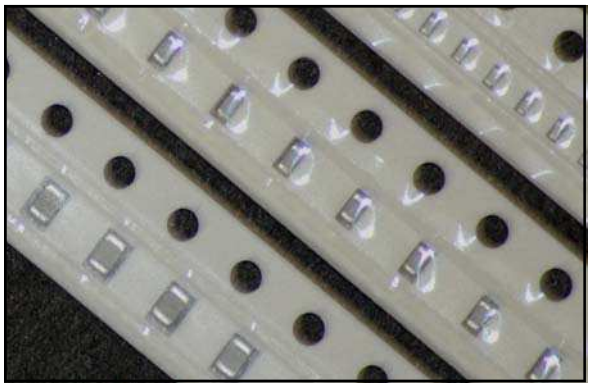
Ultra Low ESR Capacitors – "C" Series

CAPAX Technologies, Inc

The C-Series Ultra-Low ESR Capacitors are ideally suited for applications such as base station products, high Q frequency sources, portable wireless systems, and RF integrated circuits. The unique combination of characteristics, performance, and high working voltage allows C-Series Ultra-Low ESR Capacitors to exceed the dielectric RF performance of any other series capacitor and to meet and exceed EIA-198, MIL-PRF-55681 and MIL-PRF-123 requirements.



These capacitors are suitable solutions for applications that require:

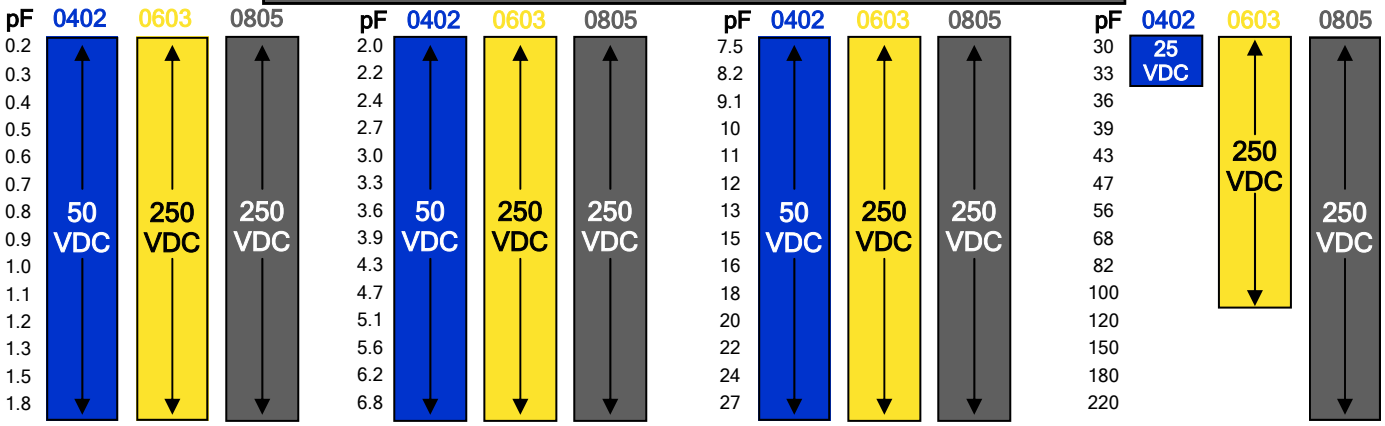
- Extremely Low ESR
- High Self Resonance Frequencies
- High Working Voltage

Mechanical Dimensions in Inches (mm)

Case Size	Length (L)	Width (W)	Thickness (T)	Bandwidth (bw)
0201	.020±.004 (.51±.10)	.010±.004 (.25±.10)	.010±.003 (.51±.08)	.003±.001 (.076±.03)
0402	.040±.004 (1.02±.10)	.020±.004 (.51±.10)	.020±.004 (.51±.10)	.010±.006 (.25±.15)
0603	.060±.006 (1.50±.15)	.032±.006 (.81±.15)	max: .035 max: (.889)	.014±.006 (.357±.15)
0805	.080±.008 (2.03±.20)	.050±.008 (1.27±.20)	.040±.006 (1.02±.15)	.020±.01 (.51±.25)

Capacitance Selection

(Charts represents basic C/V availability. Please contact us for combinations not shown.)



