

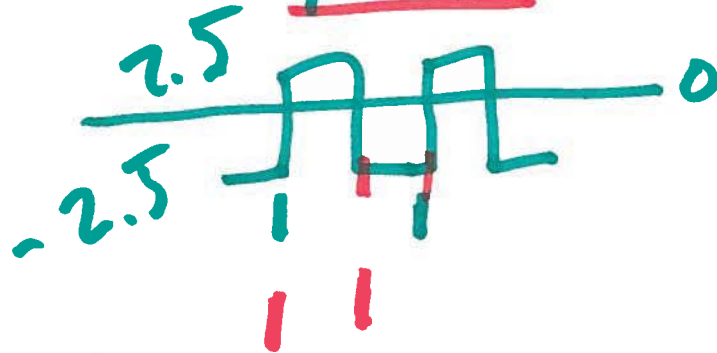
EE 421 / ECG 621

Digital IC Design

Lecture 22

NOV. 23, 2016

$$\epsilon = \frac{2.5 \cdot I_{load}}{VDD \cdot I_{DDavg}}$$

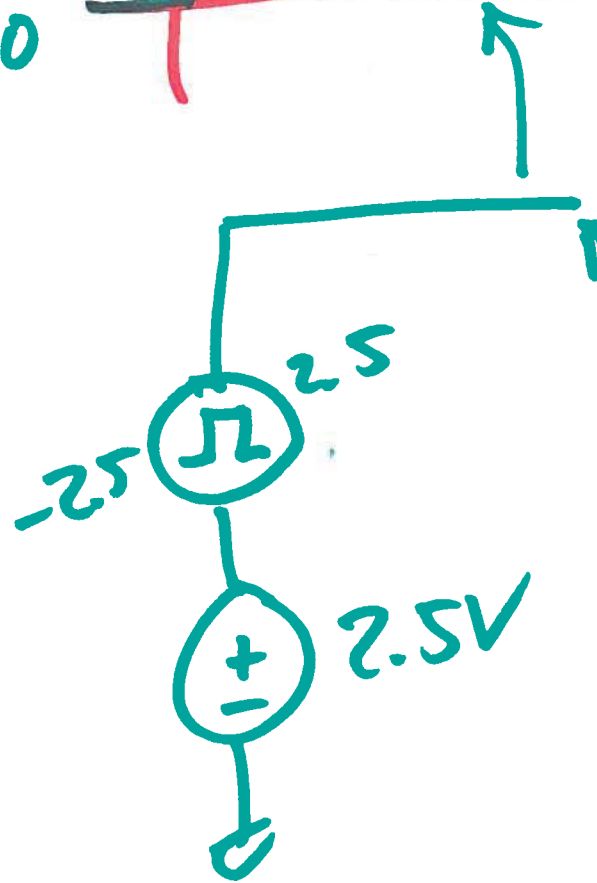
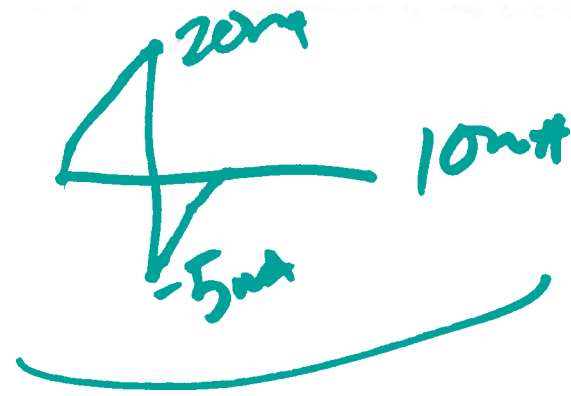
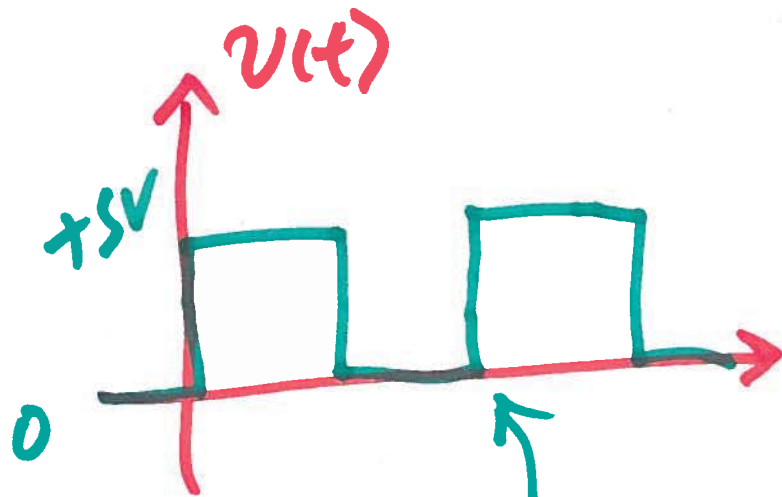


