

RF/Microwave C0G (NP0) Capacitors (RoHS)



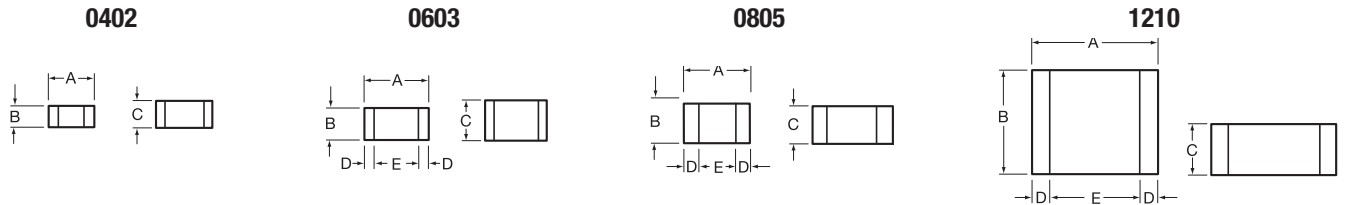
Ultra Low ESR, "U" Series, C0G (NP0) Chip Capacitors

GENERAL INFORMATION

"U" Series capacitors are C0G (NP0) chip capacitors specially designed for "Ultra" low ESR for applications in the communications market. Max ESR and effective capacitance

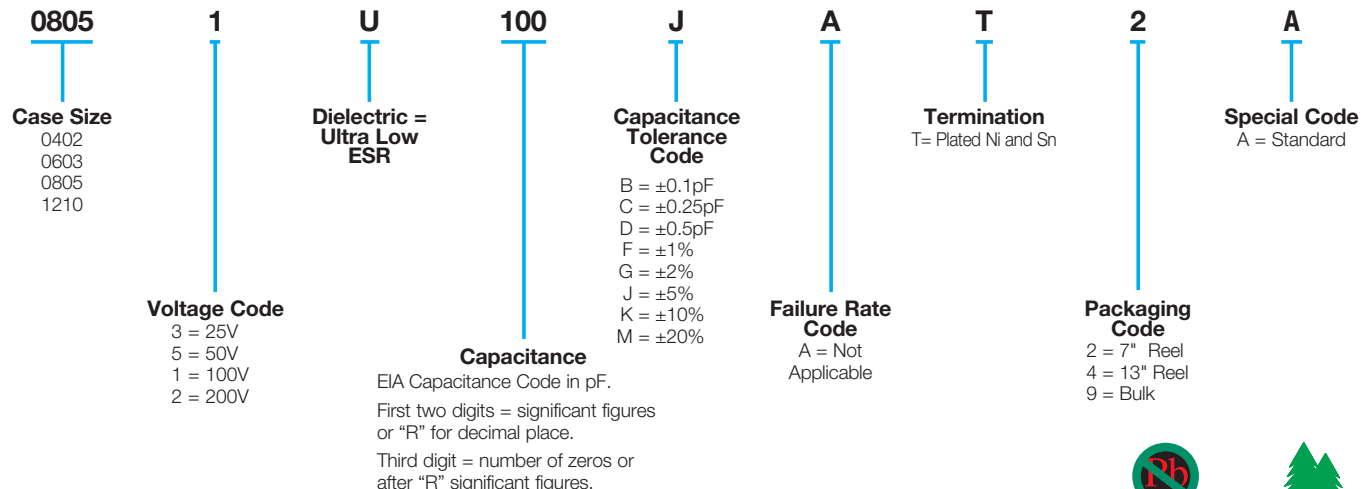
are met on each value producing lot to lot uniformity. Sizes available are EIA chip sizes 0603, 0805, and 1210.

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):

10¹² Ω min. @ 25°C and rated WVDC
10¹¹ 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 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).

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			
		0402	0603	0805	1210
0.2	B,C	50V	N/A	N/A	N/A
0.3	B,C	50V	N/A	N/A	N/A
0.4	B,C	50V	N/A	N/A	N/A
0.5	B,C	50V	N/A	N/A	N/A
0.6	B,C,D	50V	N/A	N/A	N/A
0.7	B,C,D	50V	N/A	N/A	N/A
0.8	B,C,D	50V	N/A	N/A	N/A
0.9	B,C,D	50V	N/A	N/A	N/A

