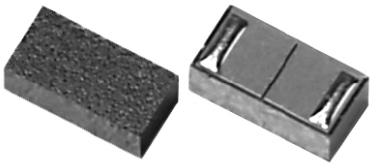
High Performance, High Precision Surface Mount 0603 Capacitor



PATENTED

FEATURES

- Terminations are Sn/Ag/Cu or Au. The standard product is lead (Pb)-free and RoHS compliant, but terminations containing lead are available
- New technology surface mount capacitor based on a special semiconductor process
- Construction reduces the parasitic inductance and brings the SRF values to ultra-high frequencies
- Capacitance is extremely stable in a wide range of frequencies from 1 MHz to several GHz
- High Q and low ESR
- Tight tolerance to ± 1 % or 0.05 pF
- Ultra high SRF
- Low parasitic inductance (~ 0.046 nH)
- Capacitance range: 0.8 pF to 560 pF and 1000 pF Consult factory for 0.1 pF through 0.7 pF

Pb-free Available

RoHS* COMPLIANT

ELECTRICAL SPECIFICATIONS

Operating Temperature: - 55 °C to + 125 °C

Temperature Coefficient of Capacitance (TCC): 0 ± 30 ppm/°C

Insulation Resistance: 10^{11} Ω min

Voltage: 2.5 x rated voltage (DC) for 5 seconds

Ageing: none

ENVIRONMENTAL SPECIFICATIONS

Life Test: 1000 hours, + 125 °C at 2 x rated voltage (DC)

Thermal Shock: 100 Cycles, - 55 °C/+ 150 °C

Moisture Resistance: 1000 hours at rated DCV, 85 % RH, + 85 °C

APPLICATIONS

- Wireless communications
- Mobile phones
- Cordless phones
- GPS
- VCO
- Filter Networks
- Matching Networks
- Base station
- DC Blocking
- High speed circuitry
- Embedded Substrates

CAPACITANCE TOLERANCE CODE

FOR LESS THAN 10 pF			FOR 10 pF AND HIGHER		
A	B	C	F	G	J
± 0.05 pF	± 0.10 pF	± 0.25 pF	± 1 %	± 2 %	± 5 %

ORDERING INFORMATION

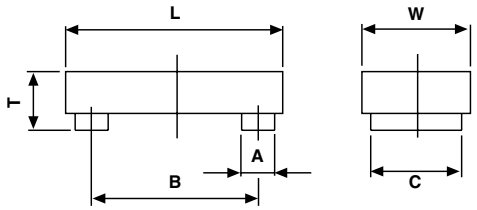
HPC	0603	A	100	G	X	X	T5	XX
MODEL	SIZE	TYPE	CAPACITANCE VALUE	CAPACITANCE TOLERANCE	TERMINATION	VOLTAGE	PACKAGING	SPECIAL ENGINEERING CONTROL CODE
			The first two digits are significant, the third is a multiplier. An "R" indicates a decimal point. Examples: 101 = 100 pF 4R7 = 4.7 pF	see chart	X = Tin/Lead termination W = Lead (Pb)-free termination	2 = 4 V 1 = 6 V Z = 10 V Y = 16 V X = 25 V M = 50 V L = 100 V	T5 = 5000 pcs tape and reel T1 = 1000 pcs tape and reel	Leave blank when no special requirements apply

"W" terminations preferred.

"See Part Numbering System, Document 10147, for complete explanations."

* Pb containing terminations are not RoHS compliant, exemptions may apply.

DIMENSIONS



For PCB pad design please see assembly/reflow recommendations document 10125.

DIMENSION	INCHES	MILLIMETERS
L	0.063 ± 0.002	1.60 ± 0.05
W	0.031 ± 0.002	0.80 ± 0.05
T	0.022 ± 0.002	0.56 ± 0.05
A	0.008 ± 0.002	0.20 ± 0.05
B	0.049 ± 0.002	1.24 ± 0.05
C	0.025 ± 0.002	0.64 ± 0.05

CAPACITANCE RANGE AND VOLTAGE

CAPACITANCE (pF)	CAPACITANCE CODE	VOLTAGE RATING & VOLTAGE CODE						
		100 V	50 V	25 V	16 V	10 V	6 V	4 V
		CODE:	CODE:	CODE:	CODE:	CODE:	CODE:	CODE:
0.8	0R8	L	M	X	Y	Z	1	2
0.9	0R9		M	X	Y	Z	1	2
1.0	1R0	L	M	X	Y	Z	1	2
1.2	1R2	L	M	X	Y	Z	1	2
1.5	1R5		M	X	Y	Z	1	2
1.8	1R8	L	M	X	Y	Z	1	2
2.2	2R2	L	M	X	Y	Z	1	2
2.7	2R7	L	M	X	Y	Z	1	2
3.3	3R3	L	M	X	Y	Z	1	2
3.9	3R9	L	M	X	Y	Z	1	2
4.7	4R7	L	M	X	Y	Z	1	2
5.6	5R6	L	M	X	Y	Z	1	2
6.8	6R8	L	M	X	Y	Z	1	2
8.2	8R2	L	M	X	Y	Z	1	2
10	100	L	M	X	Y	Z	1	2
12	120		M	X	Y	Z	1	2
15	150		M	X	Y	Z	1	2
18	180		M	X	Y	Z	1	2
22	220		M	X	Y	Z	1	2
27	270		M	X	Y	Z	1	2
33	330		M	X	Y	Z	1	2
39	390			X	Y	Z	1	2
47	470			X	Y	Z	1	2
56	560				Y	Z	1	2
68	680				Y	Z	1	2
82	820				Y	Z	1	2
100	101				Y	Z	1	2
120	121				Y	Z	1	2
150	151					Z	1	2
180	181					Z	1	2
220	221						1	2
270	271						1	2
330	331						1	2
390	391						1	2
470	471						1	2
560	561						1	2
1000	102							2

