



**THE DATASHEET OF
04025U2R2BAT2A**



RF/Microwave Capacitors

RF/Microwave C0G (NP0) Capacitors

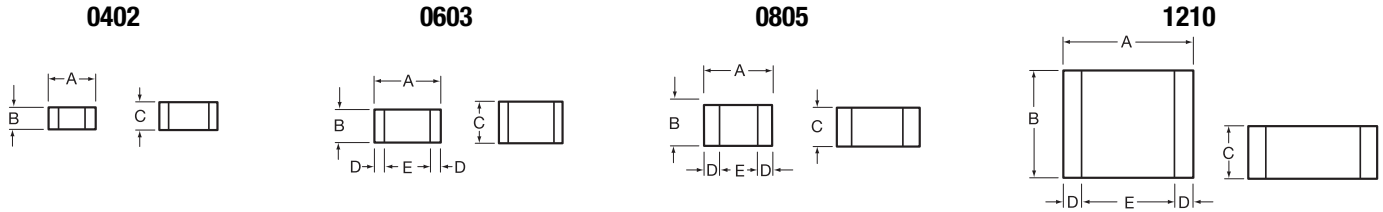
Ultra Low ESR "U" Series, C0G (NP0) Capacitors (RoHS)



GENERAL INFORMATION

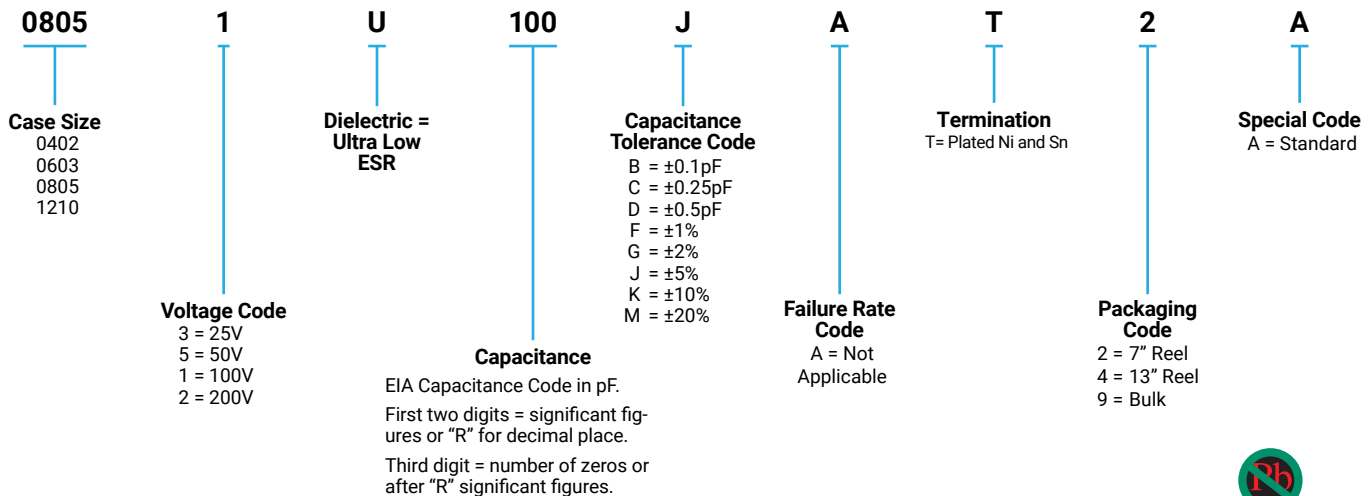
"U" Series capacitors are C0G (NP0) chip capacitors specially designed for "Ultra" low ESR for applications in the communications market. Max ESR and effective capacitance are met on each value producing lot to lot uniformity. Sizes available are EIA chip sizes 0603, 0805, and 1210.