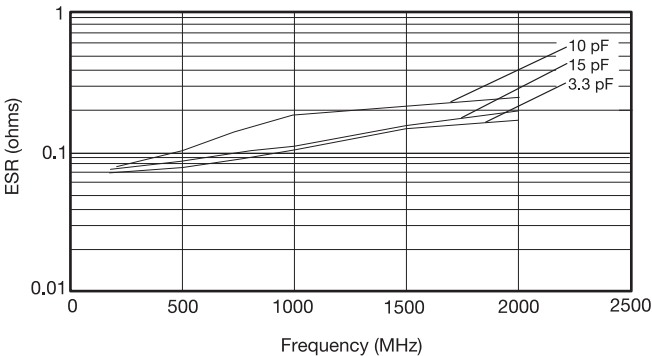
Cap (pF)	Available Tolerance	Size			
		0402	0603	0805	1210
1.0	B,C,D	50V	200V	200V	200V
1.1	B,C,D	50V	200V	200V	200V
1.2	B,C,D	50V	200V	200V	200V
1.3	B,C,D	50V	200V	200V	200V
1.4	B,C,D	50V	200V	200V	200V
1.5	B,C,D	50V	200V	200V	200V
1.6	B,C,D	50V	200V	200V	200V
1.7	B,C,D	50V	200V	200V	200V
1.8	B,C,D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

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

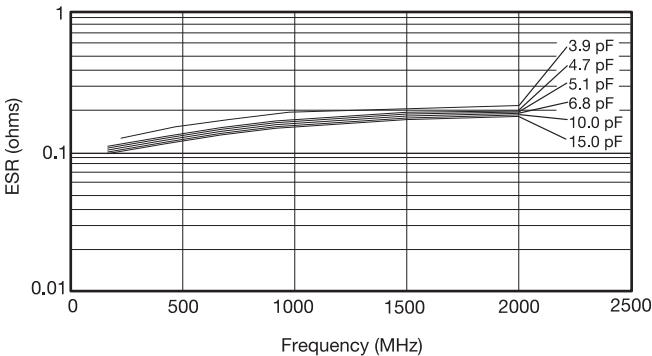
Cap (pF)	Available Tolerance	Size			
		0402	0603	0805	1210
100	F,G,J,K,M	N/A	100V	200V	200V
110	F,G,J,K,M	N/A	50V	200V	200V
120	F,G,J,K,M	N/A	50V	200V	200V
130	F,G,J,K,M	N/A	50V	200V	200V
140	F,G,J,K,M	N/A	50V	200V	200V
150	F,G,J,K,M	N/A	50V	200V	200V
160	F,G,J,K,M	N/A	50V	200V	200V
180	F,G,J,K,M	N/A	50V	200V	200V
200	F,G,J,K,M	N/A	50V	200V	200V
220	F,G,J,K,M	N/A	50V	200V	200V
270	F,G,J,K,M	N/A	50V	200V	200V
300	F,G,J,K,M	N/A	50V	200V	200V
330	F,G,J,K,M	N/A	50V	200V	200V
360	F,G,J,K,M	N/A	50V	200V	200V
390	F,G,J,K,M	N/A	50V	200V	200V
430	F,G,J,K,M	N/A	50V	200V	200V
470	F,G,J,K,M	N/A	50V	200V	200V
510	F,G,J,K,M	N/A	50V	200V	200V
560	F,G,J,K,M	N/A	50V	200V	200V
620	F,G,J,K,M	N/A	50V	200V	200V
680	F,G,J,K,M	N/A	50V	200V	200V
750	F,G,J,K,M	N/A	50V	200V	200V
820	F,G,J,K,M	N/A	50V	200V	200V
910	F,G,J,K,M	N/A	50V	200V	200V
1000	F,G,J,K,M	N/A	50V	200V	200V

ULTRA LOW ESR, “U” SERIES

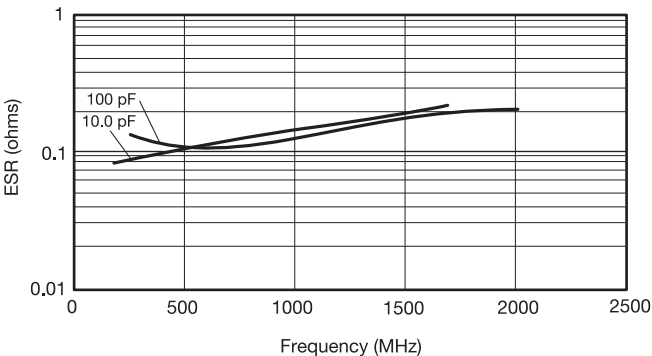
TYPICAL ESR vs. FREQUENCY
0402 “U” SERIES



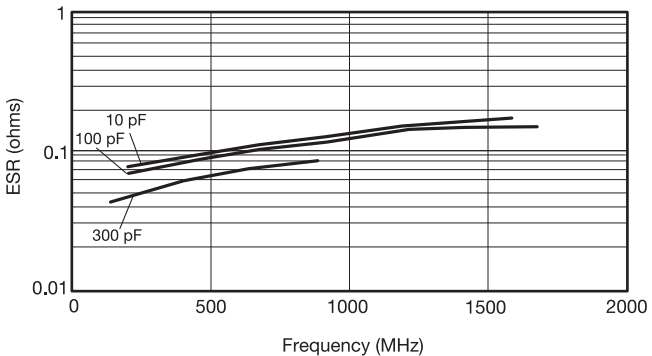
TYPICAL ESR vs. FREQUENCY
0603 “U” SERIES



