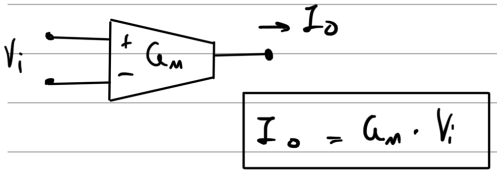
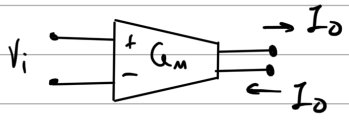
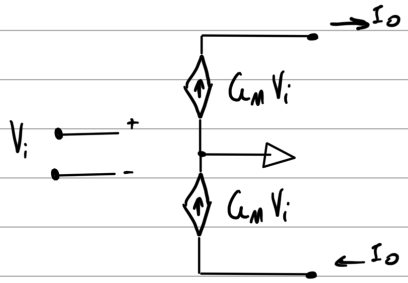
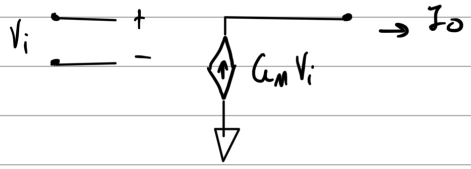
Διαγωγοί

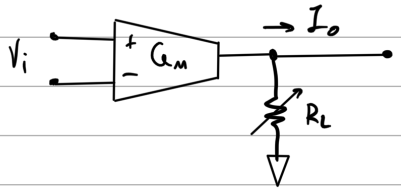


$$I_o = G_M \cdot V_i$$

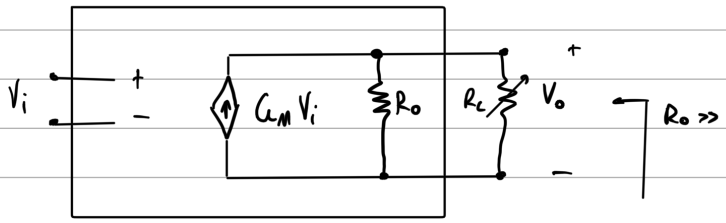






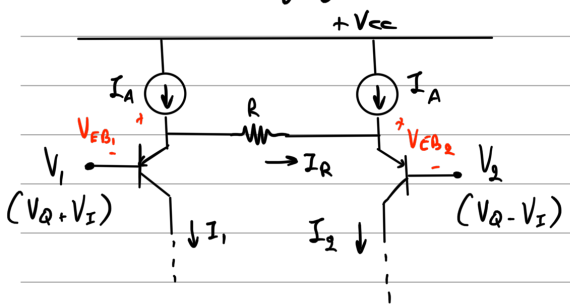


$u_o = I_o \cdot R_L$



$$A_V = \frac{V_o}{V_i} = G_m R_o \quad \text{, εάν } R_o \to 0 : A_V \to \infty$$

Διπολικός διαγωγός



$$V_{EB_1} \simeq V_{EB_2}$$

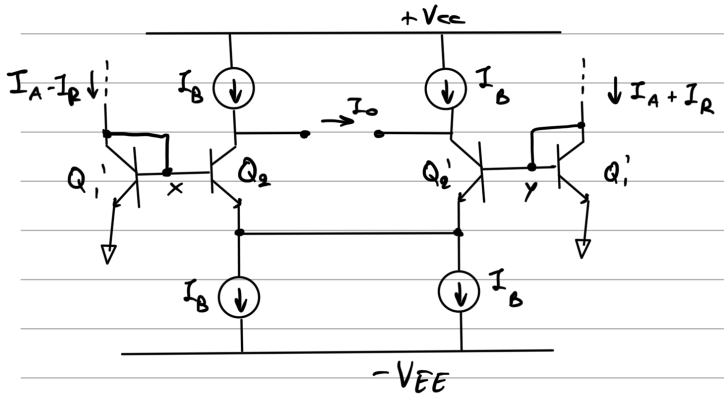
$$V_R = V_1 + V_{EB_1} - V_{EB_2} - V_2 \simeq V_1 - V_2$$

$$I_R = \frac{V_R}{R} = \frac{V_1 - V_2}{R}$$

$$\left.\begin{aligned} I_1 &= I_A - I_R \\ I_2 &= I_A + I_R \end{aligned}\right\} \longrightarrow I_2 - I_1 = 2 I_R \longrightarrow$$

$$I_2 - I_1 = G_m (V_1 - V_2) \longrightarrow$$

$$\boxed{G_m = \frac{1}{R}}$$



- $V_x - V_y = V_{EB_1} - V_{BE_1}' = V_{EB_2} - V_{EB_2}'$
- $I_C = I_S e^{V_{BE}/V_T} \longrightarrow V_{EB} = V_T \ln \frac{I_C}{I_S} \longrightarrow$

$$\longrightarrow V_T \ln\left(\frac{I_{C_1}}{I_S}\right) = V_T \ln\left(\frac{I_{CC}}{I_{C_2}'}\right) \longrightarrow \frac{I_{C_1}}{I_{C_1}'} = \frac{I_{C_2}}{I_{C_2}'} \longrightarrow$$

$$\longrightarrow \frac{I_A - I_R}{I_A + I_R} = \frac{I_B - I_O}{I_B + I_O} \longrightarrow \boxed{I_O = \frac{I_B}{I_A} I_R}$$

$$\boxed{I_o = \frac{1}{R} \cdot \frac{I_B}{I_A} (V_1 - V_2')} \qquad G_M = \frac{1}{R} \cdot \frac{I_B}{I_A}$$