$$V_{rms} = \sqrt{\frac{1}{T} \int_0^T v^2(t) \cdot dt}$$

$$= \sqrt{\frac{1}{T} \int_0^T 6.25 v^2 \cdot dt}$$

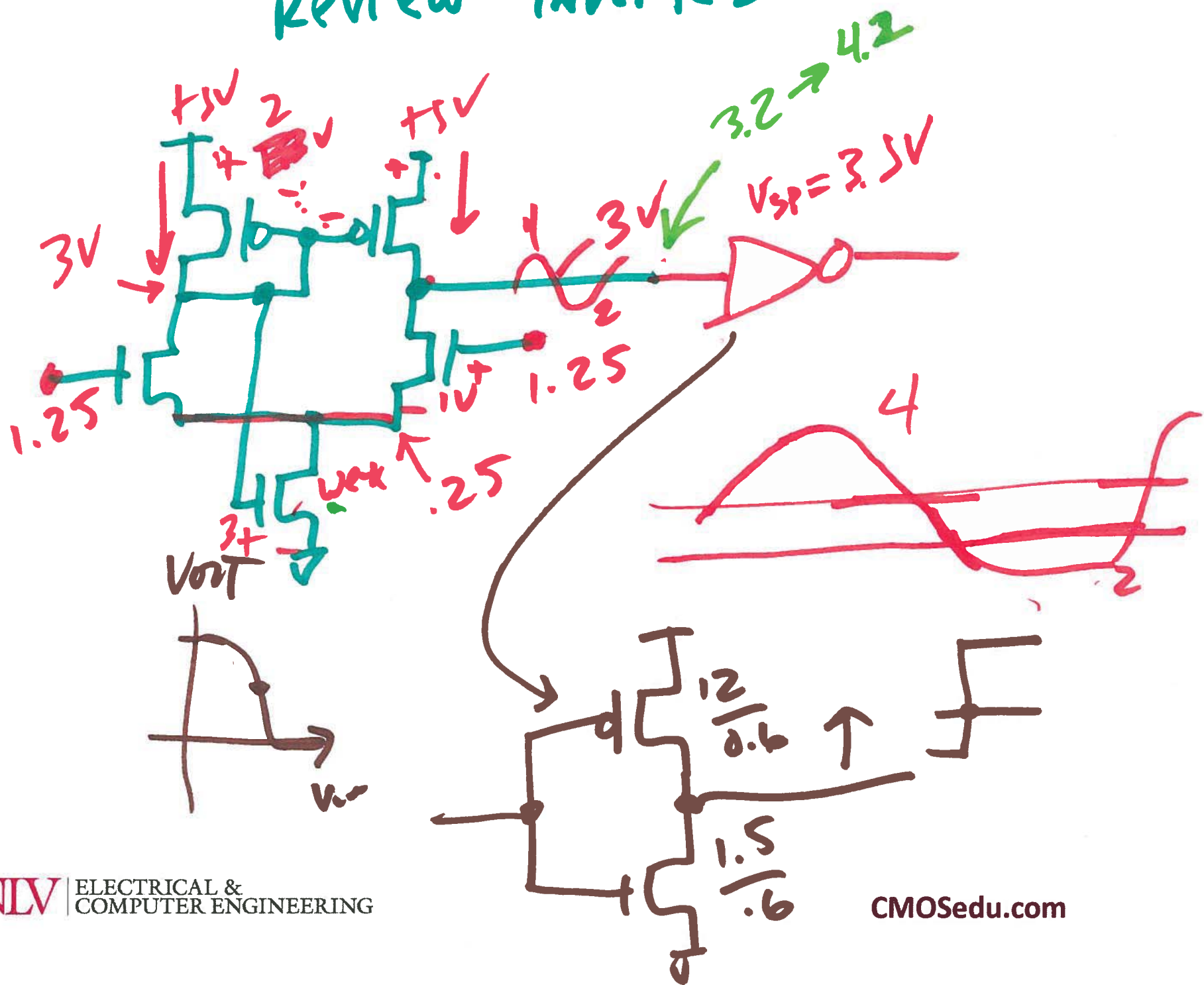
$$= 2.5V$$

1)