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	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



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 Capacitors

RF/Microwave C0G (NP0) Capacitors

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

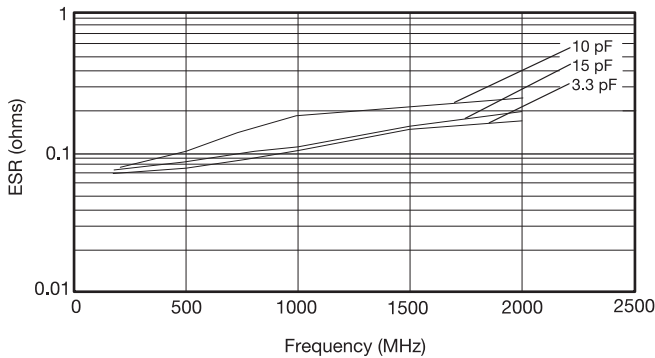


CAPACITANCE RANGE

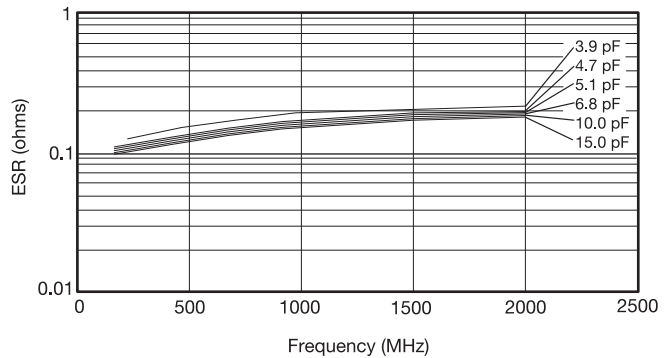
Cap (pF)	Available Tolerance	Size				Cap (pF)	Available Tolerance	Size				Cap (pF)	Available Tolerance	Size			
		0402	0603	0805	1210			0402	0603	0805	1210			0402	0603	0805	1210
0.2	B,C	50V	N/A	N/A	N/A	1.0	B,C,D	50V	200V	200V	200V	100	FG,J,K,M	N/A	100V	200V	200V
0.3	↓ B,C	↓	↓	↓	↓	1.1	↓	↓	↓	↓	↓	110	↓	↓	↓	↓	↓
0.4						1.2						120					
0.5	B,C	↓	↓	↓	↓	1.3	↓	↓	↓	↓	↓	130	↓	↓	↓	↓	↓
0.6	B,C,D					140											
0.7	B,C,D	↓	↓	↓	↓	1.4	↓	↓	↓	↓	↓	140	↓	↓	↓	↓	↓
0.8	B,C,D					150											
0.9	B,C,D	↓	↓	↓	↓	1.5	↓	↓	↓	↓	↓	160	↓	↓	↓	↓	↓
1.0	B,C,D					170											
1.1	↓	↓	↓	↓	↓	1.6	↓	↓	↓	↓	↓	180	↓	↓	↓	↓	↓
1.2						1.7						190					
1.3	↓	↓	↓	↓	↓	1.8	↓	↓	↓	↓	↓	200	↓	↓	↓	↓	↓
1.4						1.9						210					
1.5	B,C,D	↓	↓	↓	↓	2.0	↓	↓	↓	↓	↓	220	↓	↓	↓	↓	↓
1.6	B,C,D					230											
1.7	↓	↓	↓	↓	↓	2.1	↓	↓	↓	↓	↓	270	↓	↓	↓	↓	↓
1.8						2.2						300					
1.9	↓	↓	↓	↓	↓	2.2	↓	↓	↓	↓	↓	330	↓	↓	↓	↓	↓
2.0						2.3						360					
2.1	↓	↓	↓	↓	↓	2.4	↓	↓	↓	↓	↓	390	↓	↓	↓	↓	↓
2.2						2.5						430					
2.3	↓	↓	↓	↓	↓	2.7	↓	↓	↓	↓	↓	470	↓	↓	↓	↓	↓
2.4						2.8						510					
2.5	↓	↓	↓	↓	↓	3.0	↓	↓	↓	↓	↓	560	↓	↓	↓	↓	↓
2.6						3.1						620					
2.7	↓	↓	↓	↓	↓	3.3	↓	↓	↓	↓	↓	680	↓	↓	↓	↓	↓
2.8						3.2						750					
2.9	↓	↓	↓	↓	↓	3.6	↓	↓	↓	↓	↓	820	↓	↓	↓	↓	↓
3.0						3.4						910					
3.1	↓	↓	↓	↓	↓	3.9	↓	↓	↓	↓	↓	1000	↓	↓	↓	↓	↓
3.2						4.0						1000					
3.3	↓	↓	↓	↓	↓	4.3	↓	↓	↓	↓	↓	1000	↓	↓	↓	↓	↓
3.4						4.1						1000					
3.5	↓	↓	↓	↓	↓	4.7	↓	↓	↓	↓	↓	1000	↓	↓	↓	↓	↓
3.6						4.2						1000					
3.7	↓	↓	↓	↓	↓	5.1	↓	↓	↓	↓	↓	1000	↓	↓	↓	↓	↓
3.8						4.4						1000					
3.9	↓	↓	↓	↓	↓	5.6	↓	↓	↓	↓	↓	1000	↓	↓	↓	↓	↓
4.0						4.5						1000					
4.1	↓	↓	↓	↓	↓	6.2	↓	↓	↓	↓	↓	1000	↓	↓	↓	↓	↓
4.2						4.6						1000					
4.3	↓	↓	↓	↓	↓	6.8	↓	↓	↓	↓	↓	1000	↓	↓	↓	↓	↓
4.4						4.8						1000					

