

# RF/Microwave COG (NP0) Capacitors

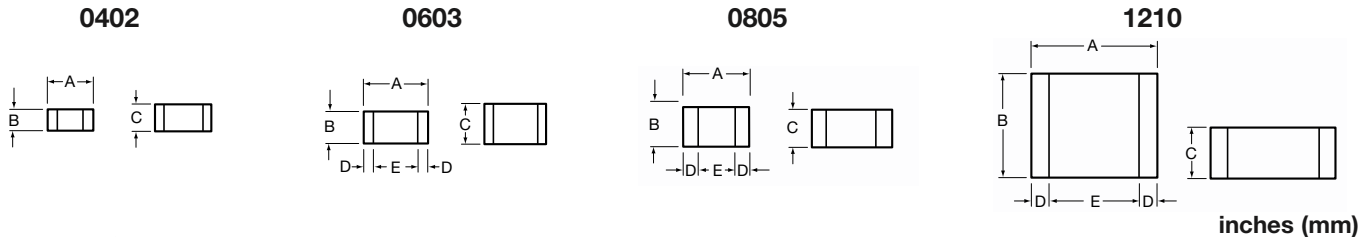
## Ultra Low ESR, “U” Series, COG (NP0) Chip Capacitors

### GENERAL INFORMATION

“U” Series capacitors are COG (NP0) chip capacitors specially designed for “Ultra” low ESR for applications in the communications market. Max ESR and effective capacitance

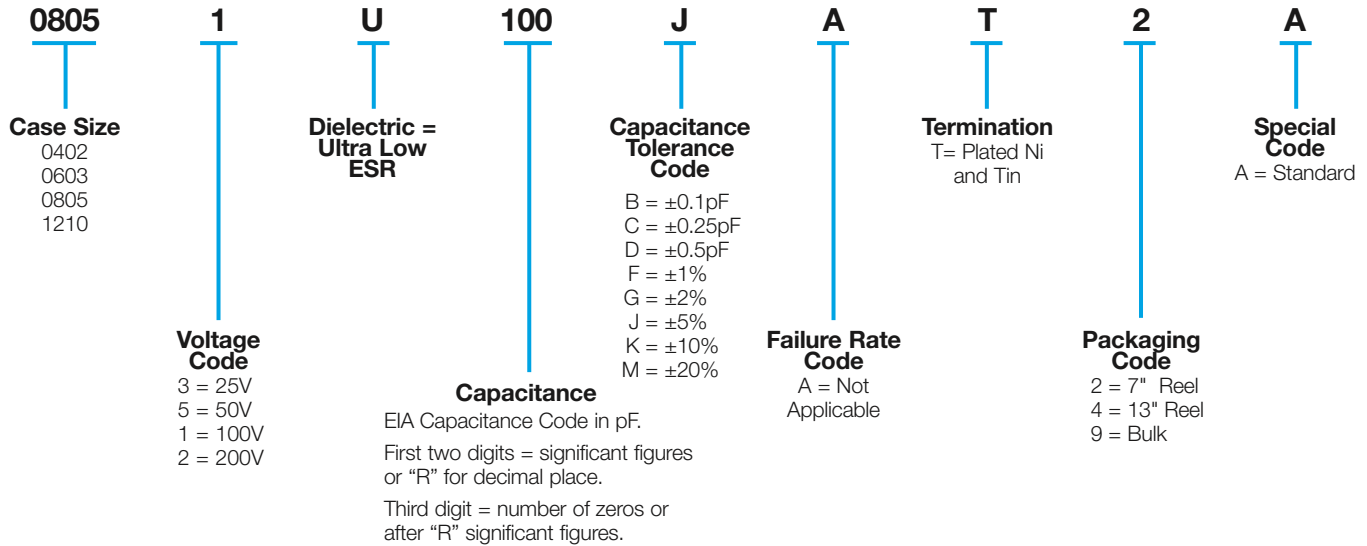
are met on each value producing lot to lot uniformity. Sizes available are EIA chip sizes 0603, 0805, and 1210.

### DIMENSIONS: inches (millimeters)



Size	A	B	C	D	E
0402	0.039±0.004 (1.00±0.1)	0.020±0.004 (0.50±0.1)	0.024 (0.6) max	N/A	N/A
0603	0.060±0.010 (1.52±0.25)	0.030±0.010 (0.76±0.25)	0.036 (0.91) max	0.010±0.005 (0.25±0.13)	0.030 (0.76) min
0805	0.079±0.008 (2.01±0.2)	0.049±0.008 (1.25±0.2)	0.040±0.005 (1.02±0.127)	0.020±0.010 (0.51±0.254)	0.020 (0.51) min
1210	0.126±0.008 (3.2±0.2)	0.098±0.008 (2.49±0.2)	0.050±0.005 (1.27±0.127)	0.025±0.015 (0.635±0.381)	0.040 (1.02) min

