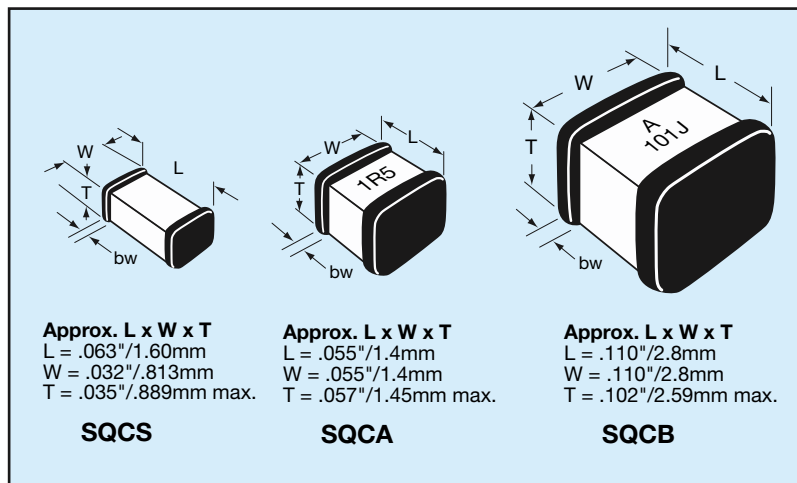


Microwave MLC's



SQ Series



These porcelain and ceramic dielectric multilayer capacitor (MLC) chips are best suited for RF/ Microwave applications typically ranging from 10 MHz to 4.2 GHz. Characteristic is a fine grained, high density, high purity dielectric material impervious to moisture with heavy internal palladium electrodes.

These characteristics lend well to applications requiring:

- 1) high current carrying capabilities;
- 2) high quality factors;
- 3) very low equivalent series resistance;
- 4) very high series resonance;
- 5) excellent stability under stresses of changing voltage, frequency, time and temperature.

MECHANICAL DIMENSIONS: inches (millimeters)

Case	Length (L)	Width (W)	Thickness (T)	Band Width (bw)
SQCS	.063±.006 (1.60±.152)	.032±.006 (.813±.152)	.035 Max. (.889)	.014±.006 (.357 ±.152)
SQCA	.055 + .015 - .010 (1.40+ .381 - .254)	.055±.015 (1.40±.381)	.020/.057 (.508/1.45)	.010 + .010 - .005 (.254 +.254 -.127)
SQCB	.110 + .020 - .010 (2.79 +.889 -.254)	.110±.010 (2.79±.508)	.030/.102 (.762/2.59)	.015±.010 (.381±.254)

HOW TO ORDER

SQ
AVX Style

CB
Case Size
(See Chart)
CS = 0603
CA = 0605
CB = 1210

7
Voltage Code
5 = 50V
1 = 100V
E = 150V
2 = 200V
V = 250V
9 = 300V
7 = 500V

M
Temperature Coefficient Code
M = +90±20ppm/°C
A = 0±30ppm/°C
C = 15% ("J" Termination only)

100
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.

J
Capacitance Tolerance Code
A = ±.05 pF
B = ±.1 pF
C = ±.25 pF
D = ±.5 pF
F = ±1%
G = ±2%
J = ±5%
K = ±10%
M = ±20%
N = ±30%

A
Failure Rate Code
A = Not Applicable

1
Termination Style Code
1 = Pd/Ag
7 = Ag/Ni/Au
J = Nickel Barrier
Sn/Pb (60/40)
T = 100% Tin

ME
Packaging* Code
ME = 7" Reel
RE = 13" Reel
WE = Waffle Pack
3A = SQCS 13"
6A = SQCS Waffle Pack
1A = SQCS 7"

PACKAGING

Standard Packaging = Waffle Pack (maximum quantity is 80)

ELECTRICAL SPECIFICATIONS

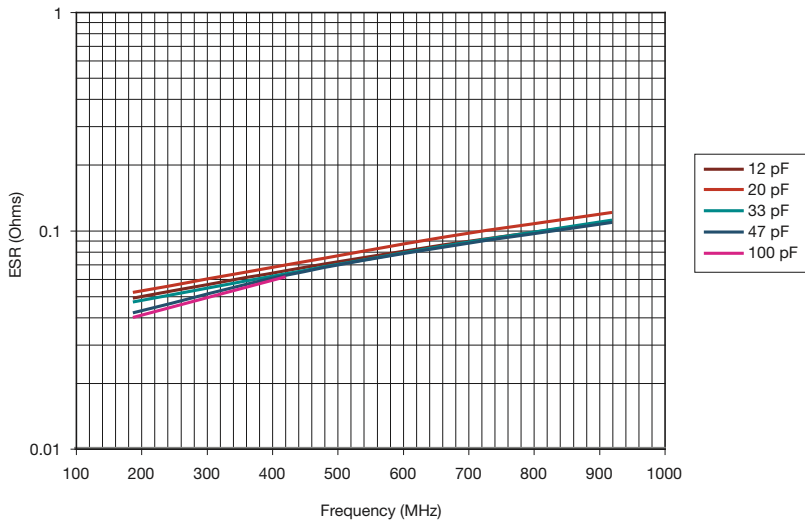
SQCS (A only), SQCA, SQCB		
	M & A	C
Temperature Coefficient	(M) +90 $\pm$ 20PPM/ $^{\circ}$ C and (A) 0 $\pm$ 30PPM/ $^{\circ}$ C	$\pm$ 15%
Capacitance Range	0.1 pF to 5100 pF	0.001 μ F to 0.1 μ F
Capacitance Tolerance	$\pm$ 0.1 pF to $\pm$ 20%	$\pm$ 10%, $\pm$ 20%, $\pm$ 30%
Operating Temperature	-55 $^{\circ}$ C + 125 $^{\circ}$ C	-55 $^{\circ}$ C to +125 $^{\circ}$ C
Quality Factor or Dissipation Factor	Per MIL-PRF-55681/4	2.5% @ 1kHz
Insulation Resistance	Per MIL-PRF-55681 10 ⁶ megohm to 470 pF @ +25 $^{\circ}$ C 10 ⁵ megohm to 470 pF @ +125 $^{\circ}$ C 10 ⁵ megohm above 470 pF @ +25 $^{\circ}$ C 10 ⁴ megohm above 470 pF @ +125 $^{\circ}$ C	10 ⁴ megohm min @ 25 $^{\circ}$ C & R VDC 10 ³ megohm min @ 25 $^{\circ}$ C & R VDC
Aging	None	<3% per decade hour
Piezoelectric Effects	None	None
Dielectric Withstanding Voltage	2.5 x rated voltage (for 500V rated 1.5 x rated voltage)	2.5 x rated voltage (for 500V rated 1.5 x rated voltage)

