

TS4

$$\left\{ \begin{array}{l} \alpha_{\min} = 1 \text{ dB} \\ \alpha_{\min} = 30 \text{ dB} \end{array} \right. \quad \left\{ \begin{array}{l} f_p = 40 \text{ kHz} \\ f_s = 10 \text{ kHz} \end{array} \right. \rightarrow \text{Transformo a Pasabajas Prototipo} \rightarrow \left\{ \begin{array}{l} \alpha_{\min} = 1 \text{ dB} \rightarrow \omega_p = 1 \\ \alpha_{\min} = 30 \text{ dB} \rightarrow \omega_s = 4 \end{array} \right.$$

$$\rightarrow n = 2,97 \Rightarrow \underline{n=3}$$

$$\xi^2 = 0,259 \Rightarrow \omega_0 = \xi^{-1/n} = 1,25$$

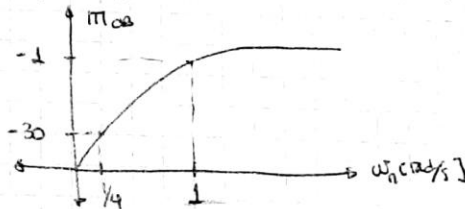
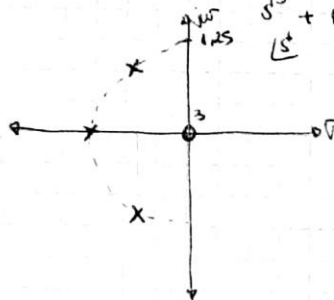
Transferencia Butter order 3:  $T_{LP}(p) = \frac{1}{p^3 + 2\xi p^2 + 2p + 1}$

Desnormalizo @  $\omega_0$ :  $T_{LP}(p) = \frac{1}{(1,25)^3 p^3 + 2(1,25)^2 p^2 + 2 \cdot 1,25 p + 1}$

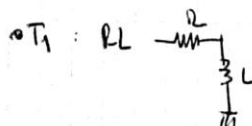
$$\rightarrow T_{LP}(p) = \frac{0,512}{p^3 + 1,6p^2 + 1,28p + 0,512}$$

Transformo tal que  $p = k(s) = \frac{1}{s}$

$$\Rightarrow T_{HP}(s) = \frac{0,512 s^3}{s^3 + 1,6s^2 + 1,28s + 0,512} = \frac{0,8 s^3}{s^3 + 0,8 s^2} \cdot \frac{0,64 s^2}{s^2 + 0,8 s + 0,64}$$

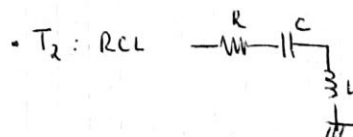


Implementación:



$$\rightarrow T_1(s) = \frac{sL}{s + R/L}$$

Si  $R=1$   
 $\Rightarrow L = 1,25$



$$\rightarrow T_2(s) = \frac{1/L s^2}{s^2 + \frac{R}{L} s + \frac{1}{LC}}$$

Si  $R=1$   
 $\Rightarrow L=1,25$   
 $C=1,25$