### HOW TO ORDER



### ELECTRICAL CHARACTERISTICS

#### Capacitance Values and Tolerances:

- Size 0402 - 0.2 pF to 22 pF @ 1 MHz
- Size 0603 - 1.0 pF to 100 pF @ 1 MHz
- Size 0805 - 1.6 pF to 160 pF @ 1 MHz
- Size 1210 - 2.4 pF to 1000 pF @ 1 MHz

#### Temperature Coefficient of Capacitance (TC):

0±30 ppm/°C (-55° to +125°C)

#### Insulation Resistance (IR):

- 10<sup>12</sup> Ω min. @ 25°C and rated WVDC
- 10<sup>11</sup> Ω min. @ 125°C and rated WVDC

#### Working Voltage (WVDC):

- Size Working Voltage
- 0402 - 50, 25 WVDC
- 0603 - 200, 100, 50 WVDC
- 0805 - 200, 100 WVDC
- 1210 - 200, 100 WVDC

#### Dielectric Working Voltage (DWV):

250% of rated WVDC

#### Equivalent Series Resistance Typical (ESR):

- 0402 - See Performance Curve, page 106
- 0603 - See Performance Curve, page 106
- 0805 - See Performance Curve, page 106
- 1210 - See Performance Curve, page 106

**Marking:** Laser marking EIA J marking standard (except 0603) (capacitance code and tolerance upon request).

#### MILITARY SPECIFICATIONS

Meets or exceeds the requirements of MIL-C-55681

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### CAPACITANCE RANGE

Cap (pF)	Available	Size			
	Tolerance	0402	0603	0805	1210
0.2	B,C	50V	N/A	N/A	N/A
0.3	↑	↓	↓	↓	↓
0.4	B,C	↓	↓	↓	↓
0.5	B,C	↓	↓	↓	↓
0.6	B,C,D	↓	↓	↓	↓
0.7	↑	↓	↓	↓	↓
0.8	B,C,D	↓	↓	↓	↓
0.9	B,C,D	↓	↓	↓	↓

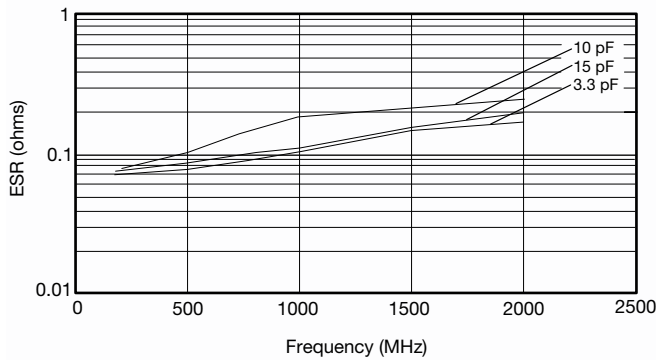
Cap (pF)	Available	Size			
	Tolerance	0402	0603	0805	1210
1.0	B,C,D	50V	200V	200V	200V
1.1	↑	↓	↓	↓	↓
1.2	B,C,D	↓	↓	↓	↓
1.3	↑	↓	↓	↓	↓
1.4	B,C,D	↓	↓	↓	↓
1.5	↑	↓	↓	↓	↓
1.6	B,C,D	↓	↓	↓	↓
1.7	↑	↓	↓	↓	↓
1.8	B,C,D	↓	↓	↓	↓
1.9	↑	↓	↓	↓	↓
2.0	B,C,D	↓	↓	↓	↓
2.1	↑	↓	↓	↓	↓
2.2	B,C,D	↓	↓	↓	↓
2.4	↑	↓	↓	↓	↓
2.7	B,C,D	↓	↓	↓	↓
3.0	↑	↓	↓	↓	↓
3.3	B,C,D	↓	↓	↓	↓
3.6	↑	↓	↓	↓	↓
3.9	B,C,D	↓	↓	↓	↓
4.3	↑	↓	↓	↓	↓
4.7	B,C,D	↓	↓	↓	↓
5.1	↑	↓	↓	↓	↓
5.6	B,C,D	↓	↓	↓	↓
6.2	↑	↓	↓	↓	↓
6.8	B,C,J,K,M	↓	↓	↓	↓

Cap (pF)	Available	Size			
	Tolerance	0402	0603	0805	1210
7.5	B,C,J,K,M	50V	200V	200V	200V
8.2	↑	↓	↓	↓	↓
9.1	B,C,J,K,M	↓	↓	↓	↓
10	F,G,J,K,M	↓	↓	↓	↓
11	↑	↓	↓	↓	↓
12	B,C,D	↓	↓	↓	↓
13	↑	↓	↓	↓	↓
15	B,C,D	↓	↓	↓	↓
18	↑	↓	↓	↓	↓
20	B,C,D	↓	↓	↓	↓
22	↑	↓	↓	↓	↓
24	B,C,D	↓	↓	↓	↓
27	↑	↓	↓	↓	↓
30	B,C,D	↓	↓	↓	↓
33	↑	↓	↓	↓	↓
36	B,C,D	↓	↓	↓	↓
39	↑	↓	↓	↓	↓
43	B,C,D	↓	↓	↓	↓
47	↑	↓	↓	↓	↓
51	B,C,D	↓	↓	↓	↓
56	↑	↓	↓	↓	↓
68	B,C,D	↓	↓	↓	↓
75	↑	↓	↓	↓	↓
82	B,C,D	↓	↓	↓	↓
91	F,G,J,K,M	↓	↓	↓	↓

