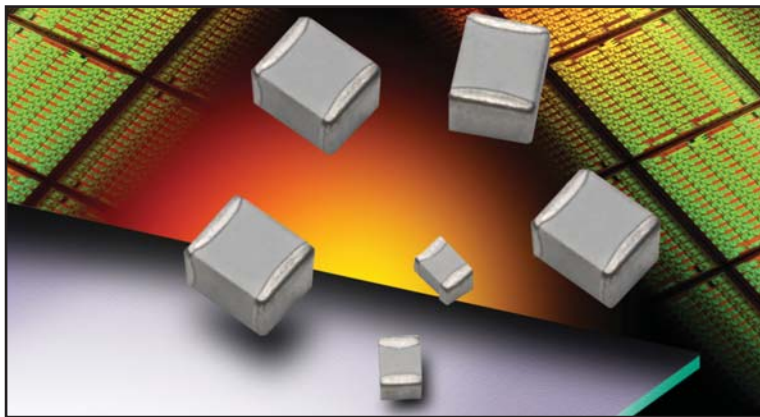


Microwave MLC's

UQ Series High Q Ultra Low ESR MLC



FEATURES:

- Ultra Low ESR
- High Q
- High Self Resonance
- Capacitance Range 0.1 pF to 1000 pF

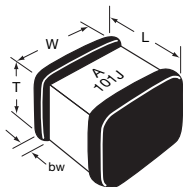
APPLICATIONS:

- RF Power Amplifiers
- Low Noise Amplifiers
- Filter Networks
- MRI Systems

HOW TO ORDER

UQ	CB	7	A	100	J	A	T	ME
AVX Style	Case Size CA = 0605 CB = 1210 CR = 0709 CL = 0402 CS = 0603 CF = 0805 See mechanical dimensions below	Voltage Code 5 = 50V 1 = 100V E = 150V 2 = 200V V = 250V 9 = 300V 7 = 500V	Temperature Coefficient Code A = 0±30ppm/°C	Capacitance EIA Capacitance Code in pF. First two digits = significant figures or "R" for decimal place. Third digit = number of zeros or after "R" significant figures.	Capacitance Tolerance Code B = ±.1 pF C = ±.25 pF D = ±.5 pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%	Failure Rate Code A = Not Applicable	Termination Style Code J = Nickel Barrier Sn/Pb (60/40) **T = 100% Tin C = Non-Magnetic Barrier/Tin **RoHS Compliant	Packaging Code ME = 7" Reel Marked 2A = 7" Unmarked (0402, 0603, & 0805 only) * Vertical T&R available

MECHANICAL DIMENSIONS: inches (millimeters)



Case	Length (L)	Width (W)	Thickness (T)	Band Width (bw)
UQCA	.055 + .015 - .010 (1.40+ .381 - .254)	.055±.015 (1.40±.381)	.057 (1.45) max.	.010 + .010 - .005 (.254 +.254 -.127)
UQCB	.110 + .020 - .010 (2.79 +.508 -.254)	.110±.015 (2.79±.381)	.102 (2.59) max.	.015±.010 (.381±.254)
UQCR	.070 ± .015 (1.78 ± .381)	.090±.010 (2.29±.254)	.115 (2.92) max.	.010 + .010 - .005 (.254 +.254 -.127)
UQCL	.040 ± .004 (1.02 ± .100)	.020±.004 (0.51±.100)	.024 (.600) max.	.010 ± .006 (0.25 ± 0.15)
UQCS	.063 ± .006 (1.60 ± 0.15)	.032±.006 (0.81±0.15)	.035 (.890) max.	.014 ± .006 (0.36 ± 0.15)
UQCF	.079 ± .008 (2.01 ± 0.20)	.049±.008 (1.24±0.20)	.051 (1.30) max.	.020 ± 0.01 (0.51 ± 0.25)

TAPE & REEL: All tape and reel specifications are in compliance with EIA RS481 (equivalent to IEC 286 part 3).

—8mm carrier

—7" reel: UQCA = 500 or 4000 pc T&R
UQCB = 500 or 1000 pc T&R
UQCR = 500 or 1000 pc T&R

UQCL = 500, 4000 or 10,000 pc T&R
UQCS = 500 or 4000 pc T&R
UQCF = 500 or 4000 pc T&R



ELECTRICAL SPECIFICATIONS

	Temperature Characteristic Code A
Temperature Coefficient (TCC)	(A) 0 ± 30 PPM/°C
Capacitance Range	(A) 0.1 pF to 1000 pF
Operating Temperature	0.1 pF to 1000 pF: from -55°C to +125°C
Quality Factor (Q)	Greater than 2,000 at 1 MHz
Insulation Resistance (IR)	0.1 pF to 1000 pF 10 ⁵ Megohms min. @ 25°C at rated WVDC 10 ⁴ Megohms min. @ 125°C at rated WVDC
Working Voltage (WVDC)	See Capacitance Values table
Dielectric Withstanding Voltage (DWV)	250% of rated WVDC for 5 secs
Aging Effects	None
Piezoelectric Effects	None
Capacitance Drift	$\pm$ (0.02% or 0.02 pF), whichever is greater

ENVIRONMENTAL CHARACTERISTICS

AVX UQ will meet and exceed the requirements of EIA-198, MIL-PRF-55681 and MIL-PRF-123

Thermal Shock	Mil-STD-202, Method 107, Condition A
Moisture Resistance	Mil-STD-202, Method 106
Low Voltage Humidity	Mil-STD-202, Method 103, condition A, with 1.5 VDC applied while subjected to an environment of 85°C with 85% relative humidity for 240 hours
Life Test	Mil-STD-202, Method 108, for 2000 hours at 125°C 200% WVDC
Shock	Mil-STD-202, Method 213, Condition J
Vibration	Mil-STD-202, Method 204, Condition B
Immersion	Mil-STD-202, Method 104, Condition B
Salt Spray	Mil-STD-202, Method 101, Condition B
Solderability	Mil-STD-202, Method 208
Terminal Strength	Mil-STD-202, Method 211
Temperature Cycling	Mil-STD-202, Method 102, Condition C
Barometric Pressure	Mil-STD-202, Method 105, Condition B
Resistance to Solder Heat	Mil-STD-202, Method 210, Condition C

Case Size A

TABLE I: TC: A (0±30PPM/°C)

Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC
0.1	B	250	1.6	B, C, D	250	5.6	B, C, D	250	24	F, G, J, K, M	250
0.2	B	250	1.7	B, C, D	250	6.2	B, C, D	250	27	F, G, J, K, M	250
0.3	B,C	250	1.8	B, C, D	250	6.8	B, C, J, K	250	30	F, G, J, K, M	250
0.4	B,C	250	1.9	B, C, D	250	7.5	B, C, J, K	250	33	F, G, J, K, M	250
0.5	B, C, D	250	2.0	B, C, D	250	8.2	B, C, J, K	250	36	F, G, J, K, M	250
0.6	B, C, D	250	2.2	B, C, D	250	9.1	B, C, J, K	250	39	F, G, J, K, M	250
0.7	B, C, D	250	2.4	B, C, D	250	10	F, G, J, K, M	250	43	F, G, J, K, M	250
0.8	B, C, D	250	2.7	B, C, D	250	11	F, G, J, K, M	250	47	F, G, J, K, M	250
0.9	B, C, D	250	3.0	B, C, D	250	12	F, G, J, K, M	250	51	F, G, J, K, M	250
1.0	B, C, D	250	3.3	B, C, D	250	13	F, G, J, K, M	250	56	F, G, J, K, M	250
1.1	B, C, D	250	3.6	B, C, D	250	15	F, G, J, K, M	250	62	F, G, J, K, M	250
1.2	B, C, D	250	3.9	B, C, D	250	16	F, G, J, K, M	250	68	F, G, J, K, M	250
1.3	B, C, D	250	4.3	B, C, D	250	18	F, G, J, K, M	250	75	F, G, J, K, M	250
1.4	B, C, D	250	4.7	B, C, D	250	20	F, G, J, K, M	250	82	F, G, J, K, M	250
1.5	B, C, D	250	5.1	B, C, D	250	22	F, G, J, K, M	250	91	F, G, J, K, M	250
									100	F, G, J, K, M	250

Case Size B

TABLE II: TC: A (0±30PPM/°C)

Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC
0.1	B	500	3.6	B, C, D	500	39	F, G, J, K, M	500	430	F, G, J, K, M	200
0.2	B	500	3.9	B, C, D	500	43	F, G, J, K, M	500	470	F, G, J, K, M	200
0.3	B,C	500	4.3	B, C, D	500	47	F, G, J, K, M	500	510	F, G, J, K, M	100
0.4	B,C	500	4.7	B, C, D	500	51	F, G, J, K, M	500	560	F, G, J, K, M	100
0.5	B, C, D	500	5.1	B, C, D	500	56	F, G, J, K, M	500	620	F, G, J, K, M	100
0.6	B, C, D	500	5.6	B, C, D	500	62	F, G, J, K, M	500	680	F, G, J, K, M	50
0.7	B, C, D	500	6.2	B, C, D	500	68	F, G, J, K, M	500	750	F, G, J, K, M	50
0.8	B, C, D	500	6.8	B, C, J, K	500	75	F, G, J, K, M	500	820	F, G, J, K, M	50
0.9	B, C, D	500	7.5	B, C, J, K	500	82	F, G, J, K, M	500	910	F, G, J, K, M	50
1.0	B, C, D	500	8.2	B, C, J, K	500	91	F, G, J, K, M	500	1000	F, G, J, K, M	50
1.1	B, C, D	500	9.1	B, C, J, K	500	100	F, G, J, K, M	500			
1.2	B, C, D	500	10	F, G, J, K, M	500	110	F, G, J, K, M	300			
1.3	B, C, D	500	11	F, G, J, K, M	500	120	F, G, J, K, M	300			
1.4	B, C, D	500	12	F, G, J, K, M	500	130	F, G, J, K, M	300			
1.5	B, C, D	500	13	F, G, J, K, M	500	150	F, G, J, K, M	300			
1.6	B, C, D	500	15	F, G, J, K, M	500	160	F, G, J, K, M	300			
1.7	B, C, D	500	16	F, G, J, K, M	500	180	F, G, J, K, M	300			
1.8	B, C, D	500	18	F, G, J, K, M	500	200	F, G, J, K, M	300			
1.9	B, C, D	500	20	F, G, J, K, M	500	220	F, G, J, K, M	200			
2.0	B, C, D	500	22	F, G, J, K, M	500	240	F, G, J, K, M	200			
2.2	B, C, D	500	24	F, G, J, K, M	500	270	F, G, J, K, M	200			
2.4	B, C, D	500	27	F, G, J, K, M	500	300	F, G, J, K, M	200			
2.7	B, C, D	500	30	F, G, J, K, M	500	330	F, G, J, K, M	200			
3.0	B, C, D	500	33	F, G, J, K, M	500	360	F, G, J, K, M	200			
3.3	B, C, D	500	36	F, G, J, K, M	500	390	F, G, J, K, M	200			

Case Size R

TABLE III: TC: A (0±30PPM/°C)

Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC
1.0	B, C, D	500	3.0	B, C, D	500	12	G, J, K, M	500	51	G, J, K, M	500
1.1	B, C, D	500	3.3	B, C, D	500	13	G, J, K, M	500	56	G, J, K, M	500
1.2	B, C, D	500	3.6	B, C, D	500	15	G, J, K, M	500	62	G, J, K, M	500
1.3	B, C, D	500	3.9	B, C, D	500	16	G, J, K, M	500	68	G, J, K, M	500
1.4	B, C, D	500	4.3	B, C, D	500	18	G, J, K, M	500	75	G, J, K, M	500
1.5	B, C, D	500	4.7	B, C, D	500	20	G, J, K, M	500	82	G, J, K, M	500
1.6	B, C, D	500	5.1	B, C, D	500	22	G, J, K, M	500	91	G, J, K, M	500
1.7	B, C, D	500	5.6	G, J, K, M	500	24	G, J, K, M	500	100	G, J, K, M	500
1.8	B, C, D	500	6.2	G, J, K, M	500	27	G, J, K, M	500			
1.9	B, C, D	500	6.8	G, J, K, M	500	30	G, J, K, M	500			
2.0	B, C, D	500	7.5	G, J, K, M	500	33	G, J, K, M	500			
2.1	B, C, D	500	8.2	G, J, K, M	500	36	G, J, K, M	500			
2.2	B, C, D	500	9.1	G, J, K, M	500	39	G, J, K, M	500			
2.4	B, C, D	500	10	G, J, K, M	500	43	G, J, K, M	500			
2.7	B, C, D	500	11	G, J, K, M	500	47	G, J, K, M	500			

Case Size L

TABLE IV: TC: A (0±30PPM/°C)

Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC
0.1	A, B	200	1.6	A, B, C, D	200	6.2	A, B, C, D	200
0.2	A, B	200	1.8	A, B, C, D	200	6.8	B, C, J, K	200
0.3	A, B, C	200	2.0	A, B, C, D	200	7.5	B, C, J, K	200
0.4	A, B, C	200	2.2	A, B, C, D	200	8.2	B, C, J, K	200
0.5	A, B, C	200	2.4	A, B, C, D	200	9.1	B, C, J, K	200
0.6	A, B, C	200	2.7	A, B, C, D	200	10	F, G, J, K, M	200
0.7	A, B, C	200	3.0	A, B, C, D	200	11	F, G, J, K, M	200
0.8	A, B, C	200	3.3	A, B, C, D	200	12	F, G, J, K, M	200
0.9	A, B, C	200	3.6	A, B, C, D	200	15	F, G, J, K, M	200
1.0	A, B, C, D	200	3.9	A, B, C, D	200	18	F, G, J, K, M	200
1.1	A, B, C, D	200	4.3	A, B, C, D	200	20	F, G, J, K, M	200
1.2	A, B, C, D	200	4.7	A, B, C, D	200	22	F, G, J, K, M	200
1.3	A, B, C, D	200	5.1	A, B, C, D	200	24	F, G, J, K, M	200
1.5	A, B, C, D	200	5.6	A, B, C, D	200	27	F, G, J, K, M	200

