

EE 421 / ECG 621

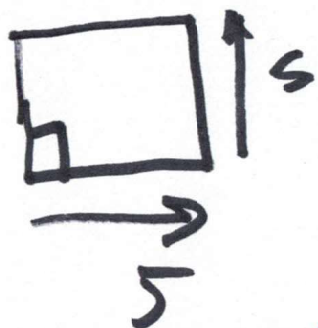
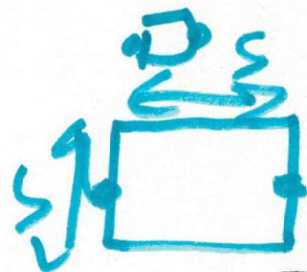
200.5k

# Digital IC Design

$$t_d = 0.35 \cdot 1MEV \cdot 200.125fF$$

9/9 / 2020

## Lecture 5



$$R = 250k = R_{\square} \cdot \frac{500}{10} \rightarrow R_{\square} = \frac{250k}{50}$$

$$\frac{5fF}{10 \times 10} = \frac{125fF}{50 \times 50}$$

5fF  $\rightarrow$  10 x 10 square

$$R_{\square} = 5k/\square$$

$$= \frac{125fF}{5 \times 10 \times 5 \times 10} \quad 10 \rightarrow 50 \times 5$$

