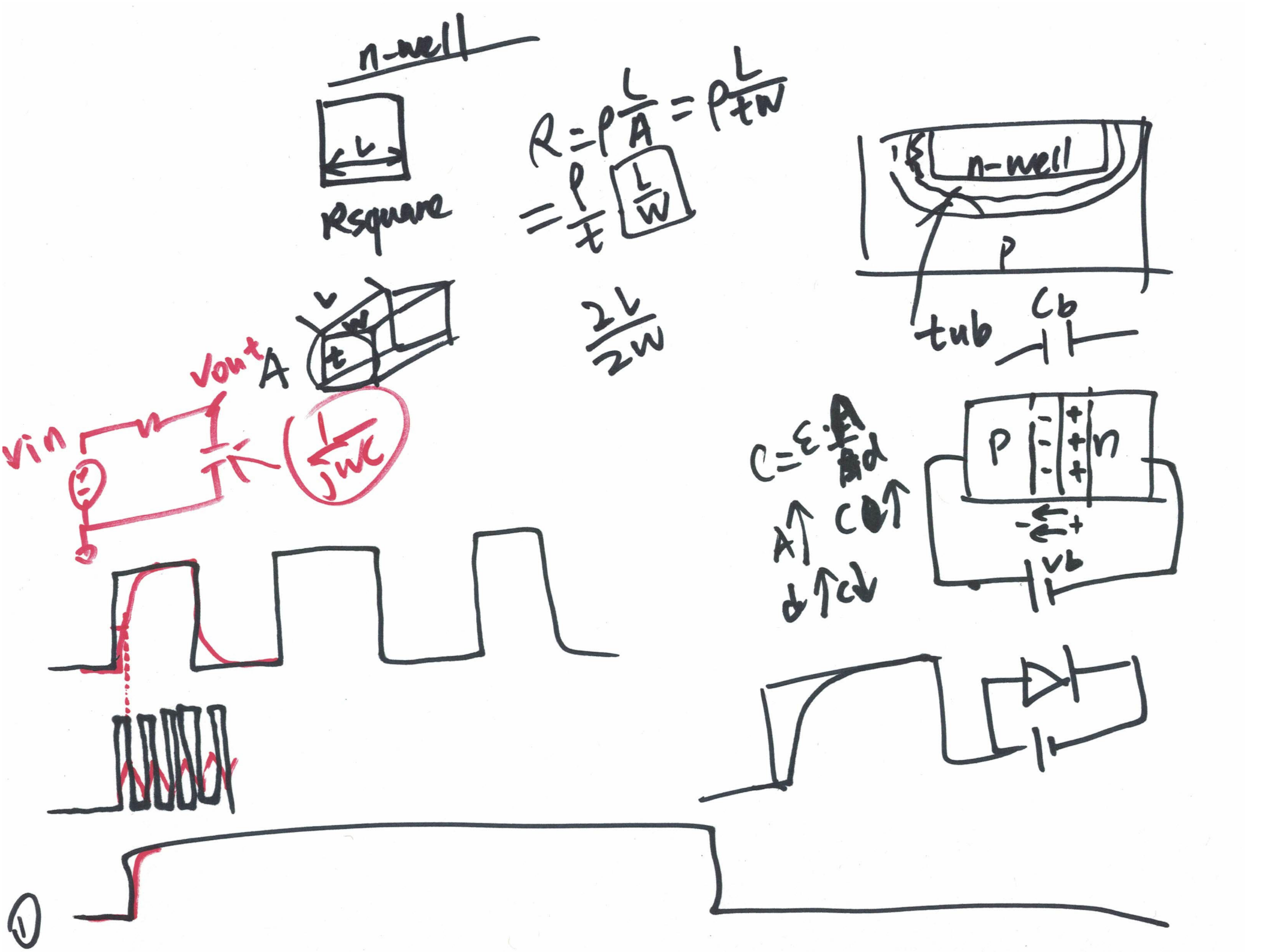
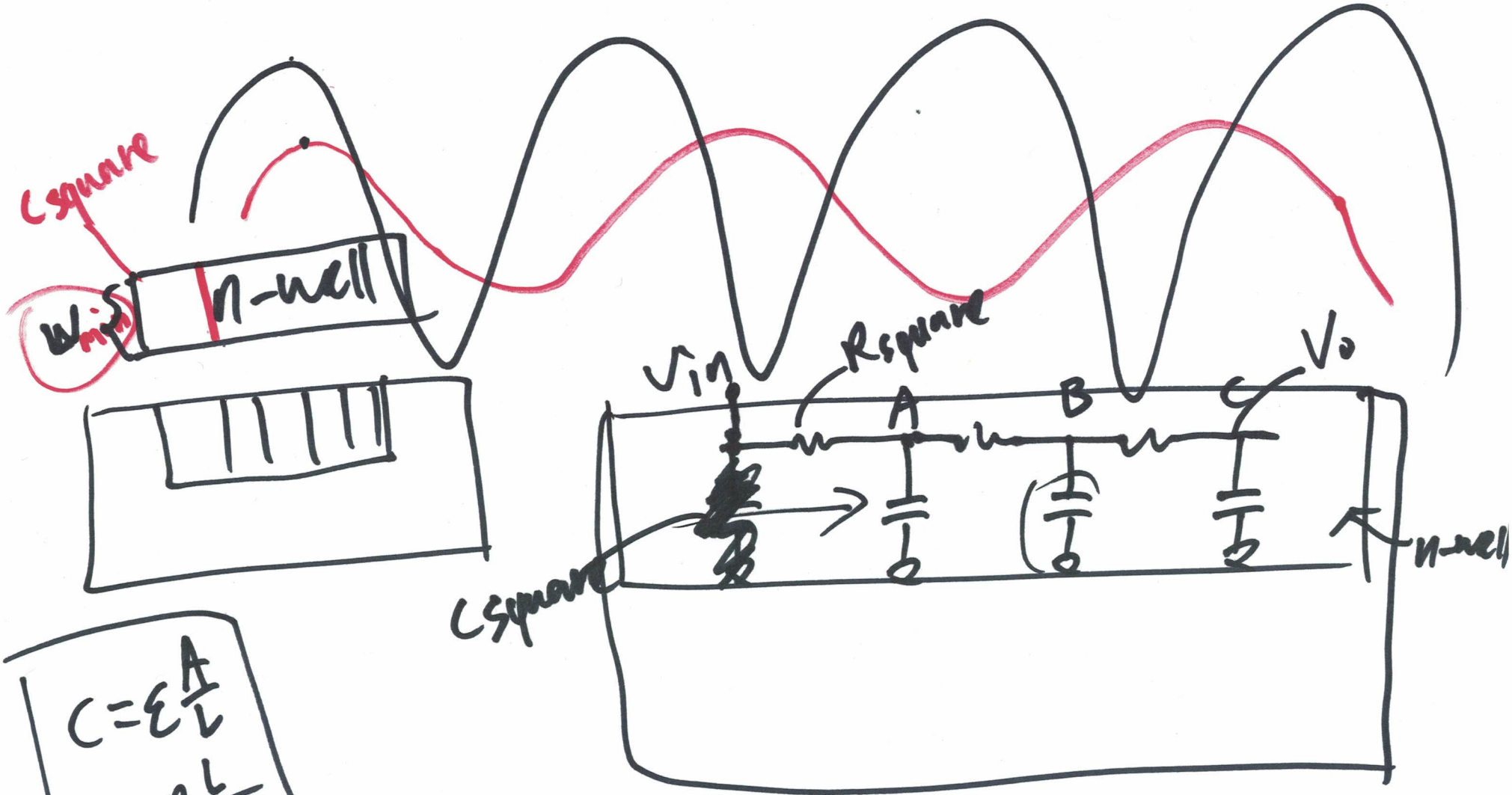

