

C-SERIES HIGH FREQUENCY CHIP CAPACITORS

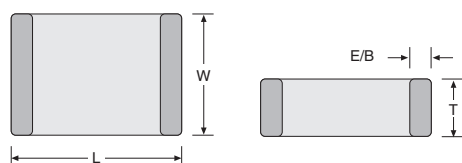


KEY FEATURES

- High-Q / Low ESR
- Self Resonant Frequencies to 23.0 GHz
- Lead-Free Terminations
- Free MLCSoft® for SPICE & S-Parameter Modeling Data

APPLICATIONS

- Cellular Products
- Cable Components
- RF Transceivers
- Wireless LAN
- RF Integrated Circuits
- Custom Applications



Dielectric RF Performance

S Series	BEST
C Series	BETTER
L Series	GOOD
NPO	?

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MECHANICAL CHARACTERISTICS

	R07/ 0402		R14 / 0603		R15 / 0805		S41 / 1210	
	Inches	(mm)	Inches	(mm)	Inches	(mm)	Inches	(mm)
L	.040 ±.004	(1.02 ±0.1)	.062 ±.006	(1.57 ±.15)	.080 ±.008	(2.03 ±.20)	.125 ±.010	(3.18 ±.25)
W	.020 ±.004	(0.51 ±0.1)	.032 ±.006	(0.81 ±.15)	.050 ±.008	(1.27 ±.20)	.095 ±.010	(2.41 ±.25)
T	.020 ±.004	(0.51 ±0.1)	.030 ^{+0.005} _{-.003}	(0.76 ⁺¹³ _{-.08})	.040 ±.006	(1.02 ±.15)	.060 Max	(1.52)
E/B	.010 ±.006	(0.25 ±.15)	.014 ±.006	(0.35 ±.15)	.020 ±.010	(0.50 ±.25)	.020 ±.010	(0.50 ±.25)

HOW TO ORDER

201	R15	C	101	J	V	4	E
VOLTAGE 250 = 25 V 500 = 50 V 101 = 100 V 201 = 200 V 301 = 300 V 501 = 500 V	CASE SIZE See Chart	DIELECTRIC C = High-Q NPO	CAPACITANCE 1st two digits are significant; third digit denotes number of zeros, R = decimal. 1R0 = 1.0 pF 101 = 100 pF	TOLERANCE * A = ± 0.05 pF * B = ± 0.10 pF * C = ± 0.25 pF F = ± 1 % G = ± 2 % J = ± 5 % K = ± 10 % * Values < 10 pF ** Values ≤ 1.8 pF	TERMINATION V = Ni/Sn	MARKING 4 = Unmarked 6 = EIA "J" Code* *For sizes ≥ 0805	TAPE MODIFIER Code Type Reel SIZES 0402 & 0603: T Paper 7" Y Paper 5" SIZE 0805: E Embossed 7" Z Embossed 5" Tape specifications conform to EIA RS481