TYPICAL ESR vs. FREQUENCY
0805 “U” SERIES



TYPICAL ESR vs. FREQUENCY
1210 “U” SERIES

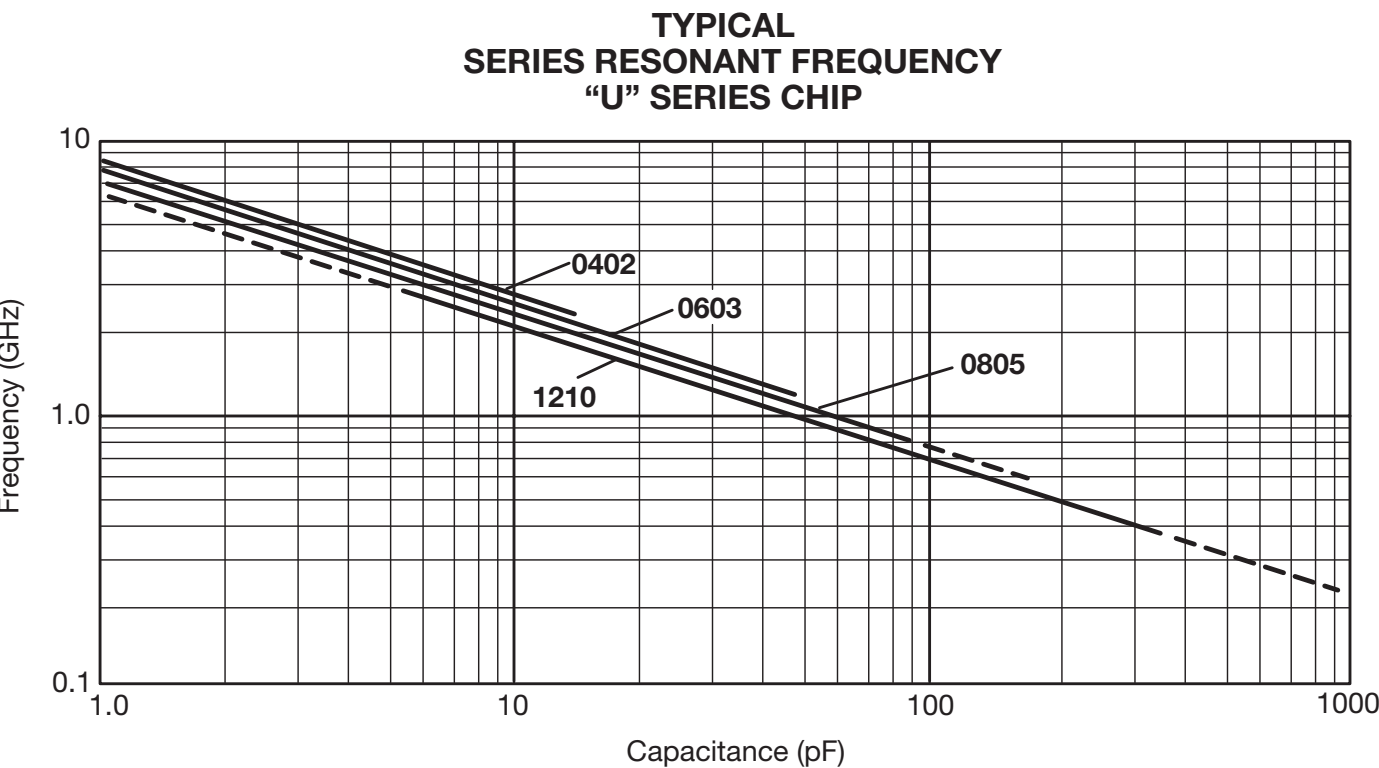


ESR Measured on the Boonton 34A

RF/Microwave C0G (NP0) Capacitors (RoHS)



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



RF/Microwave Automotive C0G (NP0) Capacitors (RoHS), AEC Q200 Qualified



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

GENERAL INFORMATION

Automotive “U” Series capacitors are C0G (NP0) chip capacitors specially designed for “Ultra” low ESR for applications in the automotive market. Max ESR and effective capacitance

are met on each value producing lot to lot uniformity. Sizes available are EIA chip sizes 0402 and 0603.

DIMENSIONS: inches (millimeters)

0402

0603



Size	inches (mm)				
	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

HOW TO ORDER

0402

Case Size
0402
0603

1

Voltage Code
5 = 50V
1 = 100V
2 = 200V

U

Dielectric =
Ultra Low
ESR

100

Capacitance
EIA Capacitance Code in pF.
First two digits = significant figures
or “R” for decimal place.
Third digit = number of zeros or
after “R” significant figures.