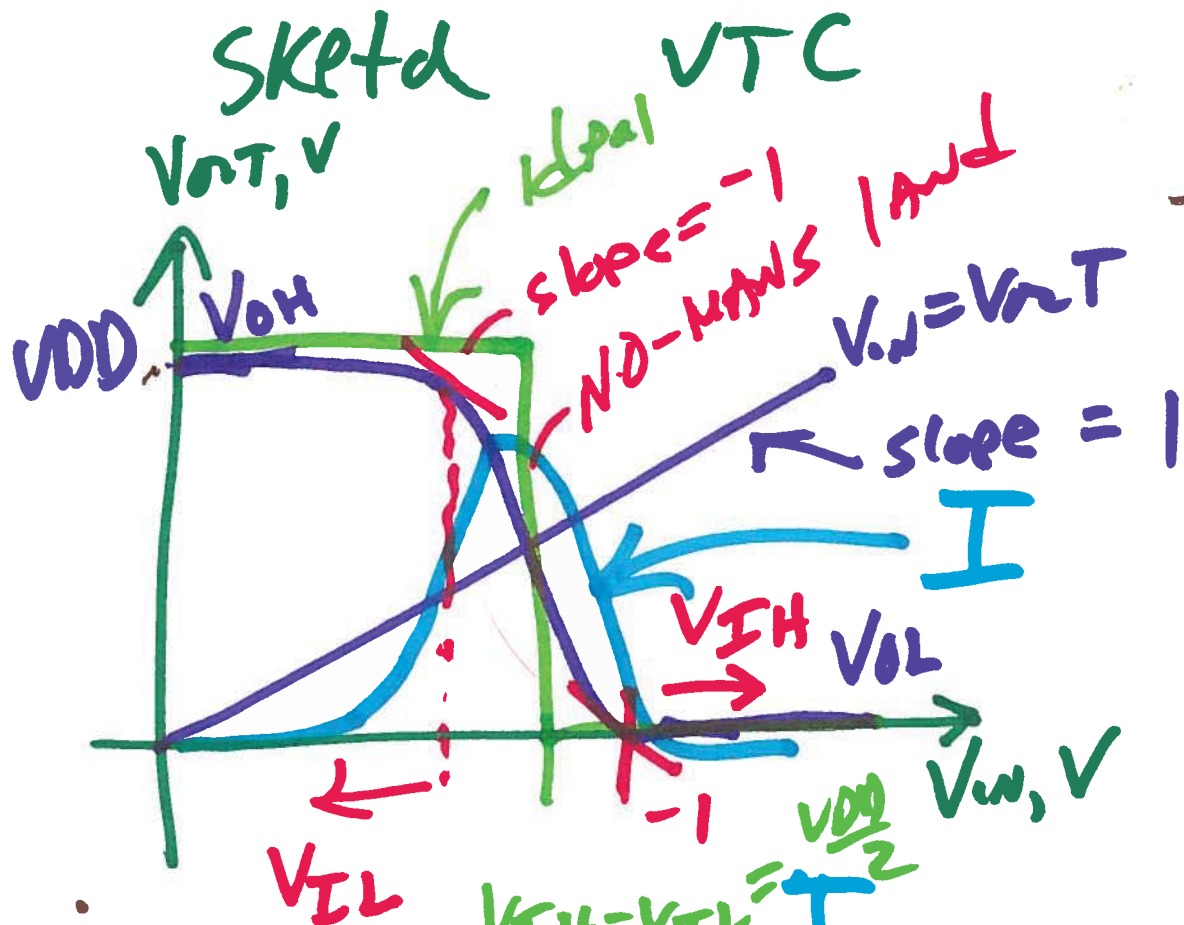


$$\begin{aligned}
 R_{ms} &= \sqrt{(2.5)^2 + (2.5)^2} \\
 &= \sqrt{2 \cdot (2.5)^2} \\
 &= \sqrt{2} \cdot \{2.5\}
 \end{aligned}$$

# Review inverters



3)

