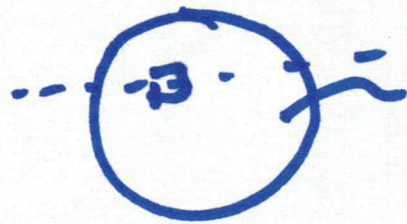


EE 421/ELV 621

Digital IC Design

August 30, 2023

Lecture 2



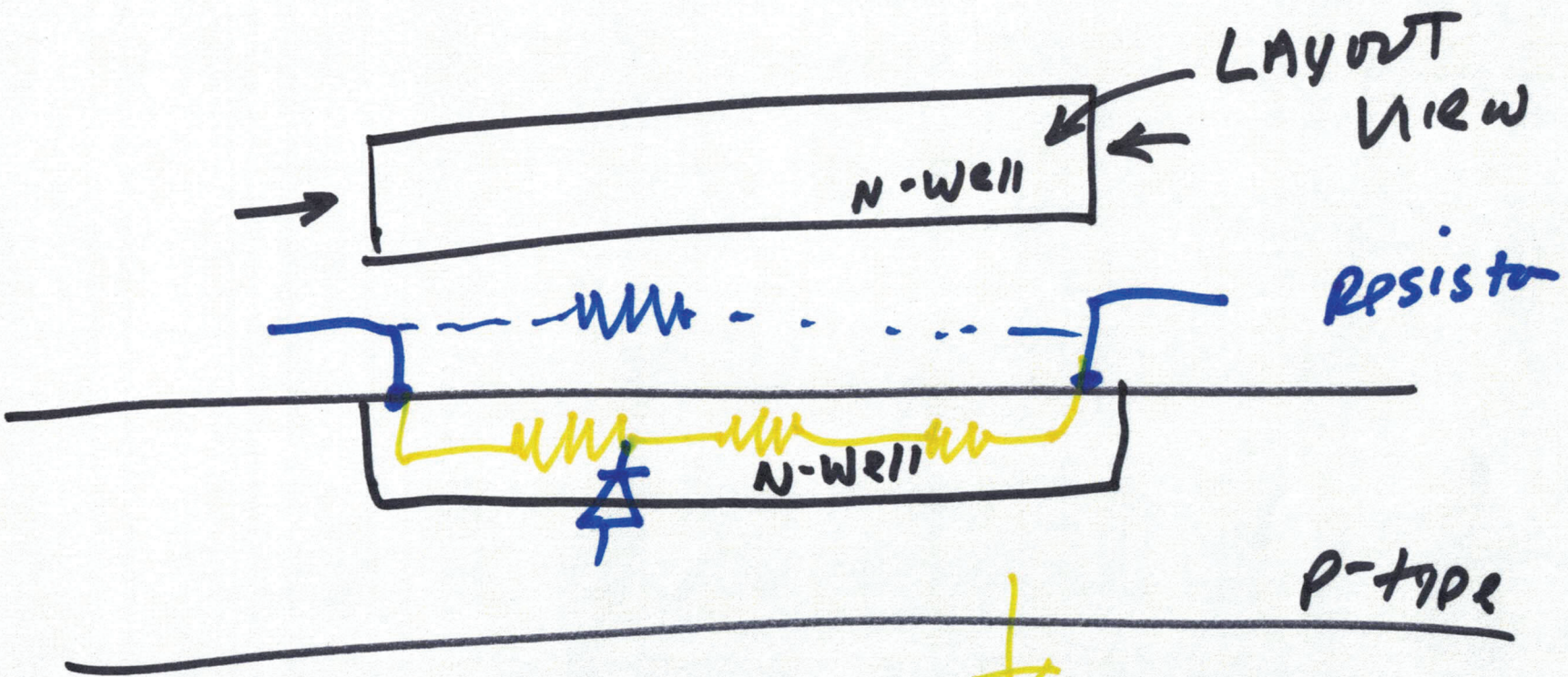
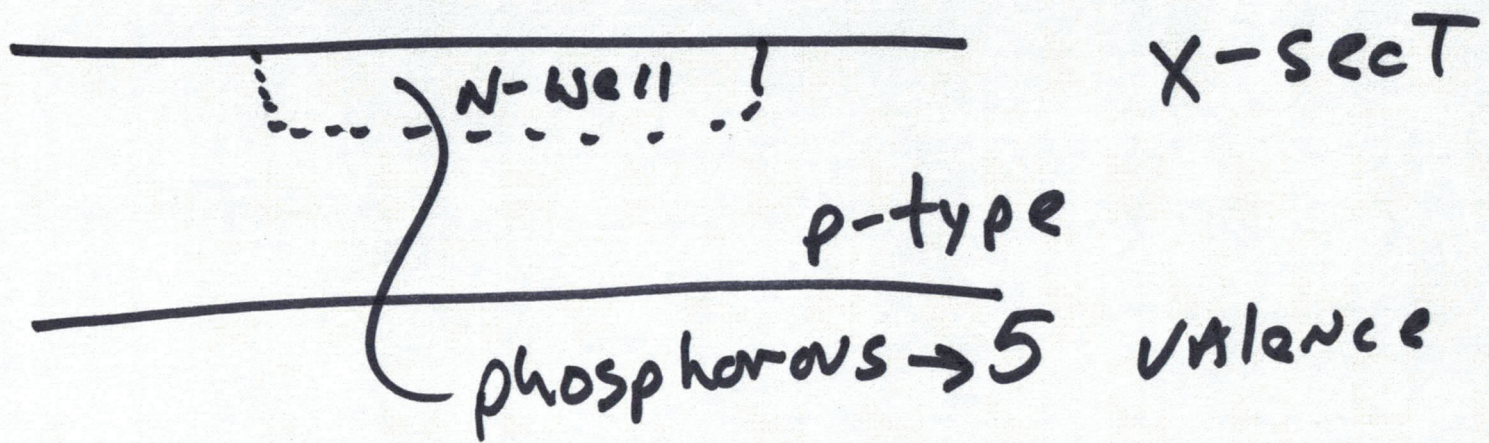
p-type