J

Capacitance
Tolerance
Code
B = ±0.1pF
C = ±0.25pF
D = ±0.5pF
F = ±1%
G = ±2%
J = ±5%
K = ±10%
M = ±20%

4

Failure Rate
Code
4 = Automotive

T

Termination
T = Plated Ni and Sn

2

Packaging
Code
2 = 7" Reel
4 = 13" Reel
9 = Bulk

A

Special Code
A = Standard

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

Temperature Coefficient of Capacitance (TC):

0±30 ppm/°C (-55° to +125°C)

Insulation Resistance (IR):

10¹² Ω min. @ 25°C and rated WVDC
10¹¹ Ω min. @ 125°C and rated WVDC

Working Voltage (WVDC):

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

Dielectric Working Voltage (DWV):

250% of rated WVDC

Equivalent Series Resistance Typical (ESR):

0402 - See Performance Curve, page 303
0603 - See Performance Curve, page 303

Automotive Specifications

Meets or exceeds the requirements of AEC Q200



RF/Microwave Automotive C0G (NP0) Capacitors (RoHS), AEC Q200 Qualified

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

CAPACITANCE RANGE

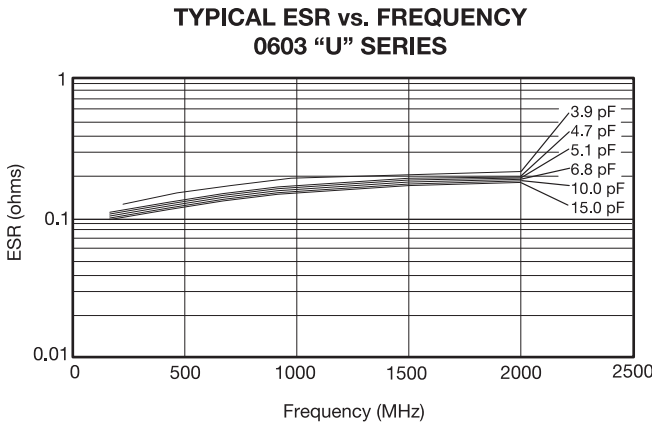
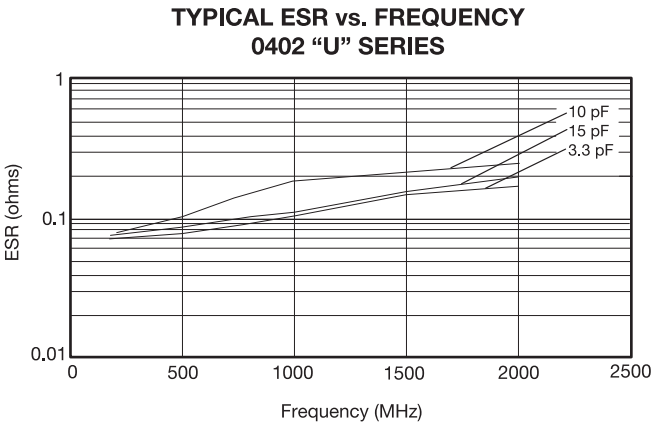
Cap (pF)	Available Tolerance	Size	
		0402	0603
0.2	B,C	100V	N/A
0.3			
0.4			
0.5	B,C	100V	N/A
0.6	B,C,D		
0.7	↓		
0.8	B,C,D	↓	↓
0.9			

Cap (pF)	Available Tolerance	Size	
		0402	0603
1.0	B,C,D	100V	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	↓	↓	↓
5.6			
6.2			
6.8	B,C,D	↓	↓
	B,C,J,K,M	↓	↓

Cap (pF)	Available Tolerance	Size	
		0402	0603
7.5	B,C,J,K,M	100V	200V
8.2			
9.1			
10	B,C,J,K,M	100V	↓
11	F,G,J,K,M		
12	↓		
13	↓	50V	↓
15			
18			
20	↓	↓	200V
22			
24			
27	↓	50V	↓
30			
33			
36	↓	N/A	↓
39			
43			
47	↓	↓	↓
51			
56			
68	↓	↓	↓
75			
82			
91	↓	↓	↓

Cap (pF)	Available Tolerance	Size	
		0402	0603
100	F,G,J,K,M	N/A	100V
110			
120			
130	↓	↓	50V
140			
150			
160	↓	↓	N/A
180			
200			
220	↓	↓	↓
270			
300			
330	↓	↓	↓
360			
390			
430	↓	↓	↓
470			
510			
560	↓	↓	↓
620			
680			
750	↓	↓	↓
820			
910			
1000	F,G,J,K,M	↓	↓

