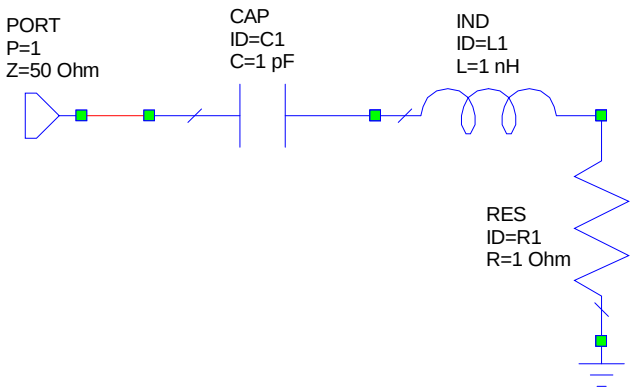
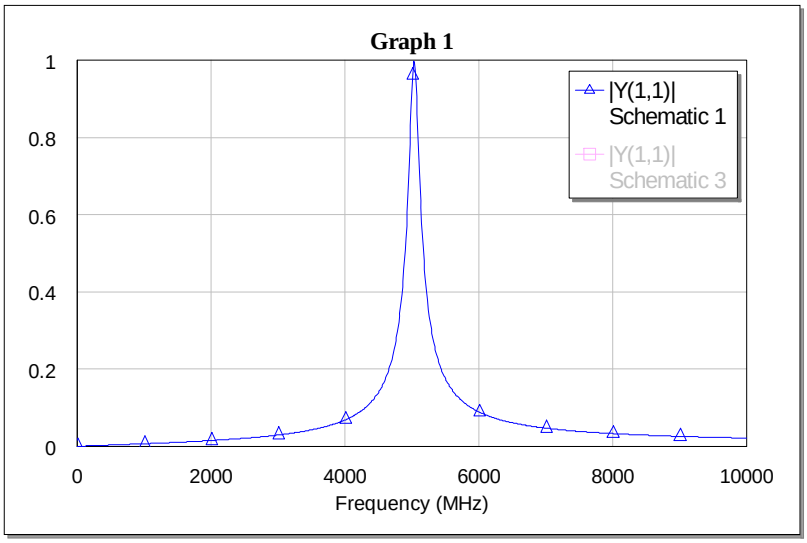
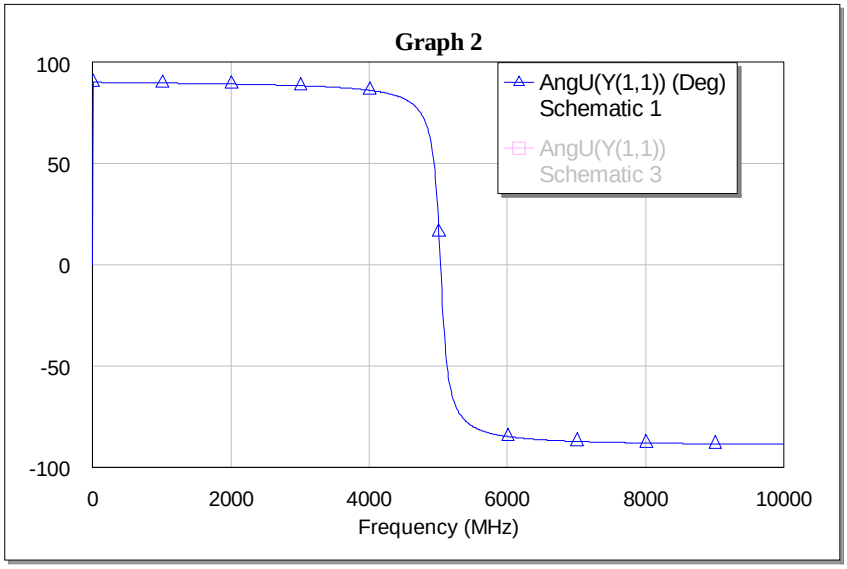
Studio di circuiti risonanti con MWO