ENVIRONMENTAL CHARACTERISTICS

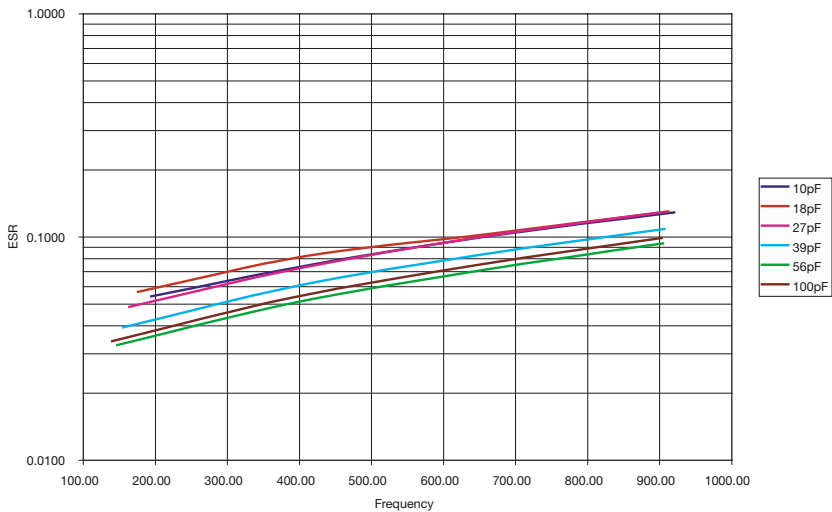
Will meet or exceed performance characteristics as outlined in MIL-PRF-55681/4.

REQUIREMENT	MIL-STD-202 METHOD
Life	108, Condition F
Shock	213, Condition J
Vibration	204, Condition B
Immersion	104, Condition B
Salt Spray	101, Condition B
Solderability	208
Thermal Shock	107, Condition B
Terminal Strength	211
Temperature Cycling	102, Condition C
Moisture Resistance	106
Barometric Pressure	105, Condition B
Resistance to Soldering Heat	210, Condition C

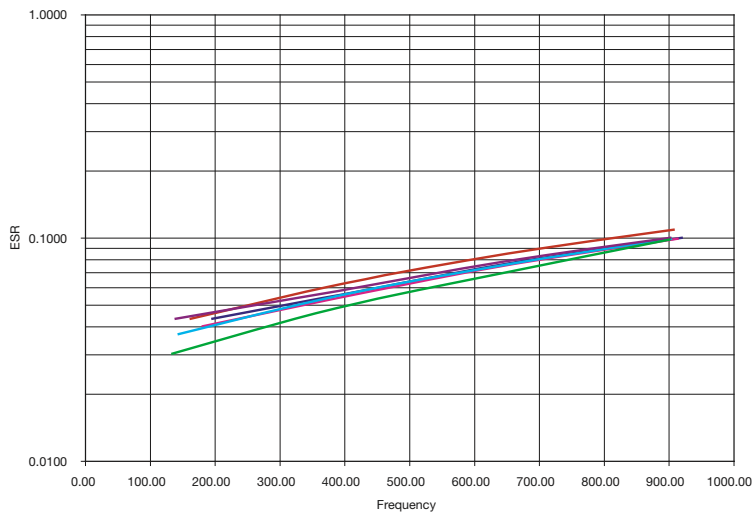
SQCS ESR vs. Frequency



SQCA ESR vs. Frequency

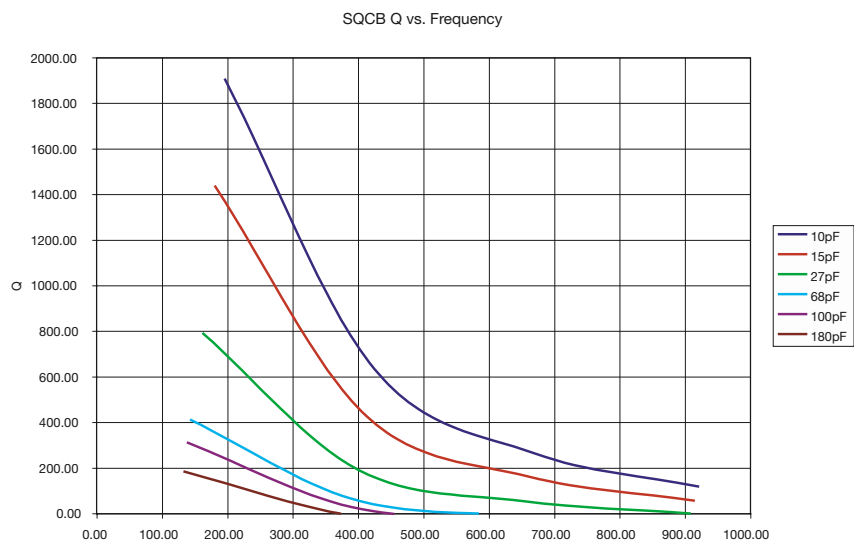
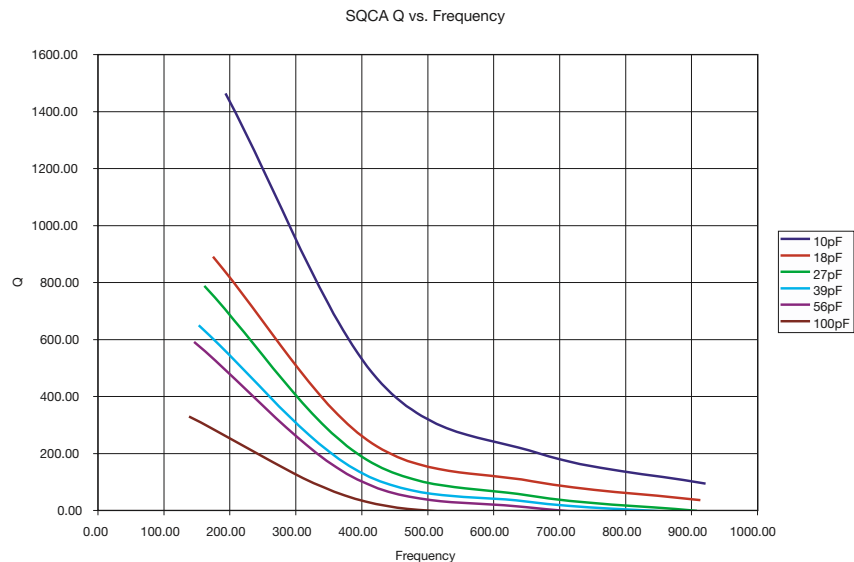
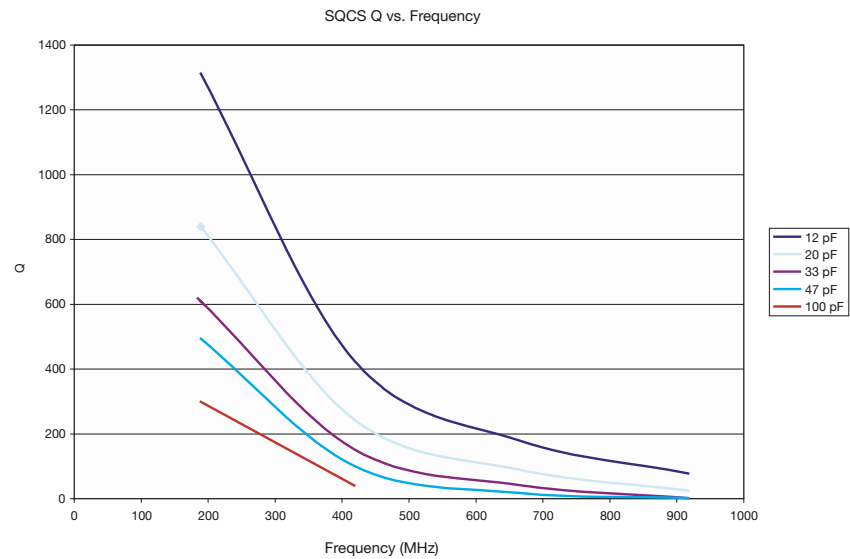