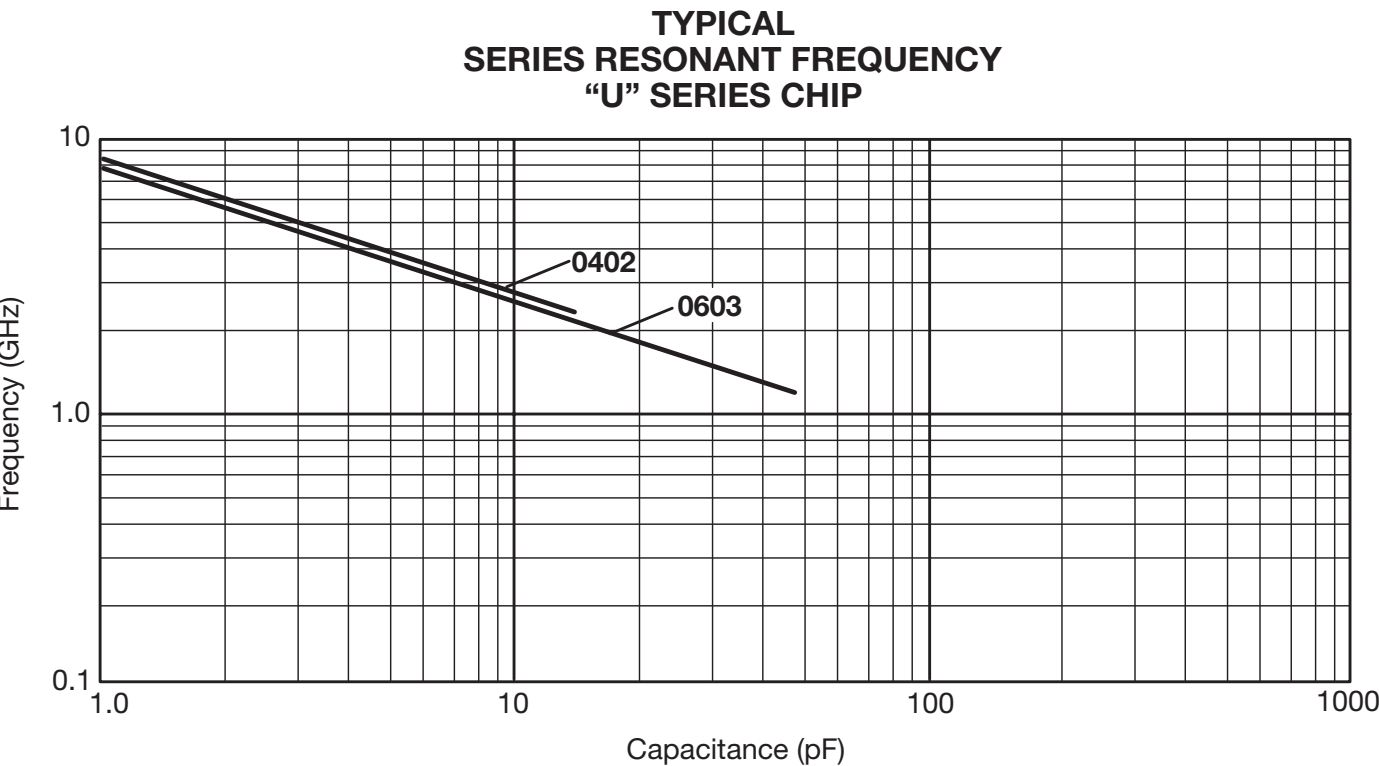
ULTRA LOW ESR, “U” SERIES



RF/Microwave Automotive C0G (NP0)
Capacitors (RoHS), AEC Q200 Qualified



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



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



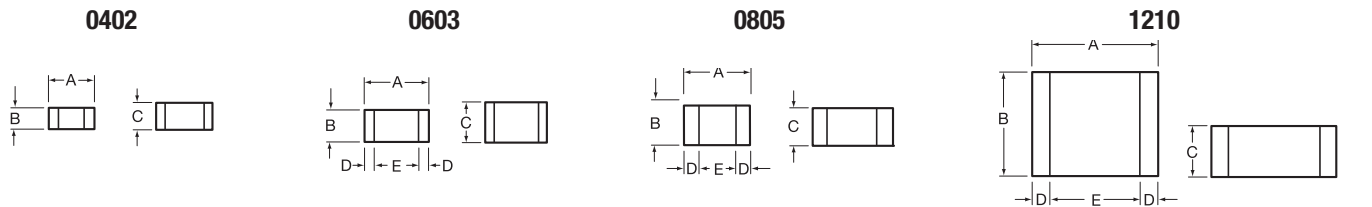
Ultra Low ESR, "U" Series, C0G (NP0) Chip Capacitors

GENERAL INFORMATION

"U" Series capacitors are C0G (NP0) chip capacitors specially designed for "Ultra" low ESR for applications in the communications market. Max ESR and effective capacitance