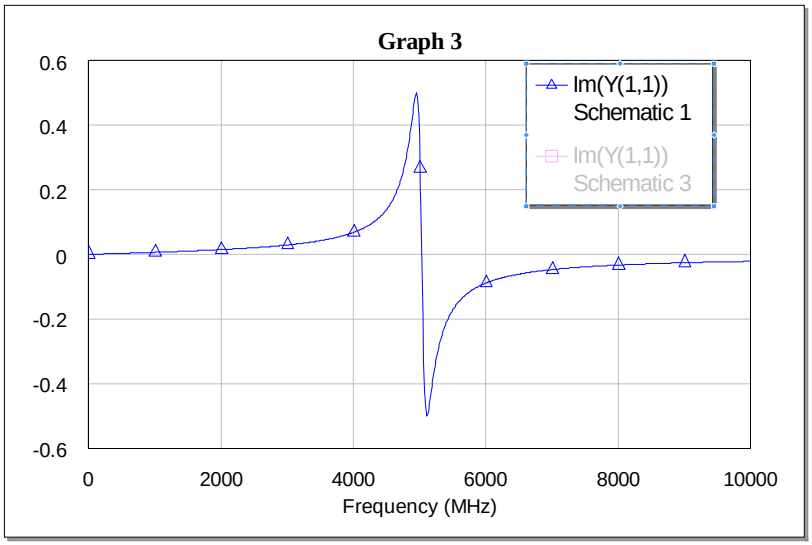
Circuito risonante serie

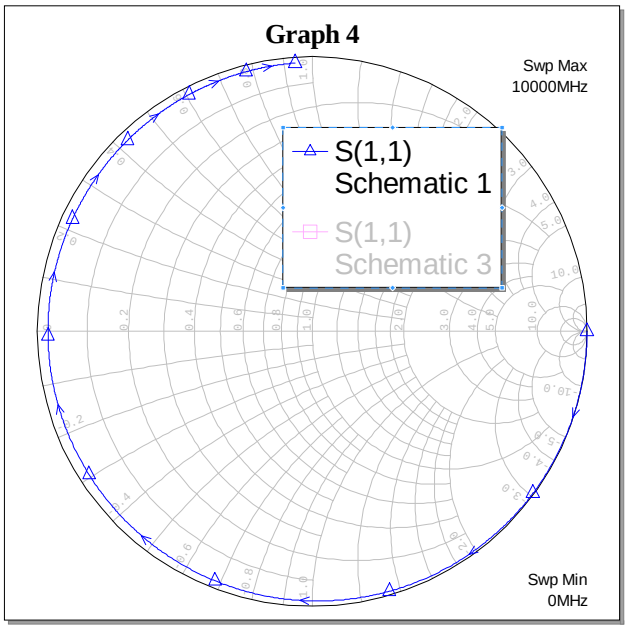


- $Y(\omega) = \frac{1}{R + j\omega L + \frac{1}{j\omega C}}$ ω_0^2 LC = 1
- Per $\omega = \omega_0$ $Y(\omega_0) = \frac{1}{R}$
- Per $\omega << \omega_0$ $\mathrm{Im}\,[Y(\omega)] \approx \omega C$
- $L = 1/\,C\omega_0^2$




Graph 2
100
50
0
-50
-100
0
2000
4000
6000
8000
10000
Frequency (MHz)
AngU(Y(1,1)) (Deg)
Schematic 1
AngU(Y(1,1))
Schematic 3

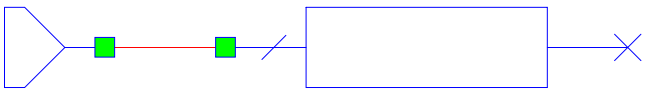

Graph 3
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
0
2000
4000
6000
8000
10000
Frequency (MHz)
Im(Y(1,1))
Schematic 1
Im(Y(1,1))
Schematic 3

