

RF/Microwave Capacitors

RF/Microwave C0G (NP0) Capacitors

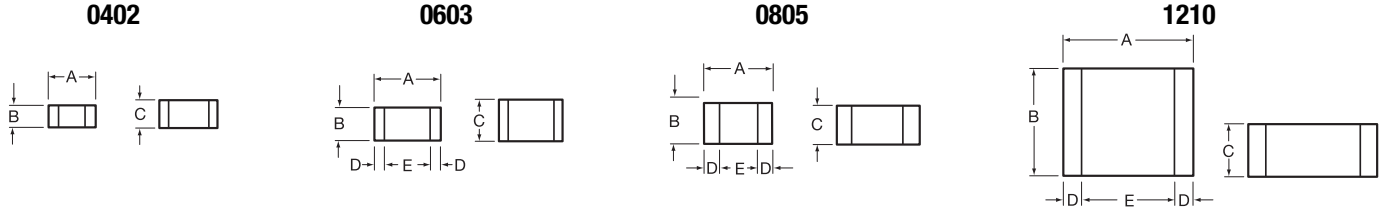
Ultra Low ESR "U" Series, C0G (NP0) Capacitors (RoHS), KGQ Series



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

KGQ	05	F	CG	1H	9R1	B	N
Series General Purpose Tin/ Nickel Finish	Size 05 = 0402 15 = 0603 21 = 0805 32 = 1210	Thickness See Cap Chart	Dielectric C0G = CG	Voltage 1H = 50V 2A = 100V 2D = 200V	Capacitance Code Code (in pF) 2 Significant Digits +Number of zeros eg. 10µF = 106 10nF = 103 47pF = 470	Capacitance Tolerance B = ± 0.1pF(<10pF) C = ± 0.25pF(<10pF) D = ± 0.5pF(<10pF) G = ±2% F = ±1% J = ±5% K = ±10% M = ±20%	Packaging See Table Below



PACKAGING CODES

Code	EIA (inch)	IEC(mm)	7" Paper	7" Embossed	13" Paper	13" Embossed
05	0402	1005	H		N	
15	0603	1608	T		M	
21	0805	2012	T		M	
32	1210	3225	T		M	

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.



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CAPACITANCE RANGE

SIZE		0402	0603			0805		1210	
Soldering		All Paper	All Paper			All Embossed		All Embossed	
(L) Length	mm	1.00±0.10	1.60±0.15			2.01±0.20		3.20±0.20	
	(in.)	(0.040±0.004)	(0.063±0.006)			(0.079±0.008)		(0.126±0.008)	
(W) Width	mm	0.50±0.10	0.81±0.15			1.25±0.20		2.50±0.20	
	(in.)	(0.020±0.004)	(0.032±0.006)			(0.049±0.008)		(0.098±0.008)	
(t) Terminal	mm	0.25±0.15	0.35±0.15			0.50±0.25		0.50±0.25	
	(in.)	(0.010±0.006)	(0.014±0.006)			(0.020±0.010)		(0.020±0.010)	
WVDC		50	50	100	200	100	200	100	200
Cap (pF)	0.2	F	A	A	A	H	H	D	D
	0.3	F	A	A	A	H	H	D	D
	0.4	F	A	A	A	H	H	D	D
	0.5	F	A	A	A	H	H	D	D
	0.6	F	A	A	A	H	H	D	D
	0.7	F	A	A	A	H	H	D	D
	0.8	F	A	A	A	H	H	D	D
	0.9	F	A	A	A	H	H	D	D
	1.0	F	A	A	A	H	H	D	D
	1.1	F	A	A	A	H	H	D	D
	1.2	F	A	A	A	H	H	D	D
	1.3	F	A	A	A	H	H	D	D
	1.4	F	A	A	A	H	H	D	D
	1.5	F	A	A	A	H	H	D	D
	1.6	F	A	A	A	H	H	D	D
	1.7	F	A	A	A	H	H	D	D
	1.8	F	A	A	A	H	H	D	D
	1.9	F	A	A	A	H	H	D	D
	2.0	F	A	A	A	H	H	D	D
	2.1	F	A	A	A	H	H	D	D
	2.2	F	A	A	A	H	H	D	D
	2.4	F	A	A	A	H	H	D	D
	2.7	F	A	A	A	H	H	D	D
	3.0	F	A	A	A	H	H	D	D
	3.3	F	A	A	A	H	H	D	D
	3.6	F	A	A	A	H	H	D	D
	3.9	F	A	A	A	H	H	D	D
	4.3	F	A	A	A	H	H	D	D
	4.7	F	A	A	A	H	H	D	D
	5.1	F	A	A	A	H	H	D	D
	5.6	F	A	A	A	H	H	D	D
	6.2	F	A	A	A	H	H	D	D
	6.8	F	A	A	A	H	H	D	D
	7.5	F	A	A	A	H	H	D	D
	8.2	F	A	A	A	H	H	D	D
	9.1	F	A	A	A	H	H	D	D
	10	F	A	A	A	H	H	D	D
	11	F	A	A	A	H	H	D	D
	12	F	A	A	A	H	H	D	D
	18	F	A	A	A	H	H	D	D
	20	F	A	A	A	H	H	D	D
	22	F	A	A	A	H	H	D	D
WVDC		50	50	100	200	100	200	100	200
SIZE		0402	0603			0805		1210	

