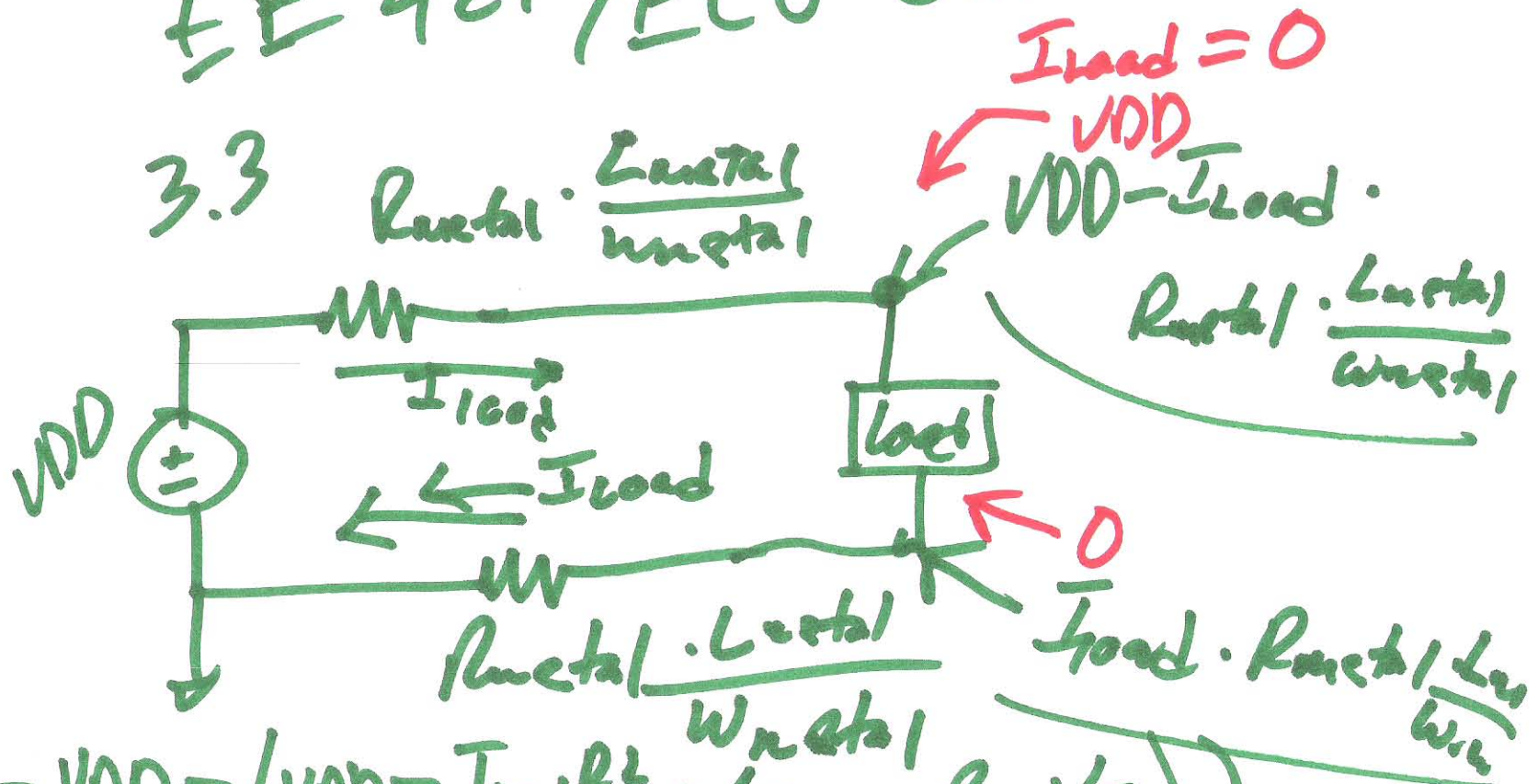


Lecture 7

Sept. 16, 2015

EE 421 / ECG 621

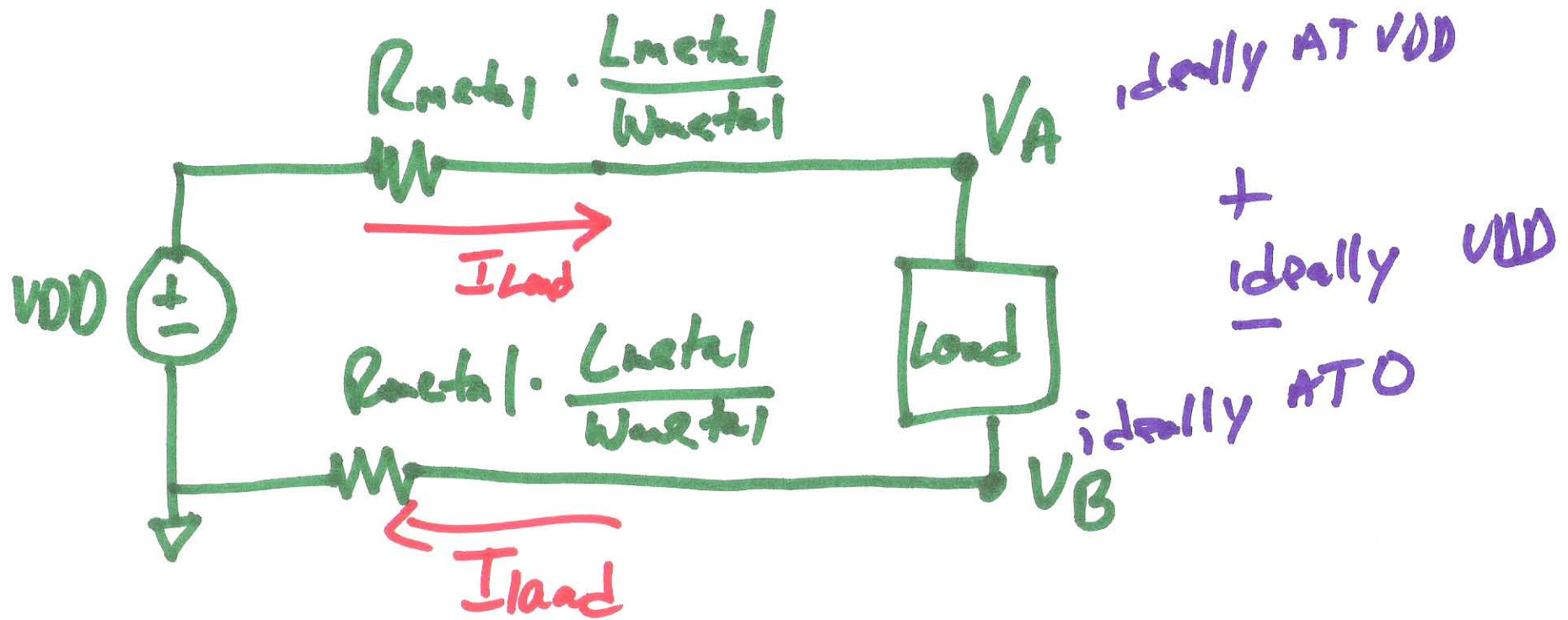
3.3 $R_{\text{metal}} \cdot \frac{L_{\text{metal}}}{W_{\text{metal}}}$



$$\Delta V_{\text{OD}} = V_{\text{DD}} - \left(V_{\text{DD}} - I_{\text{load}} \frac{R_{\text{metal}} L_{\text{metal}}}{W_{\text{metal}}} - \left(I_{\text{load}} \cdot R_{\text{metal}} \frac{L_{\text{metal}}}{W_{\text{metal}}} \right) \right)$$

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1) $\Delta V_{\text{OD}} = 0$