Ordering Information

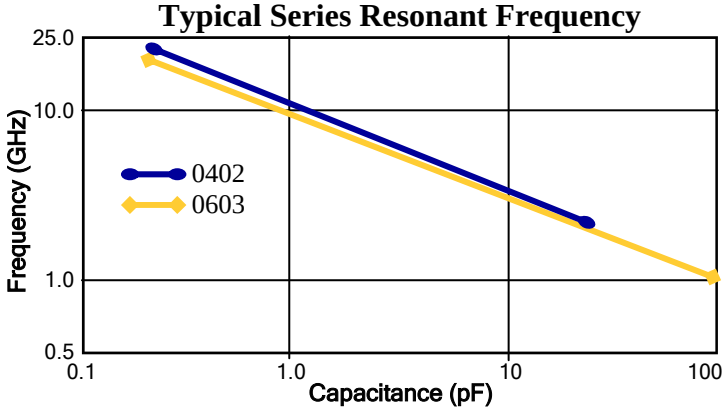
Case Size	Dielectric	Capacitance	Tolerance	Voltage	Termination	Packaging
0402	C	201	J	201	S	T
0201 0402 0603 0805	C = Ultra Hi-Q NPO	First 2 digits are Significant; Third digit indicates number of Zeros Examples: 201 = 200pF 2R2 = 2.2pF	P ±0.03pF A ±0.05pF B ±0.1pF C ±0.25pF F ±1% G ±2% J ±5% K ±10% M ±20%	First 2 digits are Significant; Third digit indicates number of Zeros Examples: 201 = 200V 151 = 150V 202 = 2000V	S Solder Plated Over Nickel SN Tin over Nickel Plated *(RoHS Compliant)* G Gold over Nickel Plated *(RoHS Compliant)*	T Tape and Reel W Waffle Pack

Environmental Characteristics		
	Specification	Test Parameters
Solderability:	Solder coverage: 90% of metalized areas No termination degradation	Preheat chip to 120°C-150°C for 60 secs, dip terminals in rosin flux then dip in Sn62 solder @ 240°±5°C for ±1 sec
Resistance to Soldering Heat:	No mechanical damage. Capacitance change: ±2.5% or 0.25pF Q>500 I.R. >10G Ohms Breakdown Voltage: 2.5 x WVDC	Preheat device to 80°-100°C for 60 secs; followed by 150°-180°C for 60 secs.
Terminal Adhesion:	Termination should not pull off. Ceramic should remain undamaged.	Linear pull force exerted on axial leads soldered to each terminal. (2lbs for 0402; 2lbs for 0603)
PCB Deflection:	No mechanical damage. Capacitance change: 2% or 0.5pF Max	Glass epoxy PCB; 0.5 mm deflection.
Life Test:	No mechanical damage. Capacitance change: ±3.0% or 0.3pF Q>500 I.R. >1G Ohms Breakdown Voltage: 2.5 x WVDC	Applied voltage: 200% rated voltage, 50mA max. Temperature: 125°±3°C Test time: 1000 +48 hours, -0 hours.
Thermal Cycle:	No mechanical damage. Capacitance change: ±2.5% or 0.25pF Q>2000 I.R. >10G Ohms Breakdown Voltage: 2.5 x WVDC	5 cycles of: 30±3 min. @ -55°+0/-3°C, 2-3 min. @ 25°C, 30±3 min. @ +125°C=3/-0°C, 2-3 mins. @ 25°C Measure after 24±2 hour cooling period.
Humidity, Steady State:	No mechanical damage. Capacitance change: ±5.0% or 0.5pF max. Q>300 I.R. = 1G Ohms Breakdown Voltage: 2.5 x WVDC	Relative humidity: 90-95% Temperature: 40°±2°C Test time: 500 + 12/-0 hours. Measure time after 24±2 hour cooling period.
Humidity, Low Voltage:	No mechanical damage. Capacitance change: ±5.0% or 0.5pF max Q>300 I.R. = 1G Ohms min. Breakdown Voltage: 2.5 x WVDC	Applied voltage: 1.5 VDC, 50 mA max Relative humidity: 85±2%; Temperature: 40°±2°C Test time: 240 + 12/-0 hours. Measure after 24±2 hour cooling period.
Vibration:	No mechanical damage. Capacitance change: ±2.5% or 0.25pF max. Q>1000 I.R. = 10G Ohms Breakdown Voltage: 2.5 x WVDC	Cycle performed for 2 hours in each of three perpendicular directions. Frequency range 10Hz to 55 Hz to 10 Hz traversed in 1 min Harmonic motion amplitude: 1.5mm.