ULTRA LOW ESR, "U" SERIES

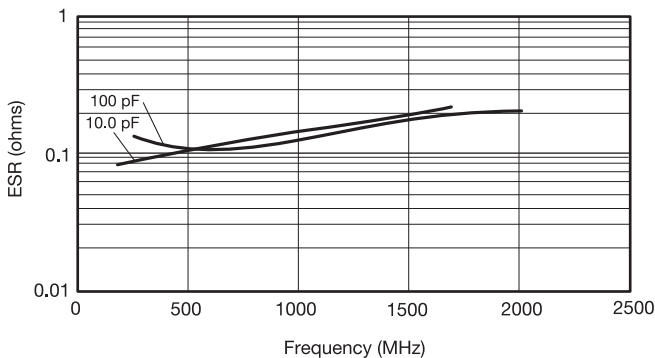
TYPICAL ESR vs. FREQUENCY
0402 "U" SERIES



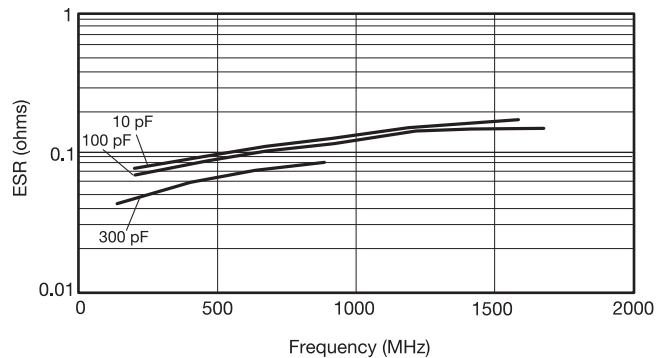
TYPICAL ESR vs. FREQUENCY
0603 "U" SERIES