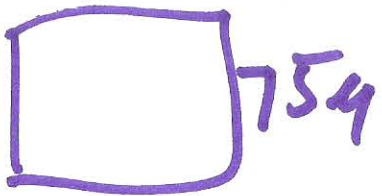
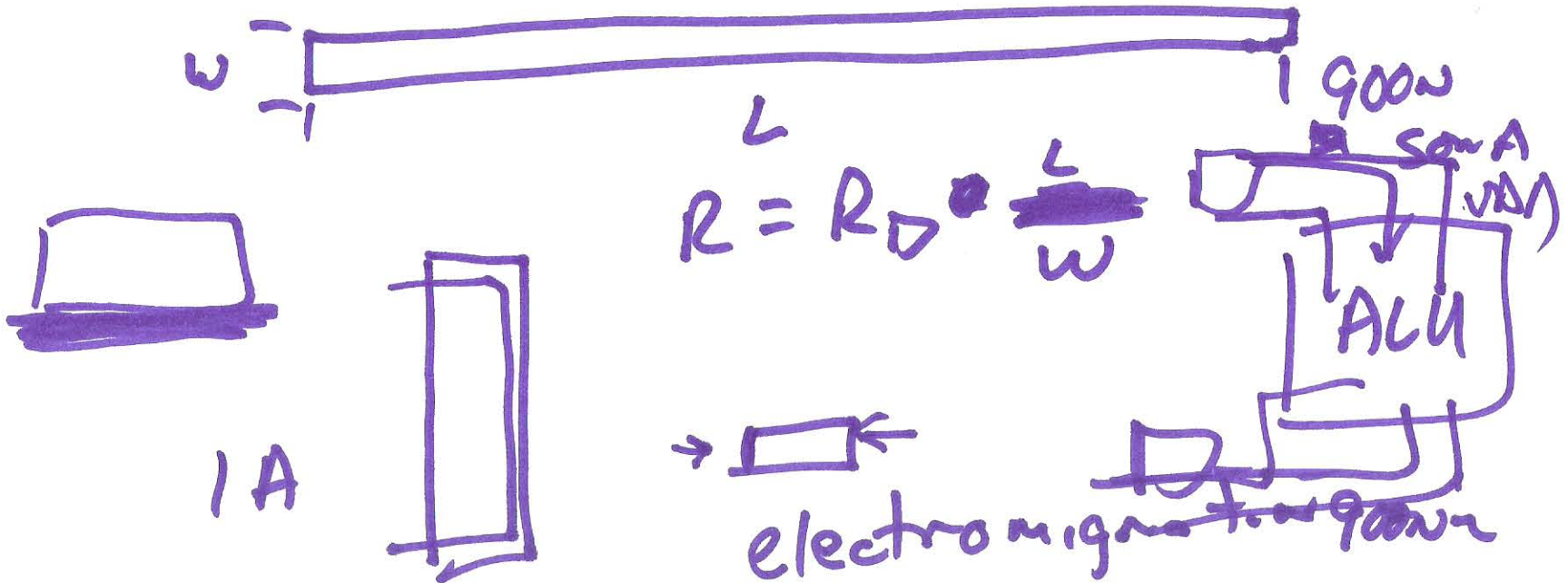
$$V_A = VDD - I_{\text{Load}} \cdot R_{\text{metal}} \cdot \frac{L_{\text{metal}}}{W_{\text{metal}}}$$

$$V_B = I_{\text{Load}} \cdot R_{\text{metal}} \cdot \frac{L_{\text{metal}}}{W_{\text{metal}}}$$

$$\text{Actual } V_A - V_B = VDD - \underbrace{2 I_{\text{Load}} \cdot R_{\text{metal}} \cdot \frac{L_{\text{metal}}}{W_{\text{metal}}}}_{\Delta VDD}$$

$$VDD - \Delta VDD \eta$$

2)