n-well
L
Rsquare
$R = \rho \frac{L}{A} = \rho \frac{L}{tW}$
$= \frac{\rho}{t} \left[\frac{L}{W}\right]$
$\frac{2L}{2W}$
n-well
p
tub
Cb
V
W
t
A
Vout
Vin
$\frac{1}{j\omega C}$
$C = \varepsilon \frac{A}{d}$
A ↑ C ↑
d ↑ C ↓
p
n
Vb



$$C = \varepsilon \frac{A}{L}$$

$$R = \rho \frac{L}{A}$$

$$\begin{cases} t_{dA} = \underline{0.7\, R_{square}\, C_{square}} \\ t_{dB} = 0.7\, \underline{2} \cdot R_{square}\, C_{square} \\ t_{dC} = 0.7 \cdot \underline{3} \cdot R_{square} \cdot C_{square} \end{cases}$$

$$T_d = t_{dA} + t_{dB} + t_{dC}$$

(2)

L squares. T_d?

$$T_d = 0.7 R_{square} C_{square} (1+2+3\cdots+L)$$

$$= 0.7 R_{square} C_{square} \frac{L(1+L)}{2} \qquad L \approx 1+L$$

$$= 0.7 R_{square} C_{square} \frac{L^2}{2} = \boxed{0.35 \cdot L^2 \cdot R_{square} C_{square}}$$

Example: Estimate the time delay through a 250kΩ n-well resistor, W=10, L=500, Assume the cap of a 10 by 10 square is 5fF.

