

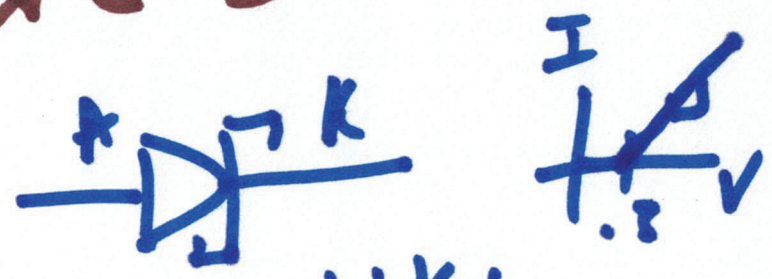
EE 442/ECT 642  
Power Electronics

Sept. 7, 2022

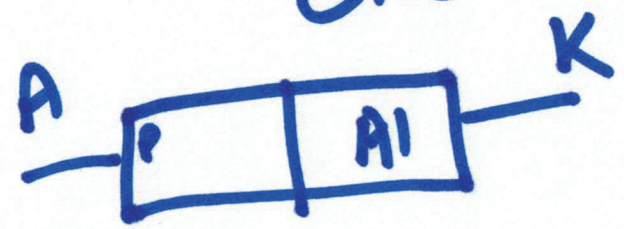
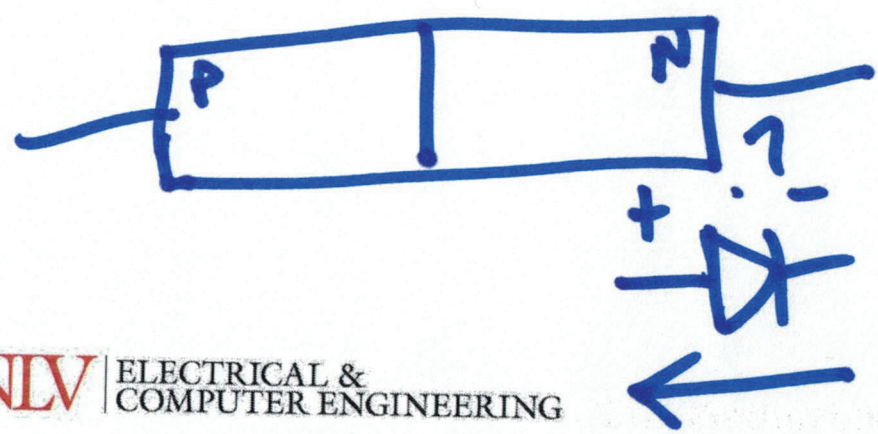
Lecture 3