SQCB ESR vs. Frequency



Microwave MLC's

SQ Series

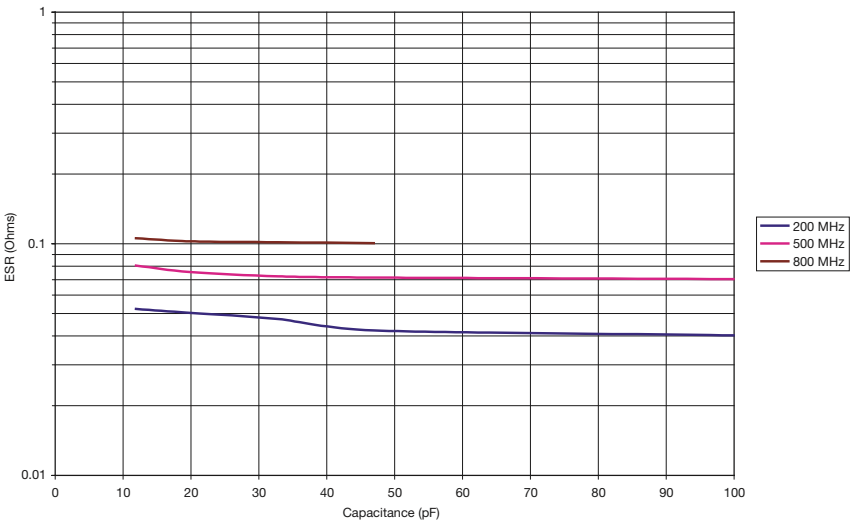


Microwave MLC's

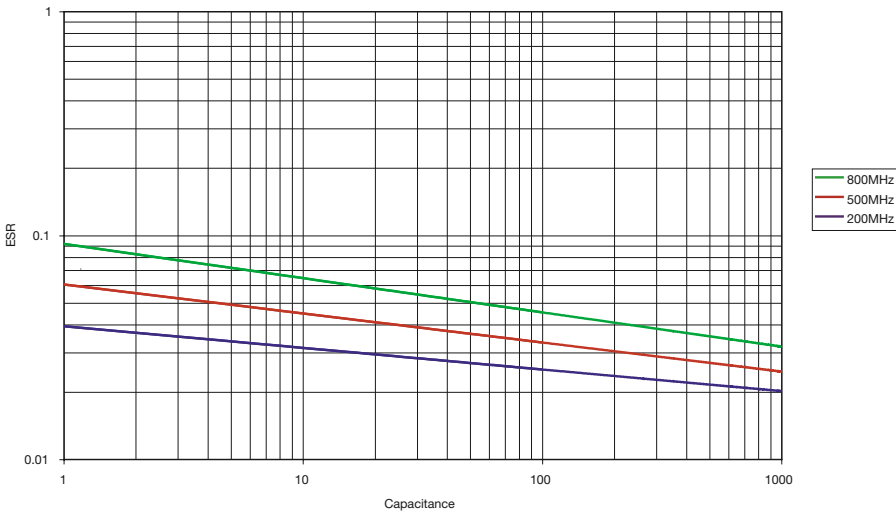


