Cauer I

$$Y(s) = \frac{s^5 + 6s^3 + 8s}{s^4 + 4s^2 + 3}$$

$s^5 + 6s^3 + 8s \;|\; s^4 + 4s^2 + 3$

$- s^5 + 4s^3 + 3s \quad s$ → 1

$s^4 + 4s^2 + 3 \;|\; 2s^3 + 5s$

$- s^4 + \frac{5}{2}s^2 \quad \frac{1}{2}s$ → $\frac{1}{2}$

$2s^3 + 5s \;|\; \frac{3}{2}s^2 + 3$

$- 2s^3 + 4s \;|\; \frac{4}{3}s$ → $\frac{4}{3}$

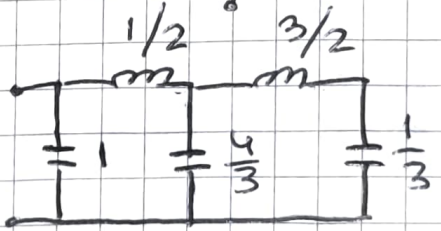
$\frac{3}{2}s^2 + 3 \;|\; s$

$- \frac{3}{2}s^2 \quad \frac{3}{2}s$ → $\frac{3}{2}$

$s \;|\; 3$

$- s \quad \frac{1}{3}s$ → $\frac{1}{3}$

0



$$C_1 = 1 \cdot \frac{1}{1{,}2k} \cdot \frac{1}{650k} = 1{,}282\ nf$$

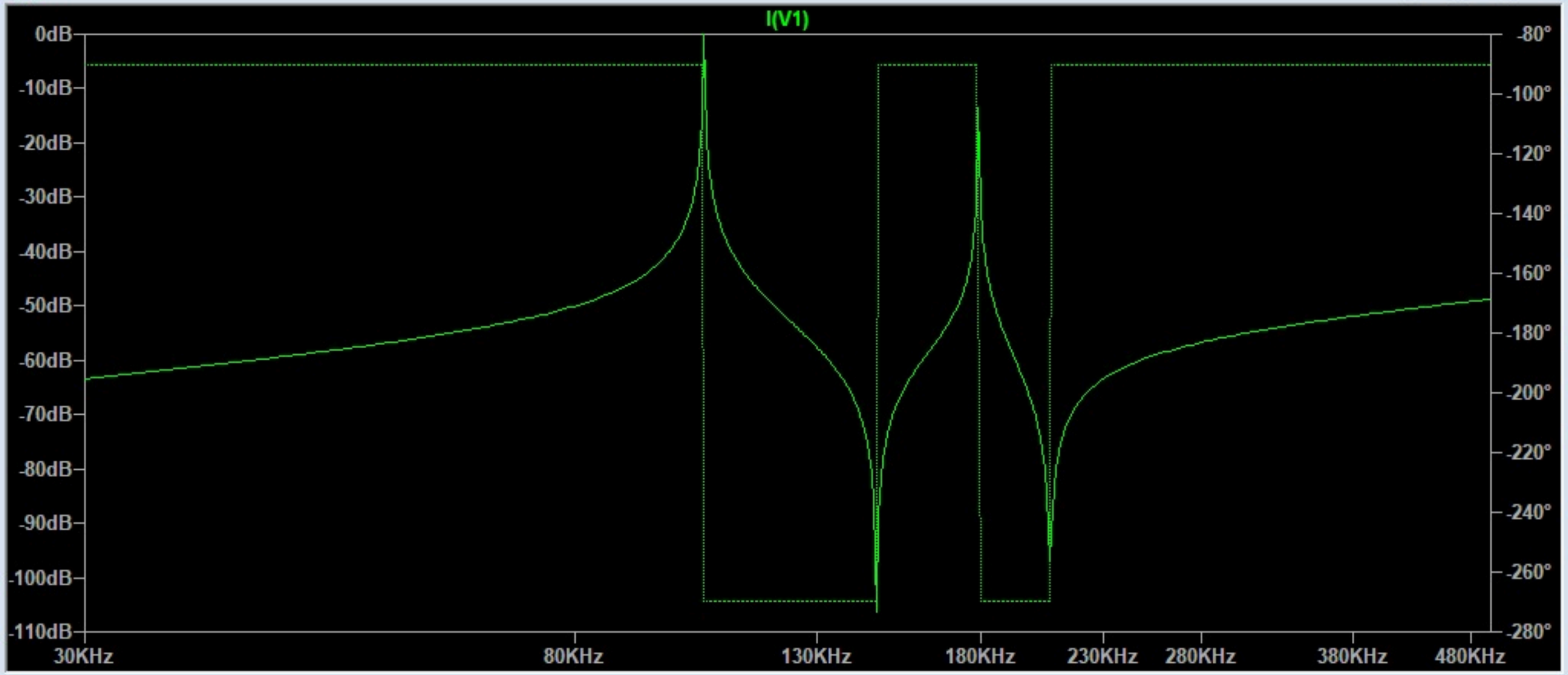
$$C_2 = \frac{4}{3} \cdot \frac{1}{1{,}2k} \cdot \frac{1}{650k} = 1{,}7094\ nf$$