$$754 \cdot \frac{1 \mu A}{4 \mu m} = 75 \mu A$$

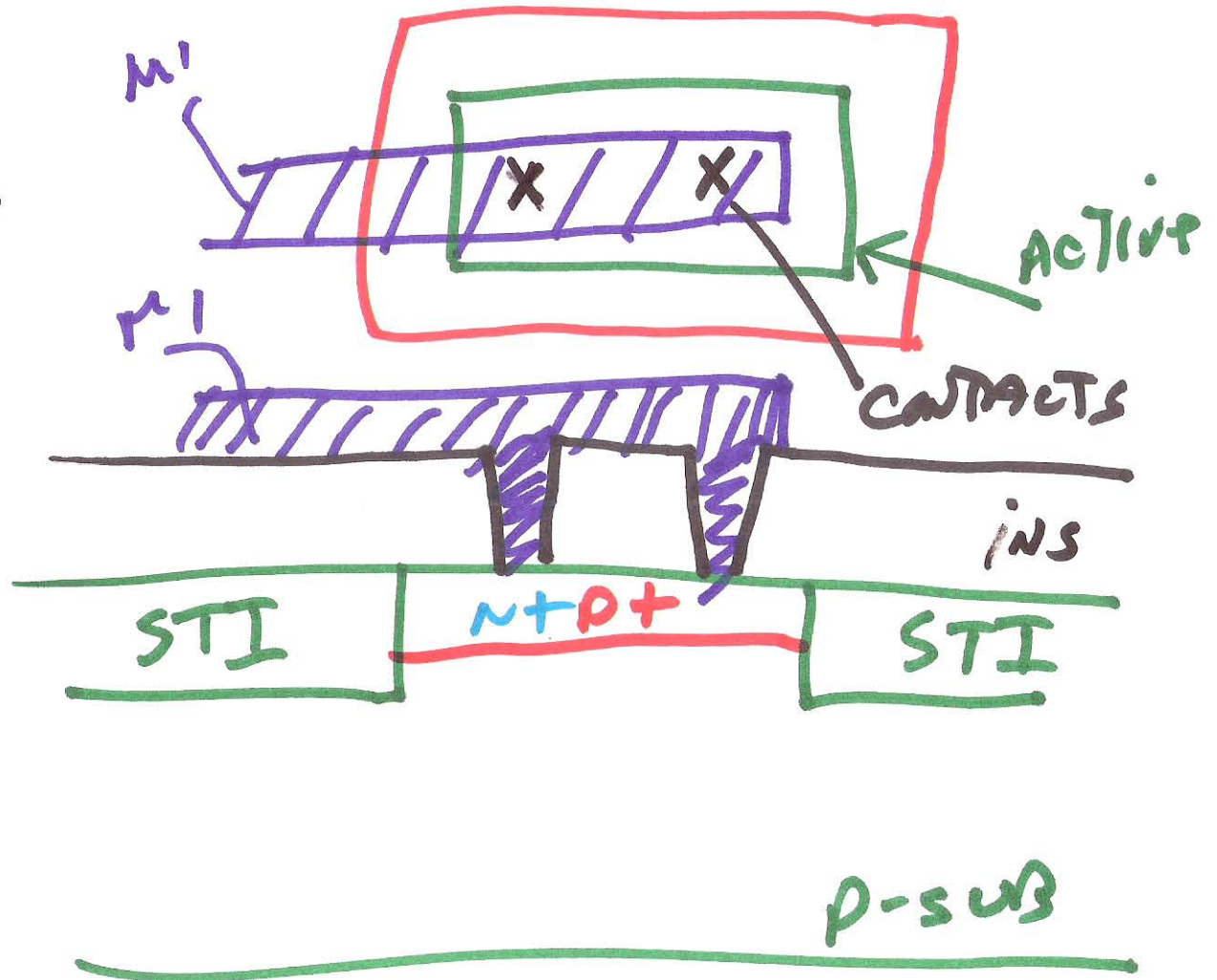