TYPICAL ESR vs. FREQUENCY
0805 "U" SERIES



TYPICAL ESR vs. FREQUENCY
1210 "U" SERIES



ESR Measured on the Boonton 34A

TYPICAL
 SERIES RESONANT FREQUENCY
 "U" SERIES CHIP



RF/Microwave Capacitors

RF/Microwave COG (NP0) Capacitors

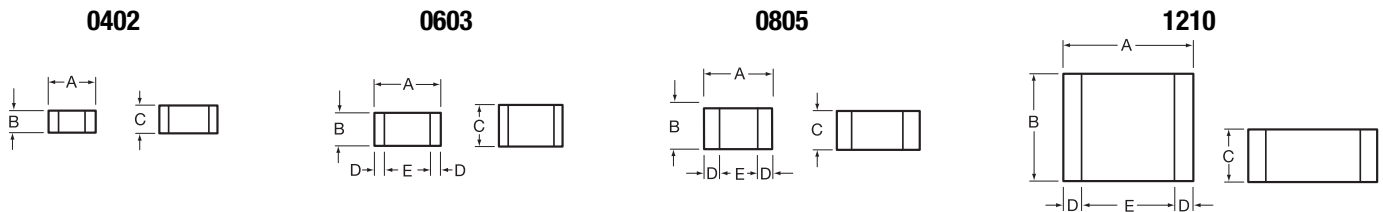
Ultra Low ESR "U" Series, COG (NP0) Capacitors (Sn/Pb)



GENERAL INFORMATION

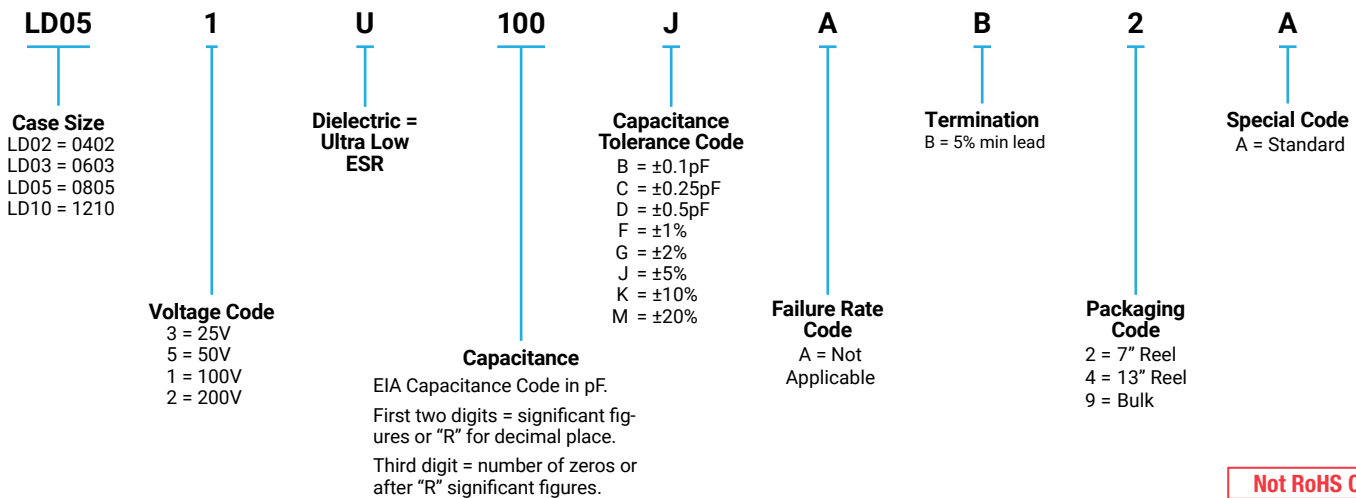
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HOW TO ORDER



Not RoHS Compliant

ELECTRICAL CHARACTERISTICS

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Size	Working Voltage
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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):

040 - 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 Capacitors

RF/Microwave C0G (NP0) Capacitors

Ultra Low ESR "U" Series, C0G (NP0) Capacitors (Sn/Pb)



CAPACITANCE RANGE

Cap (pF)	Available Tolerance	Size			
		LD02	LD03	LD05	LD10
0.2	B,C	50V	N/A	N/A	N/A
0.3	↓	↓	↓	↓	↓
0.4					
0.5	B,C	↓	↓	↓	↓
0.6	B,C,D	↓	↓	↓	↓
0.7	↓	↓	↓	↓	↓
0.8					
0.9	B,C,D	↓	↓	↓	↓