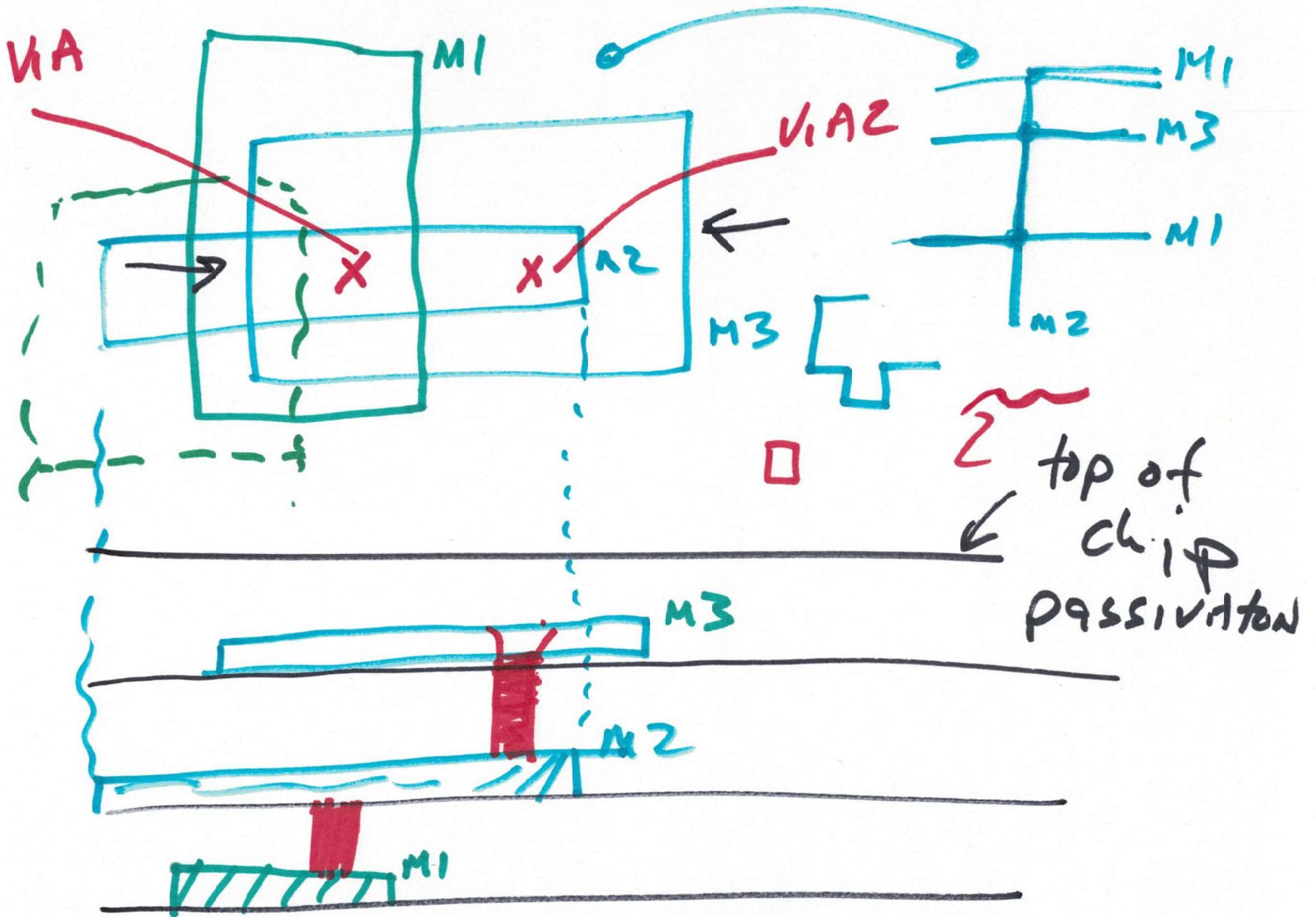
Resistance stays

1M $\Omega$

$$50 \times 50 \rightarrow 125fF$$

$$t_d = 0.35 \cdot 5k \cdot 125fF \cdot 200 \cdot 200$$

1)

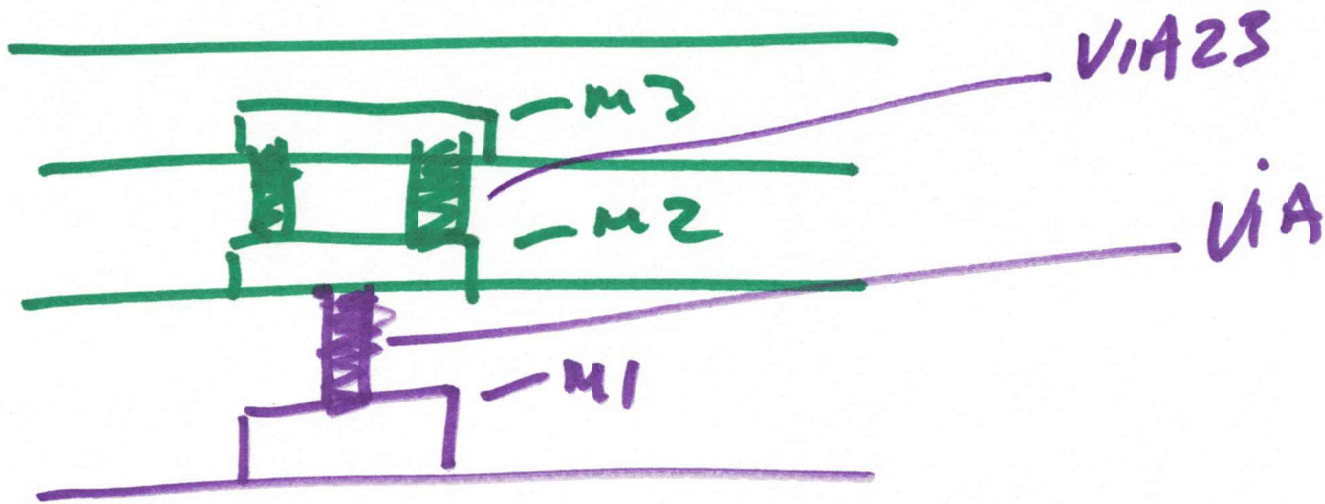
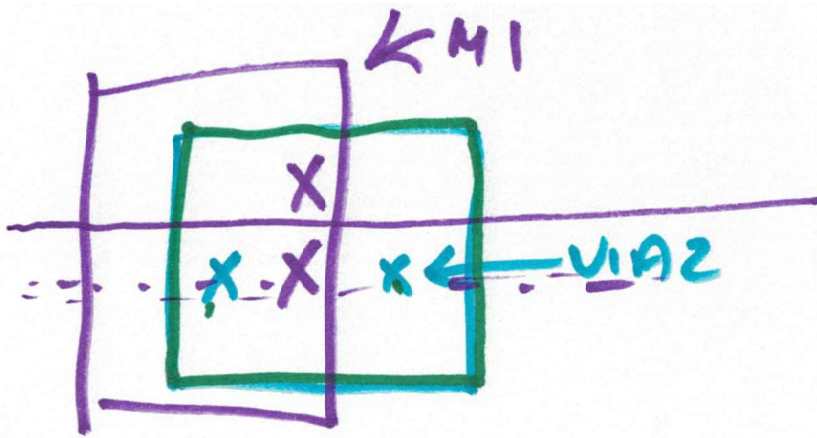