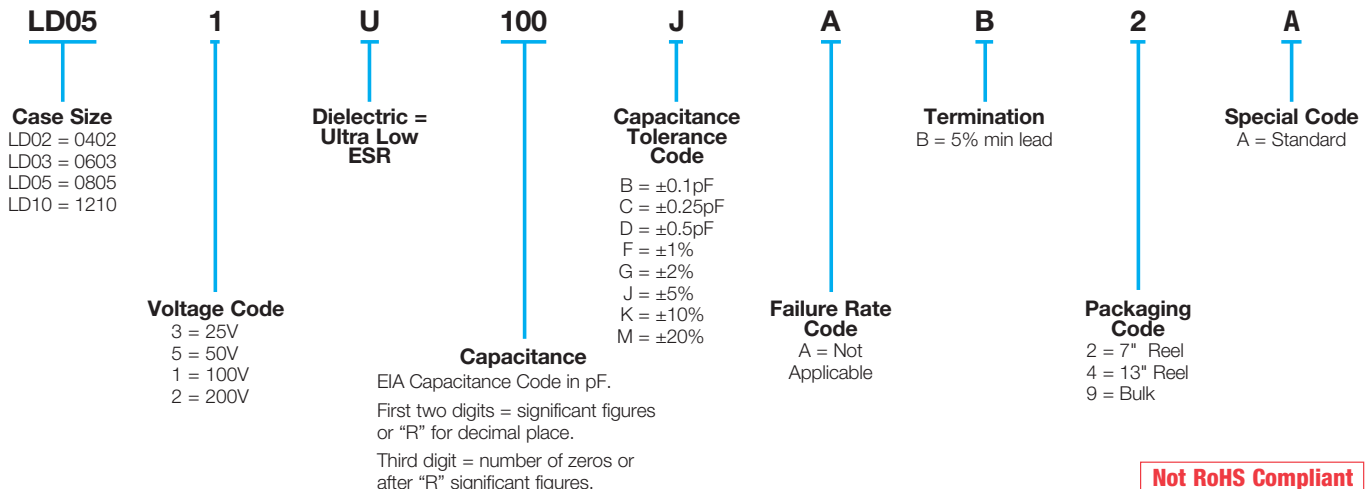
are met on each value producing lot to lot uniformity. Sizes available are EIA chip sizes 0603, 0805, and 1210.

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



Not RoHS Compliant

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):

10¹² Ω min. @ 25°C and rated WVDC
10¹¹ 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 306
0603 - See Performance Curve, page 306
0805 - See Performance Curve, page 306
1210 - See Performance Curve, page 306

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 (Sn/Pb)



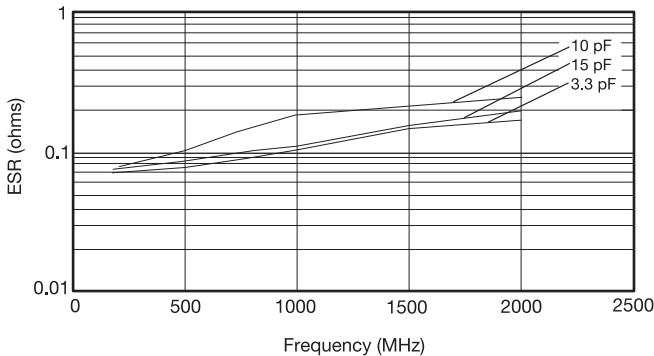
Ultra Low ESR, “U” Series, C0G (NP0) Chip Capacitors