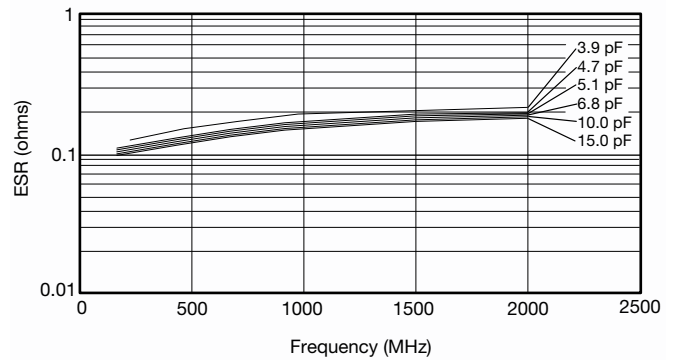
Cap (pF)	Available	Size			
	Tolerance	0402	0603	0805	1210
100	F,G,J,K,M	N/A	100V	200V	200V
110	↑	↓	↓	↓	↓
120	F,G,J,K,M	↓	↓	↓	↓
130	↑	↓	↓	↓	↓
140	F,G,J,K,M	↓	↓	↓	↓
150	↑	↓	↓	↓	↓
160	F,G,J,K,M	↓	↓	↓	↓
180	↑	↓	↓	↓	↓
200	F,G,J,K,M	↓	↓	↓	↓
220	↑	↓	↓	↓	↓
270	F,G,J,K,M	↓	↓	↓	↓
300	↑	↓	↓	↓	↓
330	F,G,J,K,M	↓	↓	↓	↓
360	↑	↓	↓	↓	↓
390	F,G,J,K,M	↓	↓	↓	↓
430	↑	↓	↓	↓	↓
470	F,G,J,K,M	↓	↓	↓	↓
510	↑	↓	↓	↓	↓
560	F,G,J,K,M	↓	↓	↓	↓
620	↑	↓	↓	↓	↓
680	F,G,J,K,M	↓	↓	↓	↓
750	↑	↓	↓	↓	↓
820	F,G,J,K,M	↓	↓	↓	↓
910	↑	↓	↓	↓	↓
1000	F,G,J,K,M	↓	↓	↓	↓

### ULTRA LOW ESR, "U" SERIES

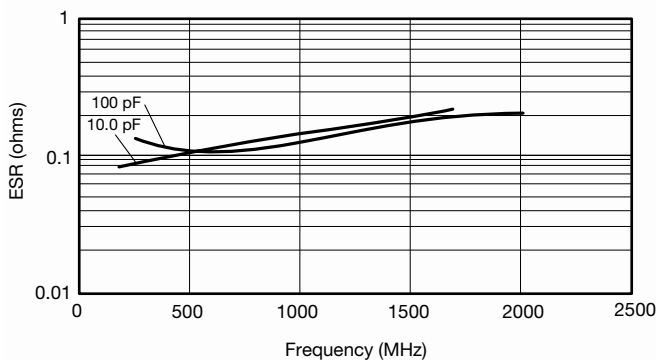
TYPICAL ESR vs. FREQUENCY  
0402 "U" SERIES



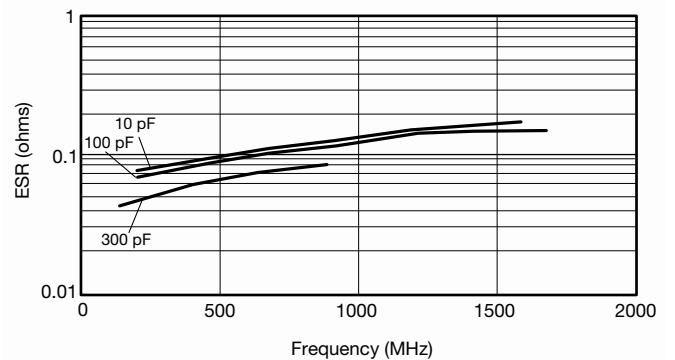
TYPICAL ESR vs. FREQUENCY  
0603 "U" SERIES



TYPICAL ESR vs. FREQUENCY  
0805 "U" SERIES



TYPICAL ESR vs. FREQUENCY  
1210 "U" SERIES



ESR Measured on the Boonton 34A

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# RF/Microwave C0G (NP0) Capacitors



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