Case Size S

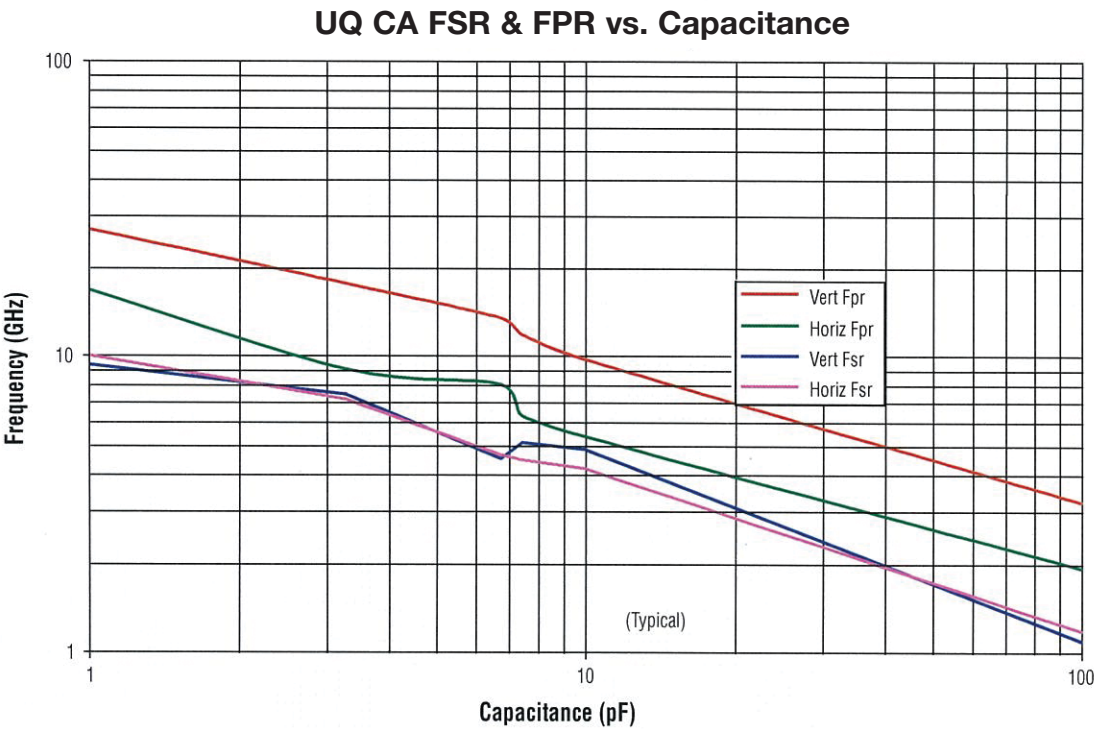
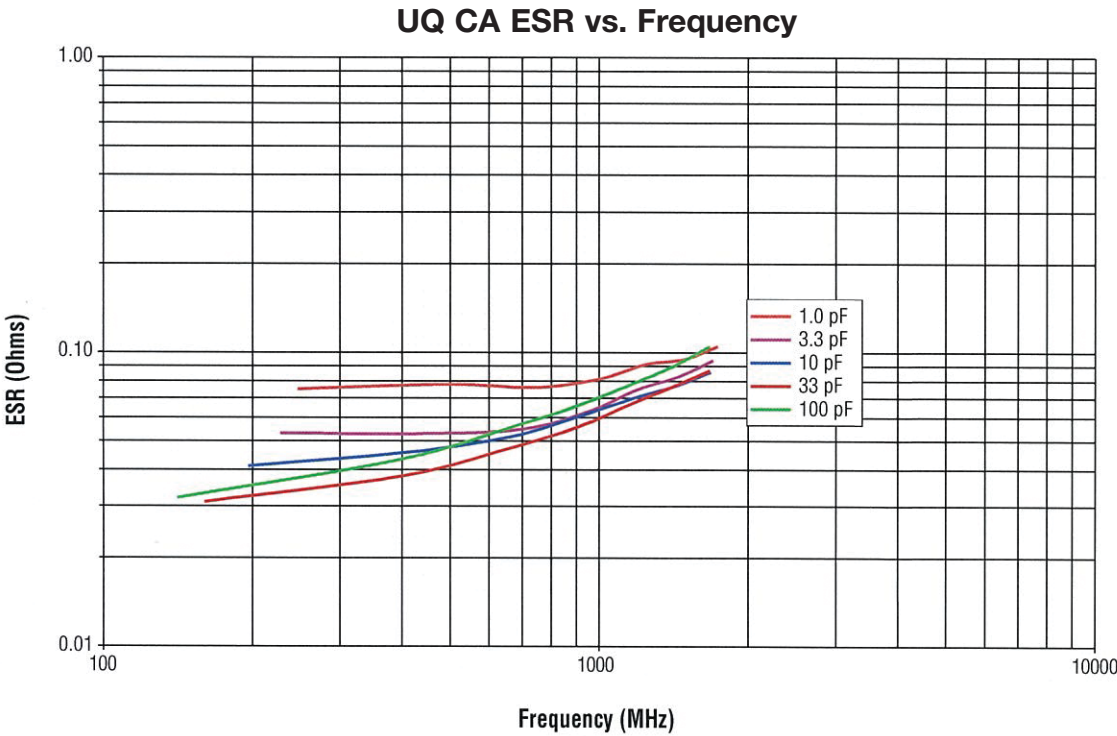
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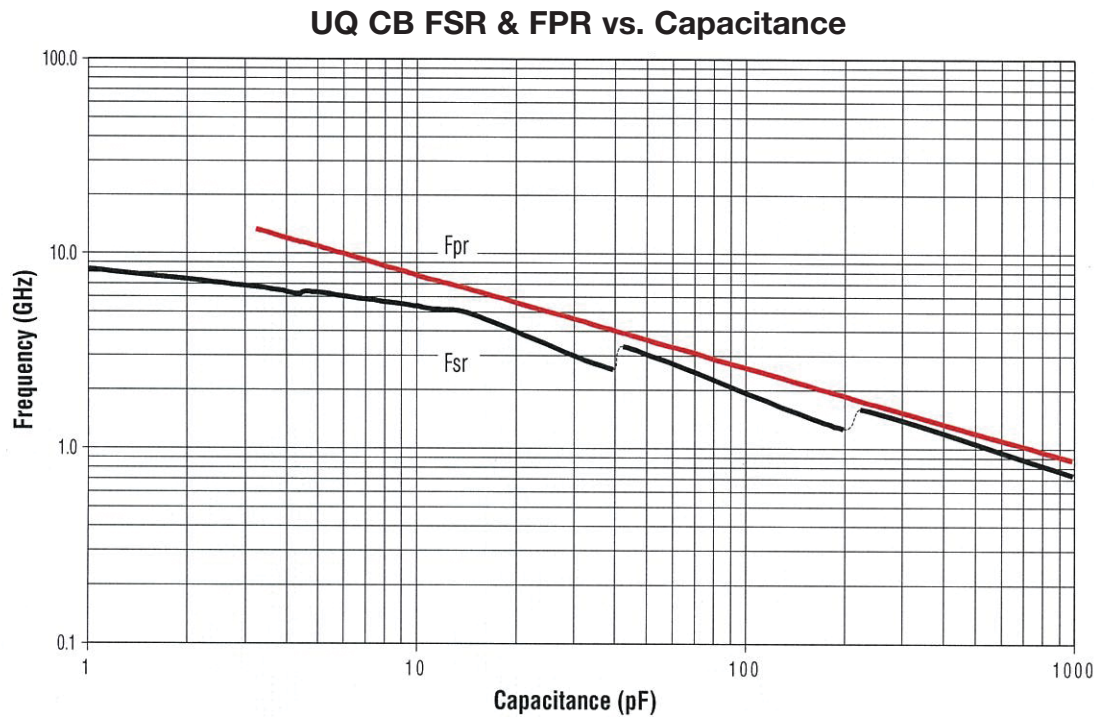
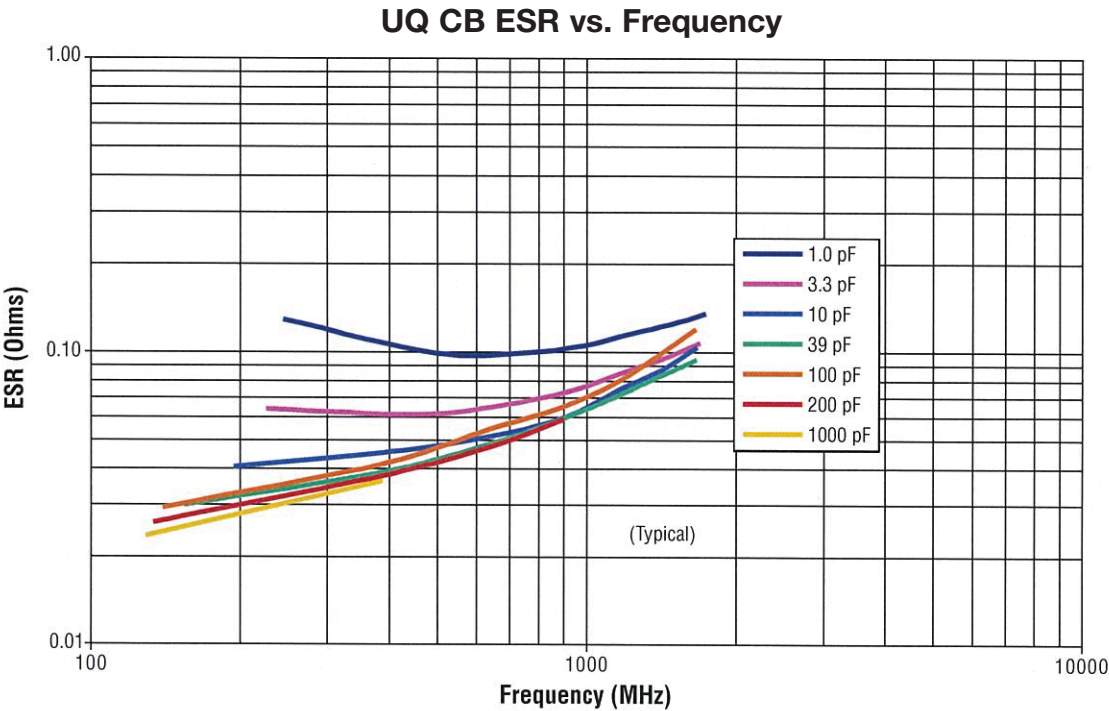
Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC
0.1	A, B	250	2.7	A, B, C, D	250	20	F, G, J, K, M	250
0.2	A, B	250	3.0	A, B, C, D	250	22	F, G, J, K, M	250
0.3	A, B, C	250	3.3	A, B, C, D	250	24	F, G, J, K, M	250
0.4	A, B, C	250	3.6	A, B, C, D	250	27	F, G, J, K, M	250
0.5	A, B, C	250	3.9	A, B, C, D	250	30	F, G, J, K, M	250
0.6	A, B, C	250	4.3	A, B, C, D	250	33	F, G, J, K, M	250
0.7	A, B, C	250	4.7	A, B, C, D	250	36	F, G, J, K, M	250
0.8	A, B, C	250	5.1	A, B, C, D	250	39	F, G, J, K, M	250
0.9	A, B, C	250	5.6	A, B, C, D	250	43	F, G, J, K, M	250
1.0	A, B, C, D	250	6.2	A, B, C, D	250	47	F, G, J, K, M	250
1.1	A, B, C, D	250	6.8	B, C, J, K	250	51	F, G, J, K, M	250
1.2	A, B, C, D	250	7.5	B, C, J, K	250	56	F, G, J, K, M	250
1.3	A, B, C, D	250	8.2	B, C, J, K	250	62	F, G, J, K, M	250
1.5	A, B, C, D	250	9.1	B, C, J, K	250	68	F, G, J, K, M	250
1.6	A, B, C, D	250	10	F, G, J, K, M	250	75	F, G, J, K, M	250
1.8	A, B, C, D	250	11	F, G, J, K, M	250	82	F, G, J, K, M	250
2.0	A, B, C, D	250	12	F, G, J, K, M	250	91	F, G, J, K, M	250
2.2	A, B, C, D	250	15	F, G, J, K, M	250	100	F, G, J, K, M	250
2.4	A, B, C, D	250	18	F, G, J, K, M	250			