SQ Series

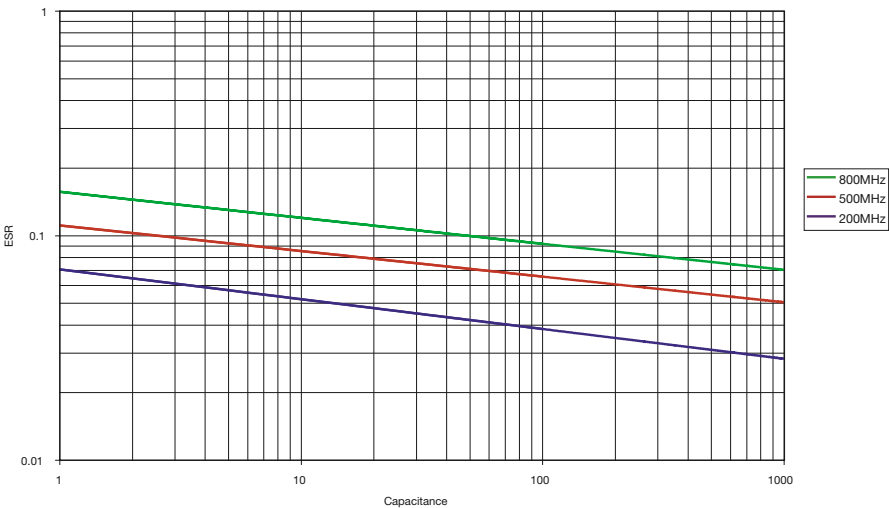
SQCS ESR vs. Capacitance



SQCA ESR vs Cap

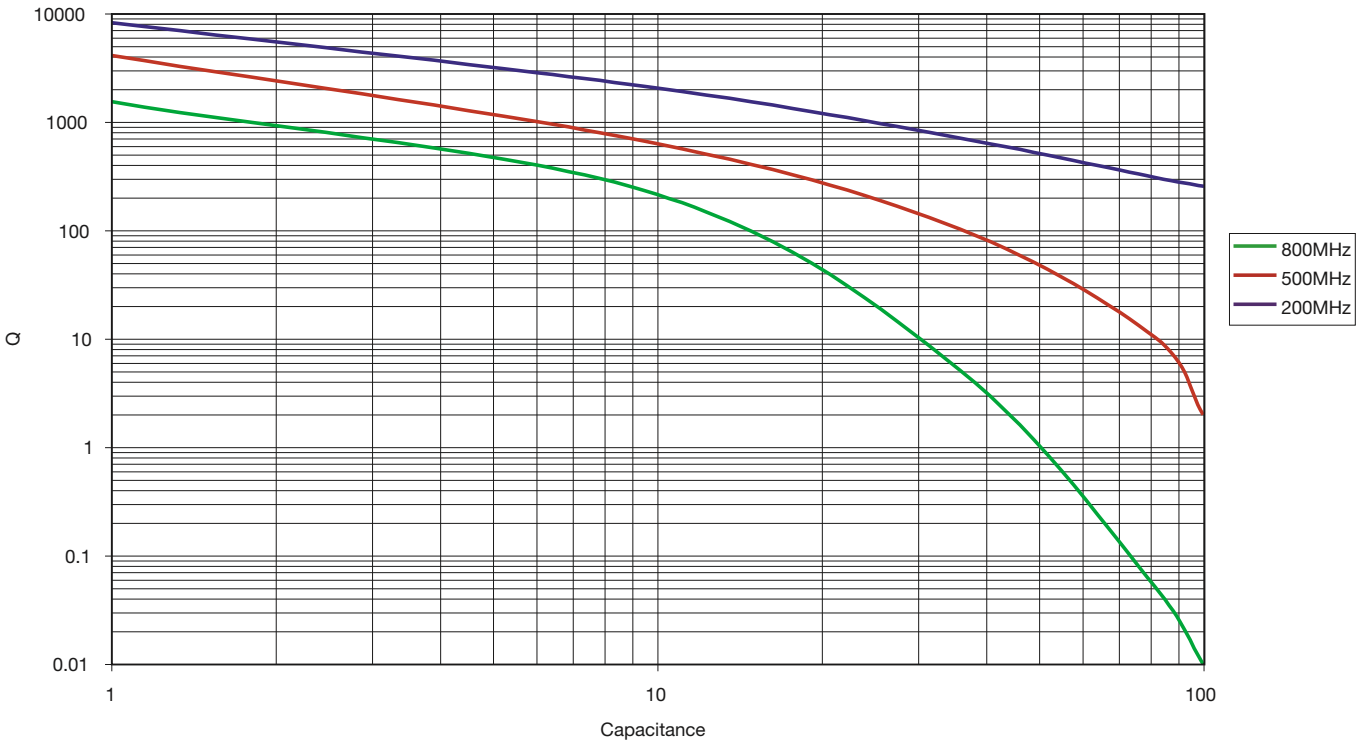


SQCB ESR Vs Cap