CAPACITANCE RANGE

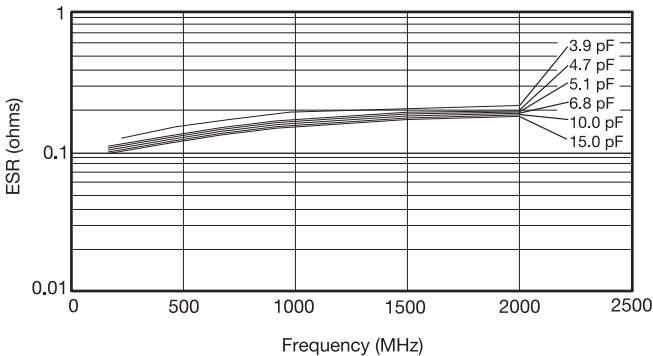
Cap (pF)	Available Tolerance	Size				Cap (pF)	Available Tolerance	Size				Cap (pF)	Available Tolerance	Size				Cap (pF)	Available Tolerance	Size			
		LD02	LD03	LD05	LD10			LD02	LD03	LD05	LD10			LD02	LD03	LD05	LD10			LD02	LD03	LD05	LD10
0.2	B,C	50V	N/A	N/A	N/A	1.0	B,C,D	50V	200V	200V	200V	7.5	B,C,J,K,M	50V	200V	200V	200V	100	F,G,J,K,M	N/A	100V	200V	200V
0.3						1.1						11						110					
0.4						1.2						12						120					
0.5	B,C					1.3						13						130					
0.6	B,C,D					1.4						14						140					
0.7						1.5						15						150					
0.8						1.6						16						160					
0.9	B,C,D					1.7						17						170					
						1.8						18						180					
						1.9						19						190					
						2.0						20						200					
						2.1						21						210					
						2.2						22						220					
						2.3						23						230					
						2.4						24						240					
						2.5						25						250					
						2.6						26						260					
						2.7						27						270					
						2.8						28						280					
						2.9						29						290					
						3.0						30						300					
						3.1						31						310					
						3.2						32						320					
						3.3						33						330					
						3.4						34						340					
						3.5						35						350					
						3.6						36						360					
						3.7						37						370					
						3.8						38						380					
						3.9						39						390					
						4.0						40						400					
						4.1						41						410					
						4.2						42						420					
						4.3						43						430					
						4.4						44						440					
						4.5						45						450					
						4.6						46						460					
						4.7						47						470					
						4.8						48						480					
						4.9						49						490					
						5.0						50						500					
						5.1						51						510					
						5.2						52						520					
						5.3						53						530					
						5.4						54						540					
						5.5						55						550					
						5.6						56						560					
						5.7						57						570					
						5.8						58						580					
						5.9						59						590					
						6.0						60						600					
						6.1						61						610					
						6.2						62						620					
						6.3						63						630					
						6.4						64						640					
						6.5						65						650					
						6.6						66						660					
						6.7						67						670					
						6.8						68						680					
						6.9						69						690					
						7.0						70						700					
						7.1						71						710					
						7.2						72						720					
						7.3						73						730					
						7.4						74						740					
						7.5						75						750					
						7.6						76						760					
						7.7						77						770					
						7.8						78						780					
						7.9						79						790					
						8.0						80						800					
						8.1						81						810					
						8.2						82						820					
						8.3						83						830					
						8.4						84						840					
						8.5						85						850					
						8.6						86						860					
						8.7						87						870					
						8.8						88						880					
						8.9						89						890					
						9.0						90						900					
						9.1						91						910					
						9.2						92						920					
						9.3						93						930					
						9.4						94						940					
						9.5						95						950					
						9.6						96						960					
						9.7						97						970					
						9.8						98						980					
						9.9						99						990					
						10.0						100						1000					

ULTRA LOW ESR, “U” SERIES

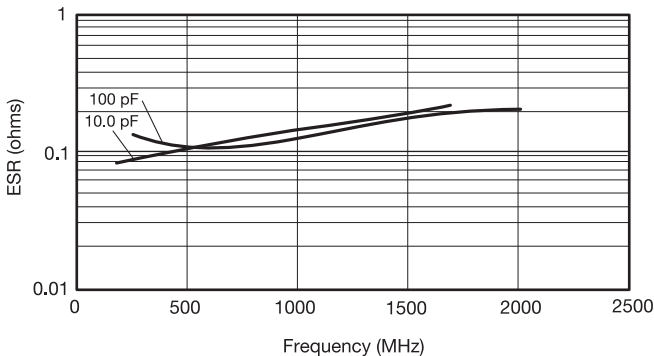
TYPICAL ESR vs. FREQUENCY
0402 “U” SERIES



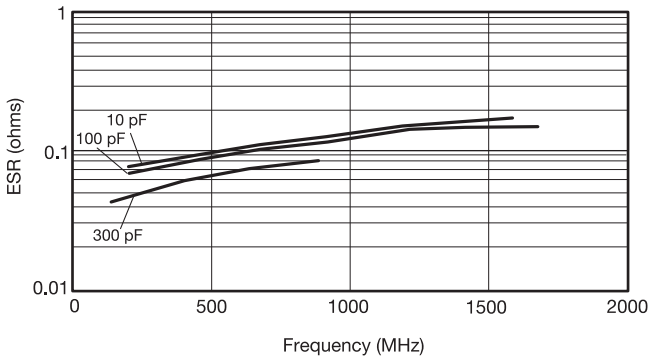
TYPICAL ESR vs. FREQUENCY
0603 “U” SERIES



