

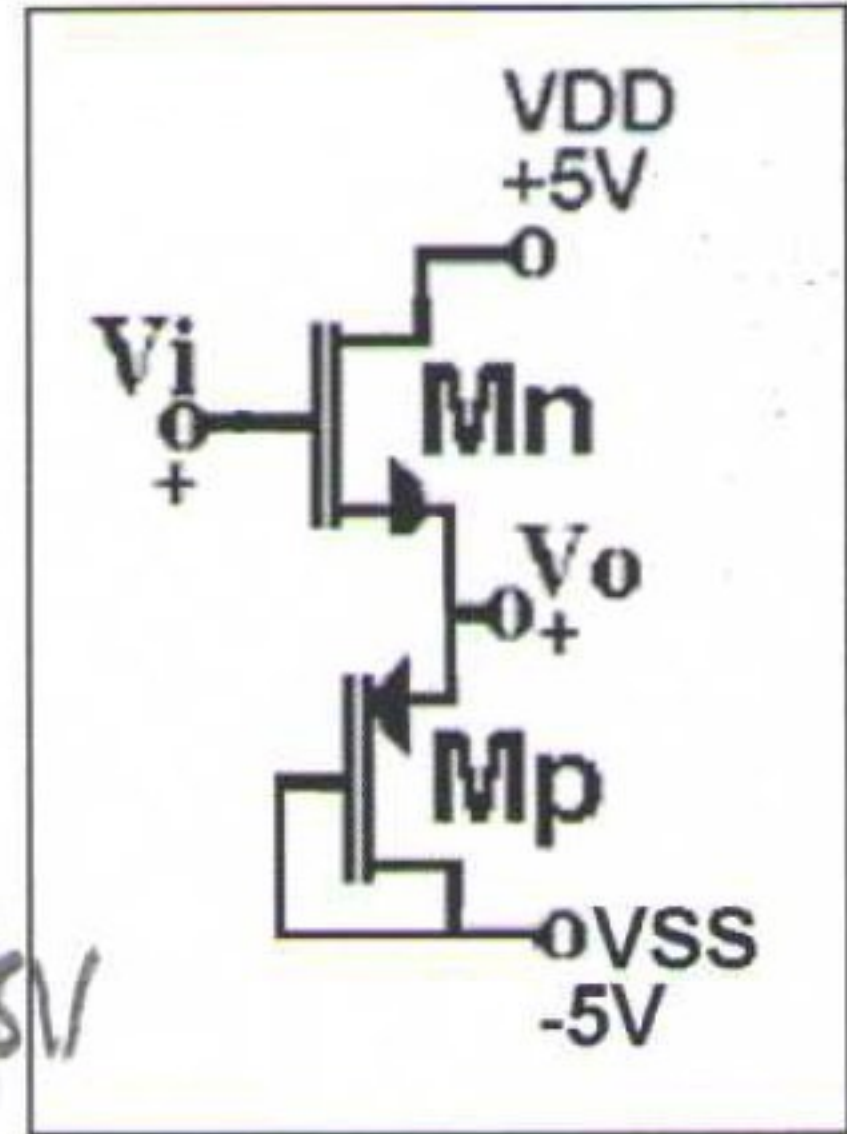
for DC case
 $V_i = 0V$

$$\left. \begin{aligned} |V_{TH}| &= 1V \\ I_{DN} &= I_{DP} = 1mA \\ \beta_N &= \beta_P \\ (K_p &= K_n) \end{aligned} \right\} \rightarrow \beta = ?$$

$$\frac{\beta_n}{2} (V_i - V_o - V_{THn})^2 = \frac{\beta_p}{2} (5 - V_o - V_{THp})^2$$

$$V_i - V_o - V_{THn} = -5 + V_o + V_{THp}$$

$$-5V - 1V = -2V_o \rightarrow V_o = -2.5V$$



$$\frac{\beta_n}{2} (0 - (-2.5V) - 1)^2 = 1mA$$

$$\beta_n = \frac{2mA}{(1.5)^2 V^2} \approx 0.89mA/V^2$$