Note

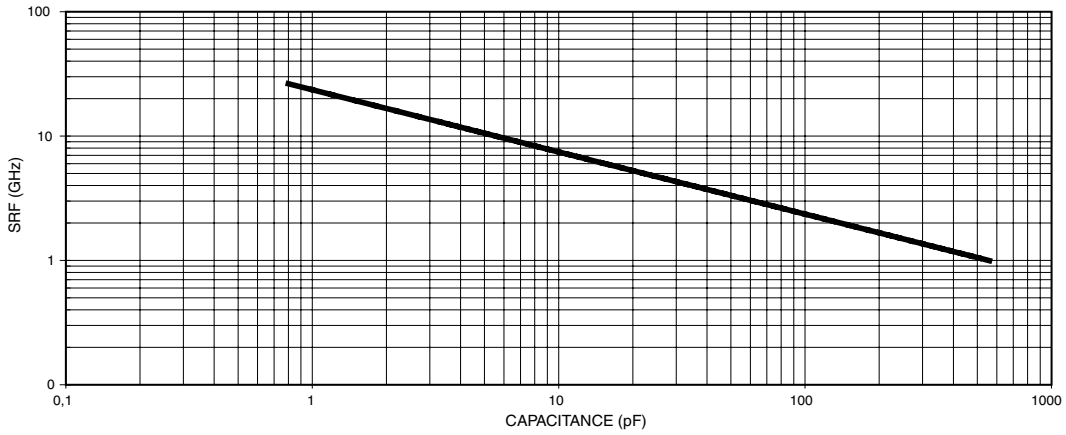
1. Consult factory for 0.1 pF through 0.7 pF

ELECTRICAL SPECIFICATIONS[1]