SIZE		0402	0603			0805		1210	
Soldering		All Paper	All Paper			All Embossed		All Embossed	
(L) Length	mm	1.00±0.10	1.60±0.15			2.01±0.20		3.20±0.20	
	(in.)	(0.040±0.004)	(0.063±0.006)			(0.079±0.008)		(0.126±0.008)	
(W) Width	mm	0.50±0.10	0.81±0.15			1.25±0.20		2.50±0.20	
	(in.)	(0.020±0.004)	(0.032±0.006)			(0.049±0.008)		(0.098±0.008)	
(t) Terminal	mm	0.25±0.15	0.35±0.15			0.50±0.25		0.50±0.25	
	(in.)	(0.010±0.006)	(0.014±0.006)			(0.020±0.010)		(0.020±0.010)	
WVDC		50	50	100	200	100	200	100	200
Cap (pF)	24	F	A	A	A	H	H	D	D
	27	F	A	A	A	H	H	D	D
	30	F	A	A	A	H	H	D	D
	33	F	A	A	A	H	H	D	D
	36	F	A	A	A	H	H	D	D
	39	F	A	A	A	H	H	D	D
	43		A	A	A	H	H	D	D
	47		A	A	A	H	H	D	D
	51		A	A	A	H	H	D	D
	56		A	A	A	H	H	D	D
	68		A	A	A	H	H	D	D
	75		A	A		H	H	D	D
	82		A	A		H	H	D	D
	91		A	A		H	H	D	D
	100		A	A		H	H	D	D
	110							D	D
	120							D	D
	130							D	D
	140							D	D
	150							D	D
	160							D	D
	180							D	D
	200							D	D
	220							D	D
	270							D	D
	300							D	D
	330							D	D
	360							D	D
	390							D	D
	430							D	D
	470							D	
	510							D	
	560							D	
	620							D	
	680							D	
	750							D	
	820							D	
	910							D	
	1000							D	
WVDC		50	50	100	200	100	200	100	200
SIZE		0402	0603			0805		1210	

Case Size	0402 (KGQ05)	0603 (KGQ15)	0805 (KGQ21)	1210 (KGQ32)
Thickness Letter	F	A	H	D
Max Thickness(mm)	0.60	0.90	1.15	1.40
Carrier Tape	PAPER	PAPER	PAPER	PAPER
Packaging Code 7"reel	H	T	T	T
Packaging Code 13"reel	N	M	M	M
PAPER				

TOLERANCE OPTIONS

Capacitance Range	Available Tolerances
0.20-0.50 pF	B, C
0.60-6.2 pF	B,C, D
6.8- 9.1 pF	B, C, J, K, M
10-1000 pF	F,G, J, K, M

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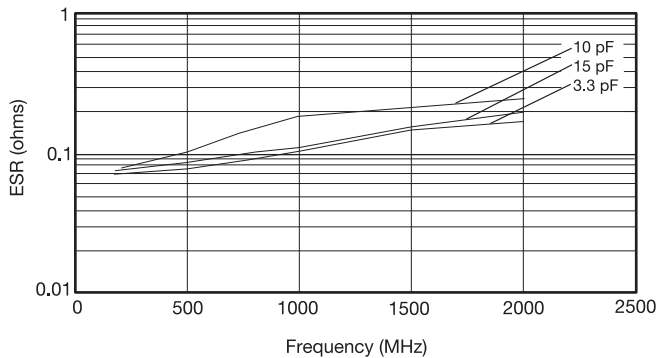
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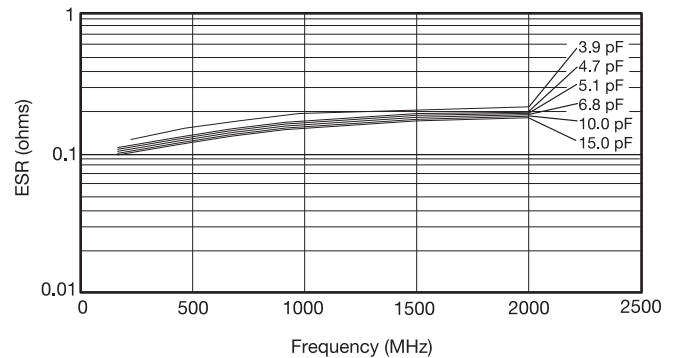