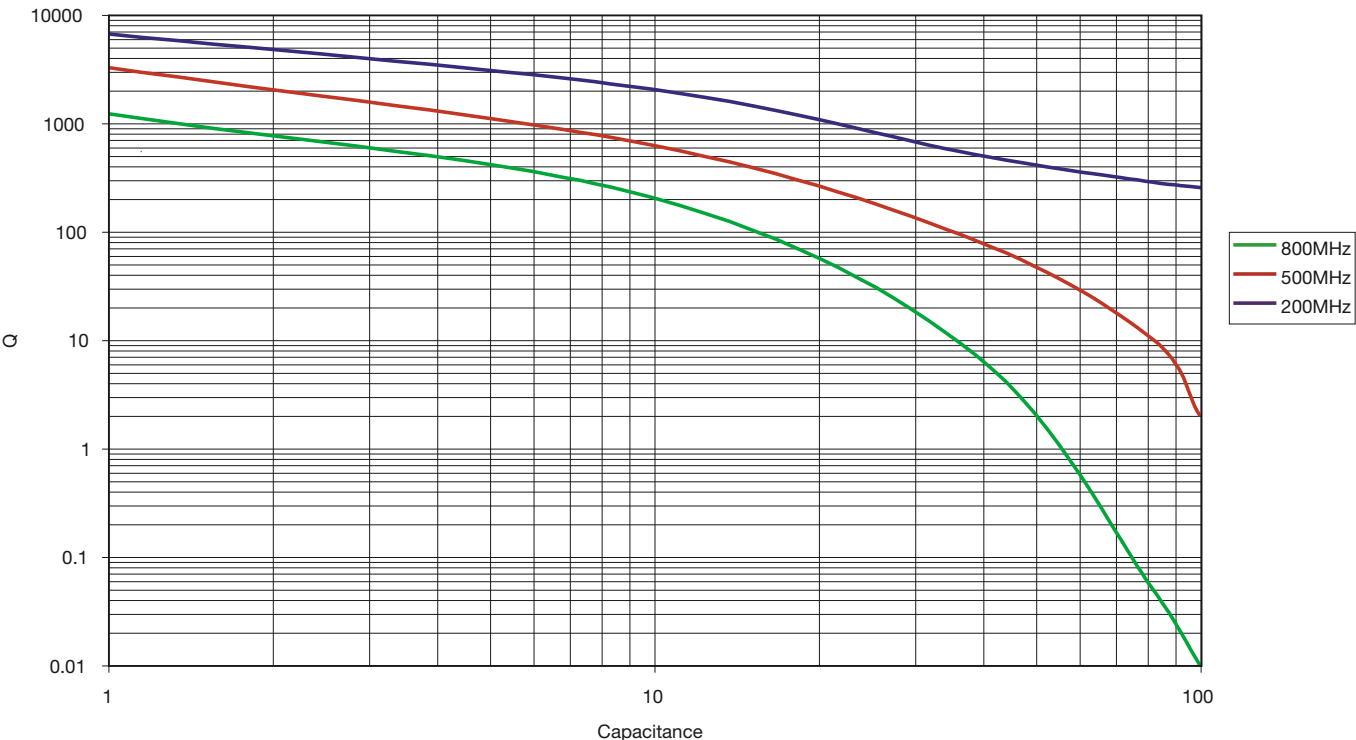


SQ Series

SQCA Q vs Cap



SQCB Q vs Cap

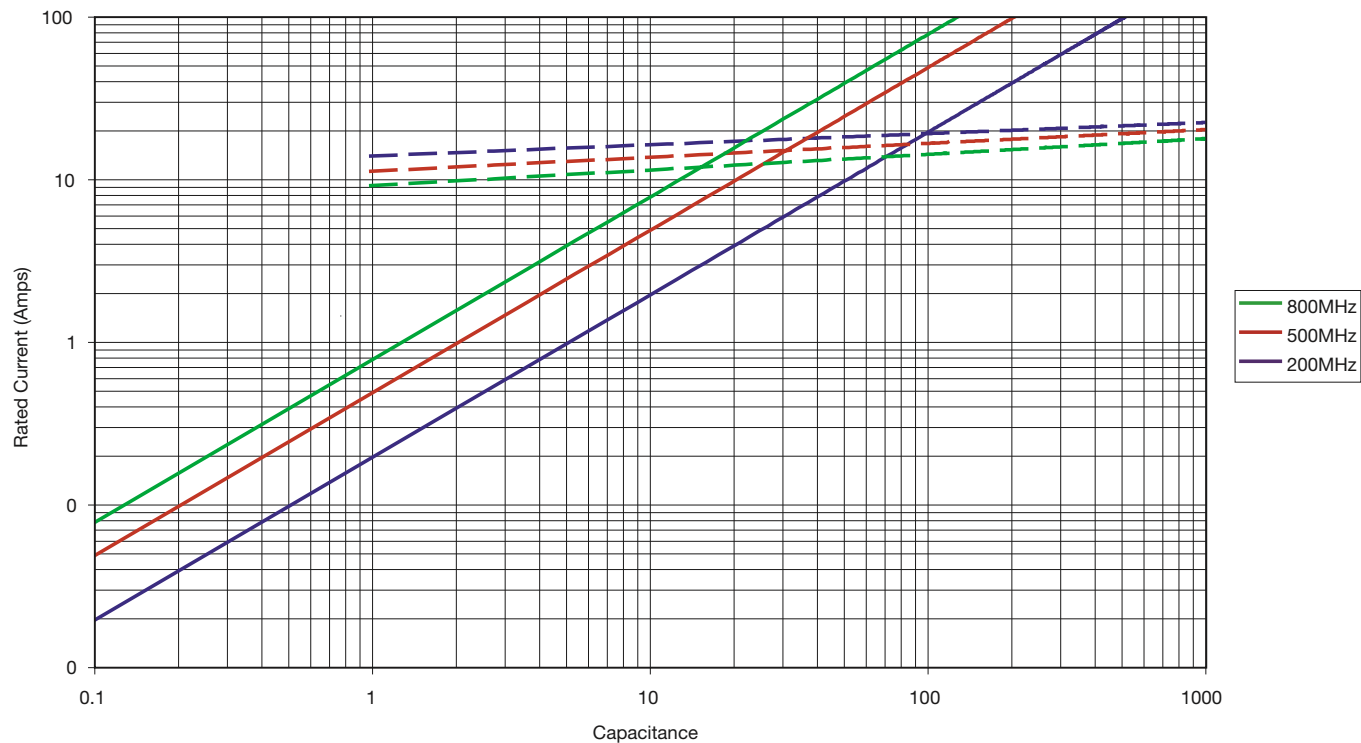


Microwave MLC's