Part number written: 201R15C101JV4E

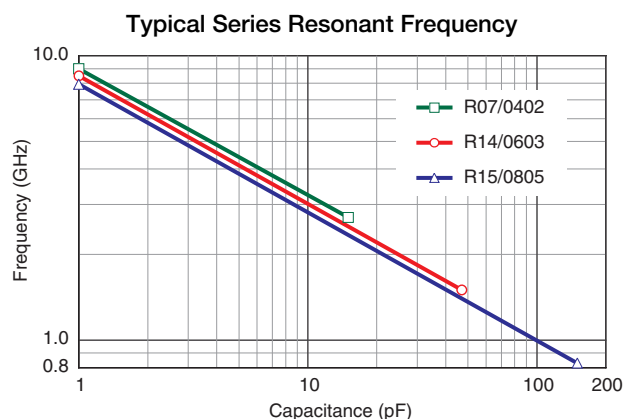
AVAILABLE CAPACITANCE SELECTION

	R07/ 0402	R14 / 0603	R15 / 0805		S41 / 1210
0.2 pF	25 V	200 V		0.5 pF	500 V
0.3 pF	25 V	200 V		0.6 pF	500 V
0.4 pF	25 V	200 V		0.7 pF	500 V
0.5 pF	25 V	200 V	200 V	0.8 pF	500 V
0.6 pF	25 V	200 V	200 V	0.9 pF	500 V
0.7 pF	25 V	200 V	200 V	1.0 pF	500 V
0.8 pF	25 V	200 V	200 V	1.1 pF	500 V
0.9 pF	25 V	200 V	200 V	1.2 pF	500 V
1.0 pF	25 V	200 V	200 V	1.3 pF	500 V
1.1 pF	25 V	200 V	200 V	1.5 pF	500 V
1.2 pF	25 V	200 V	200 V	1.6 pF	500 V
1.3 pF	25 V	200 V	200 V	1.8 pF	500 V
1.5 pF	25 V	200 V	200 V	2.0 pF	500 V
1.6 pF	25 V	200 V	200 V	2.2 pF	500 V
1.8 pF	25 V	200 V	200 V	2.4 pF	500 V
2.0 pF	25 V	200 V	200 V	2.7 pF	500 V
2.2 pF	25 V	200 V	200 V	3.0 pF	500 V
2.4 pF	25 V	200 V	200 V	3.3 pF	500 V
2.7 pF	25 V	200 V	200 V	3.6 pF	500 V
3.0 pF	25 V	200 V	200 V	3.9 pF	500 V
3.3 pF	25 V	200 V	200 V	4.3 pF	500 V
3.6 pF	25 V	200 V	200 V	4.7 pF	500 V
3.9 pF	25 V	200 V	200 V	5.1 pF	500 V
4.3 pF	25 V	200 V	200 V	5.6 pF	500 V
4.7 pF	25 V	200 V	200 V	6.2 pF	500 V
5.1 pF	25 V	200 V	200 V	6.8 pF	500 V
5.6 pF	25 V	200 V	200 V	7.5 pF	500 V
6.2 pF	25 V	200 V	200 V	8.2 pF	500 V
6.8 pF	25 V	200 V	200 V	9.1 pF	500 V
7.5 pF	25 V	200 V	200 V	10 pF	500 V
8.2 pF	25 V	200 V	200 V	12 pF	500 V
9.1 pF	25 V	200 V	200 V	15 pF	500 V
10 pF	25 V	200 V	200 V	18 pF	500 V
11 pF	25 V	200 V	200 V	20 pF	500 V
12 pF	25 V	200 V	200 V	22 pF	500 V
13 pF	25 V	200 V	200 V	27 pF	500 V
15 pF	25 V	200 V	200 V	33 pF	500 V
16 pF		200 V	200 V	39 pF	500 V
18 pF		200 V	200 V	47 pF	500 V
20 pF		100 V	200 V	56 pF	500 V
22 pF		100 V	200 V	68 pF	500 V
24 pF		100 V	200 V	82 pF	500 V
27 pF		100 V	200 V	100 pF	500 V
30 pF		100 V	200 V	120 pF	300 V
33 pF		100 V	200 V	150 pF	300 V
36 pF		100 V	200 V	180 pF	200 V
39 pF		100 V	200 V	220 pF	200 V
43 pF		100 V	200 V	270 pF	200 V
47 pF		100 V	200 V	330 pF	100 V
56 pF			200 V	390 pF	100 V
68 pF			200 V	470 pF	100 V
82 pF			200 V	560 pF	100 V
100 pF			200 V	680 pF	50 V
120 pF			100 V	820 pF	50 V
150 pF			100 V	1000 pF	50 V

This selection chart represents basic C/V capability in this series. Please contact the factory for capacitance, voltage, case size combinations not shown.

DIELECTRIC CHARACTERISTICS

TEMPERATURE COEFFICIENT:	$0 \pm 30 \text{ ppm}/^{\circ}\text{C}$, -55 to 125°C
QUALITY FACTOR:	2,500 min., 10,000 typical
INSULATION RESISTANCE:	$>1,000 \text{ G}\Omega$ @ 25°C , WVDC; 125°C IR is 10% of 25°C rating.
DIELECTRIC STRENGTH:	2.5 X WVDC Min., 25°C , 50 mA max
TEST PARAMETERS:	1MHz $\pm 50 \text{ kHz}$, $1.0 \pm 0.2 \text{ VRMS}$, 25°C
AVAILABLE CAPACITANCE:	Size 0402: 0.2 - 15 pF Size 0603: 0.2 - 47 pF Size 0805: 0.2 - 150 pF Size 1210: 0.5 - 1000 pF



