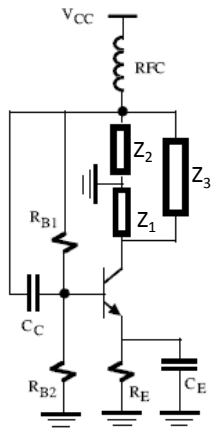
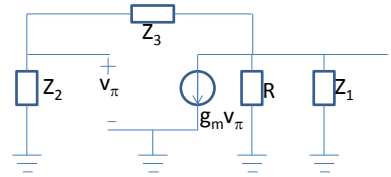
EE 530 Eletrônica Básica I

OSCILADORES

Prof. Pedro Xavier

Osciladores LC





$$L(s) = -g_m \cdot \frac{R \cdot Z_1 \cdot Z_2}{R_s \cdot (Z_1+Z_2+Z_3)+Z_1 \cdot (Z_2+Z_3)}$$

$$L(s) = -g_m \cdot \frac{-R \cdot X_1 \cdot X_2}{j \cdot R_s \cdot (X_1+X_2+X_3)-X_1 \cdot (X_2+X_3)}$$

$$\angle L(j\omega_0) = 0 \Rightarrow X_1(\omega_{osc})+X_2(\omega_{osc})+X_3(\omega_{osc}) = 0$$

$$|L(j\omega_0)| = 1 \Rightarrow |L(j\omega_0)| = g_m \cdot \frac{R \cdot X_2(\omega_{osc})}{X_1(\omega_{osc})} = 1$$

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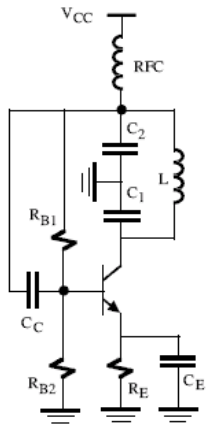
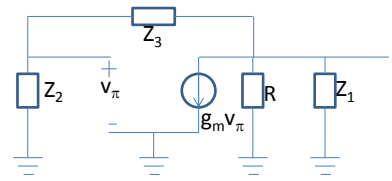
Osciladores LC

- Oscilador Colpitts (Z_1:C_1; Z_2:C_2; Z_3:L)



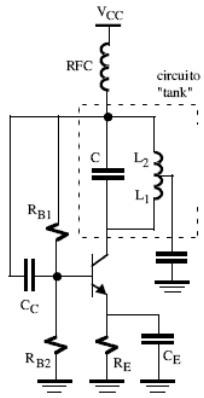


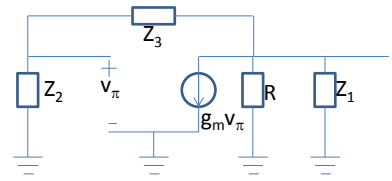
$$\omega_0 = 1 \Big/ \sqrt{L\frac{C_1 C_2}{C_1 + C_2}}$$

$$\frac{C_2}{C_1} = g_m R$$

Osciladores LC

- Oscilador Oscilador Hartley (Z_1:L_1; L_2:C_2; Z_3:C)