Case Size F

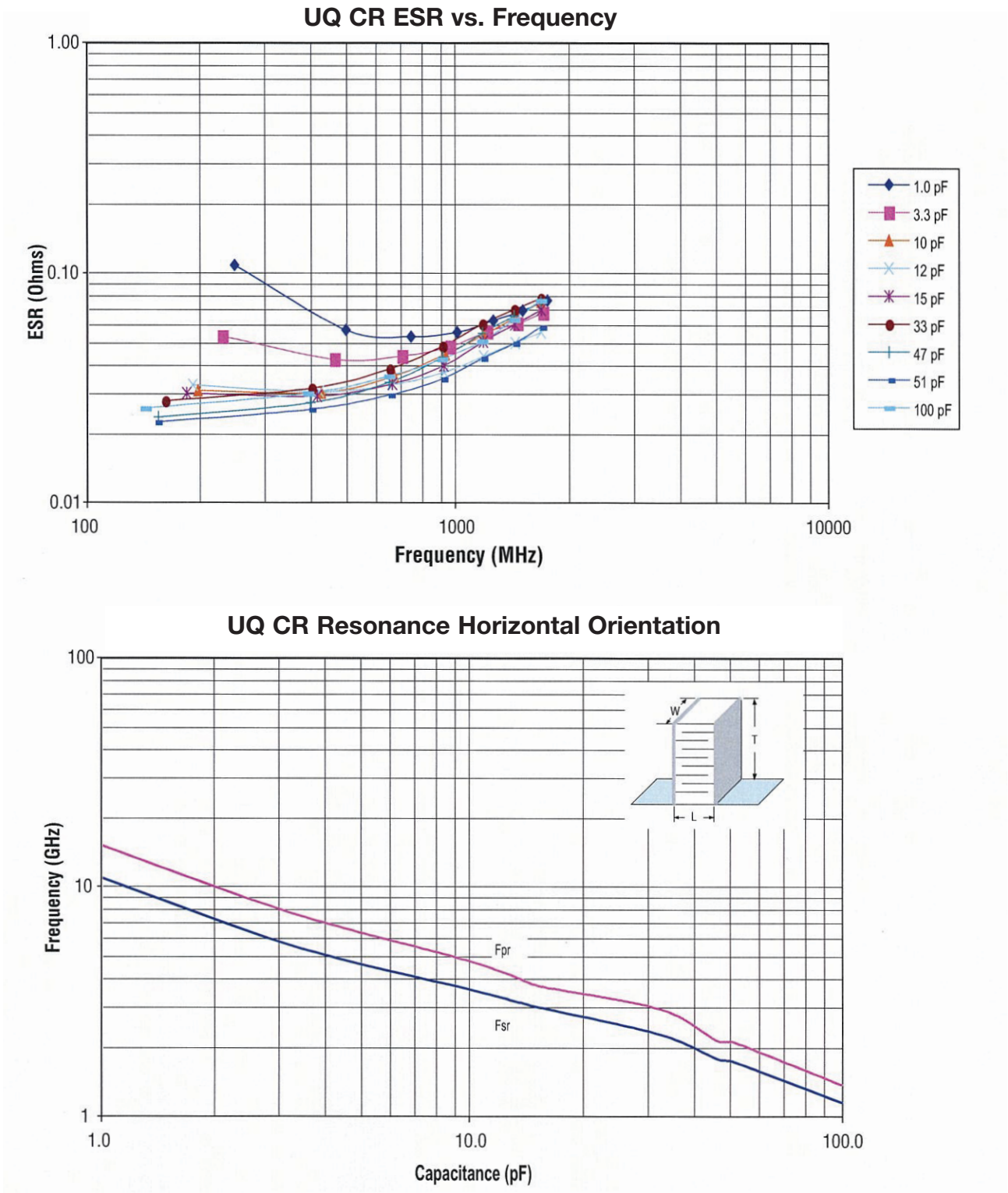
TABLE VI:

Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC
0.1	A, B	250	3.3	A, B, C, D	250	30	F, G, J, K, M	250
0.2	A, B	250	3.6	A, B, C, D	250	33	F, G, J, K, M	250
0.3	A, B, C	250	3.9	A, B, C, D	250	36	F, G, J, K, M	250
0.4	A, B, C	250	4.3	A, B, C, D	250	39	F, G, J, K, M	250
0.5	A, B, C	250	4.7	A, B, C, D	250	43	F, G, J, K, M	250
0.6	A, B, C	250	5.1	A, B, C, D	250	47	F, G, J, K, M	250
0.7	A, B, C	250	5.6	A, B, C, D	250	51	F, G, J, K, M	250
0.8	A, B, C	250	6.2	A, B, C, D	250	56	F, G, J, K, M	250
0.9	A, B, C	250	6.8	B, C, J, K	250	62	F, G, J, K, M	250
1.0	A, B, C, D	250	7.5	B, C, J, K	250	68	F, G, J, K, M	250
1.1	A, B, C, D	250	8.2	B, C, J, K	250	75	F, G, J, K, M	250
1.2	A, B, C, D	250	9.1	B, C, J, K	250	82	F, G, J, K, M	250
1.3	A, B, C, D	250	10	F, G, J, K, M	250	91	F, G, J, K, M	250
1.5	A, B, C, D	250	11	F, G, J, K, M	250	100	F, G, J, K, M	250
1.6	A, B, C, D	250	12	F, G, J, K, M	250	110	F, G, J, K, M	250
1.8	A, B, C, D	250	15	F, G, J, K, M	250	120	F, G, J, K, M	250
2.0	A, B, C, D	250	18	F, G, J, K, M	250	150	F, G, J, K, M	250
2.2	A, B, C, D	250	20	F, G, J, K, M	250	180	F, G, J, K, M	250
2.4	A, B, C, D	250	22	F, G, J, K, M	250	200	F, G, J, K, M	250
2.7	A, B, C, D	250	24	F, G, J, K, M	250	220	F, G, J, K, M	250
3.0	A, B, C, D	250	27	F, G, J, K, M	250	240	F, G, J, K, M	250

