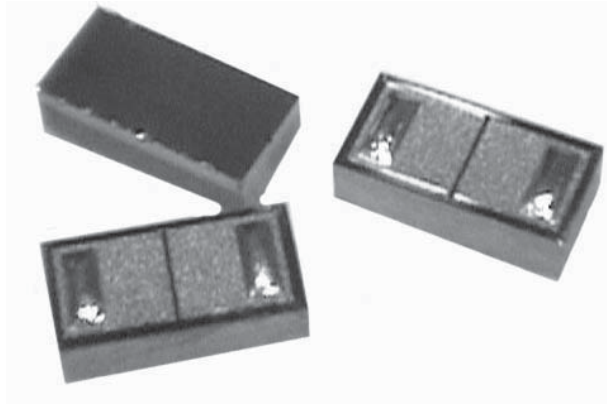


High Performance, High Precision Surface Mount 0402 Capacitor



PATENT PENDING

FEATURES

- New technology surface mount capacitor based on a special semi-conductor 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 1MHz to several GHz.
- High Q and low ESR
- Tight tolerance to $\pm 1\%$ or 0.05pF
- Ultra high SRF
- Low parasitic inductance (- 0.032nH)
- Capacitance range : 0.1pF to 180pF

ELECTRICAL SPECIFICATIONS

Operating Temperature: - 55°C to + 125°C
Temperature Coefficient of Capacitance (TCC): $0 \pm 30\text{ppm}/^\circ\text{C}$
Insulation Resistance: $10^{11}\Omega$ min
Voltage : 2.5 x rated voltage for 5 seconds
Ageing: none

APPLICATIONS

- Wireless communications
- Mobile phones
- Cordless phones
- GPS
- VCO
- Filter Networks
- Matching Networks

ENVIRONMENTAL SPECIFICATIONS

Life Test: 1000 hours, + 125°C @ 2 x rated voltage
Thermal Shock: 100 Cycles, - 55°C/+ 125°C
Moisture Resistance: 240 hours, 85% RH, + 85°C

CAPACITANCE TOLERANCE CODE

FOR LESS THAN 10pF			FOR 10pF AND HIGHER		
A	B	C	F	G	J
$\pm 0.05\text{pF}$	$\pm 0.10\text{pF}$	$\pm 0.25\text{pF}$	$\pm 1\%$	$\pm 2\%$	$\pm 5\%$

ORDERING INFORMATION

HPC	0402	A	100	G	X	X	I
MODEL	SIZE	TYPE	CAPACITANCE VALUE	CAPACITANCE TOLERANCE	TERMINATION	VOLTAGE	PACKAGING
			The first two digits are significant, the third is a multiplier. An "R" indicates a decimal point. Examples: 101 = 100pF 4R7 = 4.7pF	see chart above	X= Tin/ Lead termination	1 = 6V Z = 10V Y = 16V X = 25V	T = 10000 pcs. T5 = 5000 pcs. T1 = 1000 pcs. At tape and reel

DIMENSIONS			
	DIMENSION	INCHES	MILLIMETERS
	L	0.040 ± 0.002	1.02 ± 0.05
	W	0.020 ± 0.002	0.51 ± 0.05
	T*	0.016 ± 0.004	0.40 ± 0.10
	A	0.006 ± 0.002	0.15 ± 0.05
	A1	0.004 ± 0.001	0.10 ± 0.03
	B	0.028 ± 0.002	0.71 ± 0.05
	C	0.014 ± 0.002	0.36 ± 0.05
	D	0.008 ± 0.002	0.20 ± 0.05
	E	0.010 ± 0.002	0.25 ± 0.05

*For low profile versions see data sheet HPC0402B/C

CAPACITANCE RANGE AND VOLTAGE					
CAP (pF)	CAP CODE	VOLTAGE (V)			
		6	10	16	25
0.1	0R1				
0.2	0R2				
0.3	0R3				
0.4	0R4				
0.5	0R5				
0.6	0R6				
0.7	0R7				
0.8	0R8				
0.9	0R9				
1.0	1R0				
1.2	1R2				
1.5	1R5				
1.8	1R8				
2.2	2R2				
2.7	2R7				
3.3	3R3				
3.9	3R9				
4.7	4R7				
5.6	5R6				
6.8	6R8				
8.2	8R2				
10	100				
12	120				
15	150				
18	180				
22	220				
27	270				
33	330				
39	390				
47	470				
56	560				
68	680				
82	820				
100	101				
120	121				
150	151				
180	181				