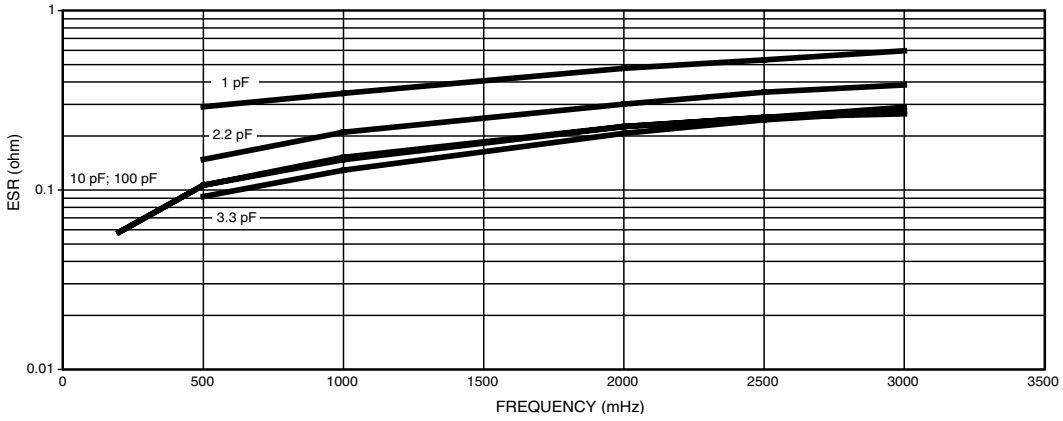
CAPACITANCE (pF) AT 1 MHz	TOLERANCE CODE**	SRF (GHz) TYP.	Ceff TYP.	Q	Ceff TYP.	Q	Ceff TYP.	Q	Ceff TYP.	Q	Ceff TYP.	Q
			200 MHz		500 MHz		1000 MHz		2000 MHz		2500 MHz	
0.8	A,B,C	26.4	0.80	6813	0.80	1491	0.80	519	0.80	174	0.81	124
0.9	A,B,C											
1.0	A,B,C	23.6	1.00	5826	1.00	1275	1.00	443	1.01	148	1.01	105
1.2	A,B,C	21.5	1.20	5232	1.20	1145	1.20	398	1.21	133	1.22	95
1.5	A,B,C	19.2	1.50	4724	1.50	1033	1.50	359	1.52	120	1.53	85
1.8	A,B,C	17.6	1.80	4465	1.80	977	1.81	339	1.82	113	1.84	80
2.2	A,B,C	15.9	2.20	3947	2.20	863	2.21	300	2.24	100	2.26	70
2.7	A,B,C	14.3	2.70	3480	2.70	761	2.71	264	2.75	88	2.78	62
3.3	A,B,C	13.0	3.30	4157	3.30	909	3.32	315	3.38	104	3.43	73
3.9	A,B,C	11.9	3.90	3517	3.91	769	3.93	266	4.01	88	4.08	62
4.7	A,B,C	10.9	4.70	2918	4.71	638	4.74	221	4.86	72	4.96	51
5.6	A,B,C	10.0	5.60	2449	5.61	535	5.66	185	5.84	60	5.98	42
6.8	A,B,C	9.0	6.80	2017	6.82	440	6.88	152	7.15	49	7.36	34
8.2	A,B,C	8.2	8.20	1672	8.23	365	8.32	126	8.71	40	9.03	28
10	F,G,J	7.5	10.0	1371	10.0	299	10.2	103	10.8	33	11.3	22
12	F,G,J	6.8	12.0	1142	12.1	249	12.3	85	13.1	27	13.9	18
15	F,G,J	6.1	15.0	914	15.1	199	15.4	68	16.8	21	18.0	14
18	F,G,J	5.6	18.0	761	18.1	165	18.6	56	20.7	17	22.6	11
22	F,G,J	5.0	22.0	623	22.2	135	22.9	46	26.1	13	29.2	9
27	F,G,J	4.5	27.1	507	27.3	110	28.4	37	33.5	11	38.8	6
33	F,G,J	4.1	33.1	415	33.5	90	35.1	30	43.3	8	52.5	5
39	F,G,J	3.8	39.1	351	39.7	76	41.9	25	54.2	6	69.5	4
47	F,G,J	3.4	47.2	291	48.0	63	51.3	20	71.0	5	99.7	3
56	F,G,J	3.1	56.2	244	57.4	52	62.3	17	93.8	4	151.4	2
68	F,G,J	2.9	68.2	201	70.1	43	77.5	13	133.2	3	289.5	1
82	F,G,J	2.6	82.5	166	85.1	35	96.2	11	200.2	2		
100	F,G,J	2.4	100.7	136	104.7	29	122.0	9	357.3	1		
120	F,G,J	2.2	121.0	113	126.9	24	153.1	7				
150	F,G,J	1.9	151.6	90	160.9	19	205.5	5				
180	F,G,J	1.8	182.4	75	195.9	15	266.7	4				
220	F,G,J	1.6	223.5	61	244.2	12	364.3	3				
270	F,G,J	1.4	275.4	50	307.3	10	525.4	2				
330	F,G,J	1.3	338.0	41	387.6	8	812.9	1				
390	F,G,J	1.2	401.3	34	473.0	6	1309.1	1				
470	F,G,J	1.1	486.5	28	596.1	5						
560	F,G,J	1.0	583.5	24	748.7	4						
1000	K											

2. 1. Additional non-standard values available on request
**A = ± 0.05; B = ± 0.10; C = ± 0.25; F = ± 1 %; G = ± 2 %; J = ± 5 %; K = 10 %

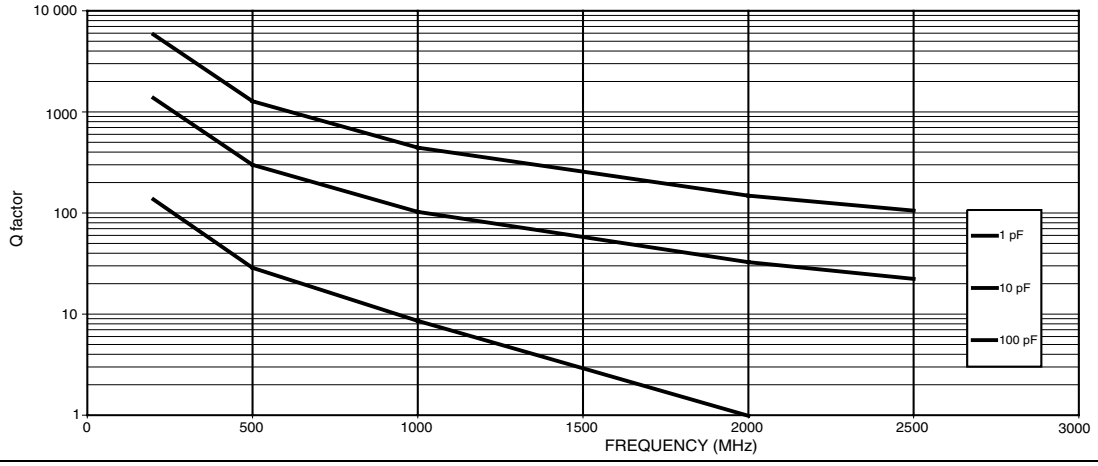
SRF VS. CAPACITANCE (TYPICAL)



ESR VS. FREQUENCY (TYPICAL)



Q VS. FREQUENCY (TYPICAL)



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