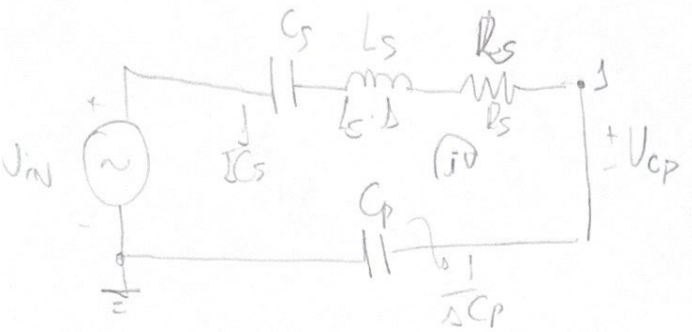

$V_R = R\,i(t) \qquad i(t) = C\,v_C'(t)$

$v_L = L\,i'(t)$

$v_C = \int_0^t i(\tau)\,d\tau$

$$-V_{in}(t) + v_C(t) + v_S(t) + v_{R_S}(t) + v_{Cp}(t) = 0$$

$$-v_{in}(t) + \frac{1}{C_S}\int_0^t i(\tau)\,d\tau + L_S\,i'(t) + R_S\,i(t) + \frac{1}{C_p}\int_0^t i(\tau)\,d\tau = 0$$

$$\frac{1}{C_S}\cdot i(t) + L_S\cdot\frac{d\,i(t)}{dt^2} + R_S\cdot\frac{d\,i(t)}{d(t)} + \frac{1}{C_p}\cdot i(t) = V_{in}$$

$$i'' + i'\cdot\frac{R_S}{L_S} + \left(\frac{1}{C_S L_S} + \frac{1}{C_p L_S}\right) i = V_{in}$$

→ EDO QUE REGE O CIRCUITO

$R_S = 640\,\Omega$

$L_S = 2.5764(9)\ H$

$C_S = 9.953\ fF$

$C_p = 2.488\ pF$

$$\omega^2 = \left(\frac{1}{C_S L_S} + \frac{1}{C_p L_S}\right) \Rightarrow \omega = 32566081\ \frac{rad}{s}$$

$$\alpha = \frac{1}{2}\,\frac{R_S}{L_S} = 125,68$$

$\alpha \ll \omega \rightarrow$ SUBAMORTECIDO, TENDE A OSCILAR.

$$y_h(t) = A_1\cdot\sin(\beta t) + A_2\cos(\beta t)$$

$\beta = \sqrt{\alpha^2 - \omega^2} = \beta \cong 32666081\,j$ → FREQUÊNCIA AMORTECIDA

$$f = \frac{126\,66081}{2\pi} \cong 5.9\ MHz$$