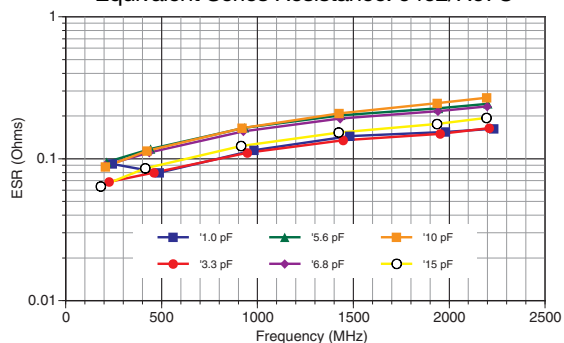
MECHANICAL & ENVIRONMENTAL CHARACTERISTICS

	SPECIFICATION	TEST PARAMETERS
SOLDERABILITY:	Solder coverage $\geq 90\%$ of metalized areas	Preheat chip to 120°C - 150°C for 60 sec. Dip terminals in rosin flux then dip in 62Sn/36Pb/2Ag solder @ $240 \pm 5^{\circ}\text{C}$ Dip time = 5 ± 1 sec.
RESISTANCE TO SOLDERING HEAT:	Chip should not crack. Solder coverage $\geq 80\%$	Preheat chip to 120°C - 150°C for 60 sec. Dip terminals in rosin flux then dip in 62Sn/36Pb/2Ag solder @ $260 \pm 5^{\circ}\text{C}$ Dip time = 10 ± 1 sec.
TERMINAL ADHESION:	Termination should not pull off. Ceramic should remain undamaged.	Linear pull force exerted on axial leads soldered to each terminal. Terminal strength: For 0402: $\geq 2.0 \text{ Lbs}$ For 0603: $\geq 2.0 \text{ Lbs}$ For 0805: $\geq 5.0 \text{ Lbs}$
PCB DEFLECTION:	No mechanical damage. Cap. change: 2% or .5pF Max	Glass Epoxy PCB: 1 mm deflection
LIFE TEST:	Cap. change: 2% or .5pF Max I.R. = Initial value	1000 Hours, 125°C , 200% rated voltage
THERMAL SHOCK:	Cap. change: 2% or .5pF Max I.R. = 70% of initial value	5 CYCLES: 30 ± 3 minutes @ -55°C , 3 min. @ 25°C 30 ± 3 min. @ $+125^{\circ}\text{C}$, 3 min. @ 25°C
MOISTURE RESISTANCE:	Cap. change: 2% or .5pF Max I.R. = 70% of initial value	240 Hours, 85% Relative Humidity, 85°C , 1.5 VDC

