


**Capacitors**

# High Reliability, SMT - NPO (COG)

Johanson high reliability surface-mount (SMT) capacitors are designed to withstand harsh environmental conditions, such as; extreme high and low temperatures, humidity, and shock/vibration. While providing consistently good performance over a long operating life.

**Features:**

- Designed with high-quality and durable materials.
- A wide array of special testing to meet specific quality capacitor requirements.
- Typically, offered NP0/COG and X7R materials in SMT capacitors.
- Special high reliability testing per MIL-PRF-123, MIL-PRF-55681, MIL-PRF-35325 and MIL-PRF-49467 are provided and commonly referenced requirements.

**NPO (COG) Size Voltage Min/Max Cap Configurations (pF)**

Size	MinCap	Low Voltage				Thickness Maximum	
		50V	100V	200V	250V	in	mm
0201	0.1	50				0.013	0.3
0402	0.2	330				0.024	0.61
0403	0.2	100				0.044	1.12
0504	0.2	680	680			0.044	1.12
0603	0.2	1000	430	220	100	0.035	0.89
0805	0.5	2200	910	560	220	0.054	1.37
1206	1	10000	2200	1000		0.064	1.63
1210	1	6200	2700	1600		0.065	1.63
1808	5			6200		0.080	2.03
1812	5	22000	10000	8200		0.100	2.54

Size	MinCap	High Voltage								Thickness Maximum	
		500V	630V	1kV	2kV	3kV	4kV	5kV	6kV	in	mm
0805	0.5	680								0.054	1.37
1206	1	1500	1200	1000	220	82				0.064	1.63
1210	1	3900	2700	1800	560	220				0.065	1.63
1808	5	4700	3300	2200	820	470	180	75	75	0.080	2.03
1812	5	8200	6800	5600	1800	1000	390	150	150	0.100	2.54
1825	5	18000	15000	12000	5600	2200	1200	390	390	0.140	3.56
2220	10	18000	18000	15000	5600	2700	1500	470	470	0.180	4.57
2225	10	27000	22000	18000	8200	3300	1800	470	470	0.150	3.81



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# High Reliability, SMT - X7R (nF)

## X7R Size Voltage Min/Max Cap Configurations (nF)

Size	MinCap	Low Voltage				Thickness Maximum	
		50V	100V	200V	250V	in	mm
0402	0.12	10	4	1	0.47	0.024	0.61
0403	0.12	12	6.8	2	1.5	0.044	1.12
0504	0.12	27	16	6.8	4.7	0.044	1.12
0603	0.12	47	22	10	7.5	0.035	0.89
0805	0.12	150	100	47	22	0.054	1.37
1206	0.24	390	220	100	62	0.064	1.63
1210	0.24	510	330	180	120	0.065	1.63
1808	0.24	620	390	240	160	0.080	2.03
1812	0.24	820	620	470	360	0.100	2.54
1825	0.47	1200	910	680	510	0.140	3.56
2220	0.47	1800	1300	910	680	0.180	4.57
2225	0.47	2400	1800	1300	820	0.150	3.81
4040	1	5100	3900	2700	1800	0.300	7.62
6560	100	11000	8200	5600	3900	0.300	7.62

Size	MinCap	High Voltage									Thickness Maximum	
		500V	630V	1kV	2kV	3kV	4kV	5kV	6kV	10kV	in	mm
0402	0.12										0.024	0.61
0504	0.12										0.044	1.12
0603	0.12	3.9	3	1.5							0.035	0.89
0805	0.12	10	5.6	2.7	1						0.054	1.37
1206	0.24	33	22	10	4.7	1					0.064	1.63
1210	0.24	68	43	15	6.8	1.3					0.065	1.63
1808	0.24	100	62	22	10	3.3	1	0.33	0.15		0.080	2.03
1812	0.24	240	150	82	24	4.7	1.3	0.75	0.33		0.100	2.54
1825	0.47	360	210	120	33	8.2	2.2	1.2	0.68		0.140	3.56
2220	0.47	470	270	150	39	10	2.7	1.5	0.82		0.180	4.57
2225	0.47	560	360	180	56	14	4.3	2.7	1.2		0.150	3.81
4040	1	1200	820	390	120	24	8.2	5.6	3.9	2.4	0.300	7.62
6560	100	2400	1600	820	240	47	15	11	8.2	5.1	0.300	7.62