2)

for 1703/1

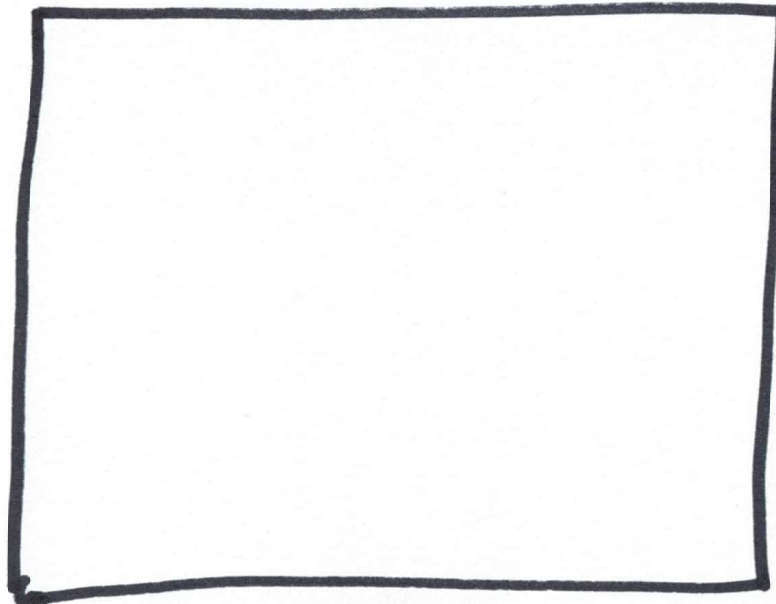
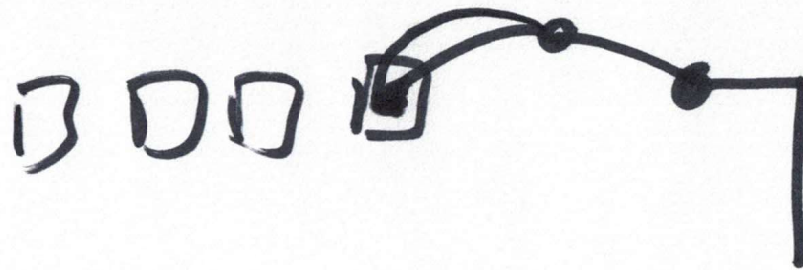
D-5UB





3)