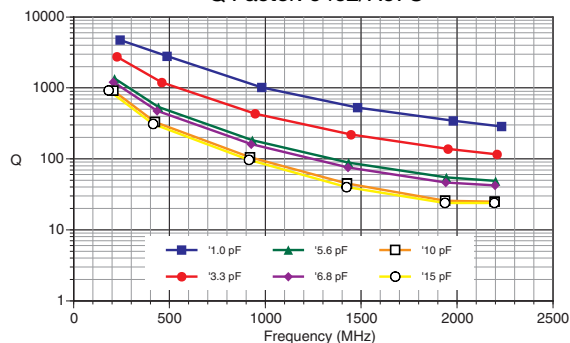


RF CHARACTERISTICS VERSUS FREQUENCY

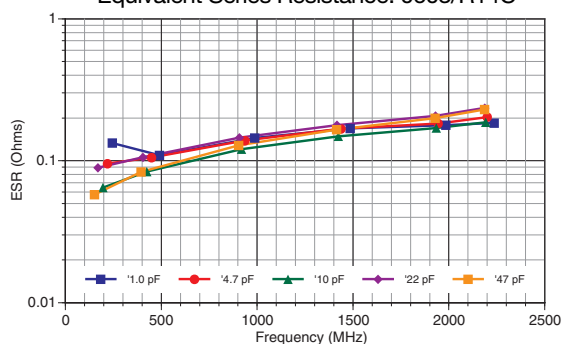
Equivalent Series Resistance: 0402/R07C



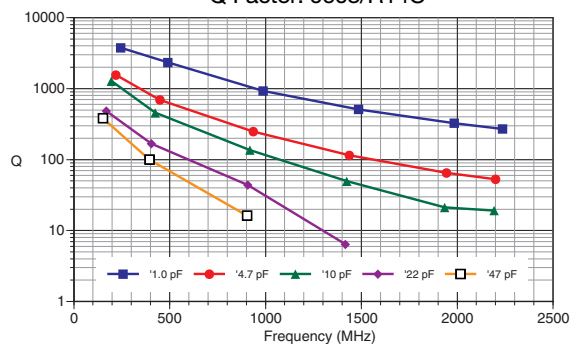
Q Factor: 0402/R07C



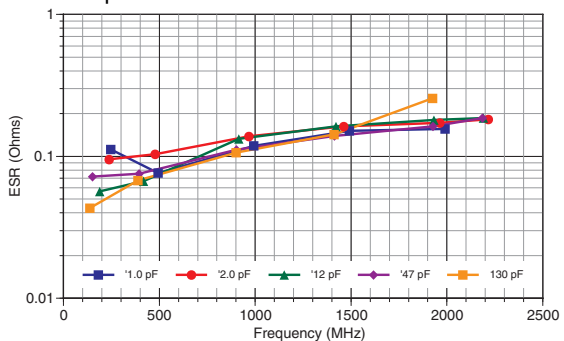
Equivalent Series Resistance: 0603/R14C



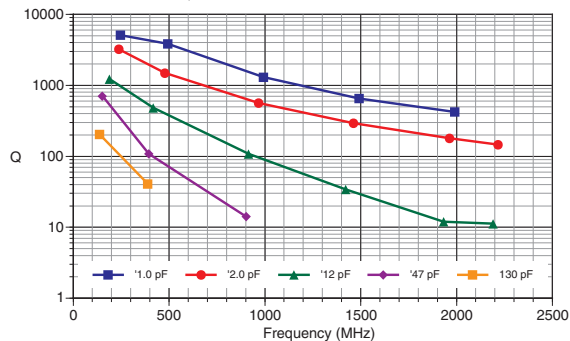
Q Factor: 0603/R14C



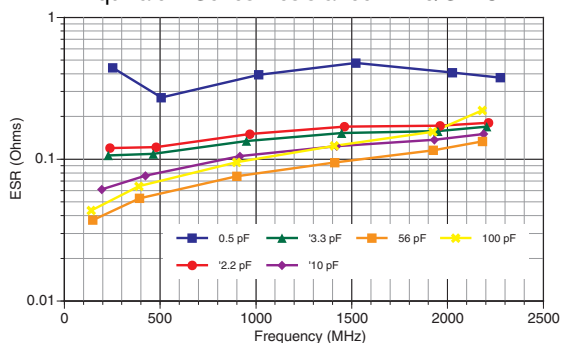
Equivalent Series Resistance: 0805/R15C



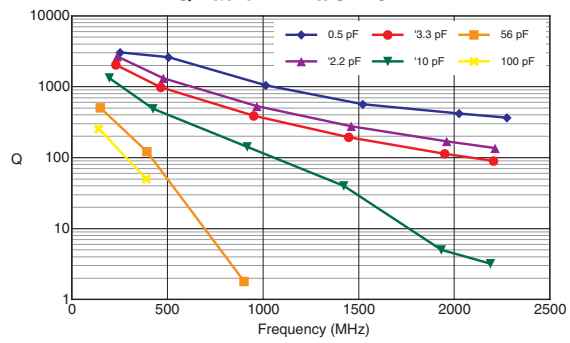
Q Factor: 0805/R15C



Equivalent Series Resistance: 1210/S41C

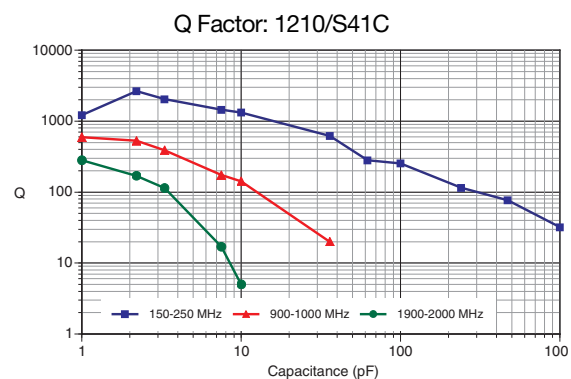
