

# RF/Microwave COG (NP0) Capacitors (RoHS)



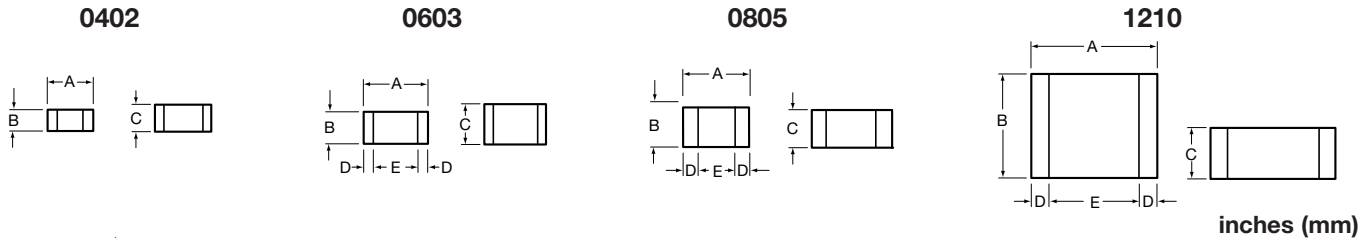
## Ultra Low ESR, "U" Series, COG (NP0) Chip Capacitors

### 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

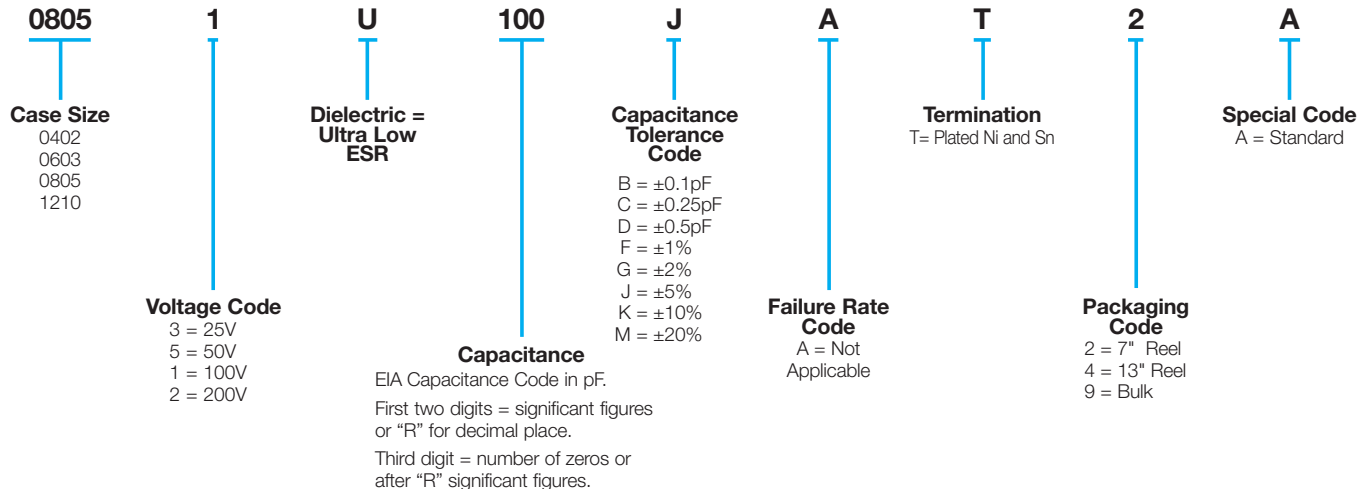
are met on each value producing lot to lot uniformity. Sizes available are EIA chip sizes 0603, 0805, and 1210.

### 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



## 7 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 127
- 0603 - See Performance Curve, page 127
- 0805 - See Performance Curve, page 127
- 1210 - See Performance Curve, page 127

**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



# RF/Microwave C0G (NP0) Capacitors (RoHS)



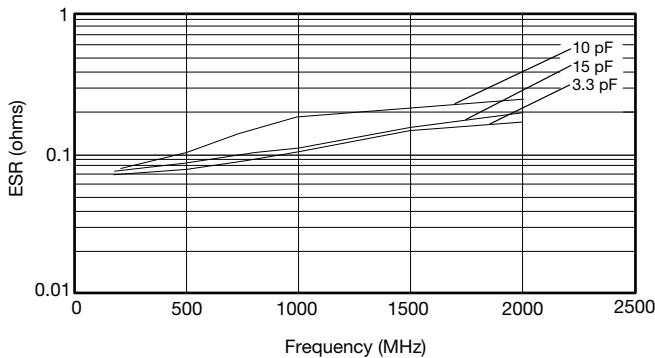
## Ultra Low ESR, "U" Series, C0G (NP0) Chip Capacitors