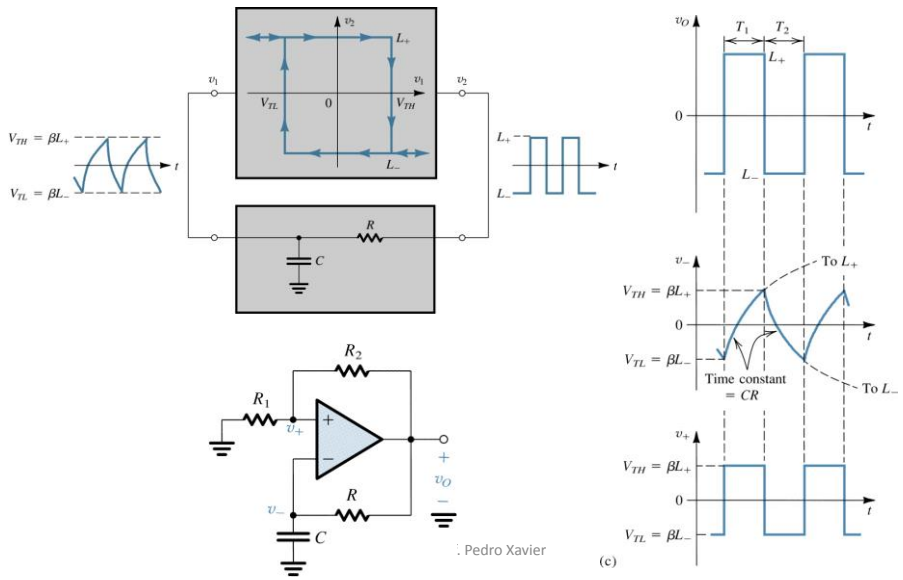
$$\omega_0 = \sqrt{\frac{1}{(L_1 + L_2)C}}$$

$$\frac{L_1}{L_2} = g_m R$$

Osciladores LC

- Fazer exercícios 13.8 e 13.9 do Sedra (5ª Ed.)
- Para casa e para nota

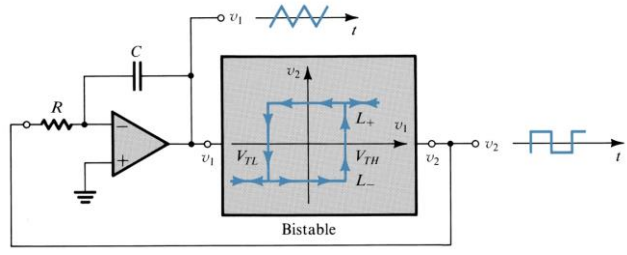
Multivibrador Astável (onda quadrada)

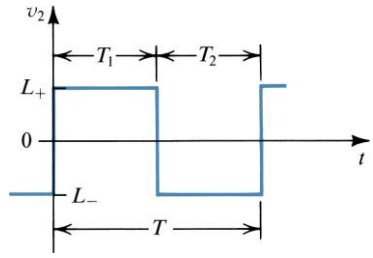


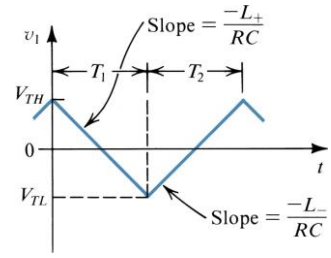
Multivibrador Astável (onda quadrada)

- Fazer exercícios 13.16 e 13.17 do Sedra(5ª Ed.)

Gerador de forma de onda triangular



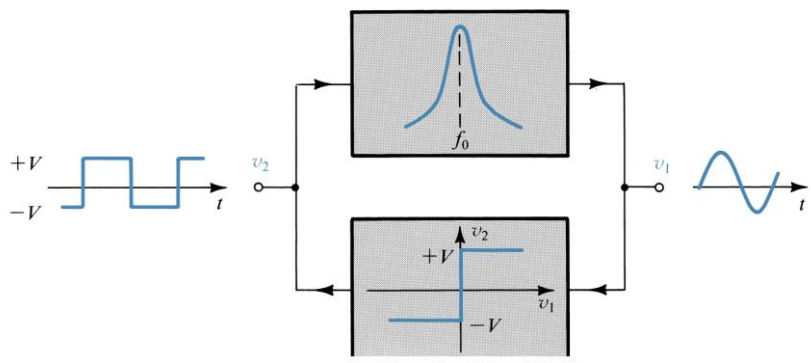




Gerador de forma de onda triangular

Fazer exercícios 13.18 do Sedra(5ª Ed.)

Oscilador com filtro ativo sintonizado



Fontes de figuras da aula

- Aula do prof. Fabiano Fruett

- Microeletrônica (Sedra)

Sugestão de estudo

- Sedra/Smith, cap. 13
- Savant, cap. 11.11