Si \rightarrow 4 valance

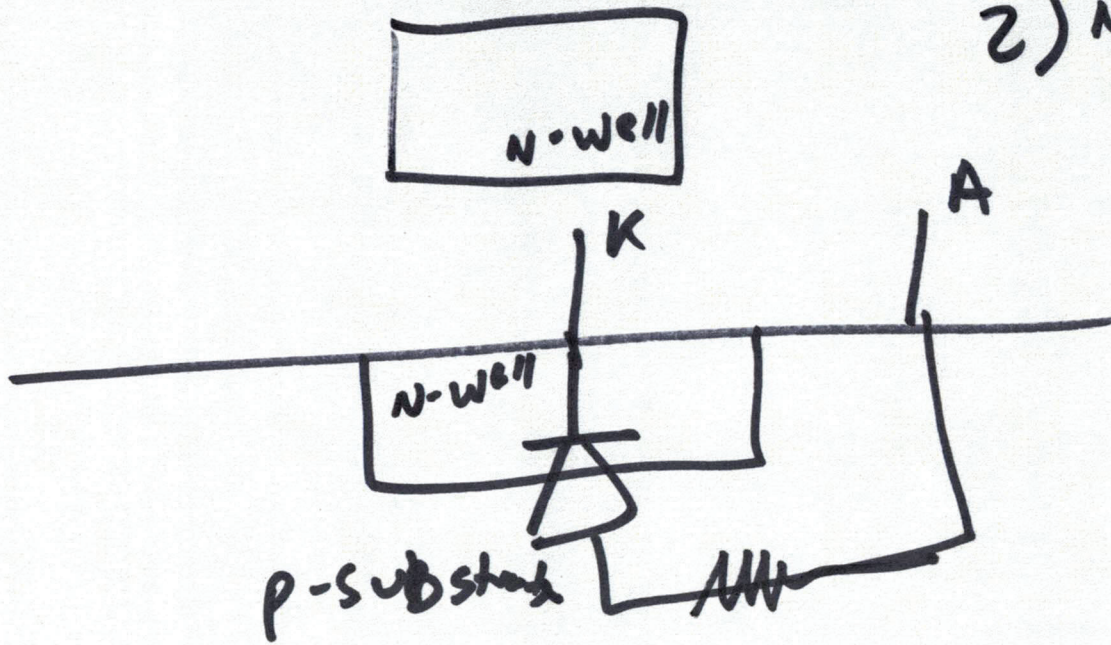
Boron \rightarrow B \rightarrow 3 valance



1)



2)



2) N-well for a diode with p-substrate

3) N-well → body of PMOS transistor

sheet resistance



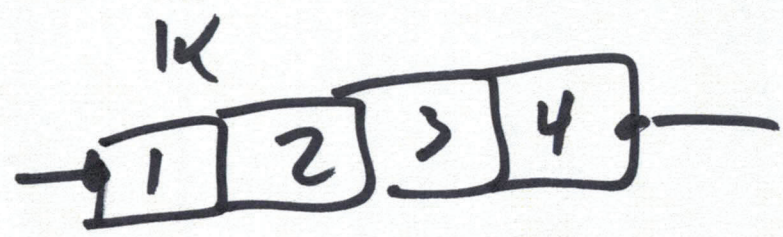
resistivity ρ in $\Omega \cdot \text{cm}$

$$R = \left(\frac{\rho}{t} \right) \cdot \frac{L}{w}$$

thickness

$$R_{\square} = \frac{\rho}{t}$$

sheet resistance



$$V_2 = V_1 \cdot \frac{R_2}{R_1 + R_2} = \frac{N \cdot R_1}{R_1 + N R_1}$$