### CAPACITANCE RANGE

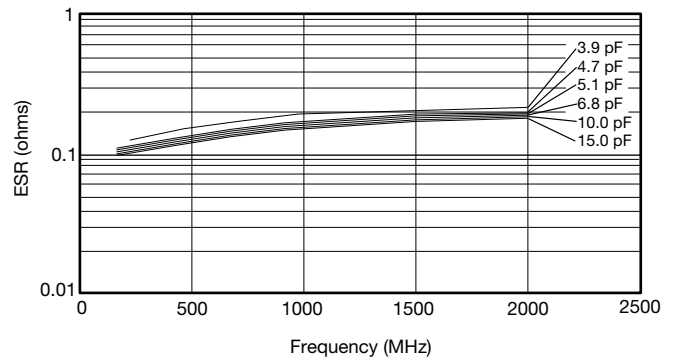
Cap (pF)	Available Tolerance	Size				Cap (pF)	Available Tolerance	Size				Cap (pF)	Available Tolerance	Size				Cap (pF)	Available Tolerance	Size			
		0402	0603	0805	1210			0402	0603	0805	1210			0402	0603	0805	1210			0402	0603	0805	1210
0.2	B,C	50V	N/A	N/A	N/A	1.0	B,C,D	50V	200V	200V	200V	7.5	B,C,J,K,M	50V	200V	200V	200V	100	F,G,J,K,M	N/A	100V	200V	200V
0.3						1.1						8.2						110			50V	200V	200V
0.4						1.2						9.1	B,C,J,K,M					120			50V	200V	200V
0.5	B,C					1.3						10	F,G,J,K,M					130			N/A	200V	200V
0.6	B,C,D					1.4						11						140				100V	200V
0.7						1.5						12						150				100V	N/A
0.8						1.6						13						160				100V	N/A
0.9	B,C,D					1.7						15						180				N/A	
						1.8						18						200					
						1.9						20						220					
						2.0						22						270					
						2.1						24						300					
						2.2						27						330					
						2.4						30						360					
						2.7						33						390					
						3.0						36						430					
						3.3						39						470					
						3.6						43						510					
						3.9						47						560					
						4.3						51						620					
						4.7						56						680					
						5.1						68						750					
						5.6						75						820					
						6.2	B,C,D					82						910					
						6.8	B,C,J,K,M					91						1000	F,G,J,K,M				

### ULTRA LOW ESR, "U" SERIES

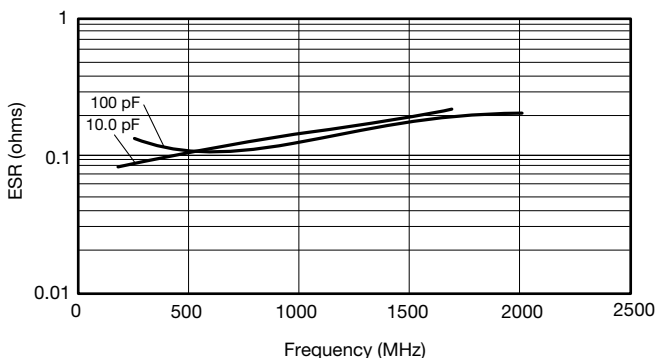
TYPICAL ESR vs. FREQUENCY  
0402 "U" SERIES



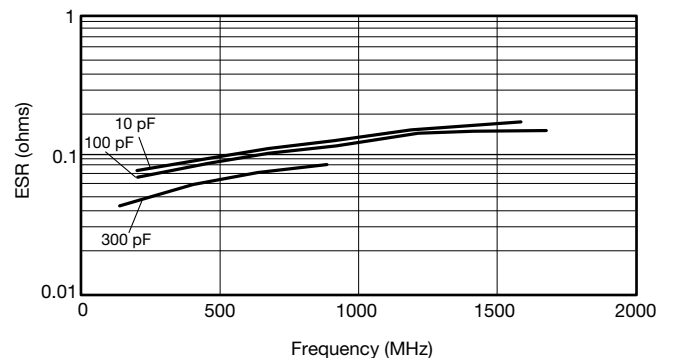
TYPICAL ESR vs. FREQUENCY  
0603 "U" SERIES