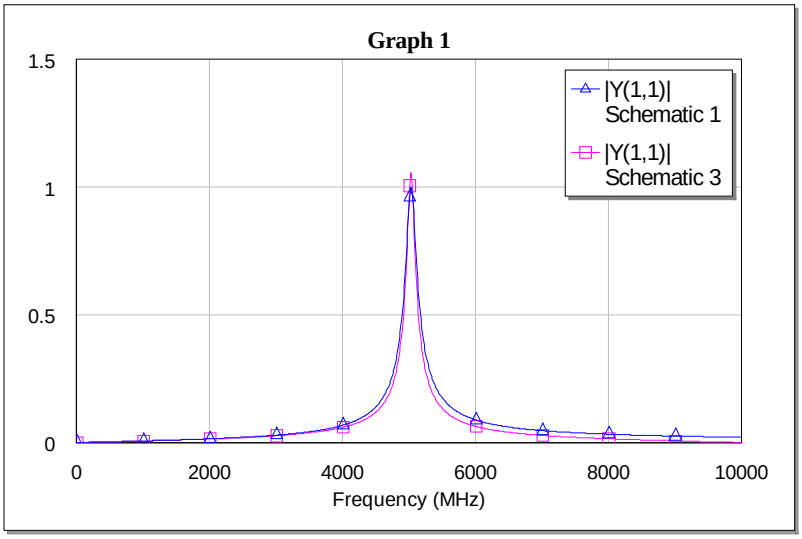


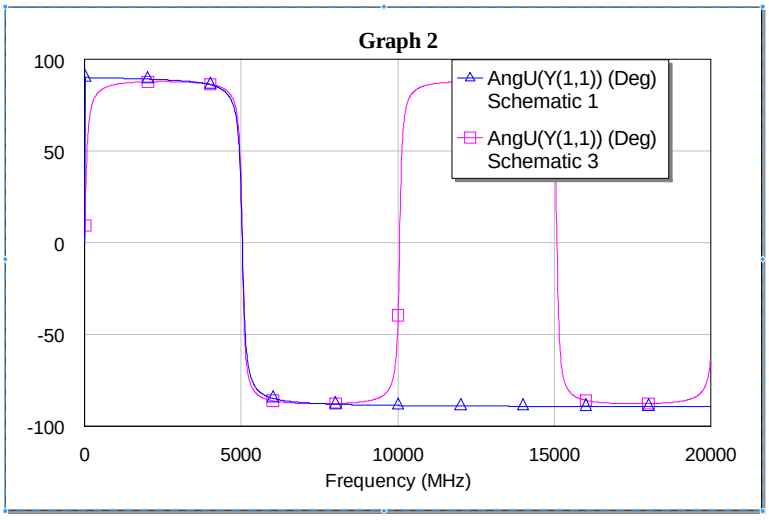
Linea con perdite aperta

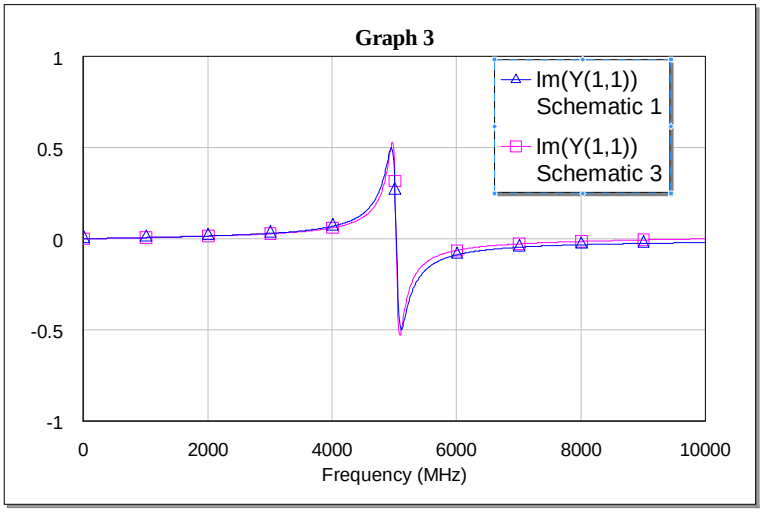
PORT
P=1
Z=50 Ohm

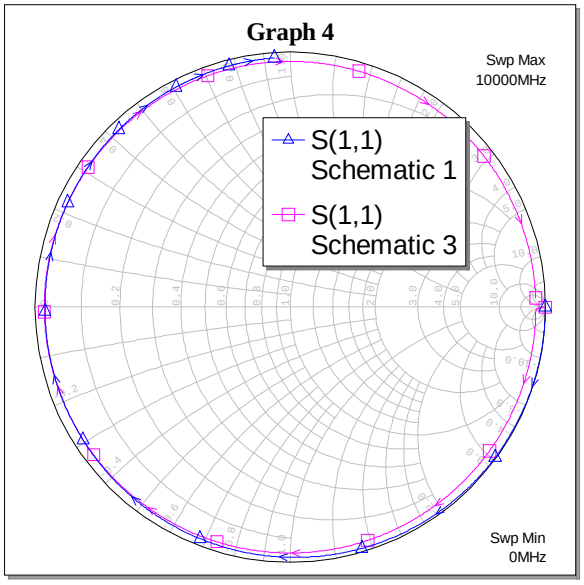
TLINP
ID=TL1
Z0=50 Ohm
L=14.9 mm
Eeff=1
Loss=11.01
F0=0 MHz



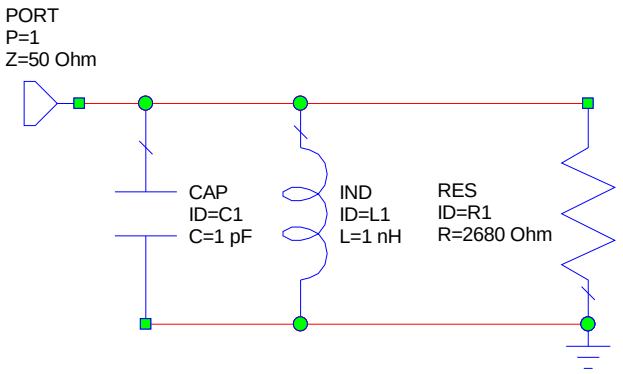

Graph 1
1.5
1
0.5
0
0
2000
4000
6000
8000
10000
Frequency (MHz)
|Y(1,1)| Schematic 1
|Y(1,1)| Schematic 3


Graph 2
100
50
0
-50
-100
0
5000
10000
15000
20000
Frequency (MHz)
AngU(Y(1,1)) (Deg) Schematic 1
AngU(Y(1,1)) (Deg) Schematic 3


Graph 3
1
0.5
0
-0.5
-1
0
2000
4000
6000
8000
10000
Frequency (MHz)
Im(Y(1,1))
Schematic 1
Im(Y(1,1))
Schematic 3


