

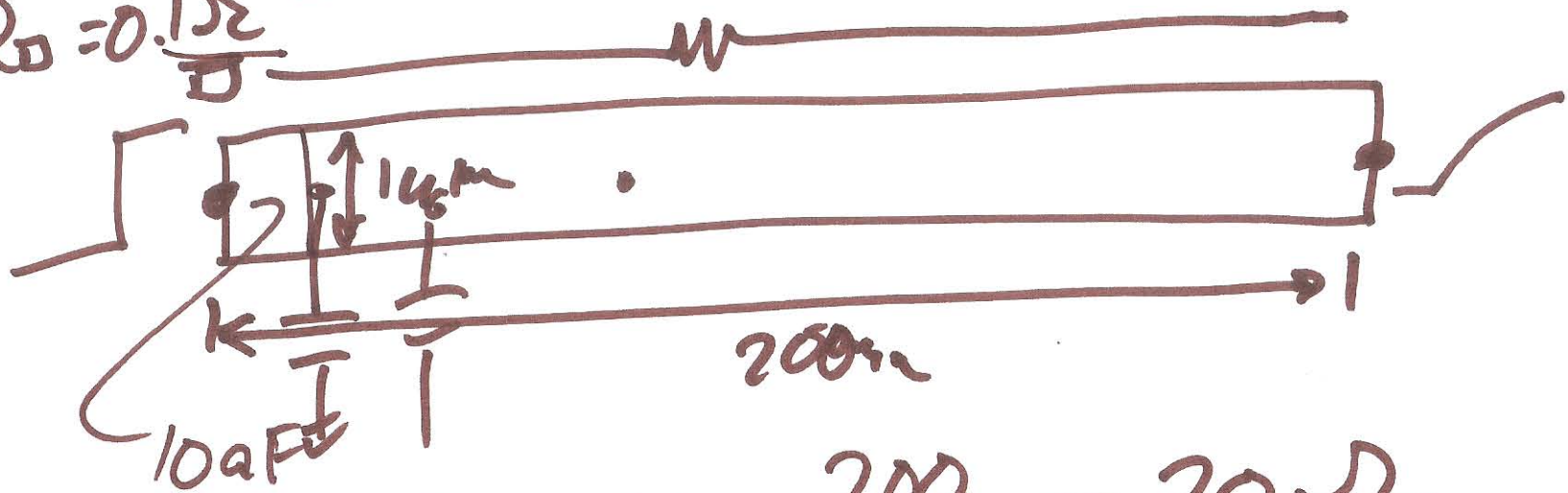
EE421/ELG621

Lecture 6, Sept. 14, 2015

Ch. 3 Metal layers

$0.35 \cdot 0.1 \cdot 200$
200pF

$R_D = 0.1 \Omega$

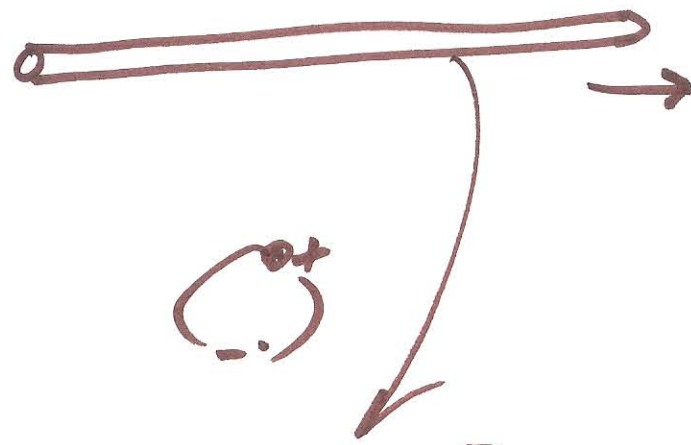


$$R = 0.1 \cdot \frac{200}{1} = \underline{\underline{20 \Omega}}$$