TYPICAL ESR vs. FREQUENCY  
0805 "U" SERIES



TYPICAL ESR vs. FREQUENCY  
1210 "U" SERIES



ESR Measured on the Boonton 34A

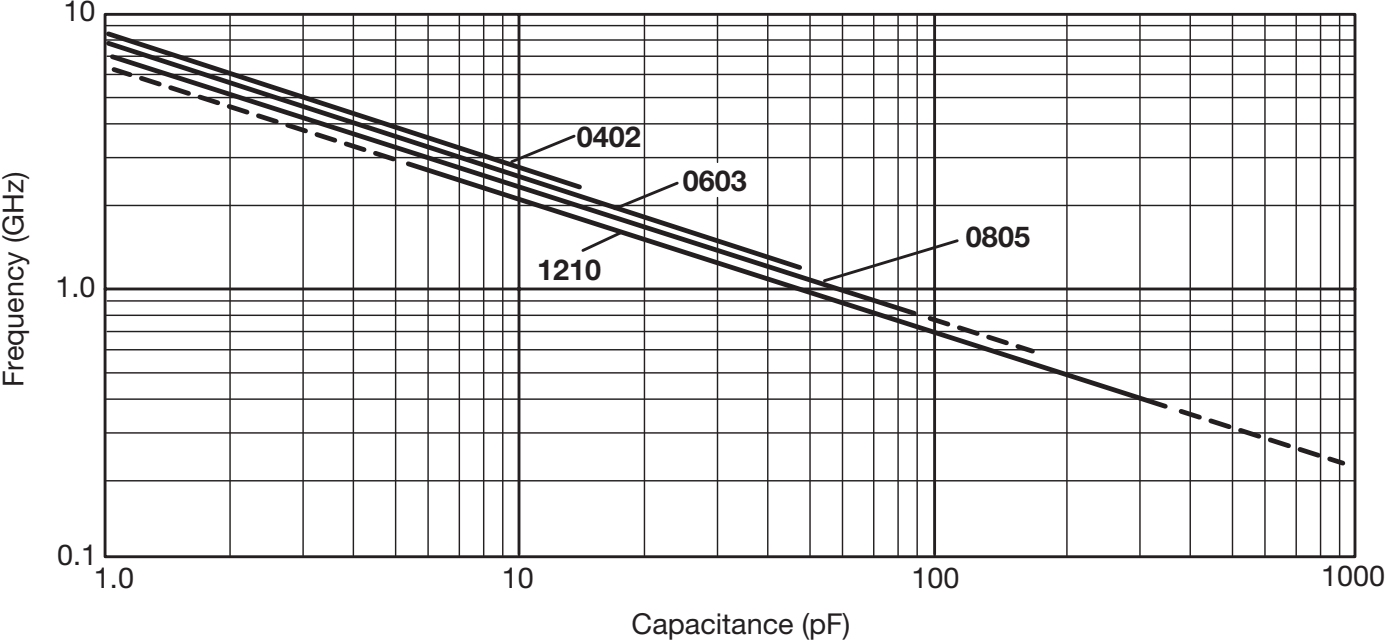


# RF/Microwave C0G (NP0) Capacitors (RoHS)



Ultra Low ESR, "U" Series, C0G (NP0) Chip Capacitors

TYPICAL  
SERIES RESONANT FREQUENCY  
"U" SERIES CHIP



7



# RF/Microwave C0G (NP0) Capacitors (Sn/Pb)



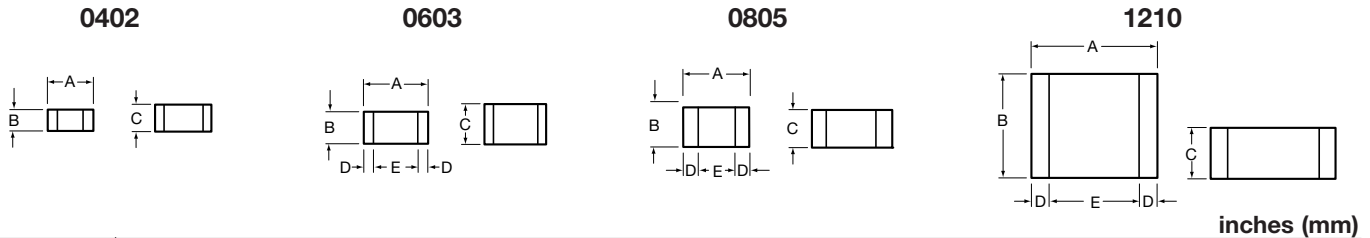
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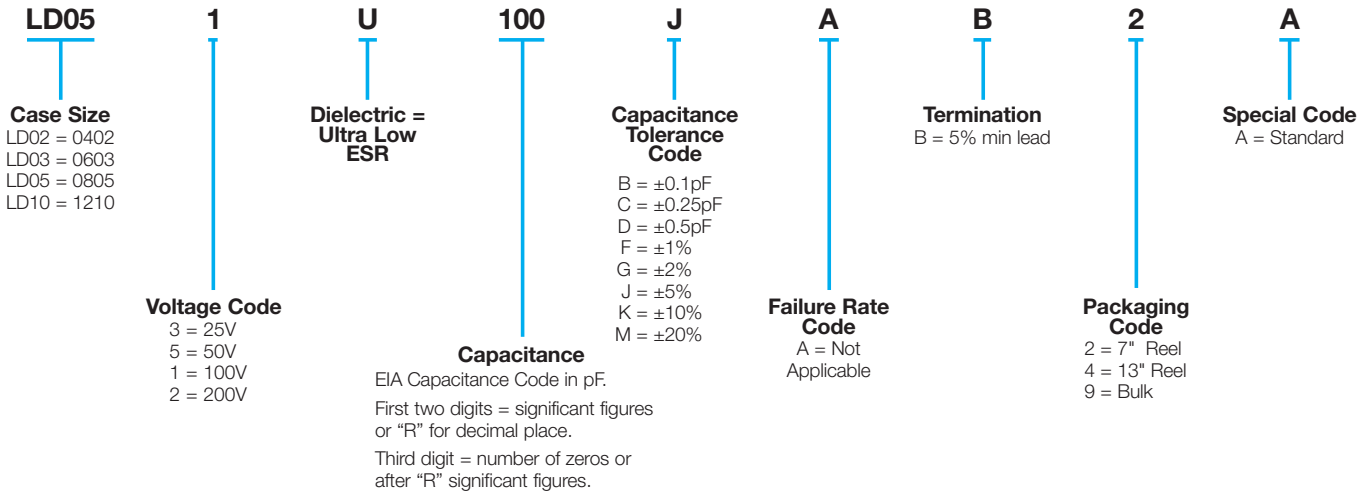
are met on each value producing lot to lot uniformity. Sizes available are EIA chip sizes 0603, 0805, and 1210.

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

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- 0603 - See Performance Curve, page 130
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**Marking:** Laser marking EIA J marking standard (except 0603) (capacitance code and tolerance upon request).

#### MILITARY SPECIFICATIONS

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# RF/Microwave C0G (NP0) Capacitors (Sn/Pb)



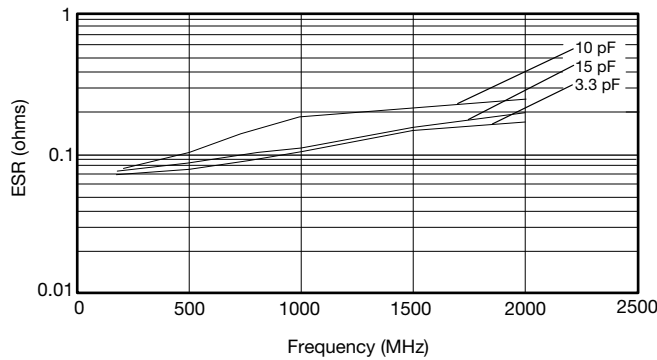
## Ultra Low ESR, "U" Series, C0G (NP0) Chip Capacitors