Graph 4
Swp Max
10000MHz
S(1,1)
Schematic 1
S(1,1)
Schematic 3
Swp Min
0MHz

Circuito risonante parallelo

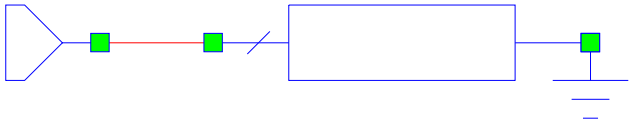


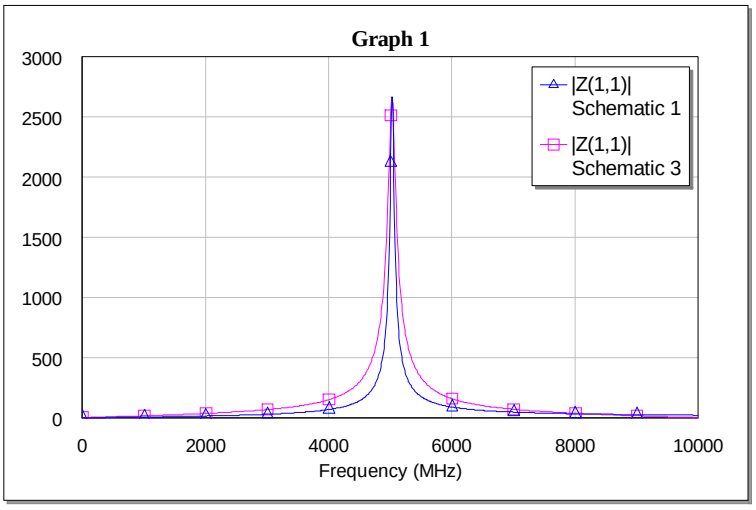
- $Z(\omega) = \frac{1}{G + j\omega C + \frac{1}{j\omega L}}$ ω_0^2 LC = 1
- Per $\omega = \omega_0$ $Z(\omega_0) = R$
- Per $\omega << \omega_0$ $\mathrm{Im}\,[Z(\omega)] \approx \omega L$
- $C = 1/\,L\omega_0^2$