TYPICAL ESR vs. FREQUENCY
0805 “U” SERIES



TYPICAL ESR vs. FREQUENCY
1210 “U” SERIES

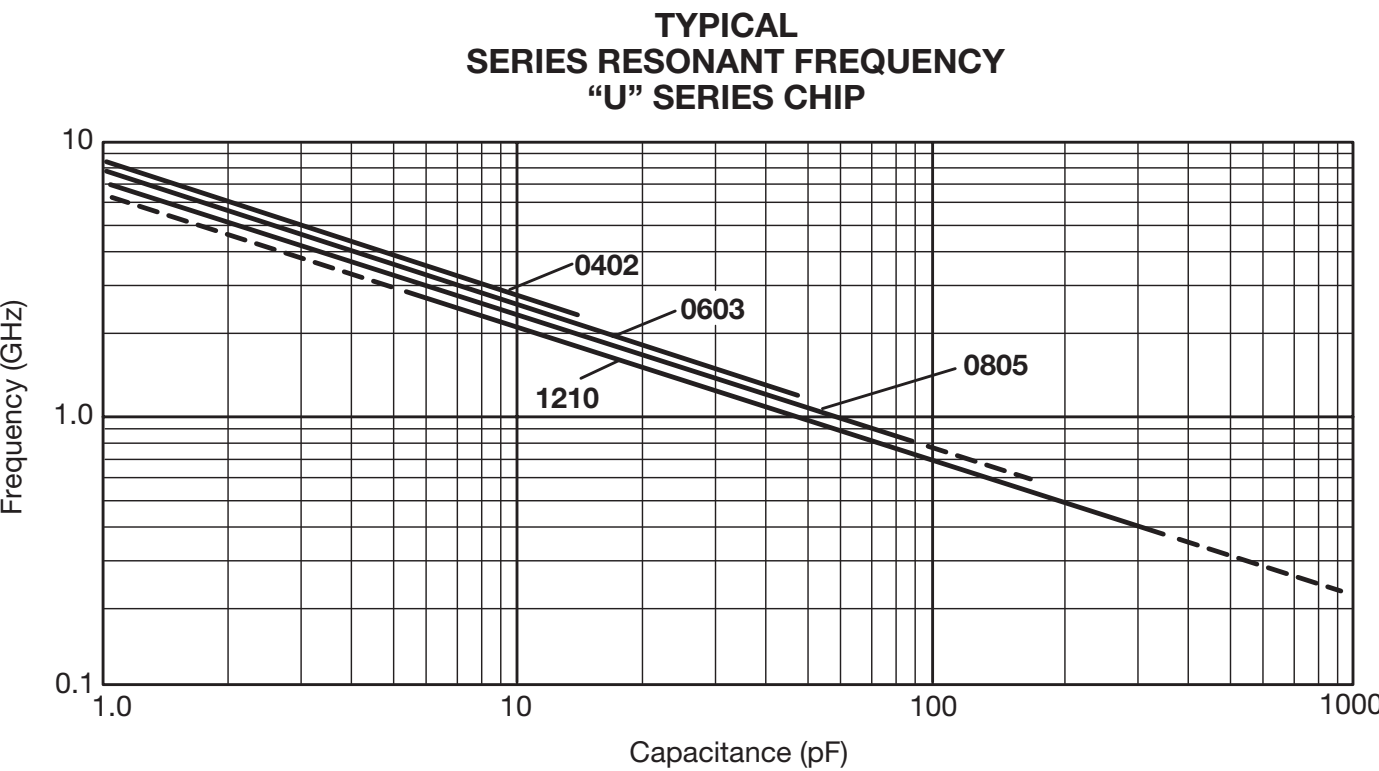


ESR Measured on the Boonton 34A

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



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



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	J ($\pm 5\%$)
2.4		12.0	
3.0		15.0	
3.6			

***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	J ($\pm 5\%$)
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	

***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 ($\pm 5\%$)	130.0	
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 ($\pm 5\%$)	100.0	
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

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Multilayer Ceramic Capacitors MLCC - SMD/SMT](#) category:

Click to view products by [AVX](#) manufacturer:

Other Similar products are found below :

[M39014/01-1467](#) [M39014/02-1218V](#) [M39014/02-1225V](#) [M39014/02-1262V](#) [M39014/22-0631](#) [1210J5000102JCT](#) [1210J2K00102KXT](#)
[1210J5000103KXT](#) [1210J5000223KXT](#) [D55342E07B379BR-TR](#) [D55342E07B523DR-T/R](#) [1812J1K00103KXT](#) [1812J1K00473KXT](#)
[1812J2K00680JCT](#) [1812J4K00102MXT](#) [1812J5000102JCT](#) [1812J5000103JCT](#) [1812J5000682JCT](#) [NIN-FB391JTRF](#) [NIN-FC2R7JTRF](#)
[NPIS27H102MTRF](#) [C1206C101J1GAC](#) [C1608C0G1E472JT000N](#) [C2012C0G2A472J](#) [2220J2K00101JCT](#) [KHC201E225M76N0T00](#)
[1812J1K00222JCT](#) [1812J2K00102KXT](#) [1812J2K00222KXT](#) [1812J2K00472KXT](#) [2-1622820-7-CUT-TAPE](#) [2220J3K00102KXT](#)
[2225J2500824KXT](#) [CCR07CG103KM](#) [CGA2B2C0G1H010C](#) [CGA2B2C0G1H040C](#) [CGA2B2C0G1H050C](#) [CGA2B2C0G1H060D](#)
[CGA2B2C0G1H070D](#) [CGA2B2C0G1H151J](#) [CGA2B2C0G1H1R5C](#) [CGA2B2C0G1H2R2C](#) [CGA2B2C0G1H3R3C](#) [CGA2B2C0G1H680J](#)
[CGA2B2C0G1H6R8D](#) [CGA2B2X8R1H221K](#) [CGA2B2X8R1H472K](#) [CGA3E1X7R1C474K](#) [CGA3E2C0G1H561JT0Y0N](#)
[CGA4J2X7R2A104K](#)