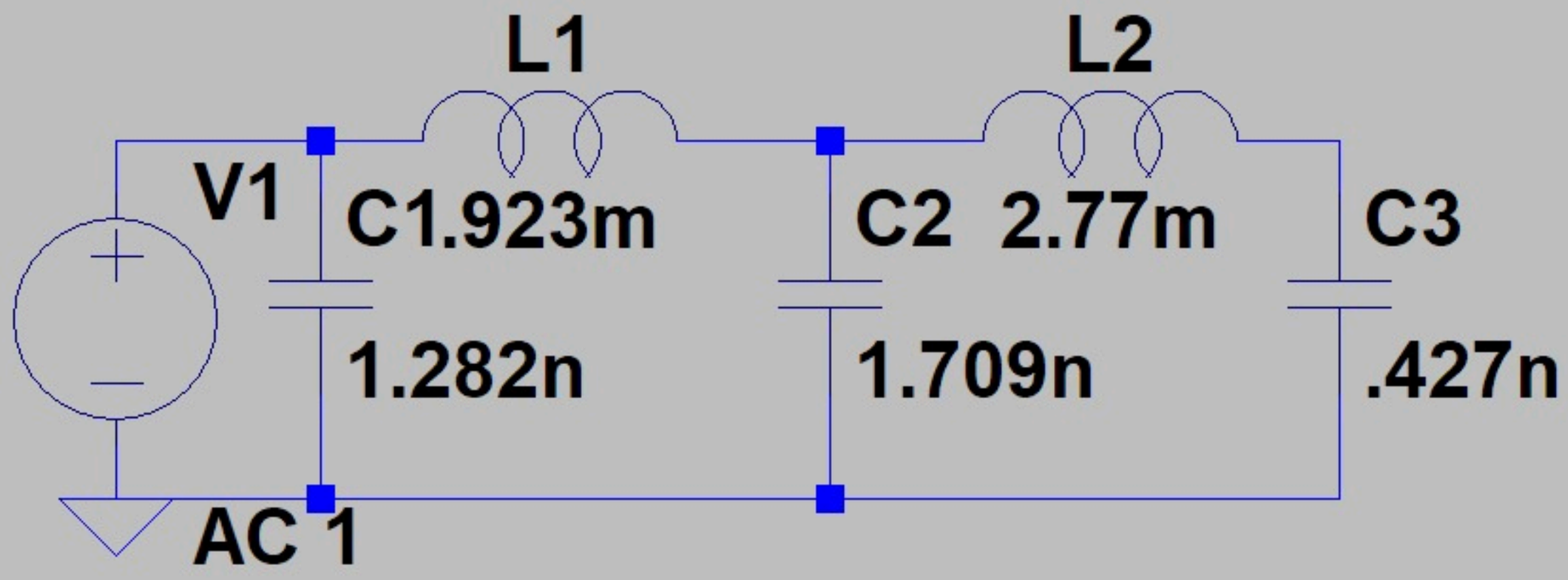
$$C_3 = \frac{1}{3} \cdot \frac{1}{1{,}2k} \cdot \frac{1}{650k} = 0{,}427\ nf$$