$$J_{Al} = \frac{1 \mu A}{4 \mu m}$$

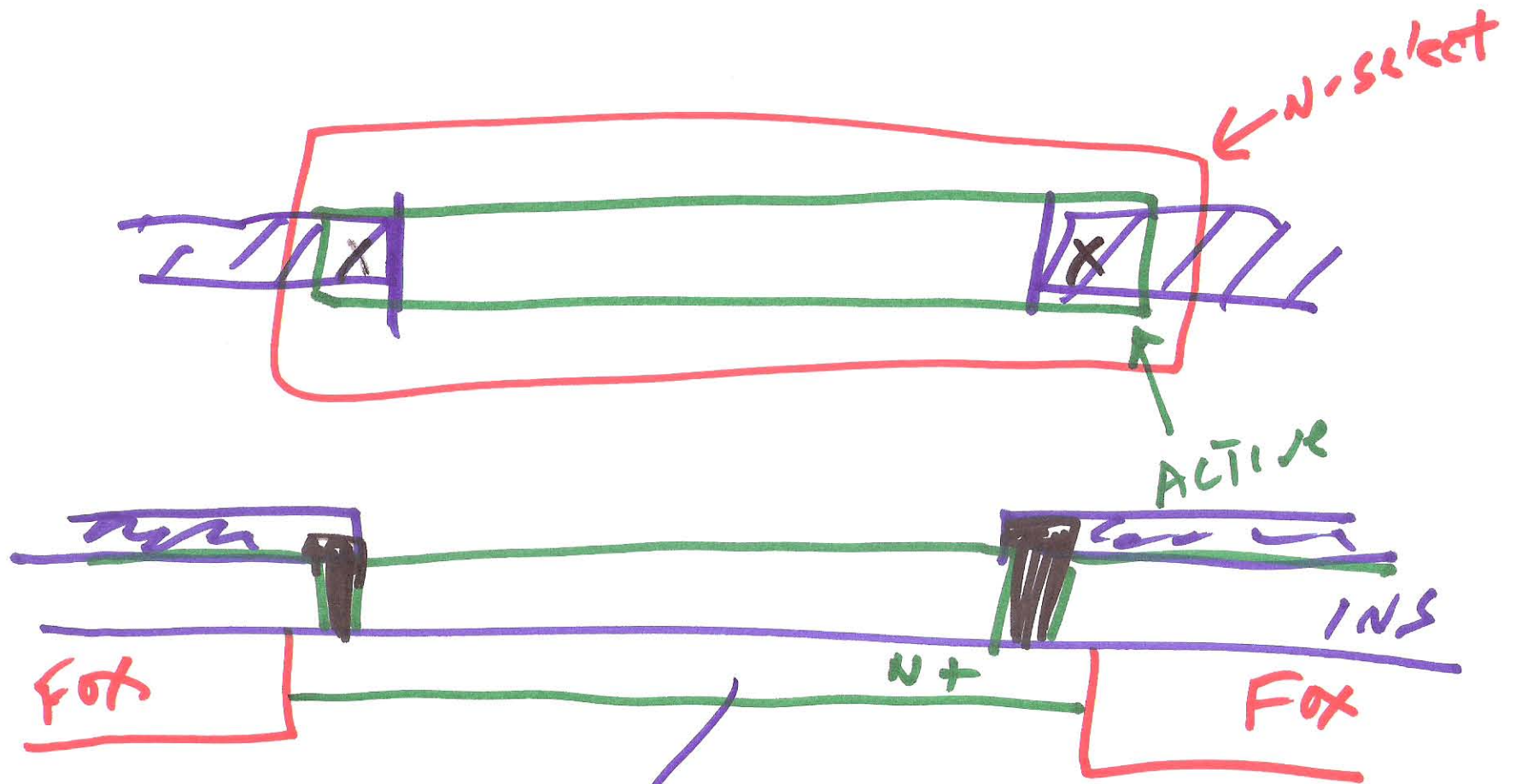


3)

