# **RF/Microwave Capacitors**

# RF/Microwave C0G (NP0) Capacitors

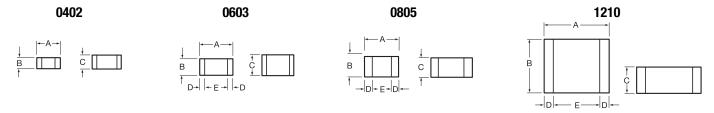
# Ultra Low ESR "U" Series, COG (NP0) Capacitors (RoHS)



#### **GENERAL INFORMATION**

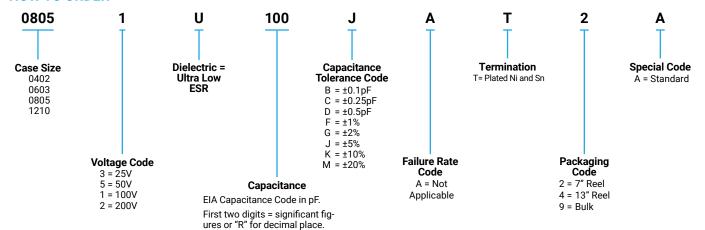
"U" Series capacitors are COG (NPO) chip capacitors specially designed for "Ultra" low ESR for applications in the communications market. Max ESR and effective capacitance are met on each value producing lot to lot uniformity. Sizes available are EIA chip sizes 0603, 0805, and 1210.

#### **DIMENSIONS:** inches (millimeters)



Size	A	В	С	D	E
0402	0.039±0.004 (1.00±0.1)	0.020±0.004 (0.50±0.1)	0.024 (0.6) max	0.010 ± 0.006 (0.25 ± 0.15)	0.014 (0.36) min
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)	0.045 (1.15mm) max	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)	0.055 (1.40mm) max	0.025 ± 0.015 (0.635 ± 0.381)	0.040 (1.02) min

#### **HOW TO ORDER**



Third digit = number of zeros or after "R" significant figures.

#### **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):

 $10^{12}\,\Omega$  min. @  $25^{\circ}$ C and rated WVDC  $10^{\scriptscriptstyle 11}\,\Omega$  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



250% of rated WVDC

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

0402 - See Performance Curve, page 300 0603 - See Performance Curve, page 300 0805 - See Performance Curve, page 300 1210 - See Performance Curve, page 300

#### Marking

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

LEAD-FREE

LEAD-FREE COMPATIBLE COMPONENT

RoHS

COMPLIANT



# **RF/Microwave Capacitors** RF/Microwave COG (NP0) Capacitors Ultra Low ESR "U" Series, COG (NP0) Capacitors (RoHS)

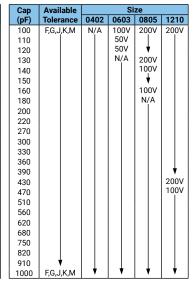


#### **CAPACITANCE RANGE**

Cap	Available	Size				
(pF)	Tolerance	0402	0603	0805	1210	l
0.2	B,C	50V	N/A	N/A	N/A	1
0.3						
0.4	♦					l
0.5	B,C					l
0.6	B,Ç,D					
0.7						l
0.8	▼					l
0.9	B,C,D	♦	♦	♦	♥	l
						•

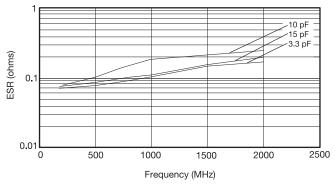
Сар	Available		Si		
(pF)	Tolerance	0402	0603	0805	1210
1.0	B,C,D	50V	200V	200V	200V
1.1					
1.2					
1.3					
1.4					
1.5					
1.6					
1.7					
1.8					
1.9					
2.0					
2.1					
2.2					
2.4					
2.7					
3.0					
3.3					
3.6					
3.9					
4.3					
4.7					
5.1	l 1				
5.6	, <b>,</b>				
6.2	B,C,D	↓	↓	↓	↓
6.8	B,C,J,K,M				

Cap	Available		Size			
(pF)	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						
13						
15			♦			
18			200V			
20			100V			
22						
24						
27		*				
30		50V				
33		N/A				
36						
39						
43						
47						
51						
56						
68						
75						
82	1	1 1		1	1	
91	▼	▼	▼	▼	🔻	

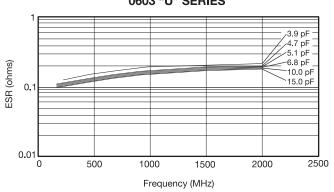


# **ULTRA LOW ESR, "U" SERIES**

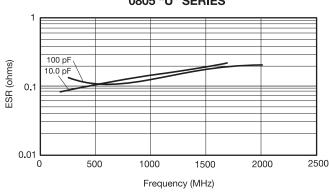
# TYPICAL ESR vs. FREQUENCY 0402 "U" SERIES



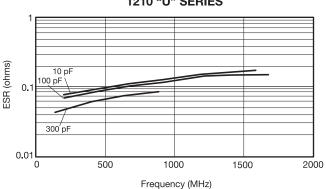
## TYPICAL ESR vs. FREQUENCY 0603 "U" SERIES



## TYPICAL ESR vs. FREQUENCY 0805 "U" SERIES



## TYPICAL ESR vs. FREQUENCY 1210 "U" SERIES



ESR Measured on the Boonton 34A



# **TYPICAL SERIES RESONANT FREQUENCY** "U" SERIES CHIP