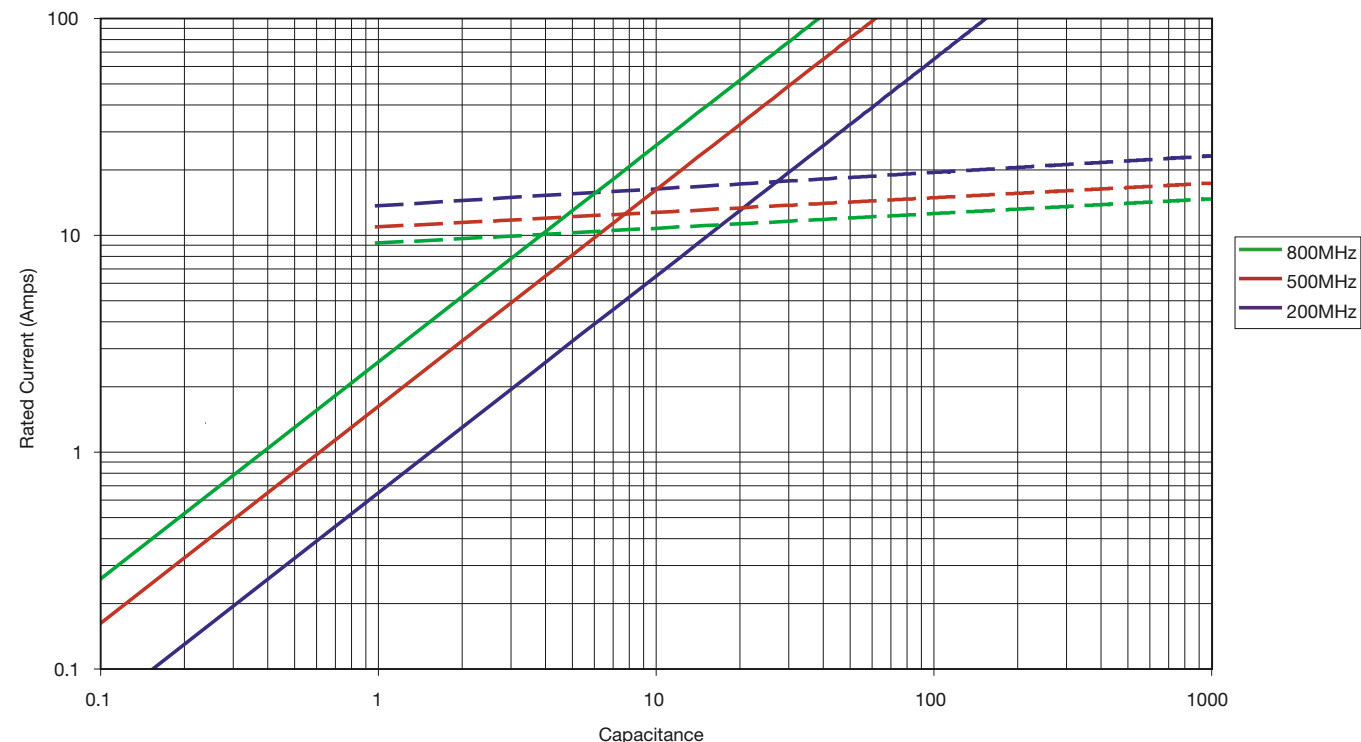


SQ Series

SQCA Rated Current

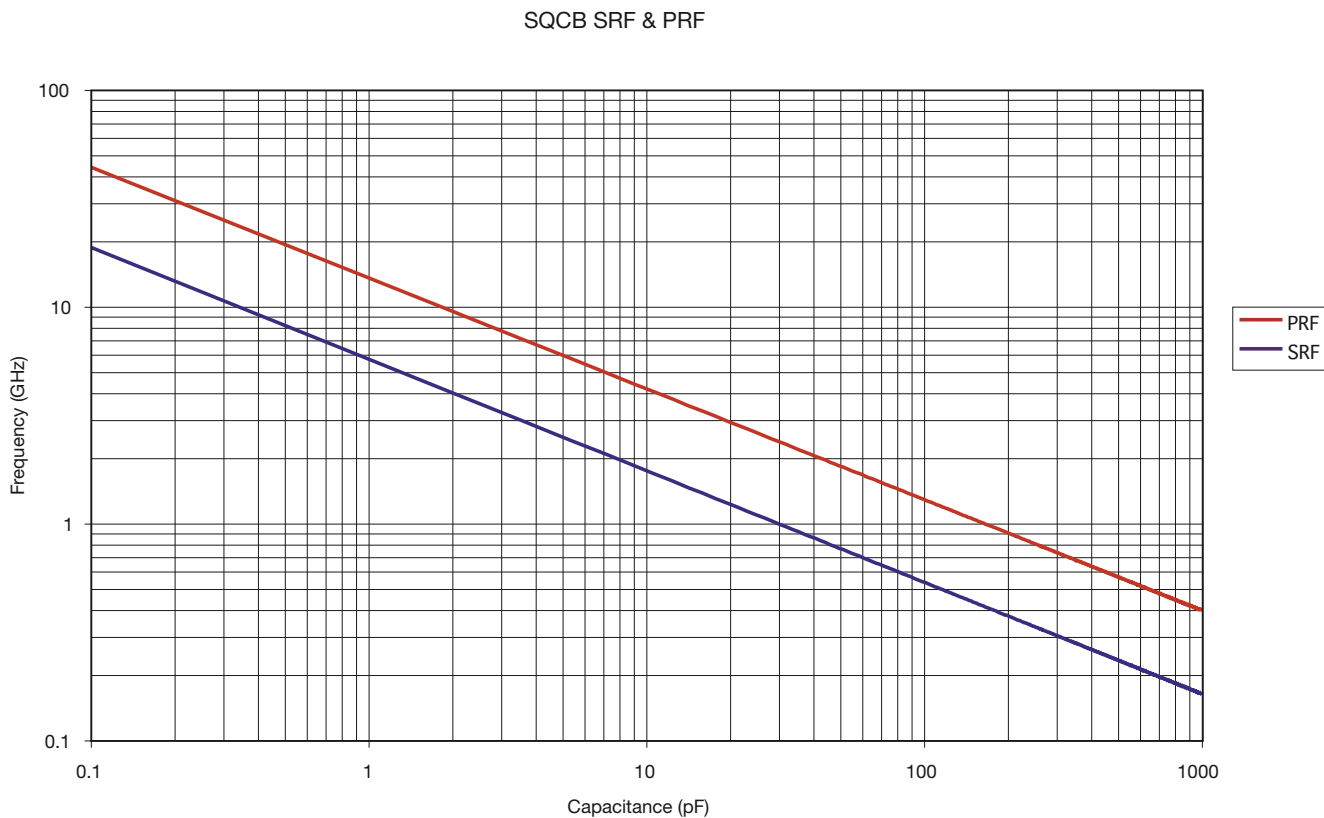
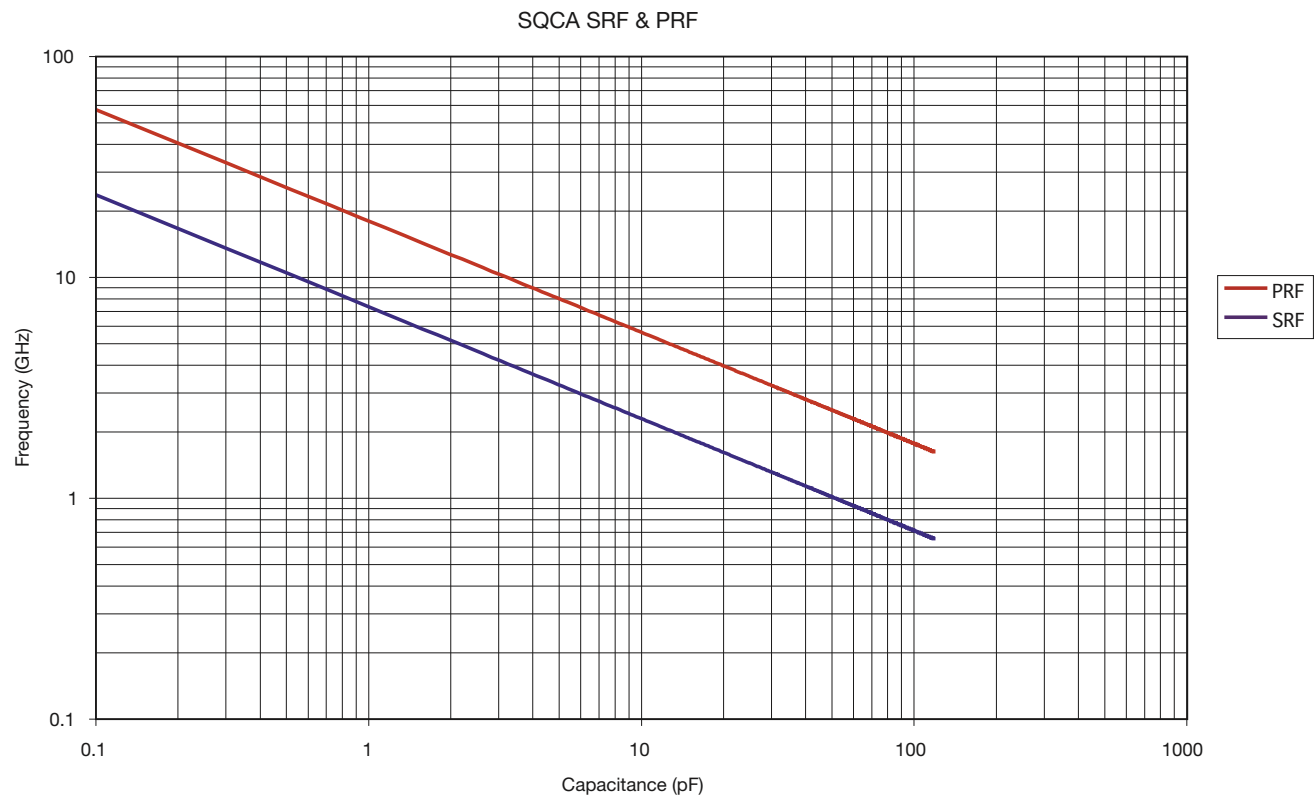