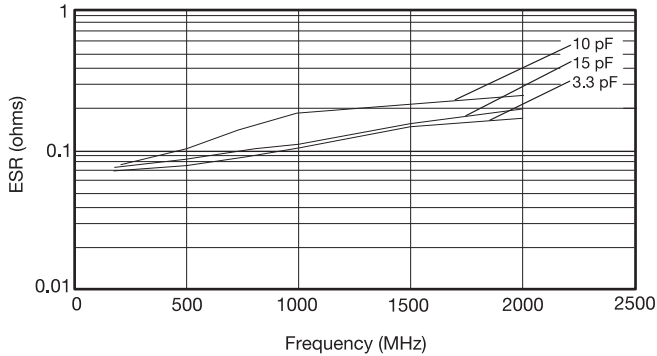
Cap (pF)	Available Tolerance	Size			
		LD02	LD03	LD05	LD10
1.0	B,C,D	50V	200V	200V	200V
1.1	↓	↓	↓	↓	↓
1.2					
1.3					
1.4					
1.5					
1.6					
1.7					
1.8					
1.9					
2.0					
2.1					
2.2					
2.4					
2.7					
3.0	↓	↓	↓	↓	↓
3.3					
3.6					
3.9					
4.3					
4.7					
5.1					
5.6					
6.2					
6.8					
7.5					
8.2					
9.1					
10					
11					
12					
13					
15					
18					
20					
22					
24					
27					
30					
33					
36					
39					
43					
47					
51					
56					
62					
68					
75					
82					
91					

Cap (pF)	Available Tolerance	Size			
		LD02	LD03	LD05	LD10
7.5	B,C,J,K,M	50V	200V	200V	200V
8.2	↓	↓	↓	↓	↓
9.1					
10					
11					
12					
13					
15					
18					
20					
22					
24					
27					
30					
33					
36					
39					
43					
47					
51					
56					
62					
68					
75					
82					
91					

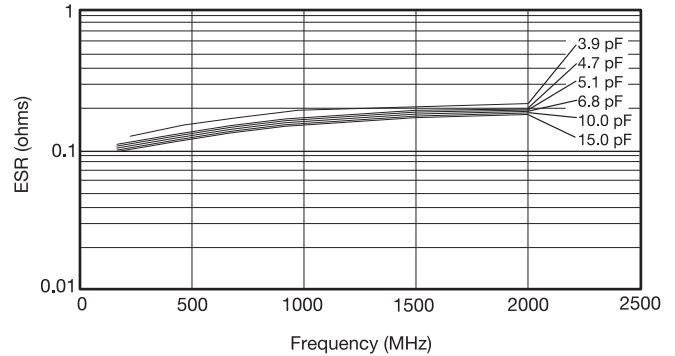
Cap (pF)	Available Tolerance	Size			
		LD02	LD03	LD05	LD10
100	F,G,J,K,M	N/A	100V	200V	200V
110	↓	↓	↓	↓	↓
120					
130					
140					
150					
160					
180					
200					
220					
270					
300					
330					
360					
390					
430					
470					
510					
560					
620					
680					
750					
820					
910		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

ULTRA LOW ESR, "U" SERIES

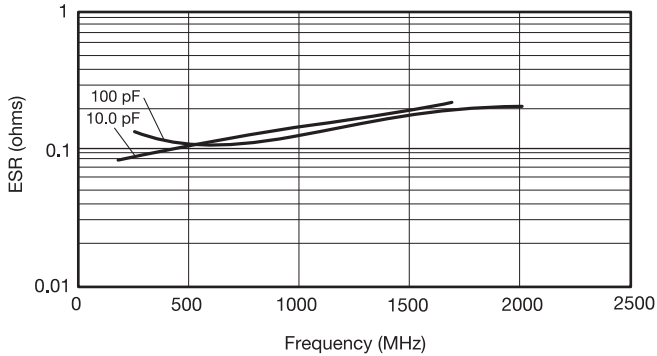
TYPICAL ESR vs. FREQUENCY
0402 "U" SERIES