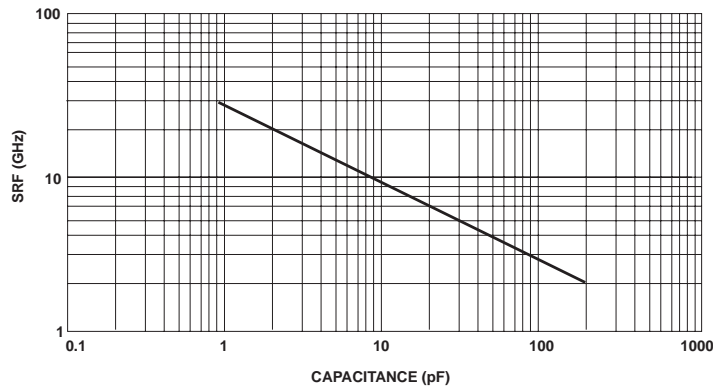


ELECTRICAL SPECIFICATIONS*												
Capacitance (pF) @1MHz	Tolerance Code**	SRF (GHz) Typ.	Ceff Typ.	Q	Ceff Typ.	Q	Ceff Typ.	Q	Ceff Typ.	Q	Ceff Typ.	Q
			200MHz		500MHz		1000MHz		2000MHz		2500MHz	
0.1	A	N/A										
0.2	A	N/A										
0.3	A	N/A										
0.4	A	N/A										
0.5	A	N/A										
0.6	A,B	N/A										
0.7	A,B	N/A										
0.8	A,B	32.5	0.80	12994	0.80	3924	0.80	1392	0.80	439	0.80	296
0.9	A,B	30.6	0.90	12052	0.90	3639	0.90	1291	0.90	407	0.91	275
1	A,B,C	29.1	1.00	11340	1.00	3424	1.00	1215	1.00	383	1.01	258
1.2	A,B,C	26.5	1.20	10395	1.20	3139	1.20	1113	1.21	351	1.21	236
1.3	A,B,C	25.5	1.30	9595	1.30	2897	1.30	1028	1.31	324	1.31	218
1.5	A,B,C	23.7	1.50	8316	1.50	2511	1.50	890	1.51	280	1.52	189
1.6	A,B,C	23.0	1.60	7796	1.60	2354	1.60	835	1.61	263	1.62	177
1.8	A,B,C	21.7	1.80	6930	1.80	2092	1.80	742	1.82	233	1.82	157
2	A,B,C	20.5	2.00	6237	2.00	1883	2.00	667	2.02	210	2.03	141
2.2	A,B,C	19.6	2.20	5670	2.20	1711	2.21	607	2.22	190	2.24	128
2.4	A,B,C	18.8	2.40	5197	2.40	1569	2.41	556	2.43	174	2.44	117
2.7	A,B,C	17.7	2.70	4620	2.70	1394	2.71	494	2.73	155	2.76	104
3	A,B,C	16.8	3.00	4158	3.00	1255	3.01	444	3.04	139	3.07	93
3.3	A,B,C	16.0	3.30	3780	3.30	1141	3.31	404	3.35	126	3.38	85
3.6	A,B,C	15.3	3.60	3464	3.60	1045	3.62	370	3.66	116	3.70	77
3.9	A,B,C	14.7	3.90	3198	3.90	965	3.92	341	3.97	107	4.02	71
4.3	A,B,C	14.0	4.30	2900	4.31	875	4.32	310	4.39	96	4.44	64
4.7	A,B,C	13.4	4.70	2654	4.71	801	4.73	283	4.81	88	4.87	59
5.1	A,B,C	12.9	5.10	2445	5.11	738	5.13	261	5.23	81	5.30	54
5.6	A,B,C	12.3	5.60	2227	5.61	672	5.64	237	5.75	74	5.84	49
6.2	B,C	11.7	6.20	2011	6.21	607	6.25	214	6.39	66	6.50	44
6.8	B,C	11.1	6.80	1834	6.81	553	6.86	195	7.03	60	7.16	40
7.5	B,C	10.6	7.50	1663	7.52	501	7.57	177	7.78	54	7.94	36
8.2	B,C	10.1	8.20	1521	8.22	458	8.28	162	8.53	50	8.73	33
9.1	B,C	9.6	9.10	1370	9.12	413	9.20	145	9.51	45	9.76	29
10	F,G,J	9.2	10.0	1247	10.0	376	10.1	132	10.5	40	10.8	27
11	F,G,J	8.8	11.0	1133	11.0	341	11.1	120	11.6	36	12.0	24
12	F,G,J	8.4	12.0	1039	12.0	313	12.2	110	12.7	33	13.2	22
13	F,G,J	8.1	13.0	959	13.1	289	13.2	101	13.9	31	14.4	20
15	F,G,J	7.5	15.0	831	15.1	250	15.3	88	16.1	26	16.9	17
16	F,G,J	7.3	16.0	779	16.1	234	16.3	82	17.3	24	18.1	16
18	F,G,J	6.8	18.0	692	18.1	208	18.4	73	19.7	22	20.8	14
20	F,G,J	6.5	20.0	623	20.1	187	20.5	65	22.1	19	23.5	12
22	F,G,J	6.2	22.0	566	22.1	170	22.6	59	24.6	17	26.3	11
24	F,G,J	5.9	24.0	519	24.2	156	24.7	54	27.1	16	29.2	10
27	F,G,J	5.6	27.0	461	27.2	138	27.9	48	31.0	14	33.7	8
30	F,G,J	5.3	30.0	415	30.3	124	31.1	43	35.0	12	38.6	7
33	F,G,J	5.1	33.1	377	33.3	113	34.3	39	39.1	11	43.7	7
36	F,G,J	4.8	36.1	346	36.4	104	37.6	36	43.4	10	49.1	6
39	F,G,J	4.7	39.1	319	39.5	95	40.9	33	47.8	9	54.8	5
43	F,G,J	4.4	43.1	290	43.6	87	45.3	30	54.0	8	63.1	5
47	F,G,J	4.2	47.1	265	47.7	79	49.8	27	60.5	7	72.1	4
51	F,G,J	4.1	51.1	244	51.8	73	54.3	25	67.2	6	81.9	3
56	F,G,J	3.9	56.1	222	56.9	66	60.0	22	76.2	6	95.6	3
62	F,G,J	3.7	62.2	201	63.2	60	66.9	20	87.8	5	114.6	2
68	F,G,J	3.5	68.2	183	69.4	54	74.0	18	100.3	4	136.9	2
75	F,G,J	3.4	75.3	166	76.7	49	82.3	16	116.3	4	168.6	2
82	F,G,J	3.2	82.3	152	84.0	45	90.8	15	134.1	3	208.6	1
91	F,G,J	3.0	91.4	136	93.5	40	102.0	13	160.0	3	278.8	1
100	F,G,J	2.9	100.5	124	103.1	37	113.4	12	190.0	2	384.9	1
110	F,G,J	2.8	110.6	113	113.7	33	126.5	11	229.7	2		
120	F,G,J	2.7	120.7	103	124.4	30	139.9	10	278.1	2		
130	F,G,J	2.5	130.8	95	135.2	28	153.7	9	338.4	1		
150	F,G,J	2.4	151.1	83	157.0	24	182.4	7	518.3	1		
160	F,G,J	2.3	161.2	77	168.0	22	197.4	7	661.1	1		
180	F,G,J	2.2	181.5	69	190.1	20	228.8	6				