N-well
 Metal 3
 Glass
 Pad
 Metal 2
 VIA 2
 Metal 1
 VIA

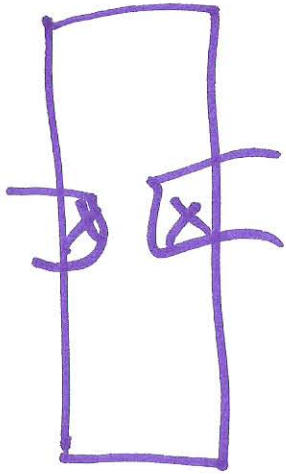
Active layer
 N-select
 P-select



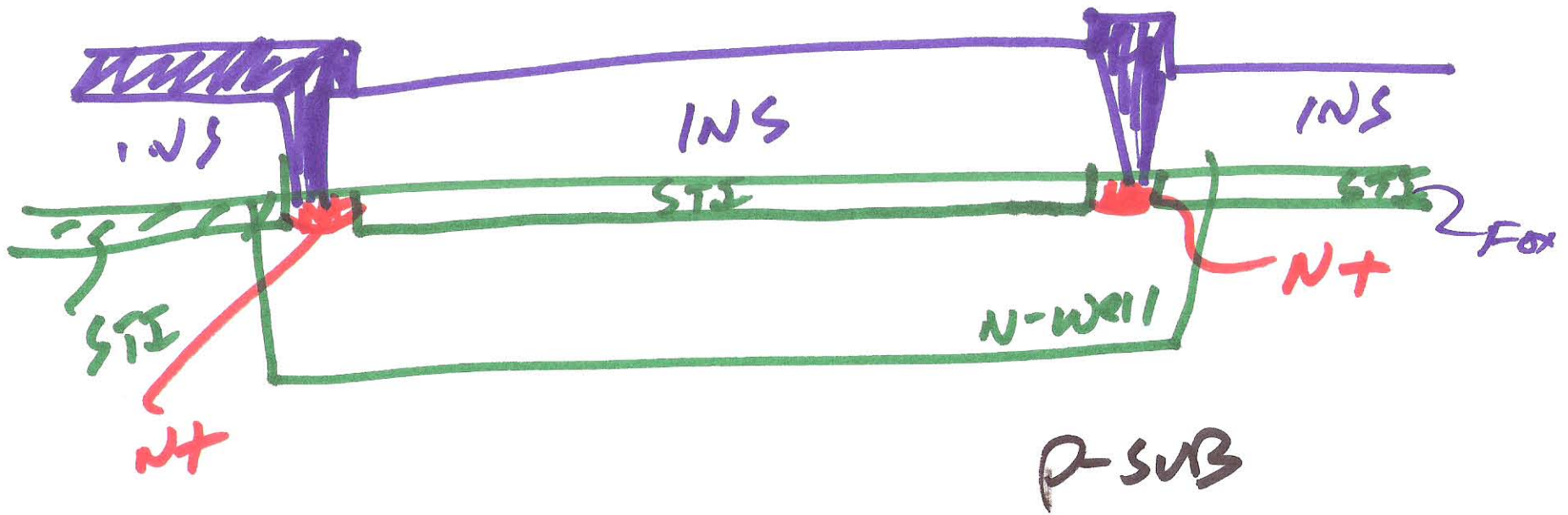
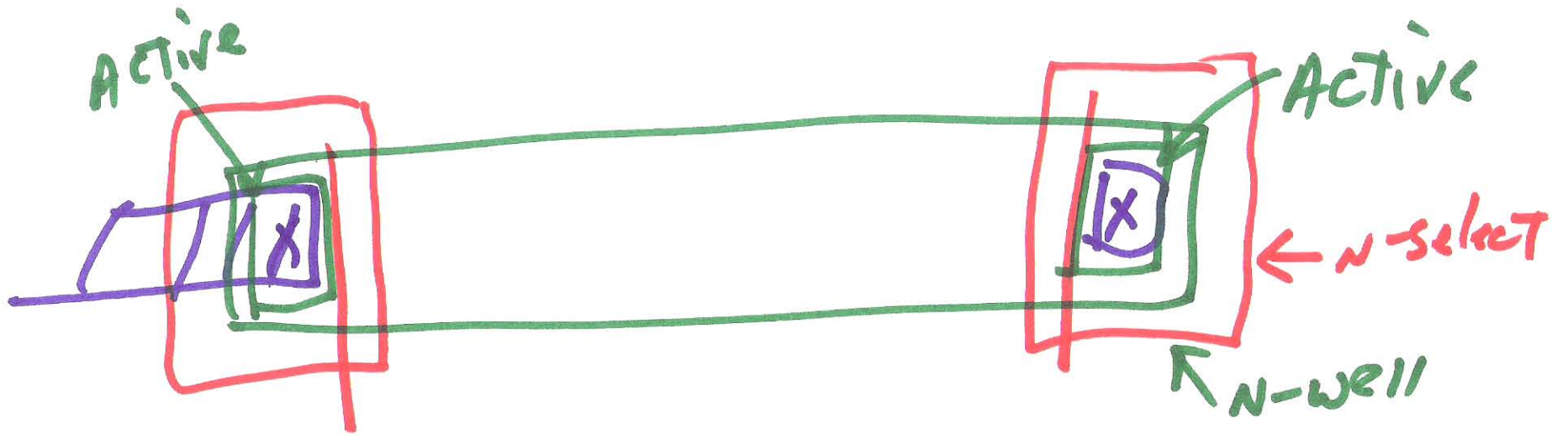