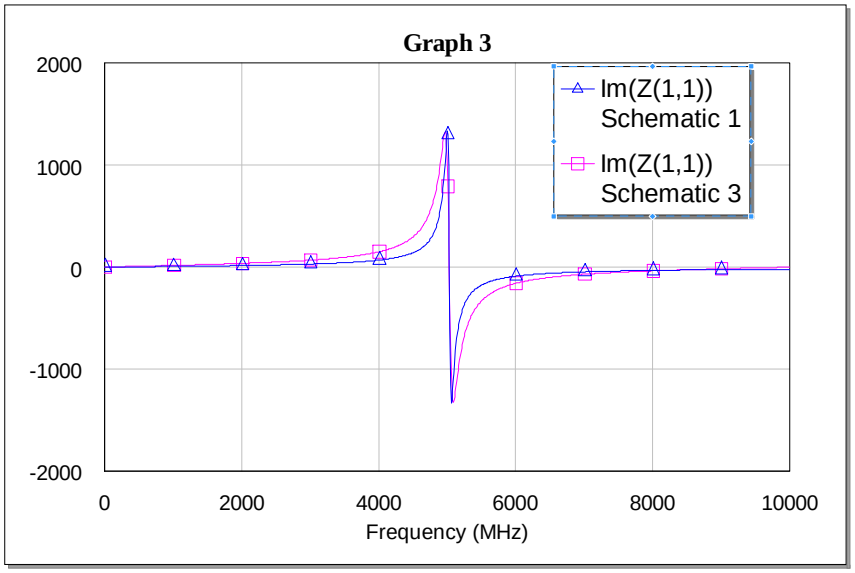
Linea con perdite in corto

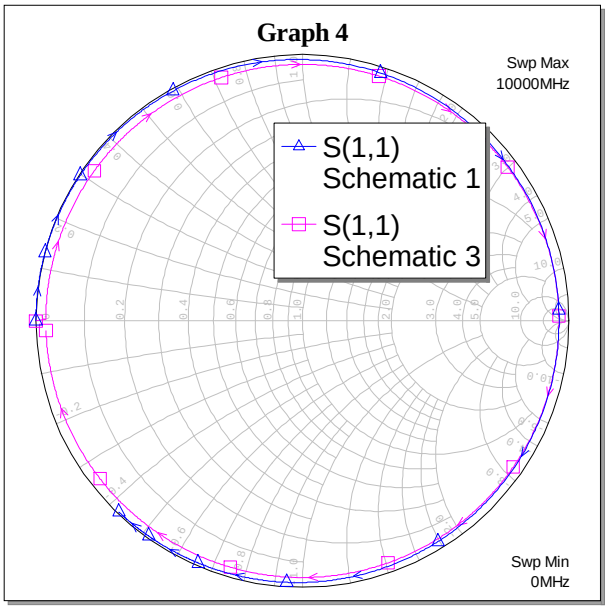
PORT
P=1
Z=50 Ohm

TLINP
ID=TL1
Z0=50 Ohm
L=14.9 mm
Eeff=1
Loss=11.01
F0=0 MHz






Graph 3
2000
1000
0
-1000
-2000
0
2000
4000
6000
8000
10000
Frequency (MHz)
Im(Z(1,1))
Schematic 1
Im(Z(1,1))
Schematic 3


Graph 4
Swp Max
10000MHz
S(1,1)
Schematic 1
S(1,1)
Schematic 3
Swp Min
0MHz

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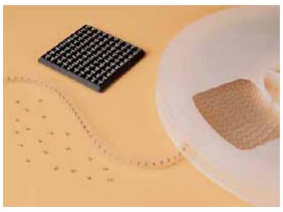
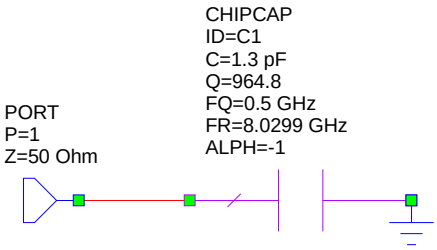
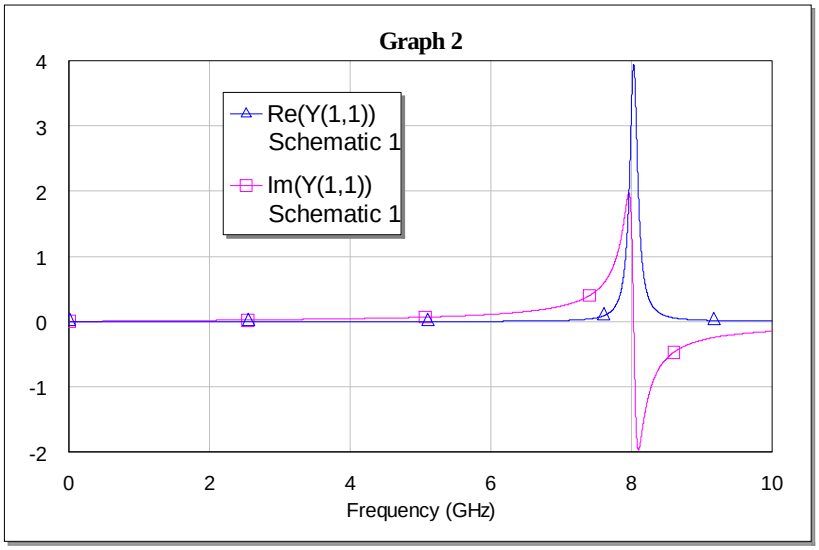
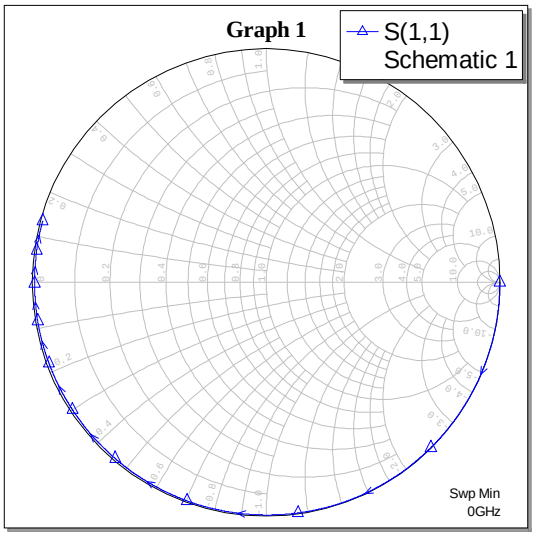


