

RF/Microwave Capacitors

RF/Microwave C0G (NP0) Capacitors

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

Automotive, AEC Q200 Qualified, KAQ Series



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)



inches (mm)

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 max (0.6)	N/A	N/A
0603	0.060±0.010 (1.52±0.25)	0.030±0.010 (0.76±0.25)	0.036 max (0.91)	0.010±0.005 (0.25±0.13)	0.030 min (0.76)

HOW TO ORDER

KAQ Series General Purpose Tin/ Nickel Finish	05 Size 05 = 0402 15 = 0603	F Thickness See Cap Chart	CG Dielectric C0G = CG	1H Voltage 1H = 50V 2A = 100V 2D = 200V	9R1 Capacitance Code Code (in pF) 2 Significant Digits +Number of zeros eg. 10µF = 106 10nF = 103 47pF = 470	B Capacitance Tolerance B = ± 0.1 pF C = ± 0.25 pF D = ± 0.50 pF F = ± 1% (>= 10 pF) G = ± 2% (>= 10 pF) J = ± 5% K = ± 10% M = ± 20%	N Packaging See Table Below
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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	

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

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



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CAPACITANCE RANGE

SIZE		0402	0603		
Soldering		All Paper	All Paper		
(L) Length	mm	1.00±0.10	1.60±0.15		
	(in.)	(0.040±0.004)	(0.063±0.006)		
(W) Width	mm	0.50±0.10	0.81±0.15		
	(in.)	(0.020±0.004)	(0.032±0.006)		
(t) Terminal	mm	0.25±0.15	0.35±0.15		
	(in.)	(0.010±0.006)	(0.014±0.006)		
WVDC		50	50	100	200
Cap	0.2	A	A	A	A
(pF)	0.3	A	A	A	A
	0.4	A	A	A	A
	0.5	A	A	A	A
	0.6	A	A	A	A
	0.7	A	A	A	A
	0.8	A	A	A	A
	0.9	A	A	A	A
	1.0	A	A	A	A
	1.1	A	A	A	A
	1.2	A	A	A	A
	1.3	A	A	A	A
	1.4	A	A	A	A
	1.5	A	A	A	A
	1.6	A	A	A	A
	1.7	A	A	A	A
	1.8	A	A	A	A
	1.9	A	A	A	A
	2.0	A	A	A	A
	2.1	A	A	A	A
	2.2	A	A	A	A
	2.4	A	A	A	A
	2.7	A	A	A	A
	3.0	A	A	A	A
	3.3	A	A	A	A
	3.6	A	A	A	A
	3.9	A	A	A	A
	4.3	A	A	A	A
	4.7	A	A	A	A
	5.1	A	A	A	A
	5.6	A	A	A	A
	6.2	A	A	A	A
	6.8	A	A	A	A
	7.5	A	A	A	A
	8.2	A	A	A	A
	9.1	A	A	A	A
	10	A	A	A	A
	11	A	A	A	A
	12	A	A	A	A
	13	A	A	A	A
	15	A	A	A	A
	18	A	A	A	A
	20	A	A	A	A
	22	A	A	A	A
	24	A	A	A	A
	27	A	A	A	A
Cap	30	A	A	A	A
WVDC		50	50	100	200
SIZE		0402	0603		

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(W) Width	mm	0.50±0.10	0.81±0.15		
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(t) Terminal	mm	0.25±0.15	0.35±0.15		
	(in.)	(0.010±0.006)	(0.014±0.006)		
WVDC		50	50	100	200
(pF)	33	A	A	A	A
	36	A	A	A	A
	39	A	A	A	A
	43		A	A	A
	47		A	A	A
	51		A	A	A
	56		A	A	A
	68		A	A	A
	75		A	A	
	82		A	A	
	91		A	A	
	100		A	A	
	110				
	120				
	130				
	140				
	150				
	160				
	180				
	200				
	220				
	270				
	300				
	330				
	360				
	390				
	430				
	470				
	510				
	560				
	620				
	680				
	750				
	820				
	910				
	1000				
WVDC		50	50	100	200
SIZE		0402	0603		

Case Size	0402 (KAQ05)	0603 (KAQ15)
Thickness Letter	A	A
Max Thickness(mm)	0.55	0.90
Carrier Tape	PAPER	PAPER
Packaging Code 7"reel	H	T
Packaging Code 13"reel	N	M
PAPER		

TOLERANCE OPTIONS

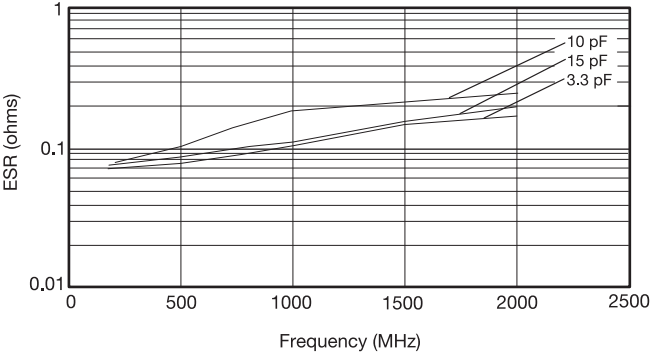
Capacitance Range	Available Tolerances
0.20-0.50 pF	B, C
0.60-6.2 pF	B, C, D
6.8-9.1 pF	B, C, J, K, M
10-1000 pF	F, G, J, K, M

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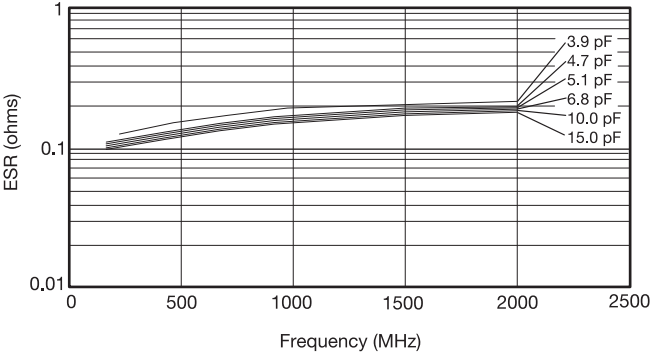


ULTRA LOW ESR, “U” SERIES

TYPICAL ESR vs. FREQUENCY
0402 “U” SERIES



TYPICAL ESR vs. FREQUENCY
0603 “U” SERIES



TYPICAL
SERIES RESONANT FREQUENCY
“U” SERIES CHIP