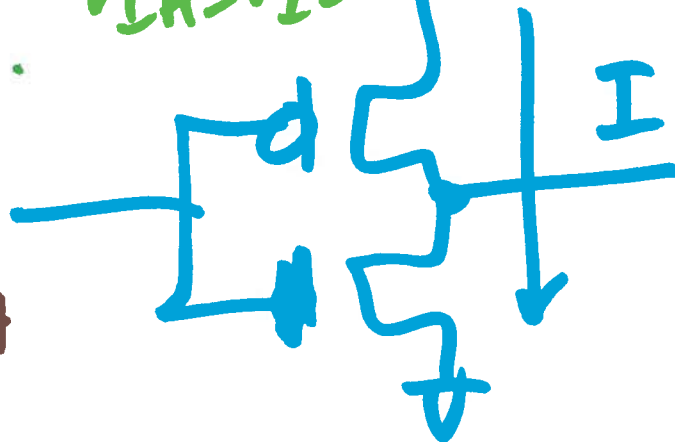


Noise MARGINS

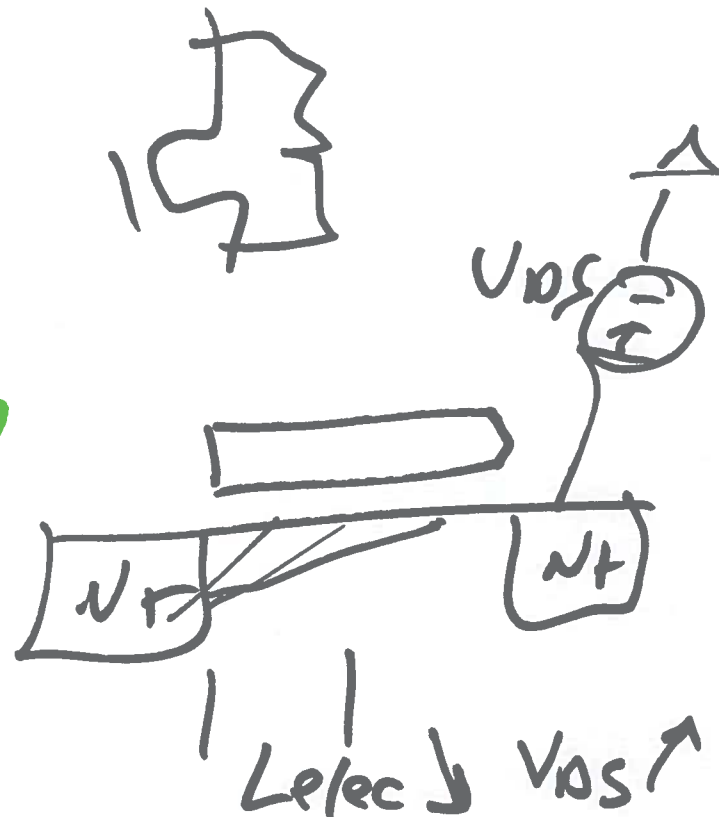