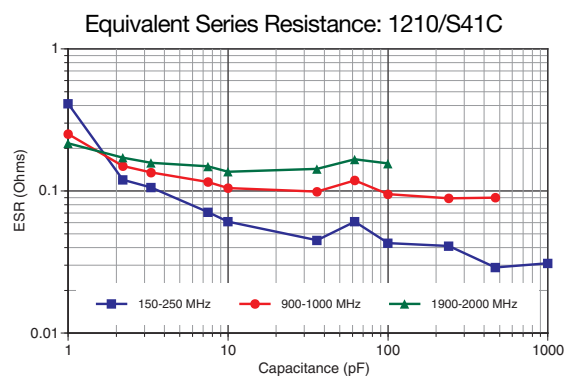
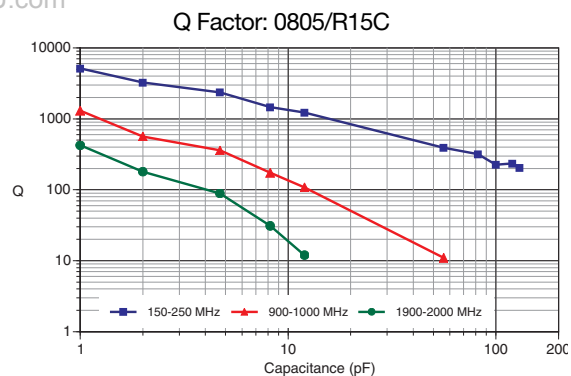
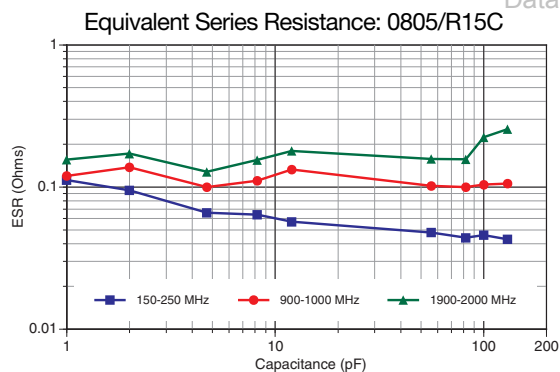
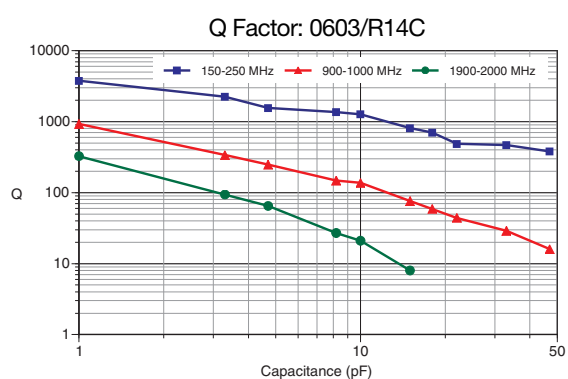
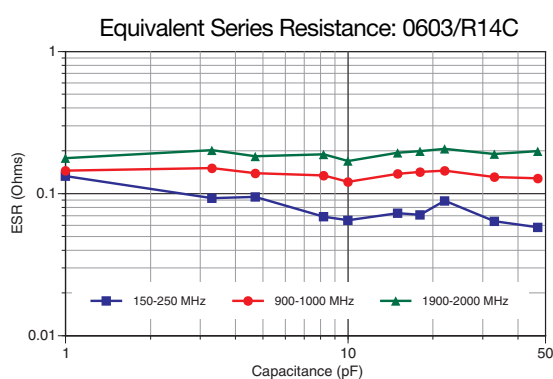
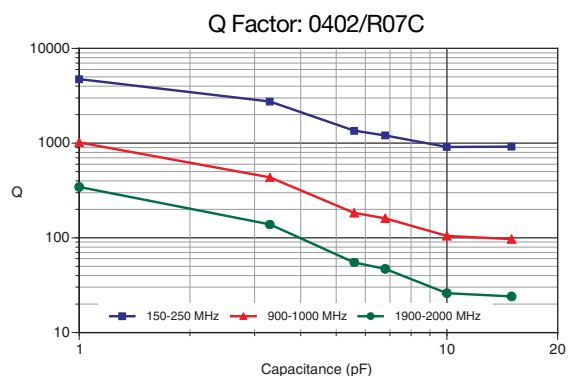
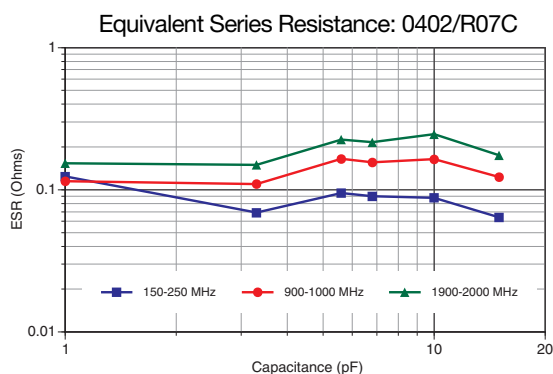


Q Factor: 1210/S41C



Measurements performed on a Boonton 34A Resonant Coaxial Line and represent typical capacitor performance.

RF CHARACTERISTICS VERSUS CAPACITANCE



Measurements performed on a Boonton 34A Resonant Coaxial Line and represent typical capacitor performance.