$$L_1 = \frac{1}{2} \cdot 1{,}2k \cdot \frac{1}{650k} = 0{,}923\ mHy$$

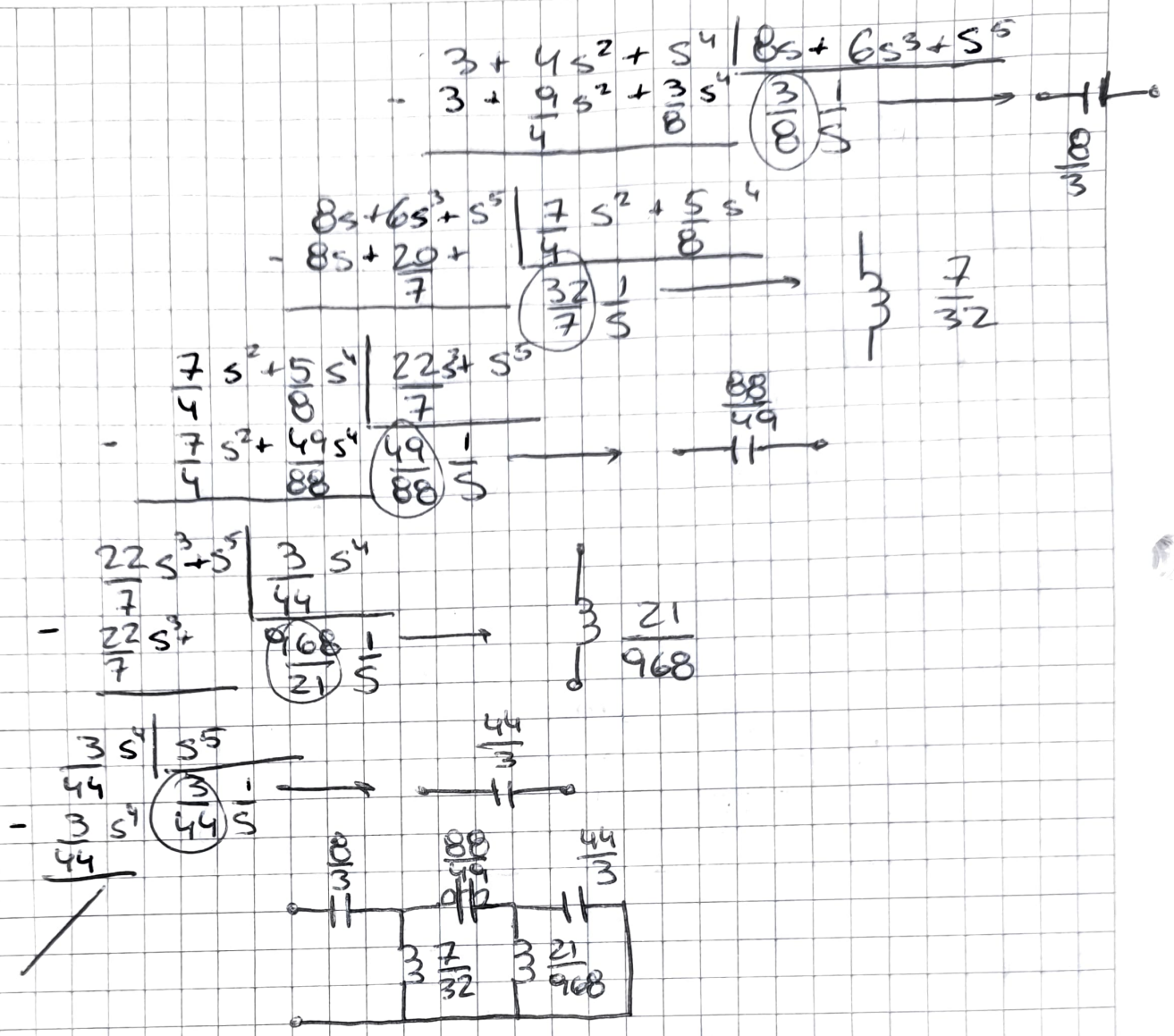
$$L_2 = \frac{3}{2} \cdot 1{,}2k \cdot \frac{1}{650k} = 2{,}77\ mHy$$

Draft2


I(V1)
0dB
-10dB
-20dB
-30dB
-40dB
-50dB
-60dB
-70dB
-80dB
-90dB
-100dB
-110dB
-80°
-100°
-120°
-140°
-160°
-180°
-200°
-220°
-240°
-260°
-280°
30KHz
80KHz
130KHz
180KHz
230KHz
280KHz
380KHz
480KHz