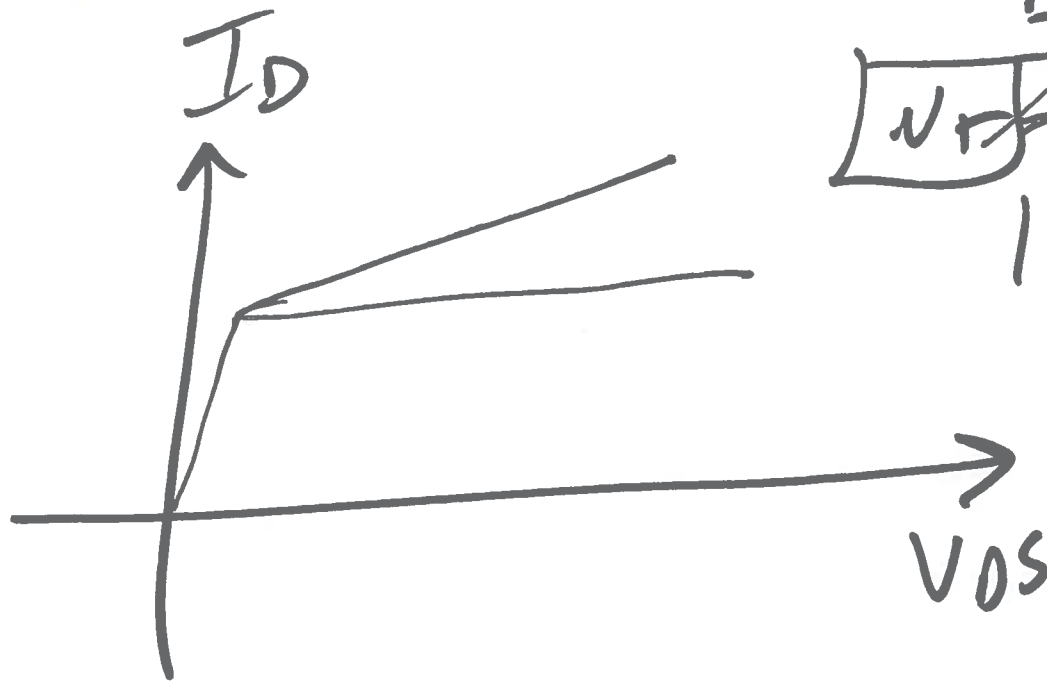
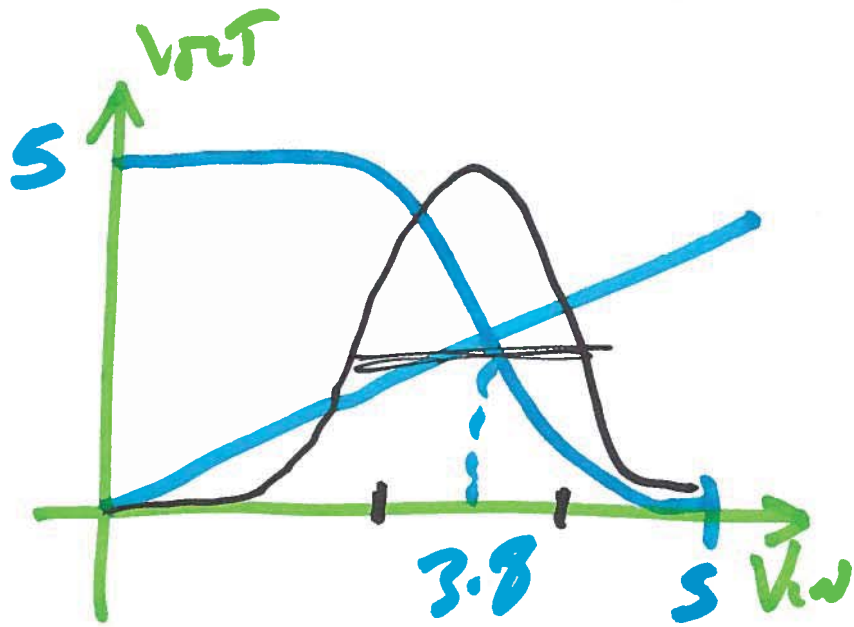
$$NM_L = V_{IL} - V_{OL}$$

