P	P		A	H		P	P				
27	pF		S		P	P		A	H		P	P				
33	pF		S		P	P		A	H		P	P				
39	pF		S		P	P		A	H		P	P				
47	pF		S		P	P		A	H		P	P				
56	pF		S		P	P		A	H		P	P				
68	pF		S		P	P		A	H		P	P				
82	pF		S		P	P		A	H		P	P				
100	pF		S		P	P		A	H		P	P				
120	pF		S		P	P		A	H		P	P				
150	pF		S		P	P		A	H		P	P				
180	pF		S		P	P		A	H		P	P				
220	pF		S		P	P		A	H		P	P				
270	pF		S		P	P		A	H		P	P				
330	pF	S	S		P	P		A	H		P	P				
390	pF	S	S		P	P		P	H		P	P				
470	pF	S	S		P	P		P	H		P	P				
560	pF	S			P	P		P	H		P	P				
680	pF	S			P	P		P	H		P	P				
820	pF	S			P			P	H		P	P				
1.0	nF	S			P			P	H		P	P	L	L		
1.2	nF				P			P	H		P	P	L	L		L
1.5	nF				P			P	H		P	P	L	L		L
1.8	nF				P			P	H		P	P	L	L		L
2.2	nF				P			P	X		P	P	L	L		L
2.7	nF				P			X	X		P	P	L	L		L
3.3	nF				P			X			P	P	L	L		L
3.9	nF			P			A	X			P	P	L	L		L
4.7	nF			P			A	X			P	P	L	L		L
5.6	nF			P			A	X			P	X	L	L		L
6.8	nF			P			A	X			C	X	L	L		L
8.2	nF			P			A	X		H	C		L	L		L
10	nF			P			A	X		H	X		L	L	L	L
15	nF						H			H	X		L		L	L
22	nF						X			H	X		X		L	
33	nF						X			X	L		X		L	
47	nF									X			Z		L	
68	nF									L			Z		L	
100	nF									L			G		L	
220	nF														U	

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CERAMIC CHIP CAPACTIORS NPO (COG) DIELECTRIC

SIZE AND VALUES AVAILABLE (NPO) 250V – 3000V

Size		0805		1206				1210					1808					1812				
(L)		2.00±0.20		3.20±0.20				3.20±0.30					4.50±0.30					4.50±0.30				
(W)		1.25±0.20		1.60±0.20				2.50±0.20					2.00±0.20					3.20±0.30				
(T)		0.80±0.10		1.65±0.20				1.65±0.20					2.00±0.20					2.00±0.20				
(t)		0.30~0.70		0.30~0.70				0.30~0.70					0.35~1.00					0.35~1.00				
Cap./ W.V.		250	500	250	500	1KV	2KV	250	500	1KV	2K	3K	250	500	1KV	2KV	3KV	250	500	1KV	2KV	3KV
10	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
12	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
15	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
18	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
22	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
27	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
33	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
39	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
47	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
56	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
68	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
82	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
100	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
120	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
150	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
180	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
220	pF	P	P	P	L	L	L			L	L	L			Z	Z	Z			L	L	L
270	pF	P	P	P	L	L	L			L	L				Z	Z	Z			L	L	L
330	pF	P	P	P	L	L				L	L				Z	Z	Z			L	L	L
390	pF	P	P	P	L	L				L	L				Z	Z				L	L	Z
470	pF	P	P	P	L	L				L	L				Z	Z				L	L	
560	pF	P		P	L	L				L	L				Z	Z				L	L	
680	pF	P		P	L	L				L					Z					L	L	
820	pF	P		X	L	L				L					Z					L	L	
1000	pF	P		X	L	L		L	L	L			Z	Z	Z			L	L	L	L	
1200	pF	P		X	L	L		L	L	L			Z	Z	Z			L	L	L	L	
1500	pF			X	L	L		L	L	L			Z	Z	Z			L	L	L		
1800	pF			X	L			L	L	L			Z	Z	Z			L	L	L		
2200	pF			X	L			L	L	L			Z	Z				L	L	L		
2700	pF			X				L	L				Z	Z				L	L	L		
3300	pF			L				L	L				Z	Z				L	L	L		
3900	pF			L				L										L	L	L		
4700	pF							L										L	L	L		
5600	pF							L										L	L			
6800	pF							L										L	L			
8200	pF																	L				
10000	pF																	L				

Thickness Code: Standard Packing Q'ty per reel

Thickness Code	Chip Size	Chip Thickness	Max Carrier Thickness	Q'ty of carboard tape in		Q'ty of Embosses tape in	
				7" reel	13" reel	7" reel	13" reel
S	0402	0.50±0.05 mm	0.60 mm	10,000	50,000	--	--
P	0603	0.80±0.10 mm	0.95 mm	4,000	15,000	--	--
A	0805	0.60±0.10 mm	0.75 mm	4,000	15,000	--	--
H		0.85±0.10 mm	0.90 mm	4,000	15,000	--	--
X		1.25±0.10 mm	1.25 mm	--	--	3,000	10,000
P	1206	0.80±0.10 mm	0.90 mm	4,000	15,000	--	--
H		0.85±0.10 mm	0.90 mm	4,000	15,000	--	--
C		0.95±0.10 mm	1.25 mm	--	--	3,000	10,000
X		1.25±0.10 mm	1.25 mm	--	--	3,000	10,000
L		1.65±0.20 mm	1.80 mm	--	--	2,000	--
X	1210	1.25±0.10 mm	1.25 mm	--	--	3,000	10,000
L		1.65±0.20 mm	1.80 mm	--	--	2,000	--
Z		2.00±0.20 mm	2.20 mm	--	--	2,000	--
G		2.50±0.20 mm	2.75 mm	--	--	2,000	--
Z	1808	2.00±0.20 mm	2.20 mm	--	--	2,000	--
L	1812	1.65±0.20 mm	1.80 mm	--	--	1,000	--
Z		2.00±0.20 mm	2.20 mm	--	--	1,000	--
U		3.20±0.20 mm	4.00 mm	--	--	500	--