Dielectric Characteristics

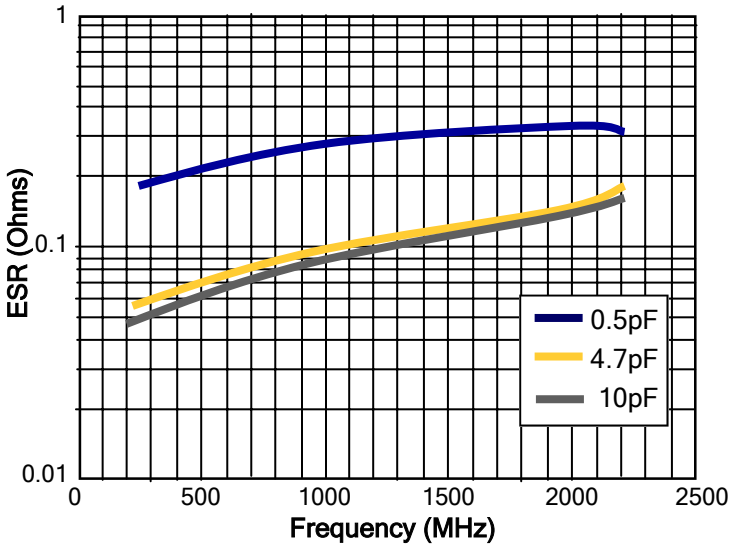
Temperature Coefficient:	0 ± 30ppm /°C, -55 to 125°C
Quality Factor:	5000 min, 10,000 typical
Insulation Resistance:	>10 G @ 25°C,WVDC; 125°C IR is 10% of 25 rating
Dielectric Strength:	2.5 x WVDC min, 25°C, 50 mA max
Test Parameters:	1MHz ±50kHz, 1.0±0.2 VRMS, 25°C
Available Capacitance:	0201 Size: 0.2 - 20 pF 0402 Size: 0.2 - 33 pF 0603 Size: 0.2 - 100 pF 0805 Size: 0.3 - 220 pF

Typical Series Resonant Frequency

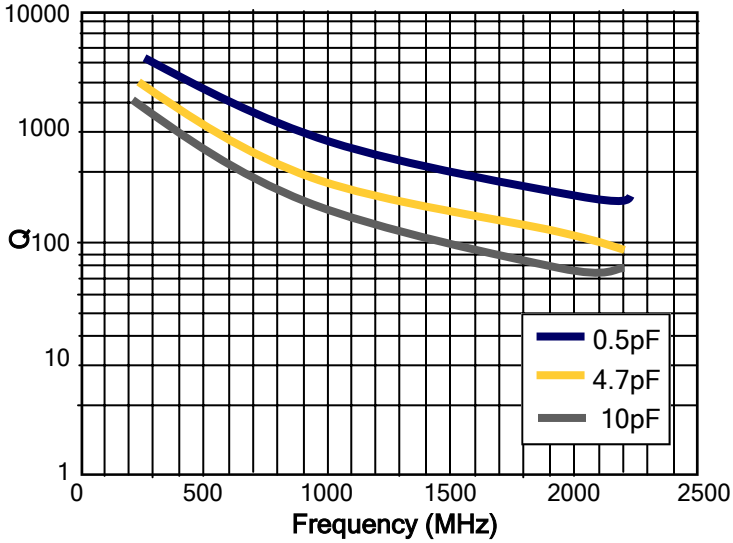


RF Characteristics versus Frequency

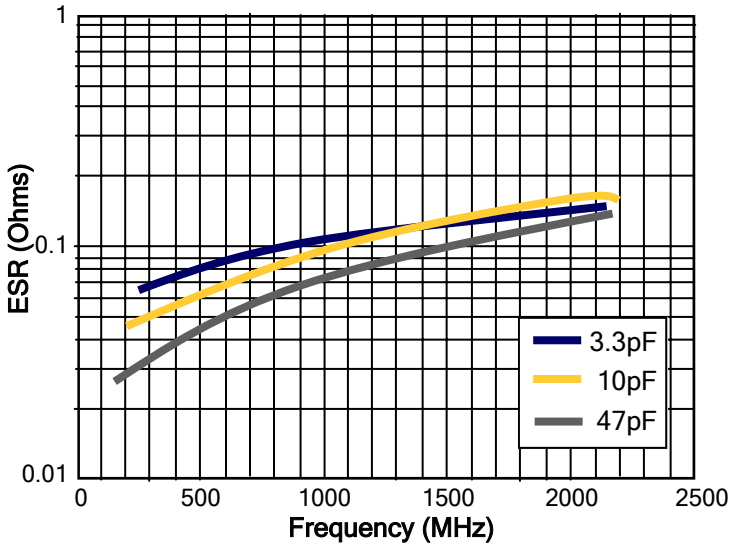
0402: Equivalent Series Resistance



0402: Dissipation Factor (Q)



