

RF/Microwave Capacitors

RF/Microwave C0G (NP0) Capacitors

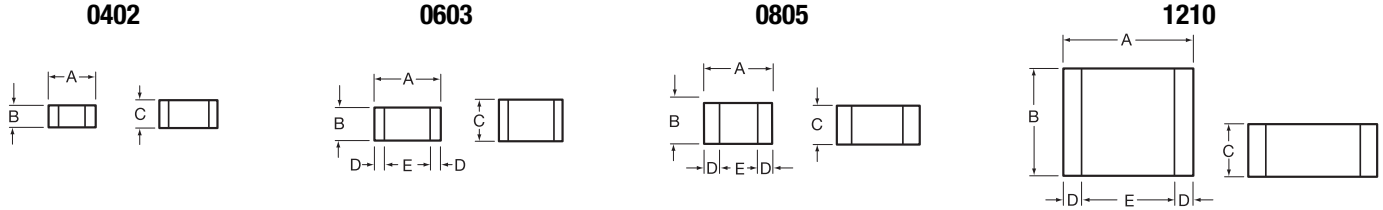
Ultra Low ESR "U" Series, C0G (NP0) Capacitors (RoHS), KGQ Series



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	Size	Thickness	Dielectric	Voltage	Capacitance	Capacitance	Packaging
General Purpose Tin/ Nickel Finish	05 = 0402 15 = 0603 21 = 0805 32 = 1210	See Cap Chart	C0G = CG	1H = 50V 2A = 100V 2D = 200V	Code Code (in pF) 2 Significant Digits +Number of zeros eg. 10µF = 106 10nF = 103 47pF = 470	Tolerance Z = + 80 -20%	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).



The Important Information/Disclaimer is incorporated in the catalog where these specifications came from or available online at www.kyocera-avx.com/disclaimer/ by reference and should be reviewed in full before placing any order.

TDS-RFM-0085 | Rev 0

— RF MICROWAVE PRODUCTS —

RF/Microwave Capacitors

RF/Microwave C0G (NP0) Capacitors

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



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	100	200
Cap (pF)	0.2	F	A	A	A	H	H	D	D	D	D	D	D
	0.3	F	A	A	A	H	H	D	D	D	D	D	D
	0.4	F	A	A	A	H	H	D	D	D	D	D	D
	0.5	F	A	A	A	H	H	D	D	D	D	D	D
	0.6	F	A	A	A	H	H	D	D	D	D	D	D
	0.7	F	A	A	A	H	H	D	D	D	D	D	D
	0.8	F	A	A	A	H	H	D	D	D	D	D	D
	0.9	F	A	A	A	H	H	D	D	D	D	D	D
	1.0	F	A	A	A	H	H	D	D	D	D	D	D
	1.1	F	A	A	A	H	H	D	D	D	D	D	D
	1.2	F	A	A	A	H	H	D	D	D	D	D	D
	1.3	F	A	A	A	H	H	D	D	D	D	D	D
	1.4	F	A	A	A	H	H	D	D	D	D	D	D
	1.5	F	A	A	A	H	H	D	D	D	D	D	D
	1.6	F	A	A	A	H	H	D	D	D	D	D	D
	1.7	F	A	A	A	H	H	D	D	D	D	D	D
	1.8	F	A	A	A	H	H	D	D	D	D	D	D
	1.9	F	A	A	A	H	H	D	D	D	D	D	D
	2.0	F	A	A	A	H	H	D	D	D	D	D	D
	2.1	F	A	A	A	H	H	D	D	D	D	D	D
	2.2	F	A	A	A	H	H	D	D	D	D	D	D
	2.4	F	A	A	A	H	H	D	D	D	D	D	D
	2.7	F	A	A	A	H	H	D	D	D	D	D	D
	3.0	F	A	A	A	H	H	D	D	D	D	D	D
	3.3	F	A	A	A	H	H	D	D	D	D	D	D
	3.6	F	A	A	A	H	H	D	D	D	D	D	D
	3.9	F	A	A	A	H	H	D	D	D	D	D	D
	4.3	F	A	A	A	H	H	D	D	D	D	D	D
	4.7	F	A	A	A	H	H	D	D	D	D	D	D
	5.1	F	A	A	A	H	H	D	D	D	D	D	D
	5.6	F	A	A	A	H	H	D	D	D	D	D	D
	6.2	F	A	A	A	H	H	D	D	D	D	D	D
	6.8	F	A	A	A	H	H	D	D	D	D	D	D
	7.5	F	A	A	A	H	H	D	D	D	D	D	D
	8.2	F	A	A	A	H	H	D	D	D	D	D	D
	9.1	F	A	A	A	H	H	D	D	D	D	D	D
	10	F	A	A	A	H	H	D	D	D	D	D	D
	11	F	A	A	A	H	H	D	D	D	D	D	D
	12	F	A	A	A	H	H	D	D	D	D	D	D
	18	F	A	A	A	H	H	D	D	D	D	D	D
	20	F	A	A	A	H	H	D	D	D	D	D	D
	22	F	A	A	A	H	H	D	D	D	D	D	D
WVDC		50			50	100	200	100	200	100	200	100	200
SIZE		0402			0603			0805			1210		

