



$$\frac{V_o}{V_i} = \frac{Z_2}{Z_1 + Z_2} = \frac{\frac{1}{\frac{1}{R} + sC}}{sL + \frac{1}{\frac{1}{R} + sC}} = \frac{1}{\frac{1}{R} + sC} \cdot \frac{\frac{1}{R} + sC}{s^2 CL + s\frac{L}{R} + 1}$$

$$\frac{V_o}{V_i} = \frac{1}{s^2 CL + s\frac{L}{R} + 1} = \frac{1/LC}{s^2 + \frac{1}{RC}s + 1/LC} = \frac{\omega_o^2}{s^2 + s\frac{\omega_o}{Q} + \omega_o^2}$$

Butterworth: $\frac{V_o}{V_i} = \frac{1}{s^2 + s\sqrt{2} + 1}$

$$\frac{1}{RC} = \sqrt{2}, \text{ si } R=1 \Rightarrow C = 0,707$$

$$\omega_o^2 = 1 = \frac{1}{LC} \Rightarrow C = \frac{1}{L} \Rightarrow L = 1,414$$

Desnormalizo: $\Omega R = 1k\Omega$ $\Omega \omega = 2\pi 1000 \frac{1}{rad}$

$$\underline{R} = 1 \cdot \Omega R = 1k\Omega$$

$$\underline{L} = 1,414 \cdot \Omega R \frac{1}{\Omega \omega} = 0,225 \text{ H}$$

$$\underline{C} = 0,707 \cdot \frac{1}{\Omega R} \cdot \frac{1}{\Omega \omega} = 112,54 \text{ nF}$$