SQCB Rated Current



Microwave MLC's

SQ Series



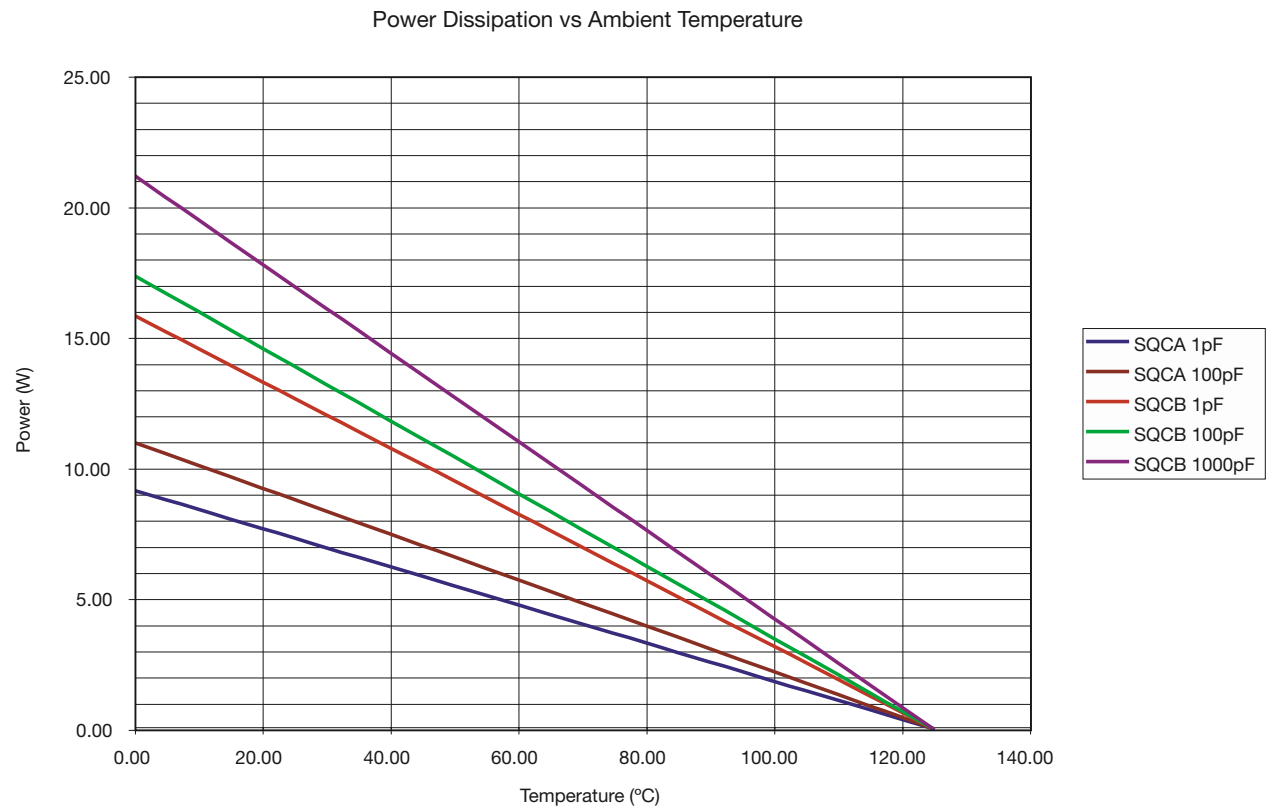
6



Microwave MLC's



SQ Series



Microwave MLC's



SQ Series Available Capacitance/Size/WVDC/T.C.

TABLE I: TC: A (0±30PPM/°C) CASE SIZE SQCS DIMENSIONS: inches (millimeters)

Case	Length	Width	Thickness	Band Width	Avail. Term.
SQCS	.063±.006 (1.60±.152)	.032±.006 (.813±.152)	.035 Max. (.889)	.014±.006 (.357 ±.152)	1, 7, J, Q

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

Microwave MLC's

SQ Series Available Capacitance/Size/WVDC/T.C.