$$t_d = 0.35 \cdot 0.1 \cdot 200 \cdot 10 \text{ nF} \cdot 200$$

$$t_d = 0.35 r c \cdot l^2$$

$l = \# \text{ squares}$

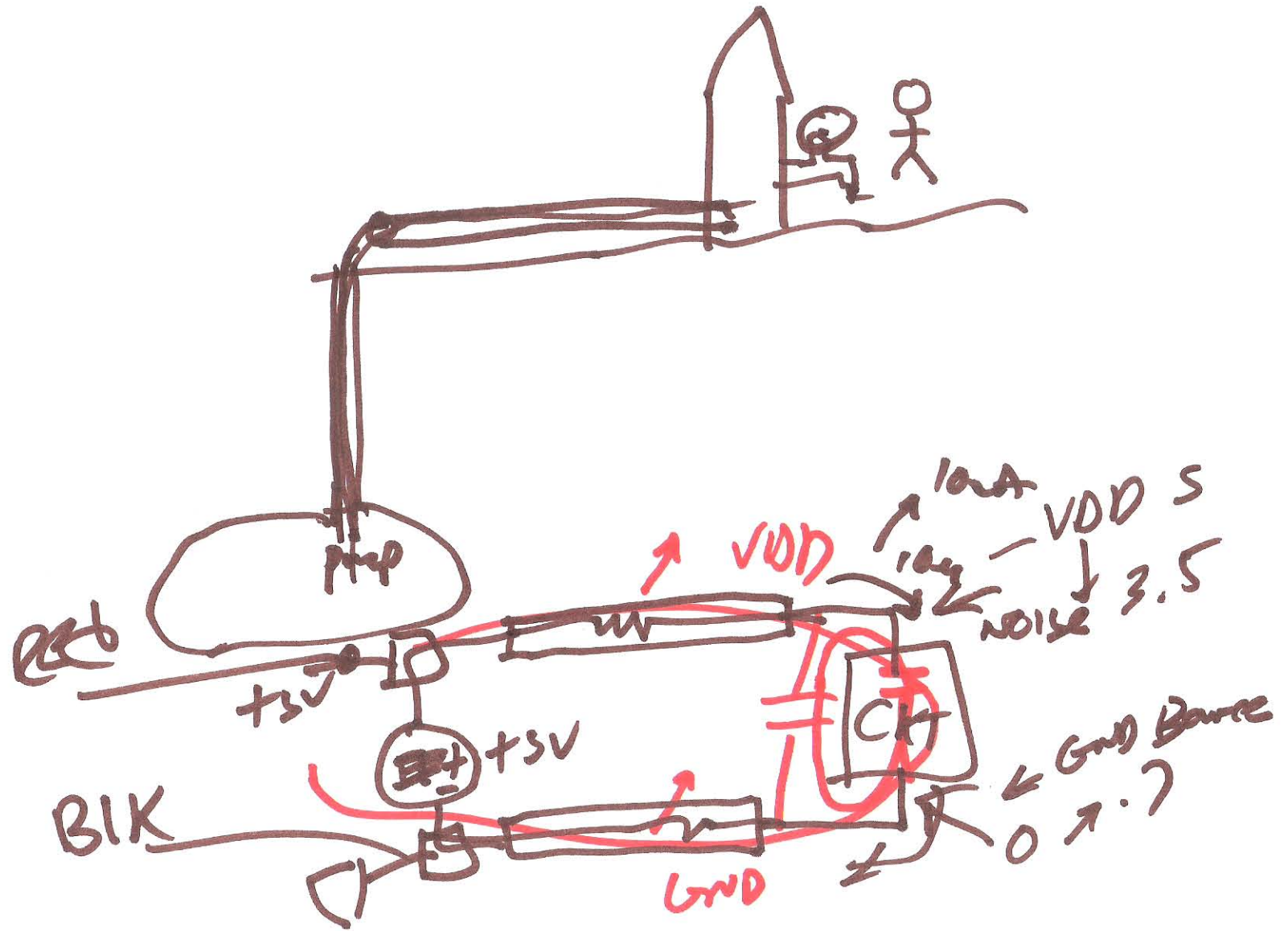


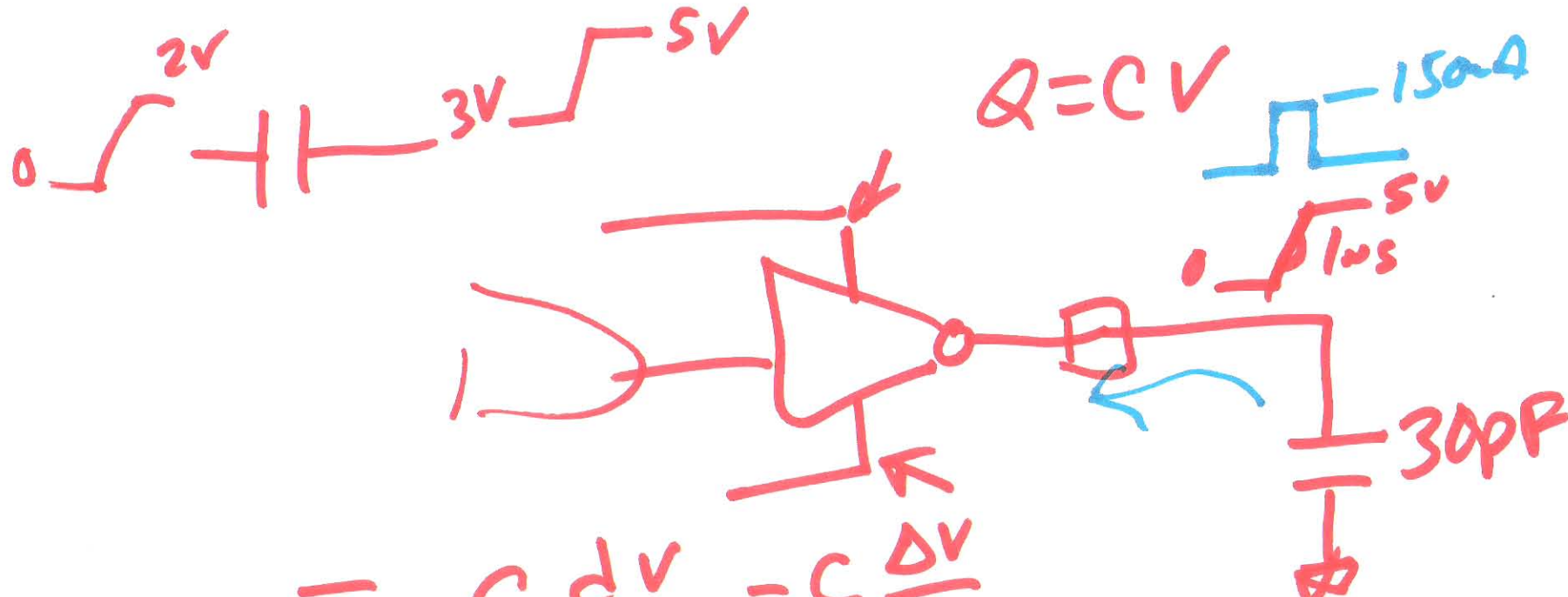