L1
L2
V1
C1.923m
C2
2.77m
C3
1.282n
1.709n
.427n
AC 1

Caso 2



$C_1 = 3{,}42\ nf$

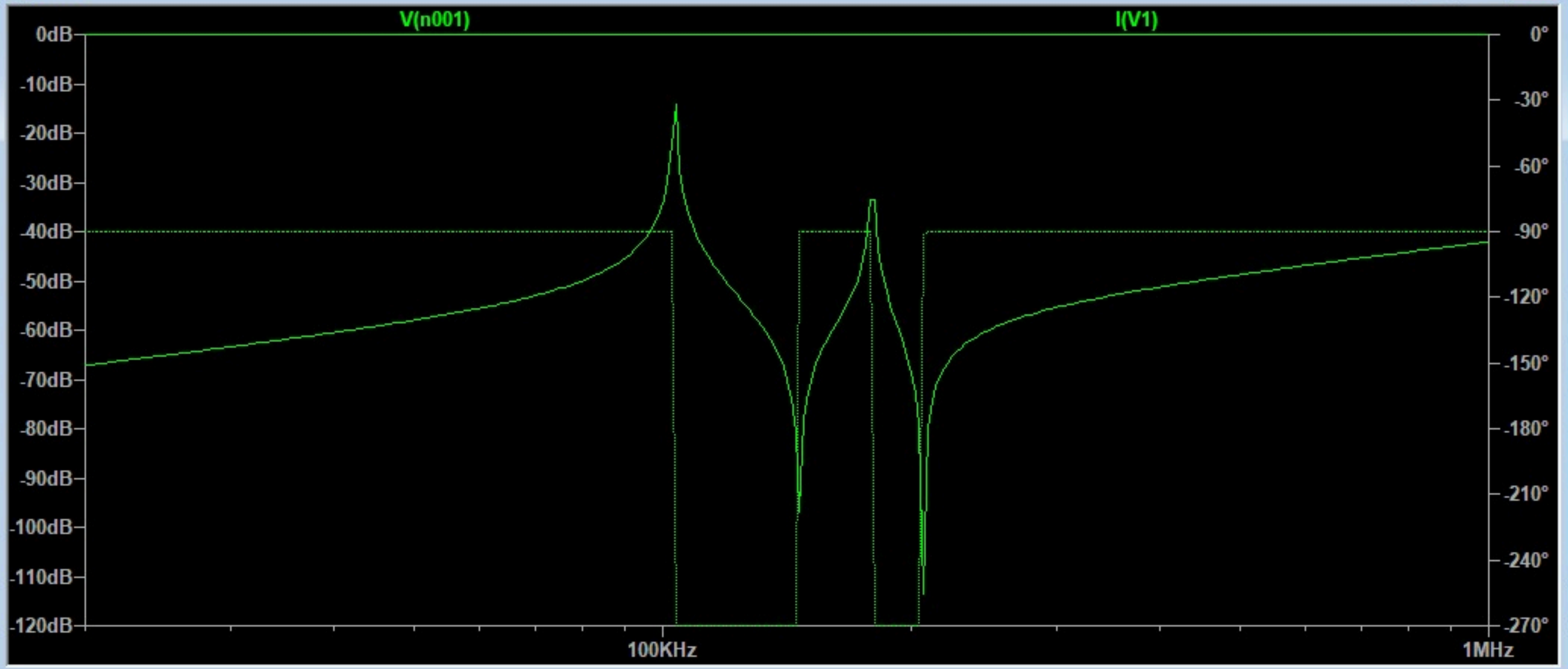
$C_2 = 2{,}302\ nf$

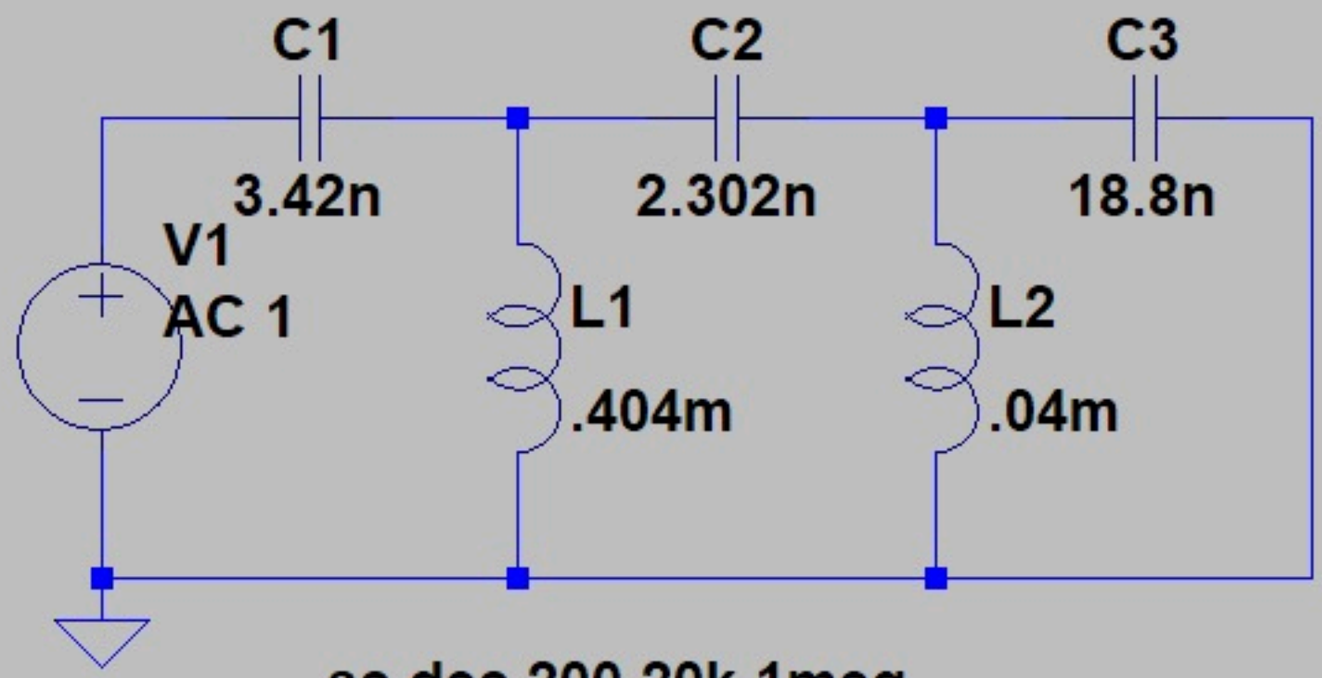
$C_3 = 18{,}8\ nf$

$L_1 = 0{,}404\ mHy$

$L_2 = 0{,}04\ mHy$

Draft2





.ac dec 200 20k 1meg

Foster

$$K_0 = \lim_{s\to 0} s\,Z(s) = \lim_{s\to 0} \frac{s(s^2+1)(s^2+3)}{s(s^2+2)(s^2+4)} = \boxed{\frac{3}{8} = K_0}$$

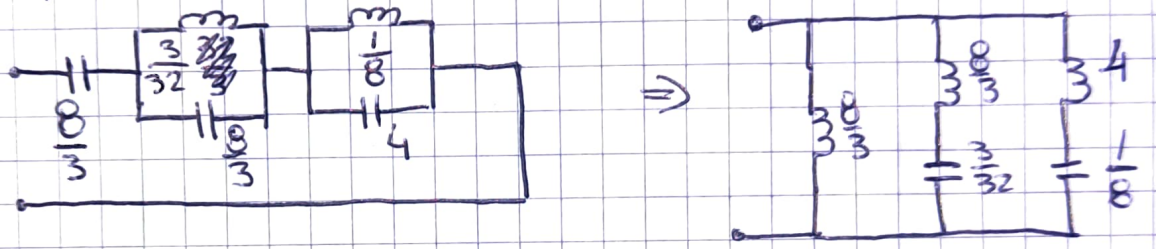
$$K_\infty = \lim_{s\to\infty} \frac{Z(s)}{s} = \frac{(s^2+1)(s^2+3)}{s^2(s^2+2)(s^2+4)} = \boxed{0 = K_\infty}$$

$$2k_1 = \lim_{s^2\to -4} Z(s)\,\frac{s^2+4}{4} = \lim_{s^2\to -4} \frac{(s^2+1)(s^2+3)}{s^2(s^2+2)} = \frac{(-3)(-1)}{(-4)(-2)} = \boxed{\frac{3}{8} = 2k_1}$$

$$2k_2 = \lim_{s^2\to -2} Z(s)\,\frac{s^2+2}{s} = \lim_{s^2\to -2} \frac{(s^2+1)(s^2+3)}{s^2(s^2+4)} = \frac{(-1)\cdot 1}{(-2)(2)} = \boxed{\frac{1}{4} = 2k_2}$$

$$\begin{cases} 2k_1 = 3/8 & \omega_1^2 = 4 \\ 2k_2 = 1/4 & \omega_2^2 = 2 \end{cases}$$