$$NM_H = V_{OH} - V_{IH}$$

$$V_{IH} = V_{IL} = \frac{V_{DD}}{2}$$

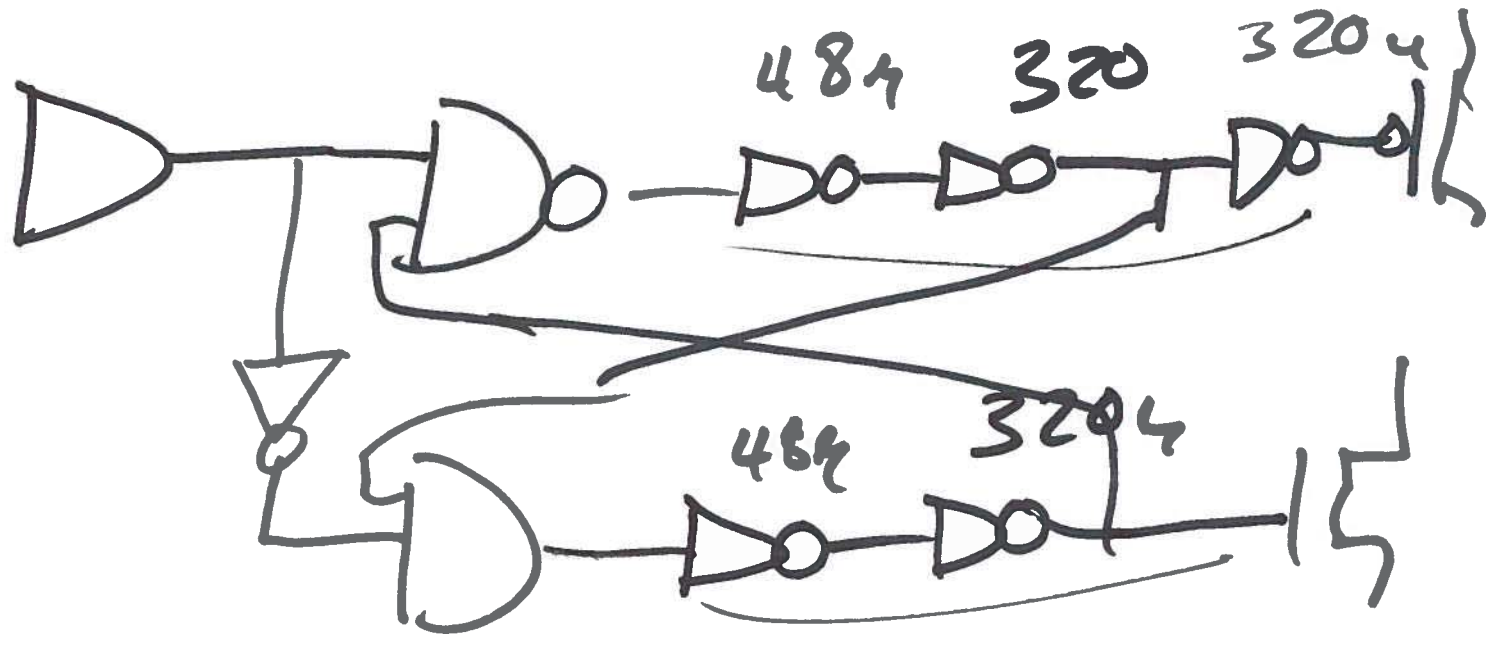


4)



$$I_D = \frac{K' \omega}{2} \frac{(V_{GS})^2}{L_{elec}}$$

5)



6)