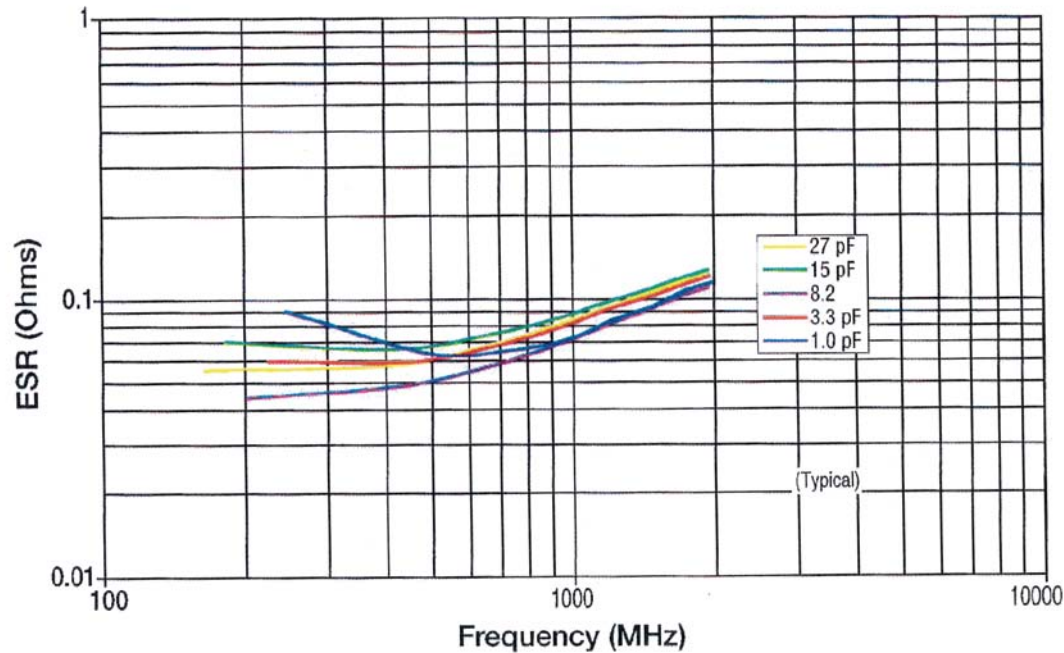




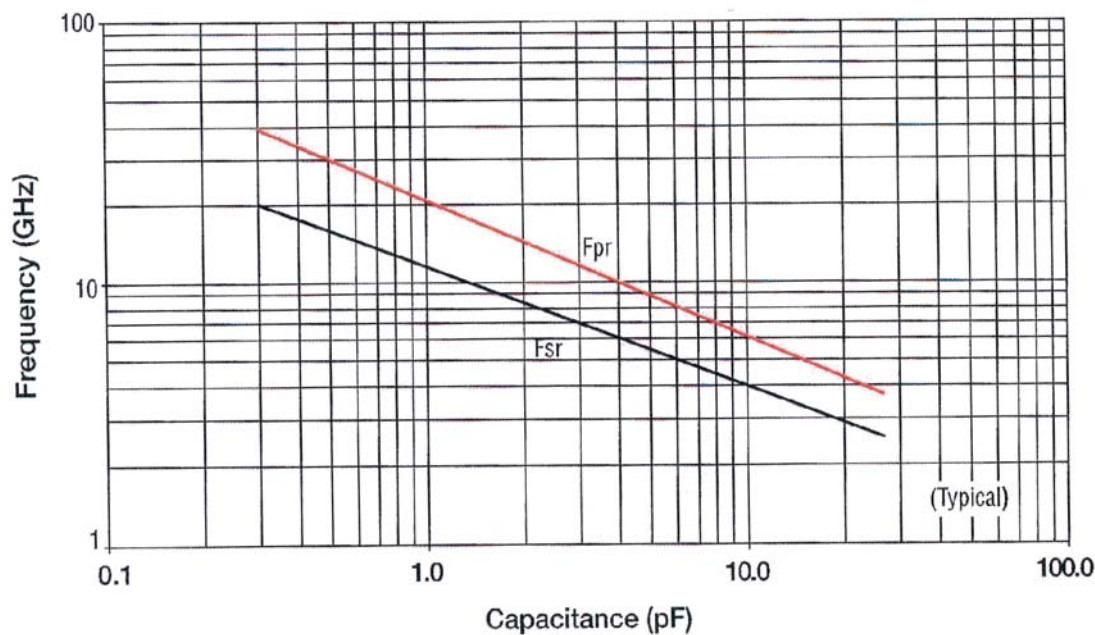
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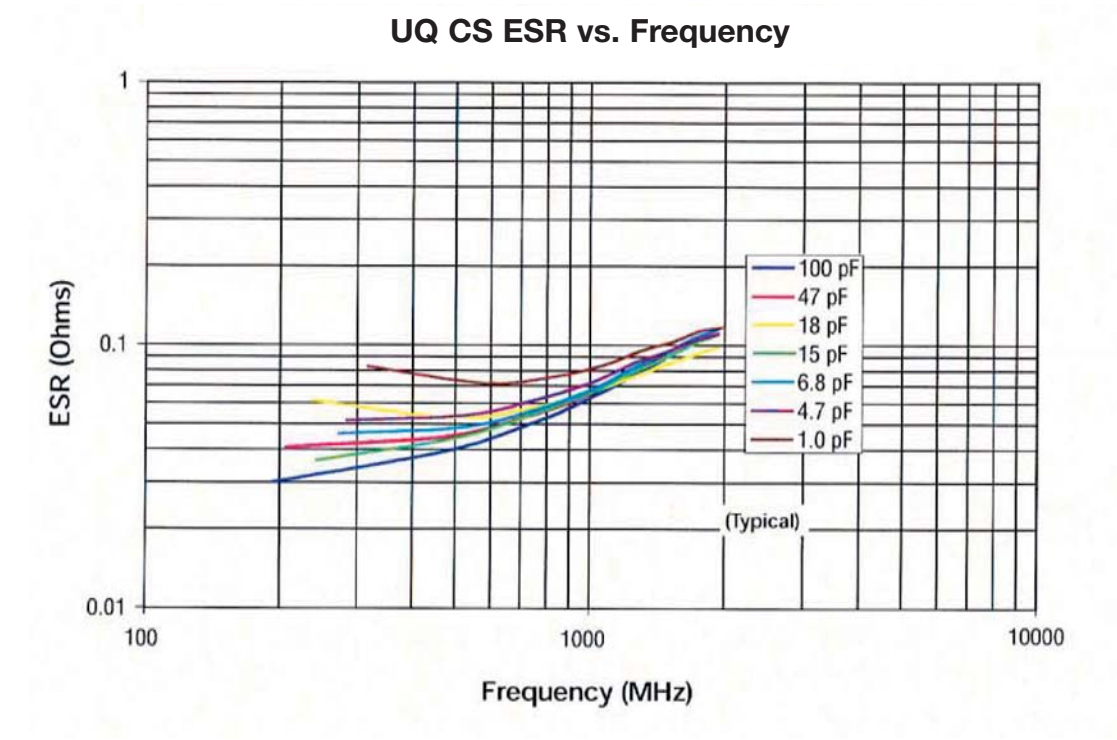
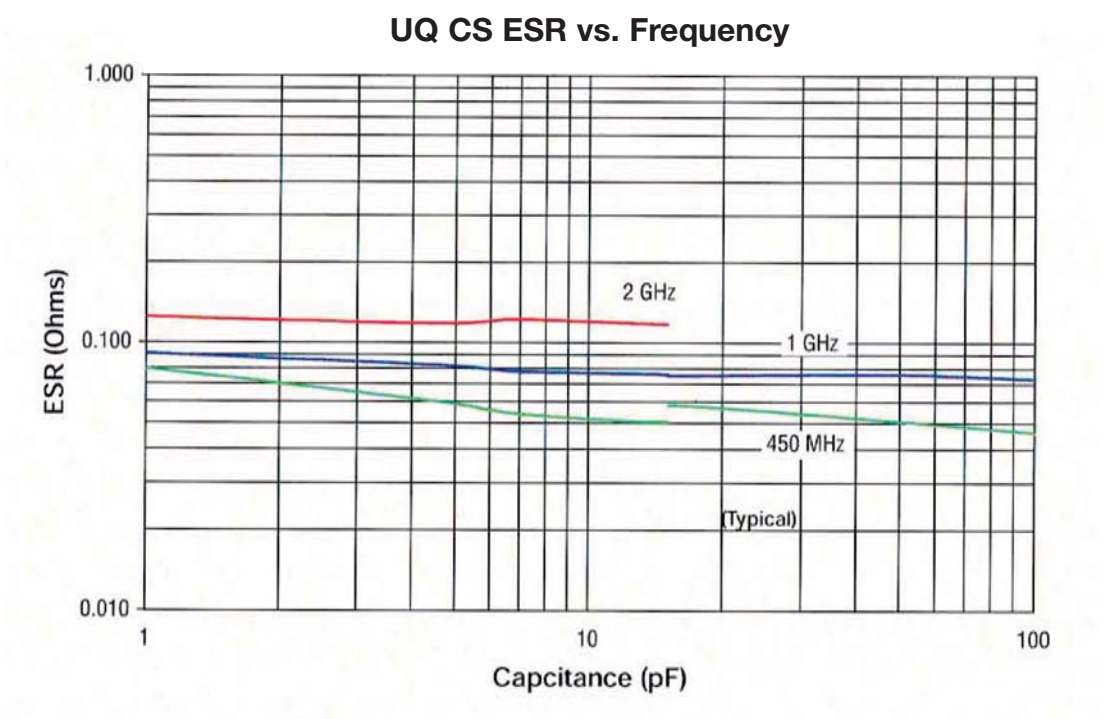