Serie ⟶ Derivación



Serie:

$C_0 = 3{,}42\,pf$ $L_{01} = 0{,}173\,mHy$

$C_1 = 3{,}42\,pf$ $L_2 = 0{,}231\,mHy$

$C_2 = 5{,}128\,pf$

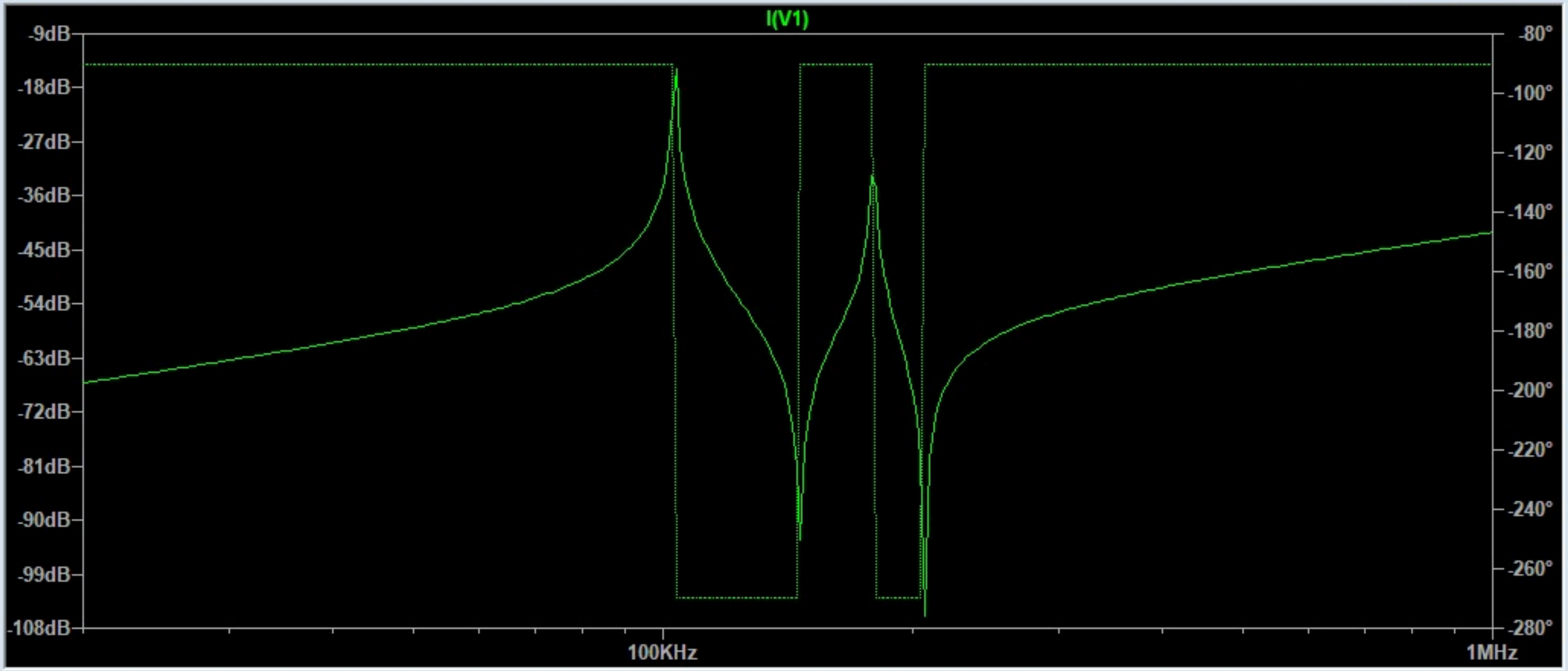
Derivación

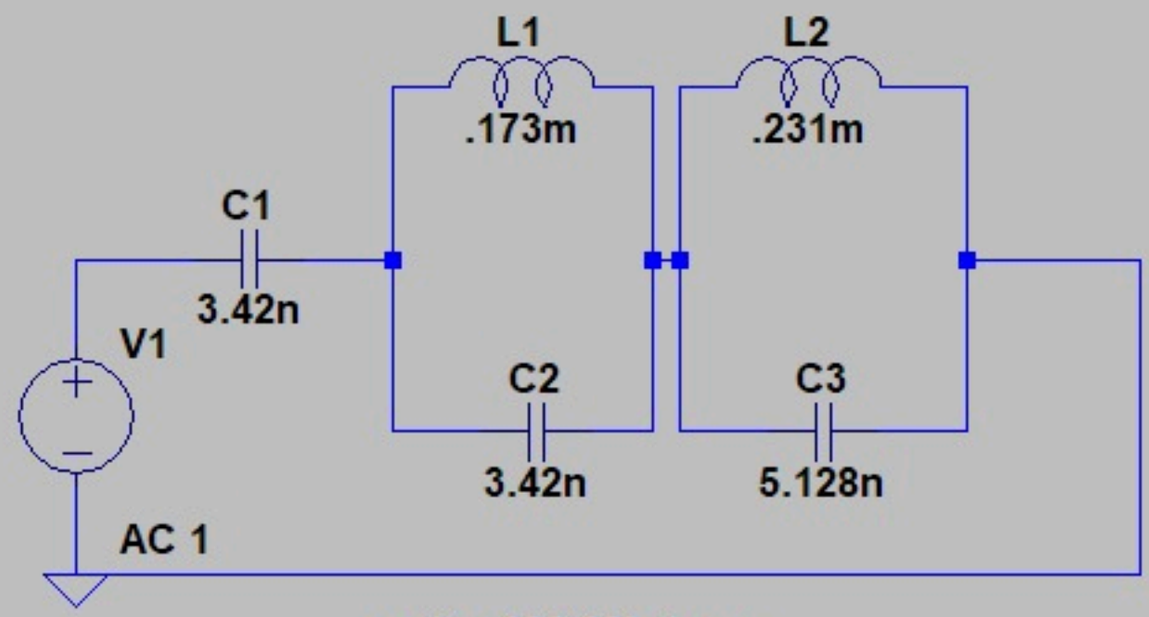
$L_0 = 4{,}923\,mHy$ $C_1 = 120{,}2\,pf$