$$c = 3 \times 10^8 \text{ m/s}$$

VACUUM

$$\epsilon_{si} = 11.7$$

$$\frac{3 \times 10^8}{11.7}$$





$$I = C \frac{dv}{dt} = C \frac{\Delta V}{\Delta t}$$

$$Q = 30pF \cdot 5 = 150pc$$

$$I = 30pF \cdot \frac{5}{1ns}$$

$$I = \underline{\underline{150\mu A}}$$

$$I = \frac{150pc}{1ns} =$$

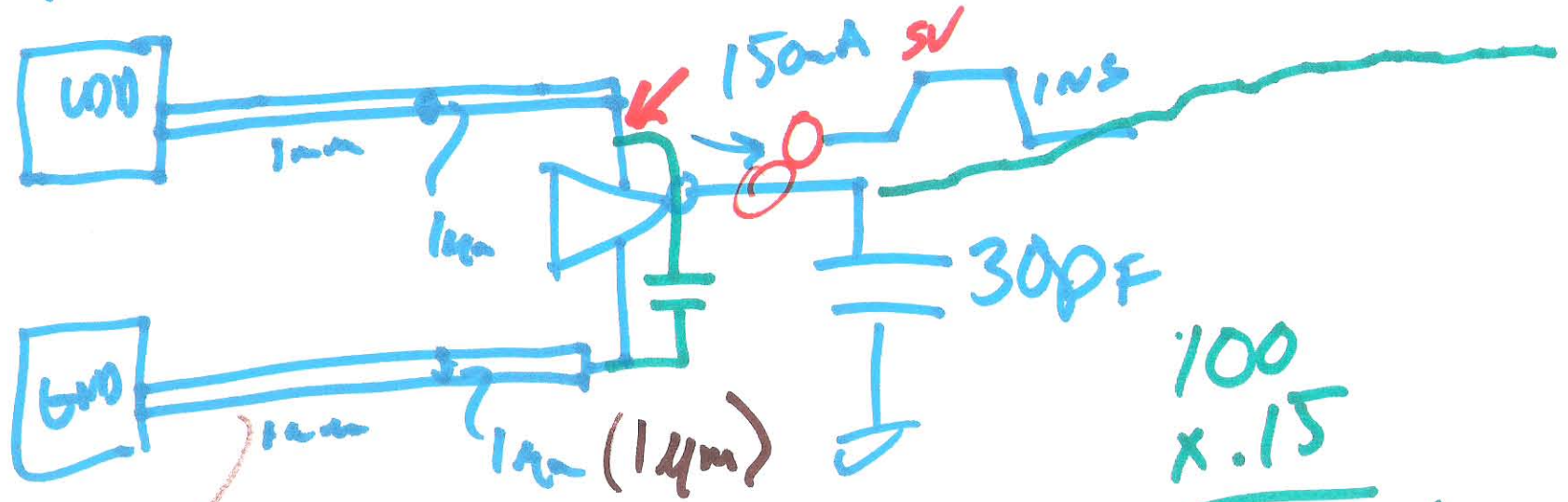
$$\frac{150 \times 10^{-12}}{1 \cdot 10^{-9}}$$

$$= 150 \times 10^{-3}$$

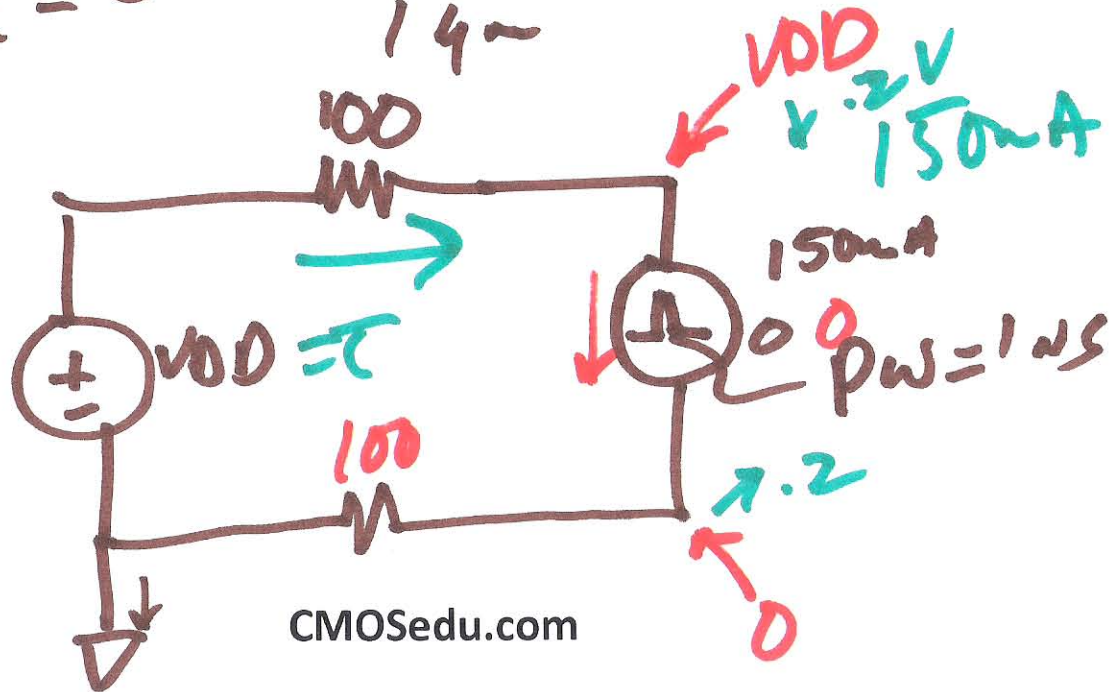
$$= 150\mu A$$

4)