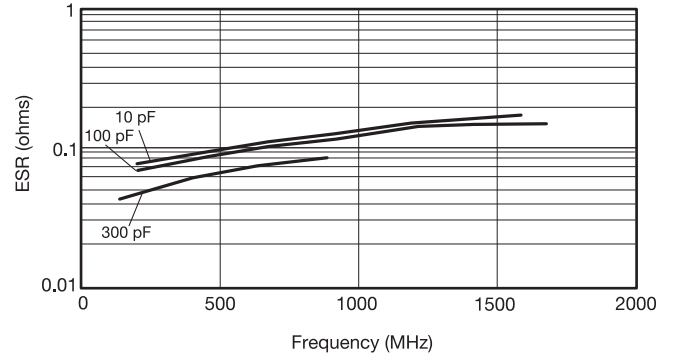
TYPICAL ESR vs. FREQUENCY
0603 "U" SERIES



TYPICAL ESR vs. FREQUENCY
0805 "U" SERIES

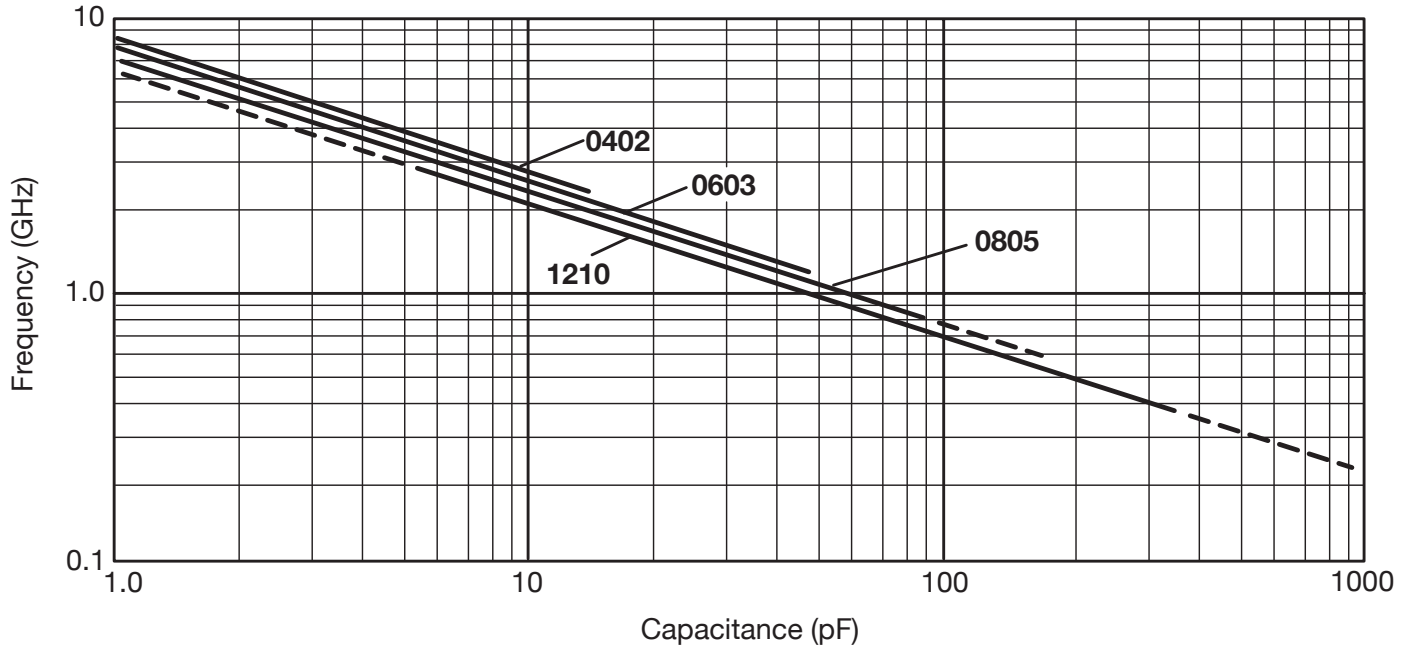


TYPICAL ESR vs. FREQUENCY
1210 "U" SERIES



ESR Measured on the Boonton 34A

TYPICAL
SERIES RESONANT FREQUENCY
"U" SERIES CHIP



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