$L_1 = 4{,}923\,mHy$ $C_2 = 160{,}2\,pf$

$L_2 = 7{,}385\,mHy$

Draft2





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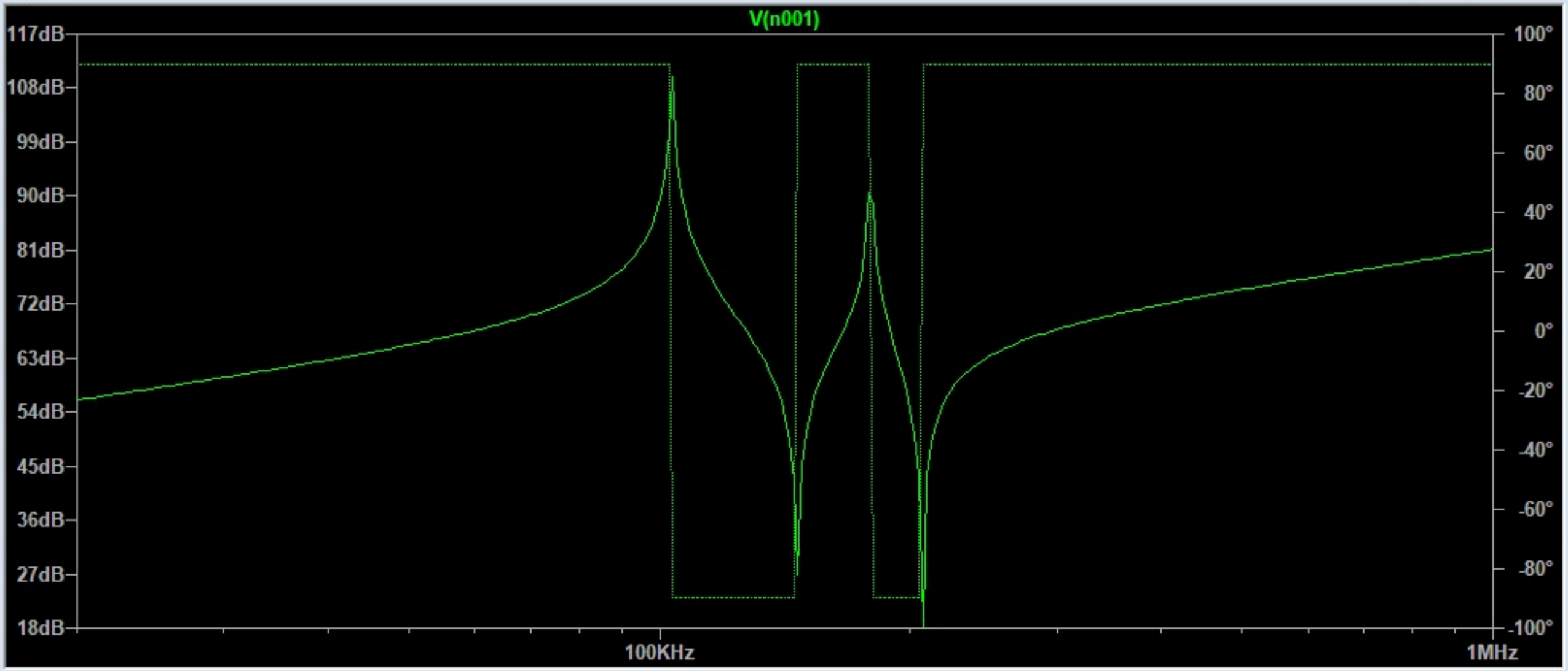
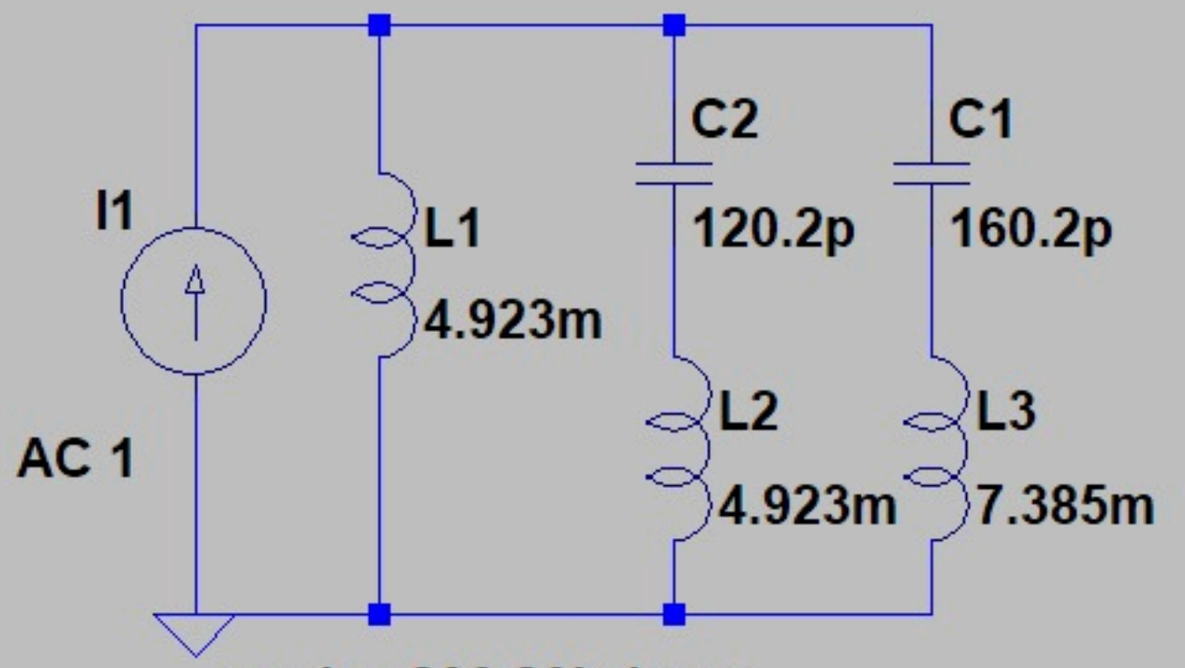
Draft2





.ac dec 200 20k 1meg