UQ CL ESR vs. Frequency

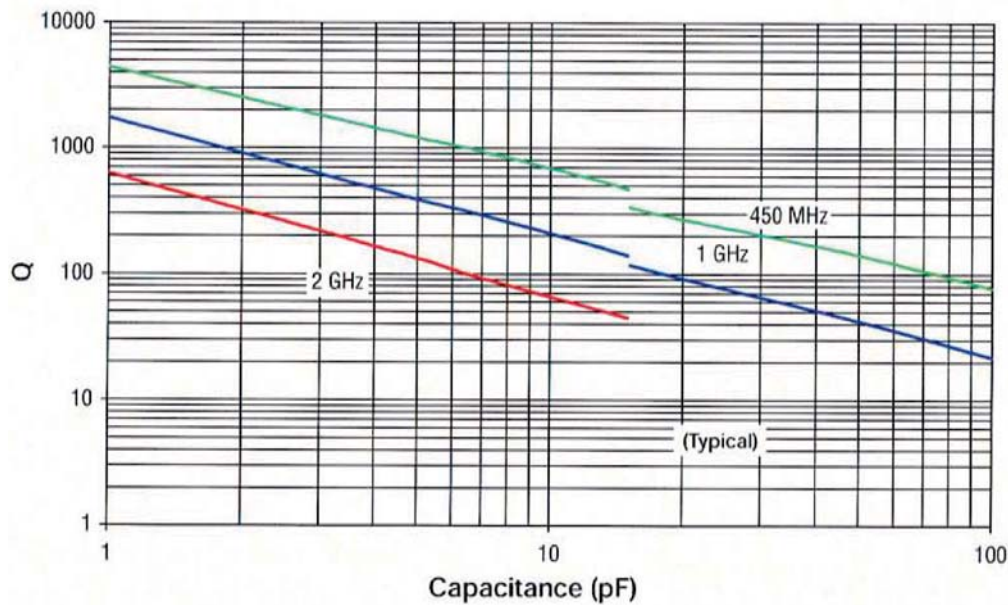


UQ CL Resonance Frequency

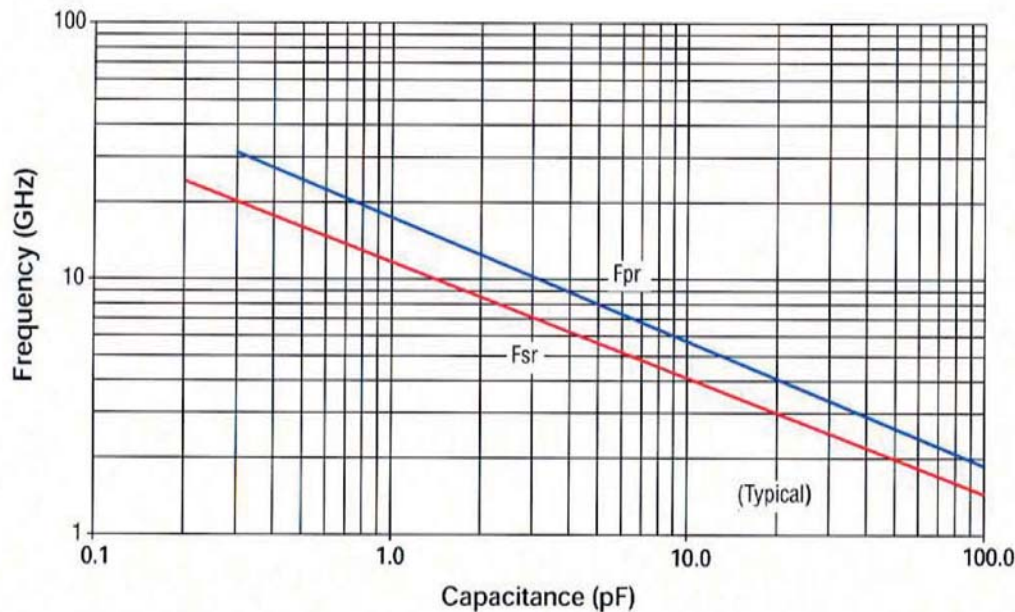




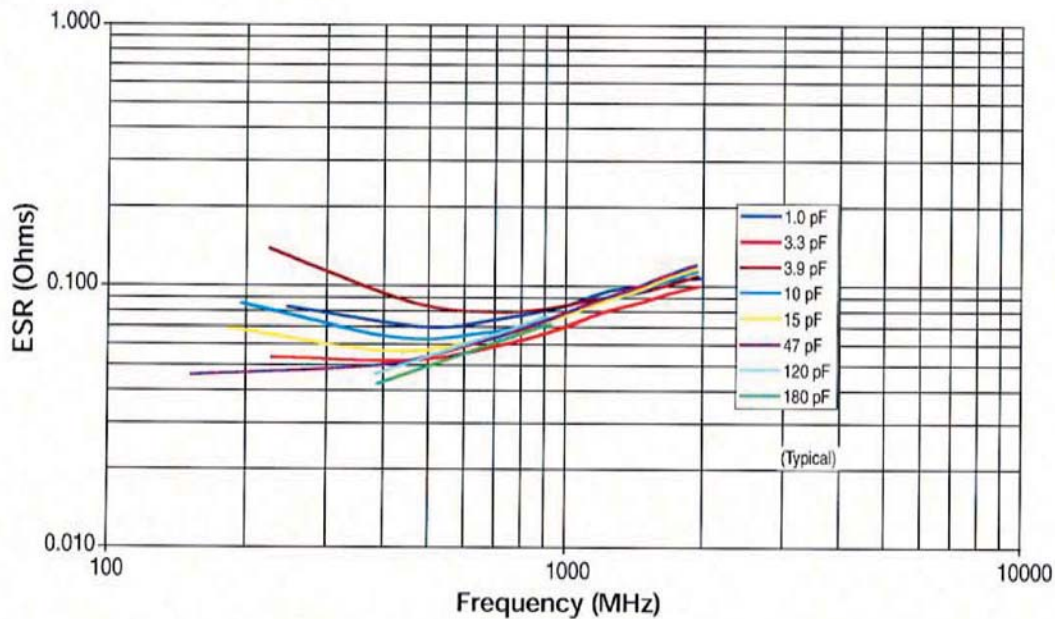
UQ CS Q vs. Capacitance



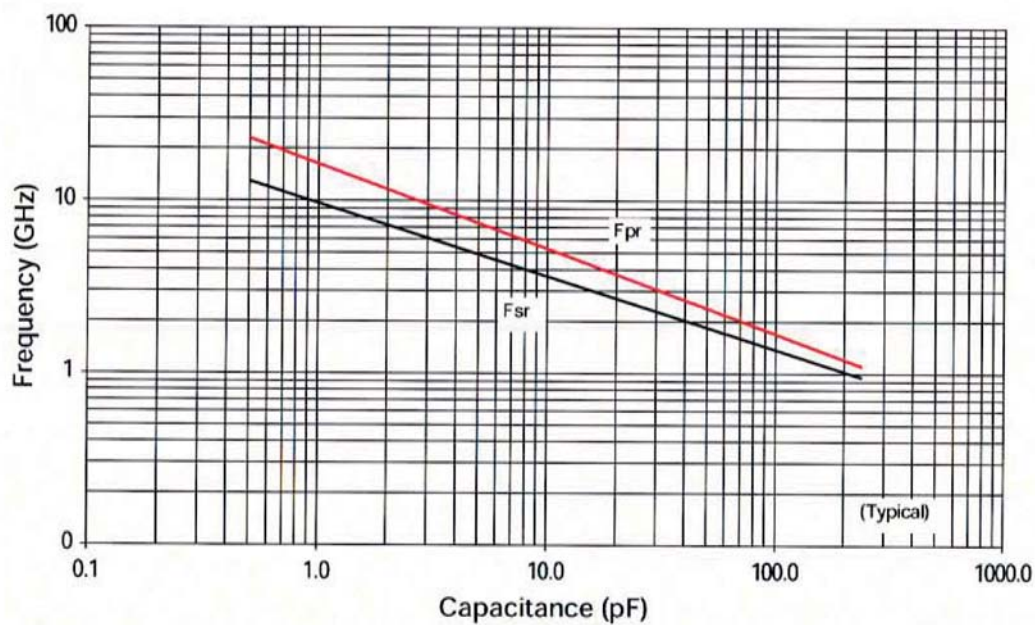
UQ CS Resonant Frequency

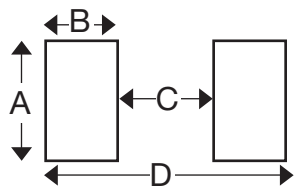


UQ CF ESR vs. Frequency



UQ CF Resonant Frequency





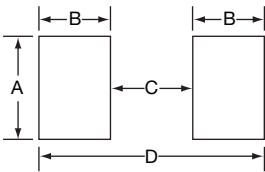
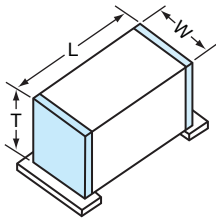
MOUNTING PAD DIMENSIONS CASE CA: inches (millimeters)

	Pad Size	A min	B min	C min	D min
Vertical Mount	Normal	0.070 (1.778)	0.050 (1.270)	0.030 (0.762)	0.130 (3.302)
	High Density	0.050 (1.270)	0.030 (0.762)	0.030 (0.762)	0.090 (2.286)
Horizontal Mount	Normal	0.080 (2.032)	0.050 (1.270)	0.030 (0.762)	0.130 (3.302)
	High Density	0.060 (1.524)	0.030 (0.762)	0.030 (0.762)	0.090 (2.286)

MOUNTING PAD DIMENSIONS CASE CB: inches (millimeters)

	Cap Value	Pad Size	A min	B min	C min	D min
Vertical Mount	0.1 pF	Normal	0.065 (1.651)	0.050 (1.270)	0.075 (1.905)	0.175 (4.445)
		High Density	0.045 (1.143)	0.030 (0.762)	0.075 (1.905)	0.135 (3.429)
	0.2 pF	Normal	0.090 (2.286)	0.050 (1.270)	0.075 (1.905)	0.175 (4.445)
		High Density	0.070 (1.778)	0.030 (0.762)	0.075 (1.905)	0.135 (3.429)
	0.3 to 510 pF	Normal	0.110 (2.794)	0.050 (1.270)	0.075 (1.905)	0.175 (4.445)
		High Density	0.090 (2.286)	0.030 (0.762)	0.075 (1.905)	0.135 (3.429)
Horizontal Mount	All Values	Normal	0.120 (3.048)	0.050 (1.270)	0.075 (1.905)	0.175 (4.445)
		High Density	0.100 (2.540)	0.030 (0.762)	0.075 (1.905)	0.135 (3.429)
		Normal	0.130 (3.302)	0.050 (1.270)	0.075 (1.905)	0.175 (4.445)
		High Density	0.110 (2.794)	0.030 (0.762)	0.075 (1.905)	0.135 (3.429)

MOUNTING PAD DIMENSIONS CASE CL, CS & CF: inches (millimeters)



Case	A min.	B min.	C min.	D min.
0402 (1005)	.0275 (0.70)	.0354 (0.90)	.0157 (0.40)	.0866 (2.20)
0603 (1608)	.0393 (1.00)	.0433 (1.10)	.03236 (0.60)	.110 (2.80)
0805 (2012)	.0590 (1.50)	.0512 (1.30)	.0236 (0.60)	.1259 (3.20)

Microwave MLC's



UQ Series High Q Ultra Low ESR MLC