$$R_{ext} \approx 50 \frac{\Omega}{\square}$$

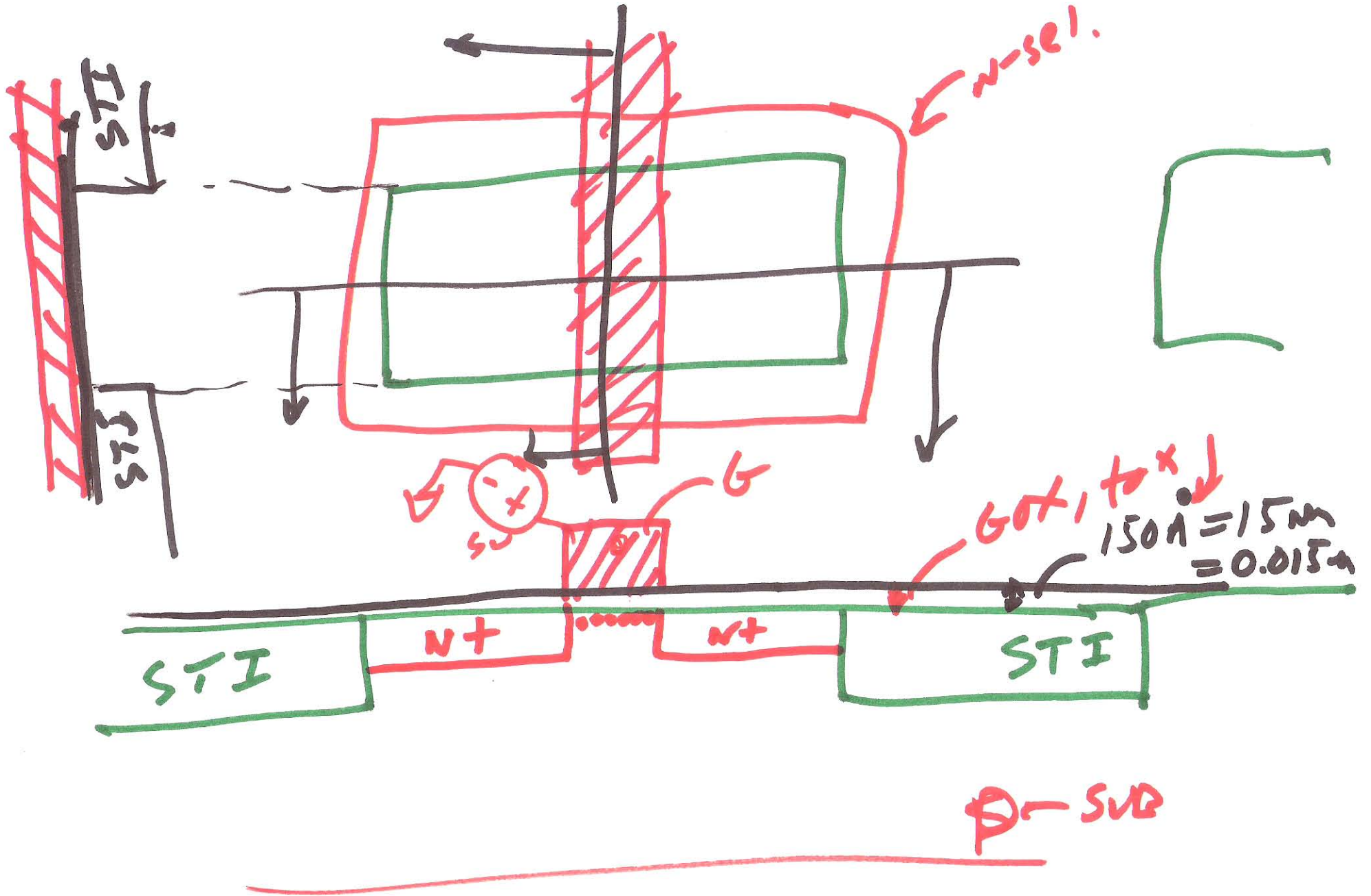
200



5)



61



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