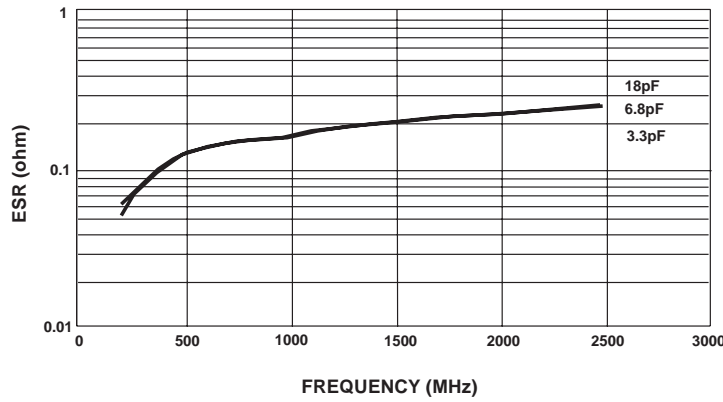
*Additional non-standard values available on request.

**A = ± 0.05; B = ± 0.10; C = ± 0.25; F = ± 1%; G = ± 2%; J = ± 5%

SRF VS. CAPACITANCE (Typical)



ESR VS. FREQUENCY (Typical)



Q VS. FREQUENCY (Typical)