DESIGN KITS

Kit #	Item #	Description	Cap Value	Cap. Values (pF)	Tol. (pF)
Kit 36T		UQCL 0402 Series Ultra-Low ESR High Q Microwave Capacitors 16 different values, 15 pcs min. per value	0.1 to 2.0	0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.5	±0.1
				1.6, 1.8, 2.0	±0.25
Kit 37T		UQCL 0402 Series Ultra-Low ESR High Q Microwave Capacitors 16 different values, 15 pcs min. per value	1.0 to 10	1.0, 1.2, 1.5, 1.8, 2.0, 2.2, 2.4, 2.7, 3.0, 3.3	±0.1
				3.9, 4.7, 5.6, 6.8, 8.2	±0.25
				10	±5%
Kit 38T		UQCL 0402 Series Ultra-Low ESR High Q Microwave Capacitors 8 different values, 15 pcs min. per value	10 to 27	10, 12, 15, 18, 20, 22, 24, 27	±5%
Kit 25T		UQCS 0603 Series Ultra-Low ESR High Q Microwave Capacitors 16 different values, 15 pcs min. per value	0.1 to 2.0	0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.5	±0.1
				1.6, 1.8, 2.0	±0.25
Kit 26T		UQCS 0603 Series Ultra-Low ESR High Q Microwave Capacitors 16 different values, 15 pcs min. per value	1.0 to 10	1.0, 1.2, 1.5, 1.8, 2.0, 2.2, 2.4, 2.7, 3.0, 3.3	±0.1
				3.9, 4.7, 5.6, 6.8, 8.2	±0.25
				10	±5%
Kit 27T		UQCS 0603 Series Ultra-Low ESR High Q Microwave Capacitors 16 different values, 15 pcs min. per value	10 to 100	10, 12, 15, 18, 20, 22, 24, 27, 30, 33, 39, 47, 56, 68, 82, 100	±5%
Kit 32T		UQCF 0805 Series Ultra-Low ESR High Q Microwave Capacitors 16 different values, 15 pcs min. per value	0.1 to 2.0	0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.5	±0.1
				1.6, 1.8, 2.0	±0.25
Kit 33T		UQCF 0805 Series Ultra-Low ESR High Q Microwave Capacitors 16 different values, 15 pcs min. per value	1.0 to 10	1.0, 1.2, 1.5, 1.8, 2.0, 2.2, 2.4, 2.7, 3.0, 3.3	±0.1
				3.9, 4.7, 5.6, 6.8, 8.2	±0.25
				10	±5%
Kit 34T		UQCF 0805 Series Ultra-Low ESR High Q Microwave Capacitors 16 different values, 15 pcs min. per value	10 to 100	10, 12, 15, 18, 20, 22, 24, 27, 30, 33, 39, 47, 56, 68, 82, 100	±5%
Kit 35T		UQCF 0805 Series Ultra-Low ESR High Q Microwave Capacitors 7 different values, 15 pcs min. per value	100 to 240	100, 120, 150, 180, 200, 220, 250	±5%