- Case A Size (.055" x .055")
- Capacitance Range 0.1 pF to 100 pF
- High Q
- Ultra-Stable Performance







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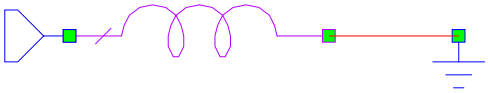
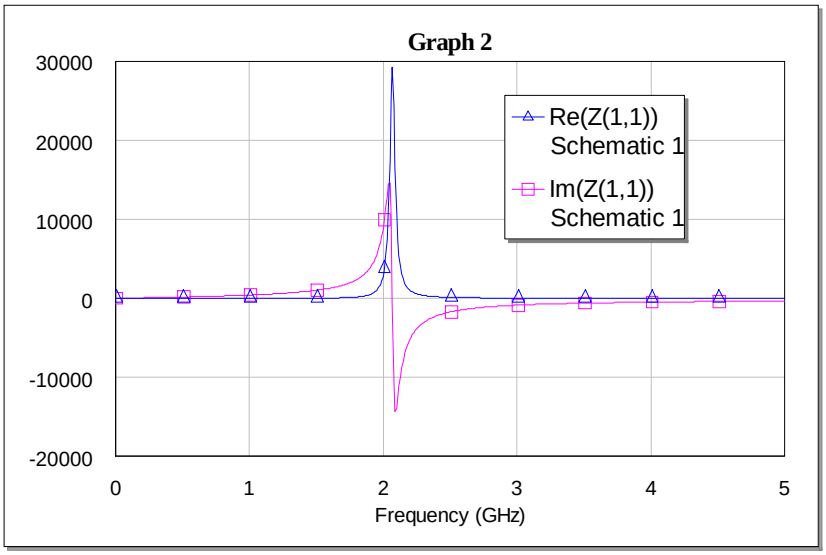
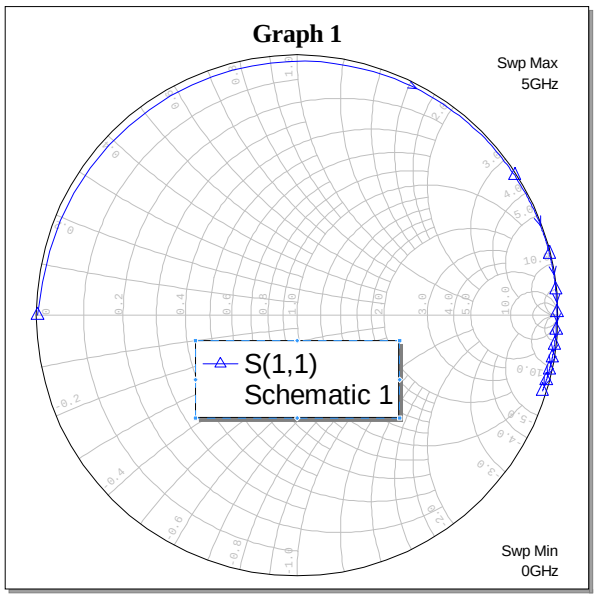
Chip Inductors– 0805HQ (2012)

PORT
P=1
Z=50 Ohm

CCIND
ID=L2
R1=11 Ohm
R2=0.12 Ohm
C=0.116 pF
L=51 nH
K=8.8e-5




Graph 2
30000
20000
10000
0
-10000
-20000
0
1
2
3
4
5
Frequency (GHz)
Re(Z(1,1))
Schematic 1
Im(Z(1,1))
Schematic 1


Graph 1
Swp Max
5GHz
S(1,1)
Schematic 1
Swp Min
0GHz