TABLE I: TC: M (+90±20PPM/°C) CASE SIZE SQCA DIMENSIONS: inches (millimeters)

Case	Length	Width	Thickness	Band Width	Avail. Term.
SQCA	.055±.025 (1.40±.635)	.055±.015 (1.40±.381)	.020/.057 (.508/1.45)	.010 +.010 -.005 (.254 +.254 -.127)	1, 7, J, Q

Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC
0.1	B	150	1.7	B, C, D	150	6.2	B, C, D	150	27	F, G, J, K, M	150
0.2	B	150	1.8	B, C, D	150	6.8	B, C, J, K, M	150	30	F, G, J, K, M	150
0.3	B,C	150	1.9	B, C, D	150	7.5	B, C, J, K, M	150	33	F, G, J, K, M	150
0.4	B,C	150	2.0	B, C, D	150	8.2	B, C, J, K, M	150	36	F, G, J, K, M	150
0.5	B, C, D	150	2.2	B, C, D	150	9.1	B, C, J, K, M	150	39	F, G, J, K, M	150
0.6	B, C, D	150	2.4	B, C, D	150	10	F, G, J, K, M	150	43	F, G, J, K, M	150
0.7	B, C, D	150	2.7	B, C, D	150	11	F, G, J, K, M	150	47	F, G, J, K, M	150
0.8	B, C, D	150	3.0	B, C, D	150	12	F, G, J, K, M	150	51	F, G, J, K, M	150
0.9	B, C, D	150	3.3	B, C, D	150	13	F, G, J, K, M	150	56	F, G, J, K, M	150
1.0	B, C, D	150	3.6	B, C, D	150	15	F, G, J, K, M	150	62	F, G, J, K, M	150
1.1	B, C, D	150	3.9	B, C, D	150	16	F, G, J, K, M	150	68	F, G, J, K, M	150
1.2	B, C, D	150	4.3	B, C, D	150	18	F, G, J, K, M	150	75	F, G, J, K, M	150
1.3	B, C, D	150	4.7	B, C, D	150	20	F, G, J, K, M	150	82	F, G, J, K, M	150
1.4	B, C, D	150	5.1	B, C, D	150	22	F, G, J, K, M	150	91	F, G, J, K, M	150
1.5	B, C, D	150	5.6	B, C, D	150	24	F, G, J, K, M	150	100	F, G, J, K, M	150
1.6	B, C, D	150									

TABLE II: TC: A (0±30PPM/°C) CASE SIZE SQCA DIMENSIONS: inches (millimeters)

Case	Length	Width	Thickness	Band Width	Avail. Term.
SQCA	.055±.025 (1.40±.635)	.055±.015 (1.40±.381)	.020/.057 (.508/1.45)	.010 +.010 -.005 (.254 +.254 -.127)	1, 7, J, Q

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

Microwave MLC's



SQ Series Available Capacitance/Size/WVDC/T.C.

TABLE I: TC: M (+90±20PPM/°C) CASE SIZE SQCB DIMENSIONS: inches (millimeters)

Case	Length	Width	Thickness	Band Width	Avail. Term.
SQCB	.110 +0.035 -0.020 (2.79 +.889 -.508)	.110 ±.020 (2.79 ±.508)	.030/.102 (.762/2.59)	.015 ±.010 (.381 ±.254)	1, 7, J, Q

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

TABLE II: TC: A (0±30PPM/°C) CASE SIZE SQCB DIMENSIONS: inches (millimeters)

Case	Length	Width	Thickness	Band Width	Avail. Term.
SQCB	.110 +0.035 -0.020 (2.79 +.889 -.508)	.110 ±.020 (2.79 ±.508)	.030/.102 (.762/2.59)	.015 ±.010 (.381 ±.254)	1, 7, J, Q

Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC	Cap. pF	Cap. Tol.	WVDC
0.1	B	500	3.9	B, C, D	500	47	F, G, J, K, M	500	560	F, G, J, K, M	150
0.2	B	500	4.3	B, C, D	500	51	F, G, J, K, M	500	620	F, G, J, K, M	150
0.3	B,C	500	4.7	B, C, D	500	56	F, G, J, K, M	500	680	F, G, J, K, M	150
0.4	B,C	500	5.1	B, C, D	500	62	F, G, J, K, M	500	750	F, G, J, K, M	150
0.5	B, C, D	500	5.6	B, C, D	500	68	F, G, J, K, M	500	820	F, G, J, K, M	150
0.6	B, C, D	500	6.2	B, C, D	500	75	F, G, J, K, M	500	910	F, G, J, K, M	150
0.7	B, C, D	500	6.8	B, C, J, K, M	500	82	F, G, J, K, M	500	1000	F, G, J, K, M	150
0.8	B, C, D	500	7.5	B, C, J, K, M	500	91	F, G, J, K, M	500	1100	F, G, J, K, M	50
0.9	B, C, D	500	8.2	B, C, J, K, M	500	100	F, G, J, K, M	500	1200	F, G, J, K, M	50
1.0	B, C, D	500	9.1	B, C, J, K, M	500	110	F, G, J, K, M	300	1300	F, G, J, K, M	50
1.1	B, C, D	500	10	F, G, J, K, M	500	120	F, G, J, K, M	300	1500	F, G, J, K, M	50
1.2	B, C, D	500	11	F, G, J, K, M	500	130	F, G, J, K, M	300	1600	F, G, J, K, M	50
1.3	B, C, D	500	12	F, G, J, K, M	500	150	F, G, J, K, M	300	1800	F, G, J, K, M	50
1.4	B, C, D	500	13	F, G, J, K, M	500	160	F, G, J, K, M	300	2000	F, G, J, K, M	50
1.5	B, C, D	500	15	F, G, J, K, M	500	180	F, G, J, K, M	300	2200	F, G, J, K, M	50
1.6	B, C, D	500	16	F, G, J, K, M	500	200	F, G, J, K, M	300	2400	F, G, J, K, M	50
1.7	B, C, D	500	18	F, G, J, K, M	500	220	F, G, J, K, M	200	2700	F, G, J, K, M	50
1.8	B, C, D	500	20	F, G, J, K, M	500	240	F, G, J, K, M	200	3000	F, G, J, K, M	50
1.9	B, C, D	500	22	F, G, J, K, M	500	270	F, G, J, K, M	200	3300	F, G, J, K, M	50
2.0	B, C, D	500	24	F, G, J, K, M	500	300	F, G, J, K, M	200	3600	F, G, J, K, M	50
2.2	B, C, D	500	27	F, G, J, K, M	500	330	F, G, J, K, M	200	3900	F, G, J, K, M	50
2.4	B, C, D	500	30	F, G, J, K, M	500	360	F, G, J, K, M	200	4300	F, G, J, K, M	50
2.7	B, C, D	500	33	F, G, J, K, M	500	390	F, G, J, K, M	200	4700	F, G, J, K, M	50
3.0	B, C, D	500	36	F, G, J, K, M	500	430	F, G, J, K, M	200	5000	F, G, J, K, M	50
3.3	B, C, D	500	39	F, G, J, K, M	500	470	F, G, J, K, M	200	5100	F, G, J, K, M	50
3.6	B, C, D	500	43	F, G, J, K, M	500	510	F, G, J, K, M	150			