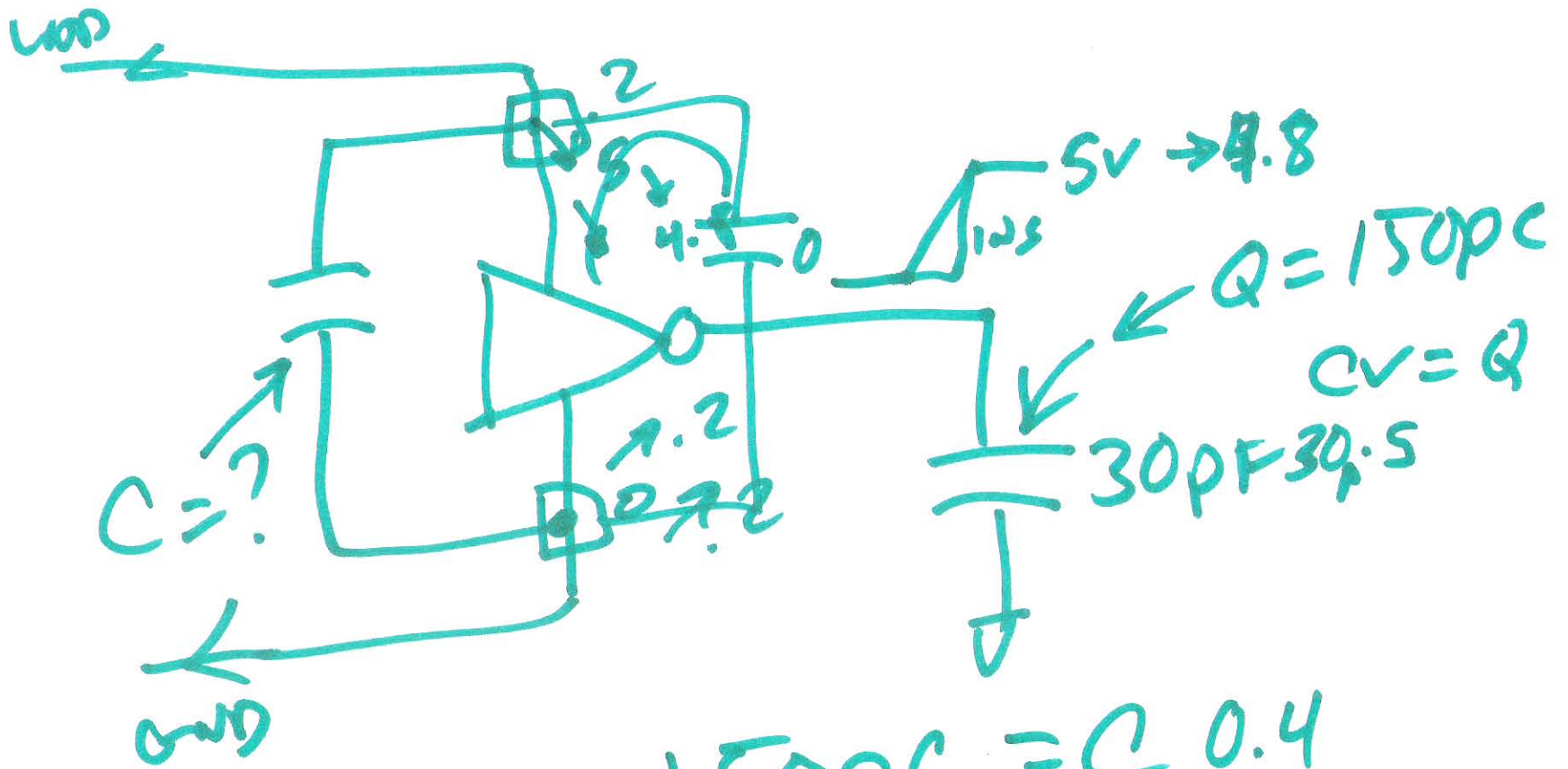
$$R_D = 0.15 \Omega/\mu\text{m}$$



$$R = 0.1 \cdot \frac{1,000 \mu\text{m}}{1.4 \mu\text{m}} = 100 \Omega \quad 15 \text{V}$$



5)



$$150\text{ pC} = C \cdot 0.4$$

$$C = \frac{1500\text{ pF}}{4}$$

$$C \approx \underline{\underline{375\text{ pF}}}$$