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Soldering		All Paper			All Paper			All Embossed			All Embossed		
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(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	100	200
Cap (pF)	24	F	A	A	A	H	H	D	D	D	D	D	D
	27	F	A	A	A	H	H	D	D	D	D	D	D
	30	F	A	A	A	H	H	D	D	D	D	D	D
	33	F	A	A	A	H	H	D	D	D	D	D	D
	36	F	A	A	A	H	H	D	D	D	D	D	D
	39	F	A	A	A	H	H	D	D	D	D	D	D
	43		A	A	A	H	H	D	D	D	D	D	D
	47		A	A	A	H	H	D	D	D	D	D	D
	51		A	A	A	H	H	D	D	D	D	D	D
	56		A	A	A	H	H	D	D	D	D	D	D
	68		A	A	A	H	H	D	D	D	D	D	D
	75		A	A		H	H	D	D	D	D	D	D
	82		A	A		H	H	D	D	D	D	D	D
	91		A	A		H	H	D	D	D	D	D	D
	100		A	A		H	H	D	D	D	D	D	D
	110							D	D	D	D	D	D
	120							D	D	D	D	D	D
	130							D	D	D	D	D	D
	140							D	D	D	D	D	D
	150							D	D	D	D	D	D
	160							D	D	D	D	D	D
	180							D	D	D	D	D	D
	200							D	D	D	D	D	D
	220							D	D	D	D	D	D
	270							D	D	D	D	D	D
	300							D	D	D	D	D	D
	330							D	D	D	D	D	D
	360							D	D	D	D	D	D
	390							D	D	D	D	D	D
	430							D	D	D	D	D	D
	470							D	D	D	D	D	D
	510							D	D	D	D	D	D
	560							D	D	D	D	D	D
	620							D	D	D	D	D	D
	680							D	D	D	D	D	D
	750							D	D	D	D	D	D
	820							D	D	D	D	D	D
	910							D	D	D	D	D	D
	1000							D	D	D	D	D	D
WVDC		50			50	100	200	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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RF/Microwave C0G (NP0) Capacitors

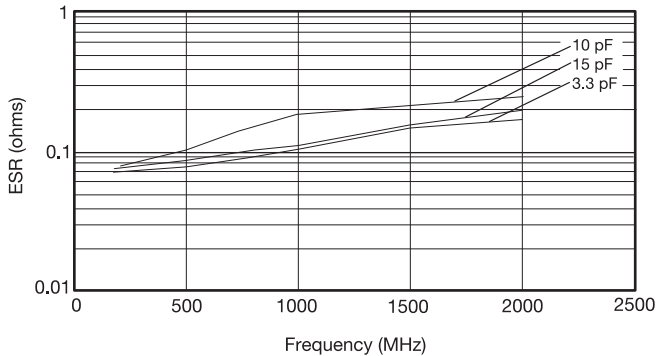
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ULTRA LOW ESR, "U" SERIES

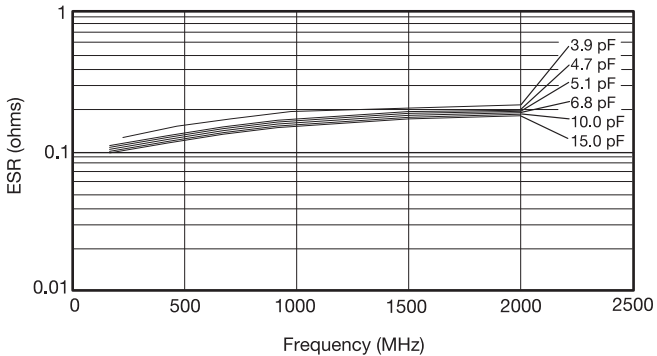
TYPICAL ESR vs. FREQUENCY

0402 "U" SERIES



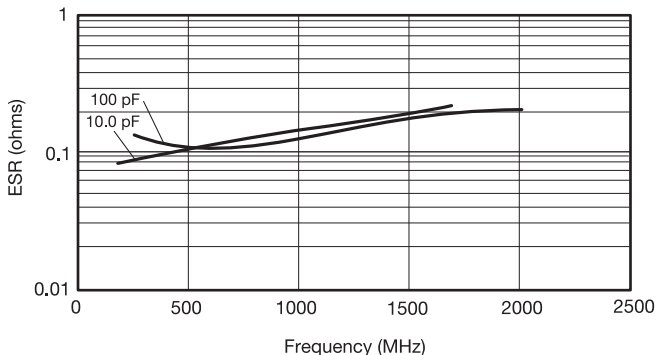
TYPICAL ESR vs. FREQUENCY

0603 "U" SERIES



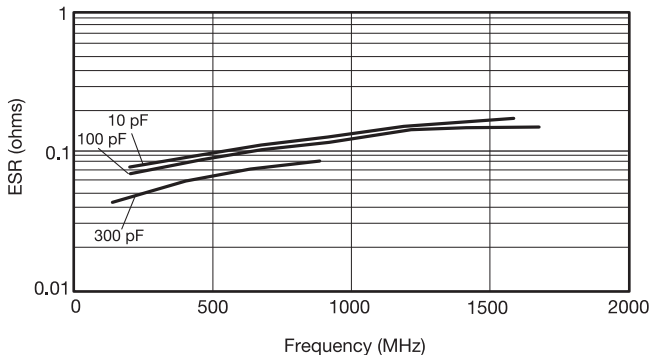
TYPICAL ESR vs. FREQUENCY

0805 "U" SERIES



TYPICAL ESR vs. FREQUENCY

1210 "U" SERIES



ESR Measured on the Boonton 34A

TYPICAL SERIES RESONANT FREQUENCY "U" SERIES CHIP