$$L = \frac{500}{10} = 50 \qquad R_{square} = \frac{250k}{50} = 5k\Omega$$

$C_{square} = 5fF$

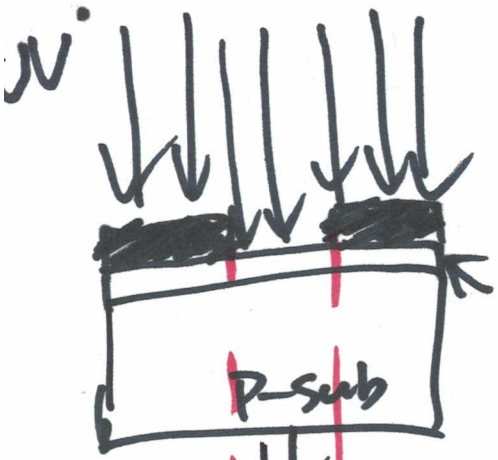
what if 5 by 5 is 5fF $\quad C_{sqrnre} = 20fF$

$C = \varepsilon \frac{A}{d}$

Photoresist

positive negative

FOX



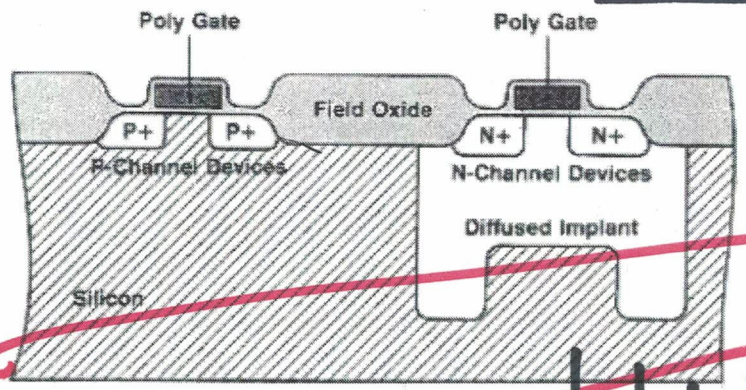


Fig. 3. *After the P+ and N+ diffusions, more oxide is deposited over the P-channel and N-channel devices.*

stripper

M1

developer

M1

photoresist

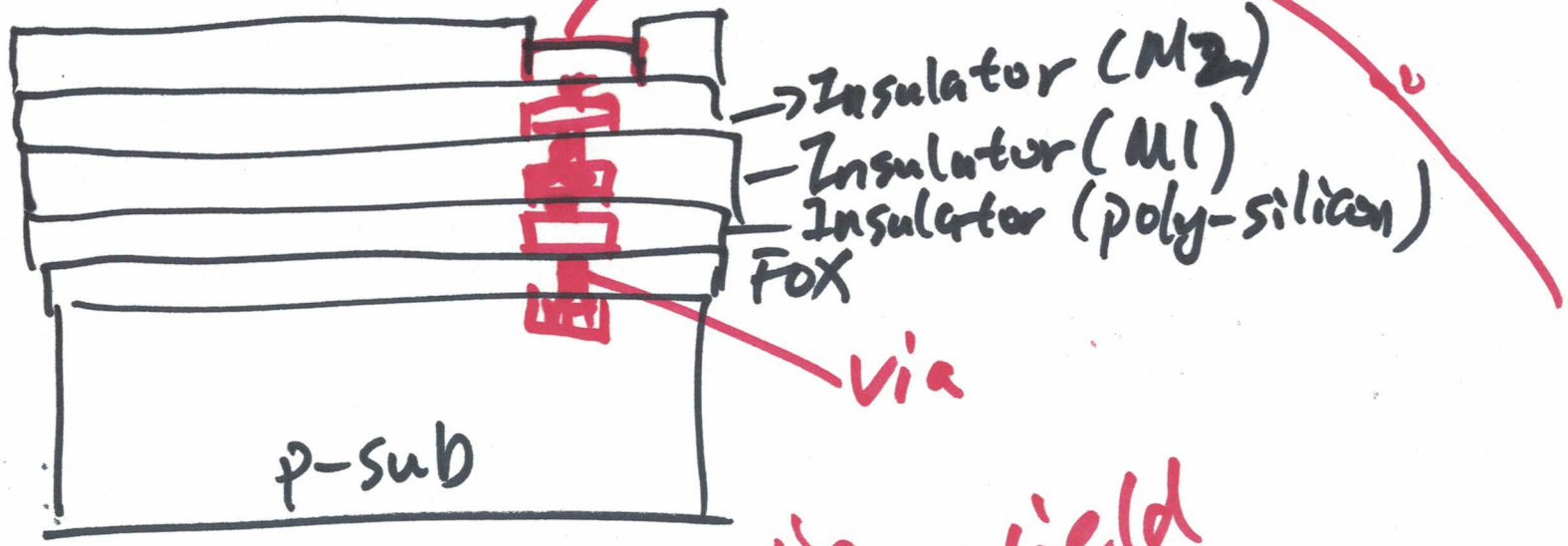
M1

etchant acid

M

(4)

C5 layers



via yield