ULTRA LOW ESR, "U" SERIES

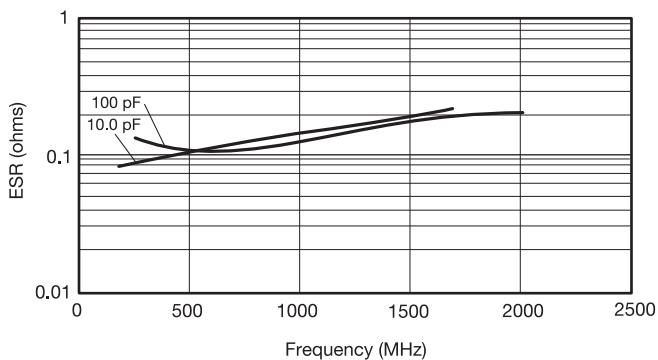
TYPICAL ESR vs. FREQUENCY
0402 "U" SERIES



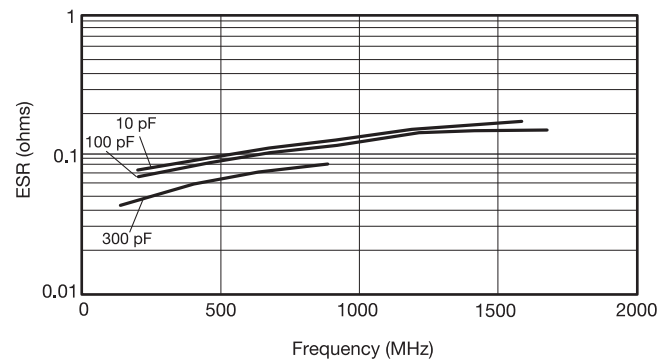
TYPICAL ESR vs. FREQUENCY
0603 "U" SERIES



TYPICAL ESR vs. FREQUENCY
0805 "U" SERIES

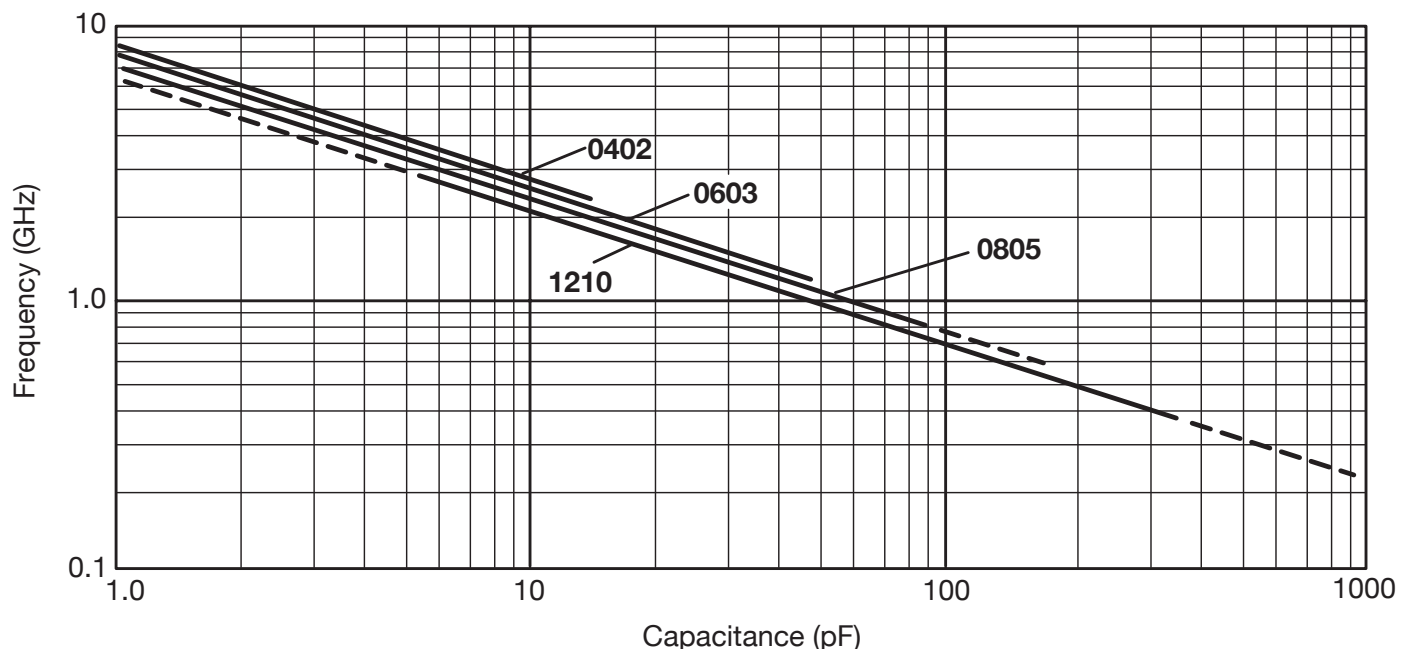


TYPICAL ESR vs. FREQUENCY
1210 "U" SERIES



ESR Measured on the Boonton 34A

TYPICAL SERIES RESONANT FREQUENCY "U" SERIES CHIP



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[CC0100JRNPO6BN101](#) [CC0402JRNPO9BN301](#) [CC0805KKX7R0BB105](#) [AC0805KKX7R6BB475](#) [CC0805KKX7R7BB824](#)
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