### CAPACITANCE RANGE

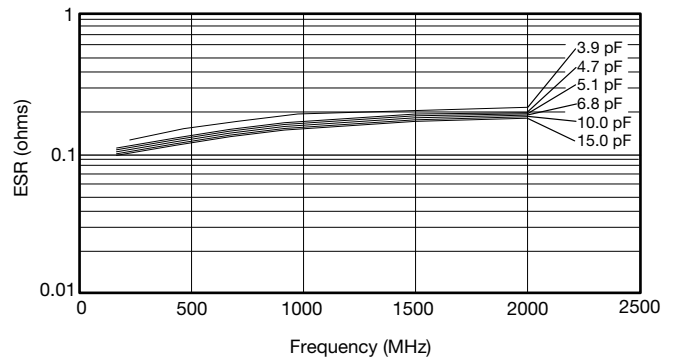
Cap (pF)	Available Tolerance	Size				Cap (pF)	Available Tolerance	Size				Cap (pF)	Available Tolerance	Size				Cap (pF)	Available Tolerance	Size																																																																																																																					
		LD02	LD03	LD05	LD10			LD02	LD03	LD05	LD10			LD02	LD03	LD05	LD10			LD02	LD03	LD05	LD10																																																																																																																		
0.2	B,C	50V	N/A	N/A	N/A	1.0	B,C,D	50V	200V	200V	200V	100	F,G,J,K,M	N/A	100V	200V	200V	110					120					130					140					150					160					180					200					220					270					300					330					360					390					430					470					510					560					620					680					750					820					910					1000				

### ULTRA LOW ESR, "U" SERIES

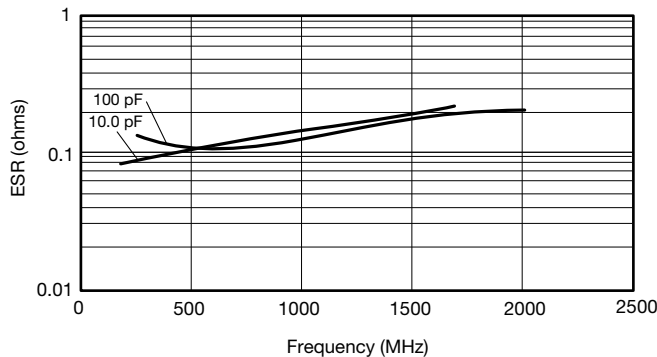
TYPICAL ESR vs. FREQUENCY  
0402 "U" SERIES



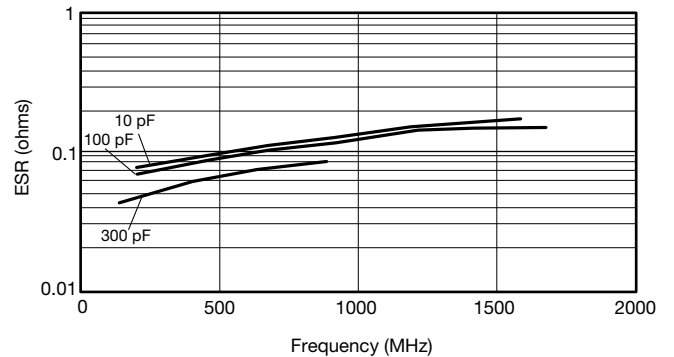
TYPICAL ESR vs. FREQUENCY  
0603 "U" SERIES