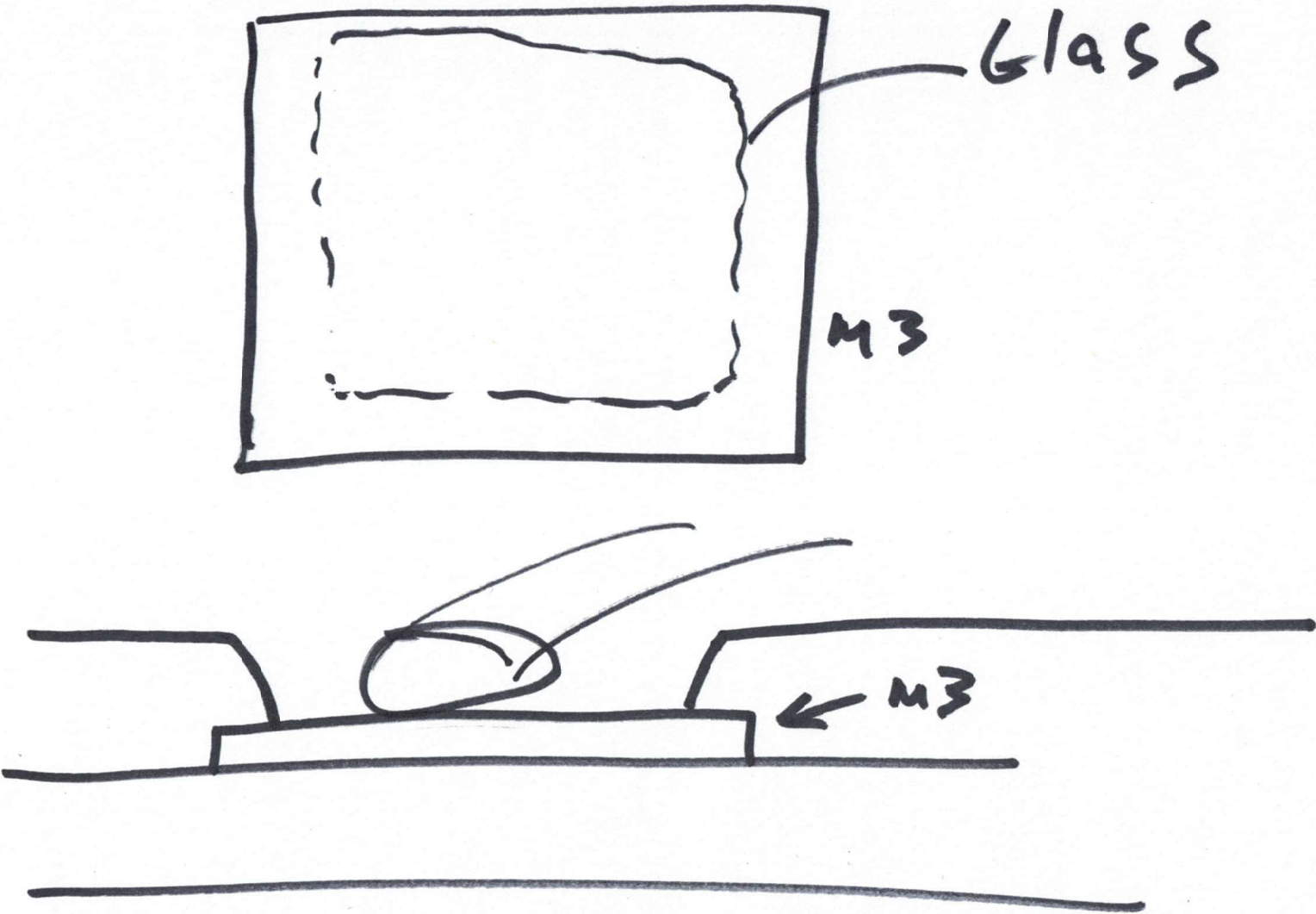
Bond Pad



754

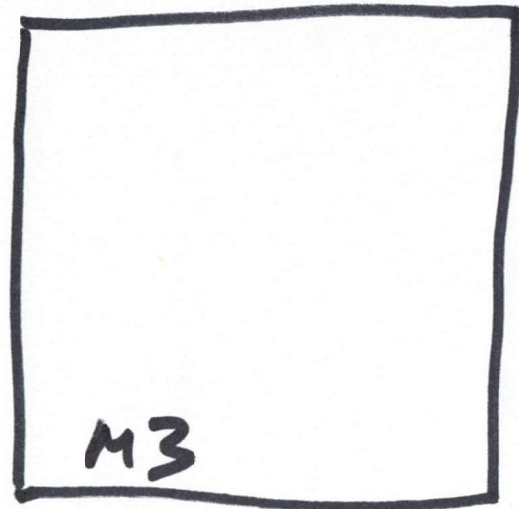
754

4)

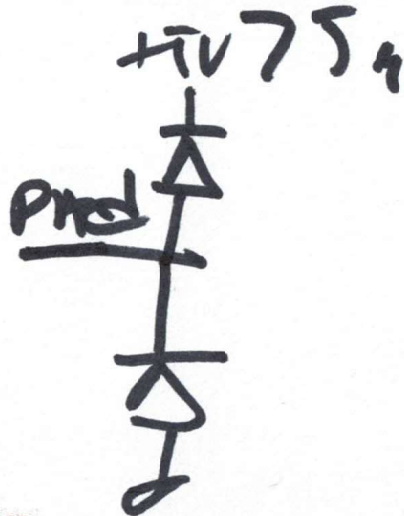
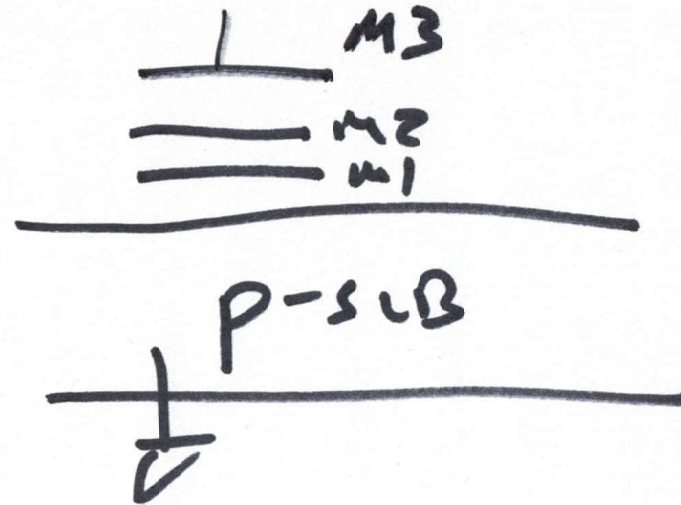


5)

$$C_p = 50 \text{ fF}/\mu\text{m}^2 \quad C_f = 100 \text{ aF}/\mu\text{m}$$



75 $\mu$



$$C_{\text{pad}} = 75\mu \times 75\mu \times \frac{50 \text{ fF}}{\mu^2}$$

$$+ 4.75\mu \cdot 100 \text{ aF}/\mu$$

$$= 250 \text{ fF}$$

b)