0603: Equivalent Series Resistance



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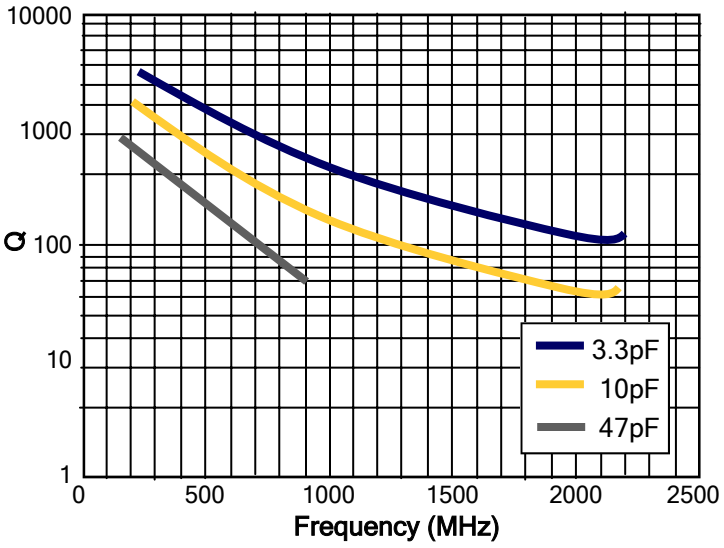
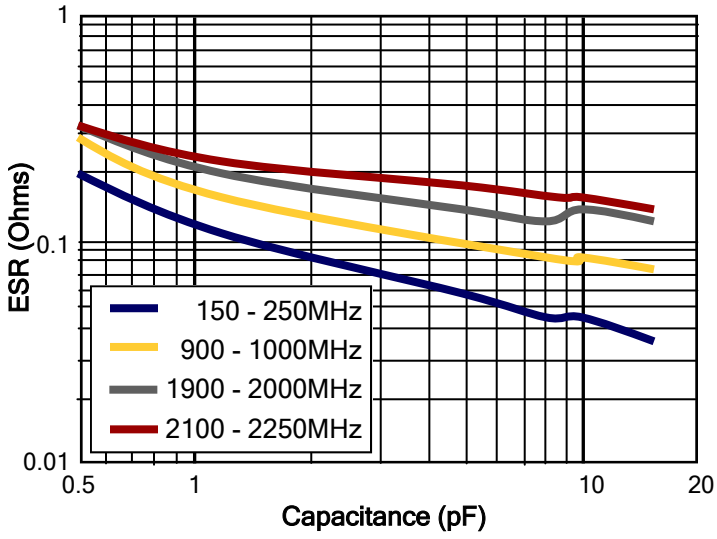
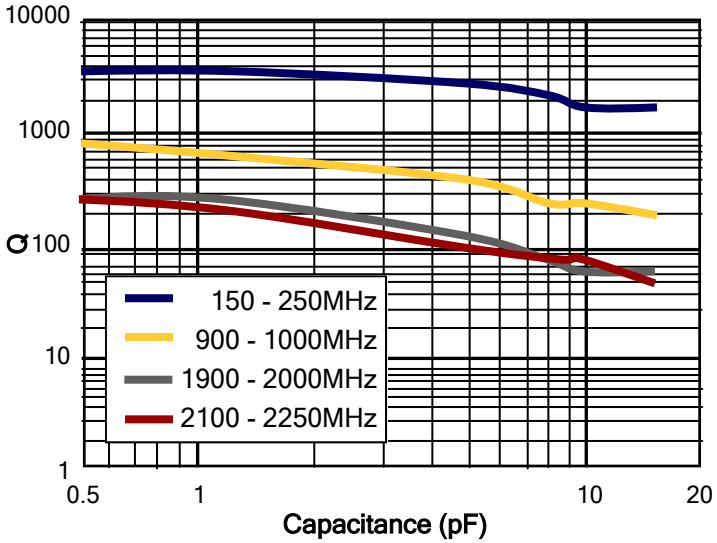


RF Characteristics versus Capacitance

0402: Equivalent Series Resistance



0402: Dissipation Factor (Q)



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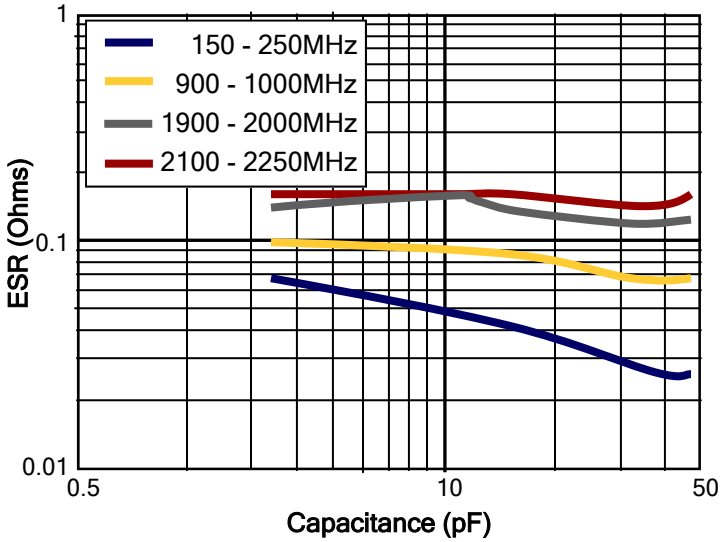

0603: Dissipation Factor (Q)