TYPICAL ESR vs. FREQUENCY  
0805 "U" SERIES



TYPICAL ESR vs. FREQUENCY  
1210 "U" SERIES



ESR Measured on the Boonton 34A

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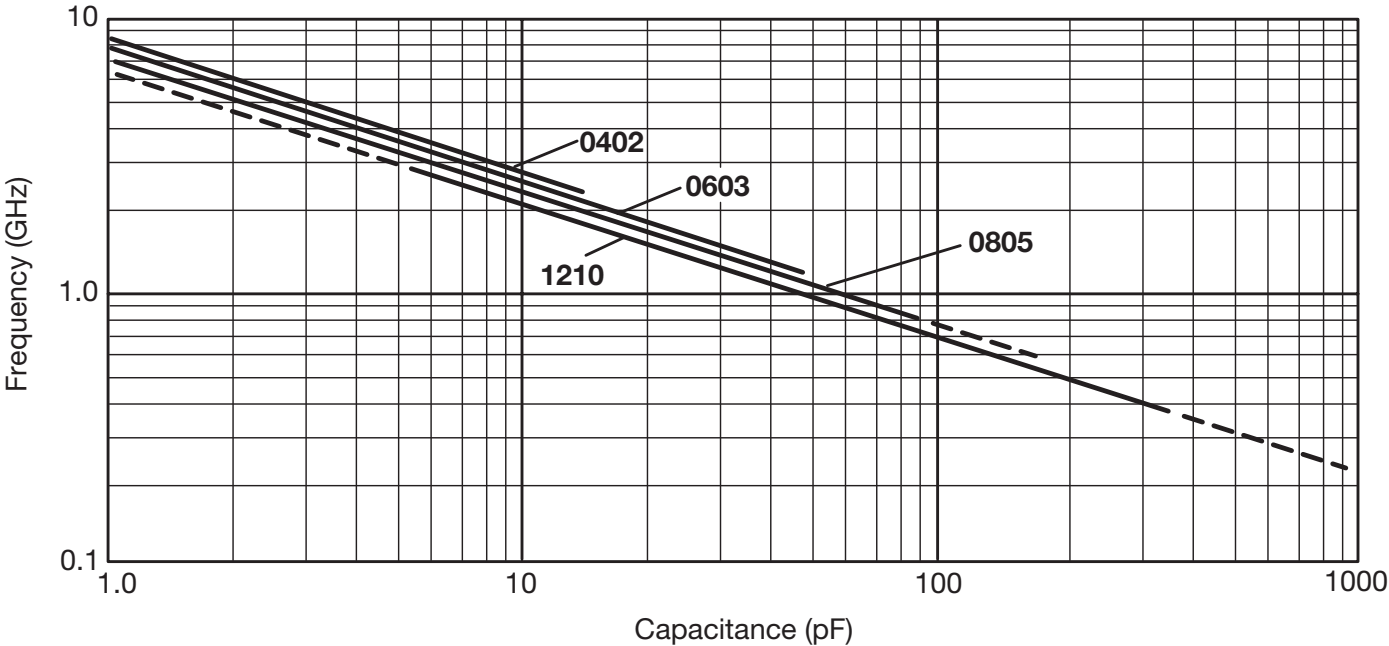


# RF/Microwave C0G (NP0) Capacitors (Sn/Pb)



Ultra Low ESR, "U" Series, C0G (NP0) Chip Capacitors

TYPICAL  
SERIES RESONANT FREQUENCY  
"U" SERIES CHIP



**AVX RF**  
**RF/Microwave**  
“U” Series  
Designer Kits

## “U” Dielectric Kits

### 0402

Kit 5000 UZ			
Cap. Value pF	Tolerance	Cap. Value pF	Tolerance
0.5	B ( $\pm 0.1\text{pF}$ )	4.7	B ( $\pm 0.1\text{pF}$ )
1.0		5.6	
1.5		6.8	
1.8		8.2	
2.2		10.0	
2.4		12.0	
3.0		15.0	
3.6			J ( $\pm 5\%$ )

\*\*\*25 each of 15 values

### 0603

Kit 4000 UZ					
Cap. Value pF	Tolerance	Cap. Value pF	Tolerance		
1.0	B ( $\pm 0.1\text{pF}$ )	6.8	B ( $\pm 0.1\text{pF}$ )		
1.2		7.5			
1.5		8.2			
1.8		10.0			
2.0		12.0			
2.4		15.0			
2.7		18.0			
3.0		22.0			
3.3		27.0			
3.9		33.0			
4.7		39.0			
5.6		47.0			
					J ( $\pm 5\%$ )

\*\*\*25 each of 24 values

### 0805

Kit 3000 UZ			
Cap. Value pF	Tolerance	Cap. Value pF	Tolerance
1.0	B ( $\pm 0.1\text{pF}$ )	15.0	J ( $\pm 5\%$ )
1.5		18.0	
2.2		22.0	
2.4		24.0	
2.7		27.0	
3.0		33.0	
3.3		36.0	
3.9		39.0	
4.7		47.0	
5.6		56.0	
7.5		68.0	
8.2		82.0	
9.1		100.0	
10.0		J ( $\pm 5\%$ )	
12.0	160.0		

\*\*\*25 each of 30 values

### 1210

Kit 3500 UZ			
Cap. Value pF	Tolerance	Cap. Value pF	Tolerance
2.2	B ( $\pm 0.1\text{pF}$ )	36.0	J ( $\pm 5\%$ )
2.7		39.0	
4.7		47.0	
5.1		51.0	
6.8		56.0	
8.2		68.0	
9.1		82.0	
10.0		J ( $\pm 5\%$ )	
13.0	120.0		
15.0	130.0		
18.0	240.0		
20.0	300.0		
24.0	390.0		
27.0	470.0		
30.0	680.0		

\*\*\*25 each of 30 values