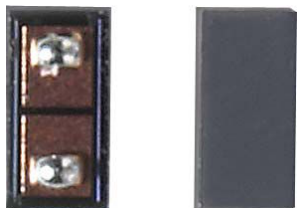


Surface Mounted RF Capacitor HPC Replacement Part



RFCS series of thin film capacitors on silicon are designed for RF circuits that require exceptional performance at frequencies up to 20 GHz. The unique structure of the RFCS capacitors is based on thin-film electrodes deposited on a highly conductive silicon substrate. This unique structure is characterized by low parasitic inductance allowing the capacitors to maintain their performance to higher frequencies than other technologies.

The RFCS replaces the HPC product line.
Additional values and form factors available upon request.

FEATURES

- Industries highest SRF
- Low DCR, high Q
- Small size: 0.040" x 0.020" x 0.015"
- S parameter files available upon request

APPLICATIONS

- Lumped element filters
- Impedance matching circuits
- Decoupling and DC blocking
- Smart cards
- Other high Q RF circuitry

STANDARD ELECTRICAL SPECIFICATIONS

PARAMETER	VALUE	UNIT
Substrate Material	Silicon	
Terminations	Lead (Pb)-free solder	
Capacitance Range ⁽¹⁾	0.2 to 27	pF
Tolerance ⁽²⁾	± 5	%
Working Voltage	Up to 50	V
Operating Temperature	- 55 to + 125	°C
Storage Temperature	- 55 to + 125	°C
Temperature Coefficient	± 30	ppm/°C
ESD Classification ⁽³⁾	Value dependant, up to class 2	

Notes

⁽¹⁾ Custom values available upon request. See custom design section below

⁽²⁾ ± 0.1 pF for values < 2 pF

⁽³⁾ According to AEC-Q200 method 002. Contact factory for more details

RF CHARACTERISTICS - Typical Values

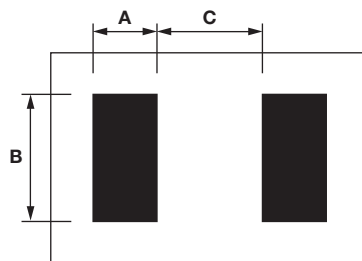
CAPACITANCE (pF)	Q		SRF (GHz)	MAX. OPERATING VOLTAGE (V)
	100 MHz	1 GHz		
AT 1 MHz				
0.2	70 500	3190	> 20	50
0.3	45 700	2050	> 20	50
0.4	33 600	1490	19.4	50
0.5	26 500	1170	18.2	50
0.6	21 800	960	17.2	50
0.7	18 500	810	16.5	50
0.8	16 000	700	15.8	50
0.9	14 100	610	15.3	50
1	12 600	540	14.9	50
1.2	10 400	450	14.1	50
1.5	8170	350	13.2	50

RF CHARACTERISTICS - Typical Values

CAPACITANCE (pF) AT 1 MHz	Q		SRF (GHz)	MAX. OPERATING VOLTAGE (V)
	100 MHz	1 GHz		
1.8	6720	290	12.5	50
2.2	3360	130	10.6	50
2.7	2720	100	10.4	50
3.3	2220	80	10.2	25
3.9	1870	70	10.1	25
4.7	1540	60	9.9	25
5.6	1290	50	9.8	25
6.8	1060	40	9.6	25
8.2	870	30	9.4	25
10	710	25	9.3	25
12	600	21	9.1	16
15	470	20	8.9	16
18	400	15	8.8	16
22	320	10	8.6	10
27	260	10	8.5	10

DIMENSIONS in inches (millimeters)

	LENGTH	WIDTH	THICKNESS
PART	0.04	0.02	0.015 (0.5) ± 0.001
Mounting Pad C ≥ 2.2 pF	14	6	
Mounting Pad C < 2.2 pF	12	4	

FOOTPRINT DIMENSIONS in inches (millimeters)

VALUE RANGE	A	B	C
0.2 to 27	8	14	18

CUSTOM DESIGNED CAPACITORS

Vishay EFI will custom design and measure additional values and form factors upon request.
Typical capacitance density is limited to: ~ 200 pF/mm²

**Surface Mounted RF Capacitor
HPC Replacement Part**

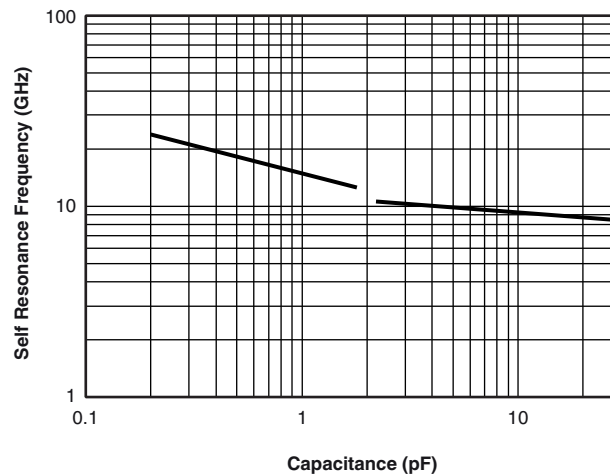
Vishay Electro-Films

GLOBAL PART NUMBER INFORMATION

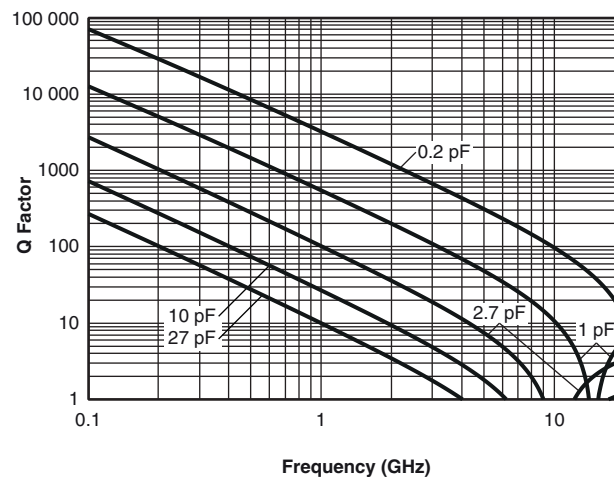
Global Part Number: RFCS04021000BKNT1

Global Part Number Description: RFCS 0402 1 pF 10 % on tape

R	F	C	S	0	4	0	2	1	0	0	0	B	K	N	T	1
MODEL	SIZE	CAPACITANCE (pF)	INDUCTANCE MULTIPLIER CODE			TOLERANCE CODE			SPECIAL		PACKAGING CODE					
RFCS	0402	First 4 digits are significant figures of inductance	D = 0.0001 C = 0.001 B = 0.01			J = 5 % K = 10 % M = 20 % L = 25 % B = ± 0.1 pF			N = None		WAFFLE WS = 100 min., 1 mult TAPE AND REEL T0 = 100 min., 100 mult T1 = 1000 min., 100 mult TS = 100 min., 1 mult					

TYPICAL COMPONENT PERFORMANCE**Self Resonance vs. Value**

Two electrode geometries are used to cover the value range. For this reason the above plot exhibits discontinuity.

**Quality Factor vs. Frequency**



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