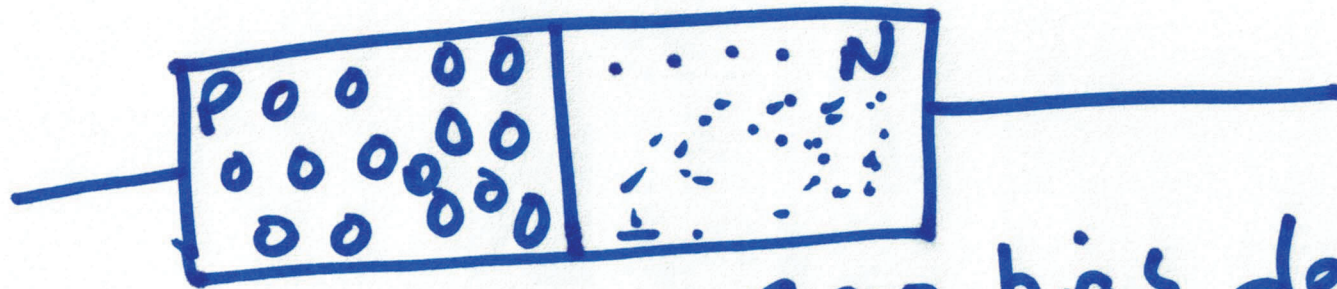


silicon

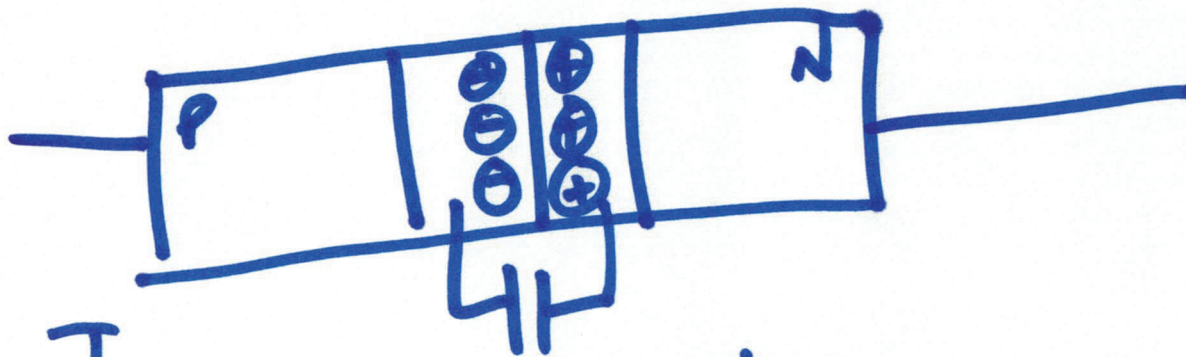


Schottky  
diode

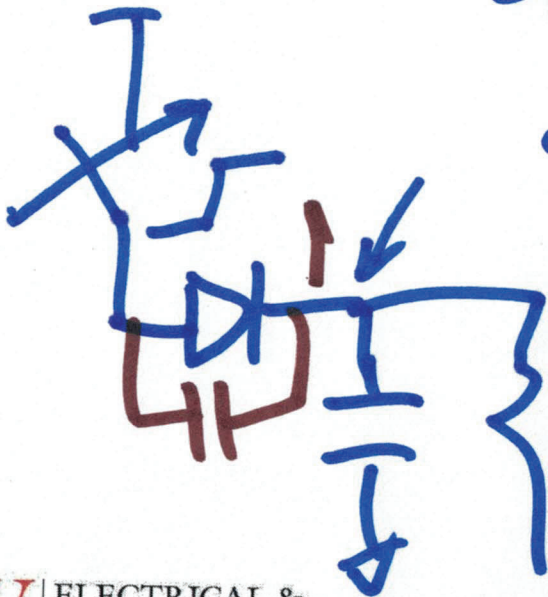




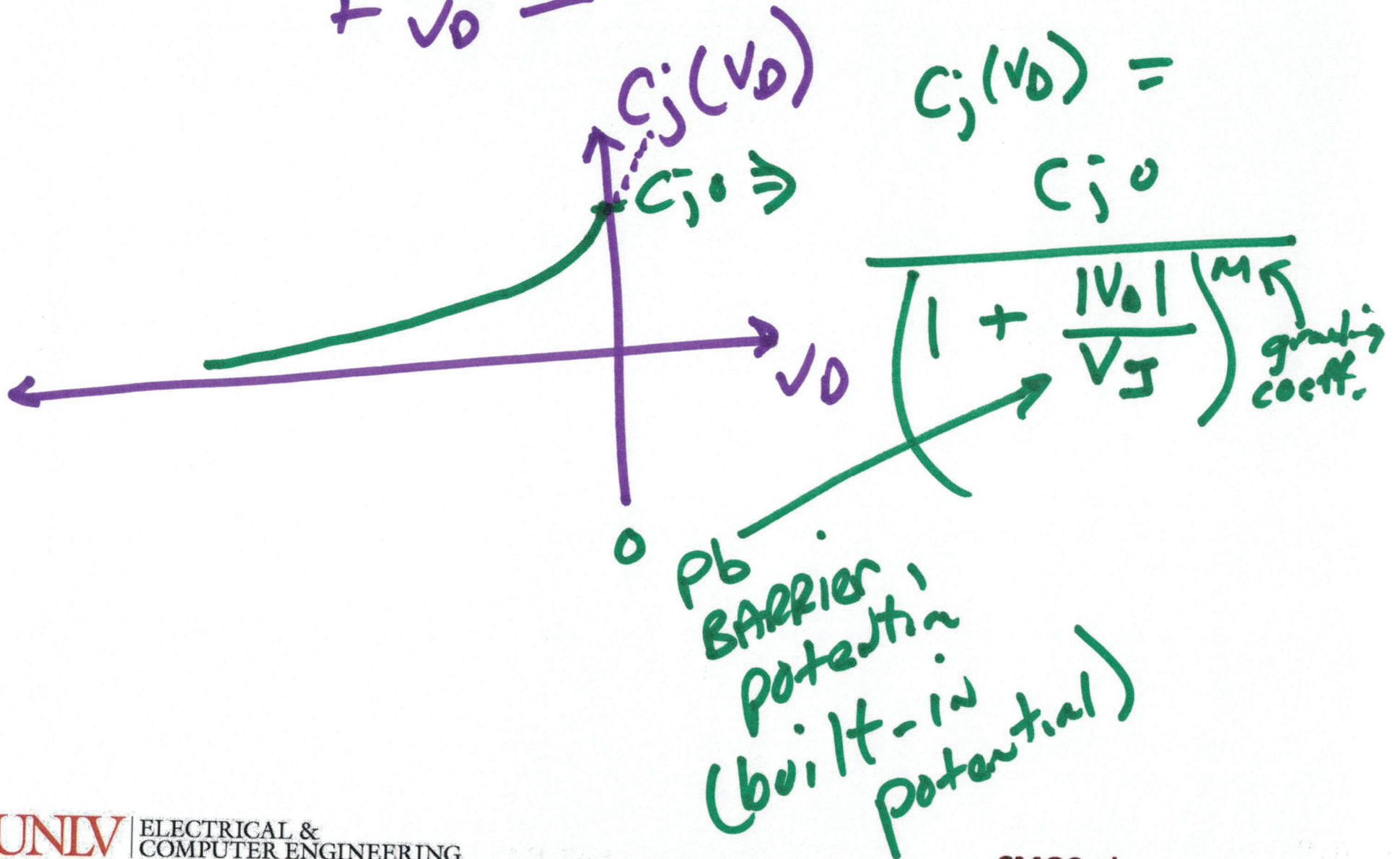
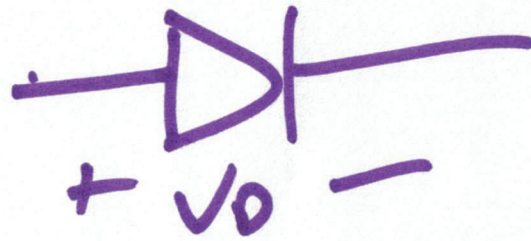
$C_{j0}$  = zero bias depletion CAP



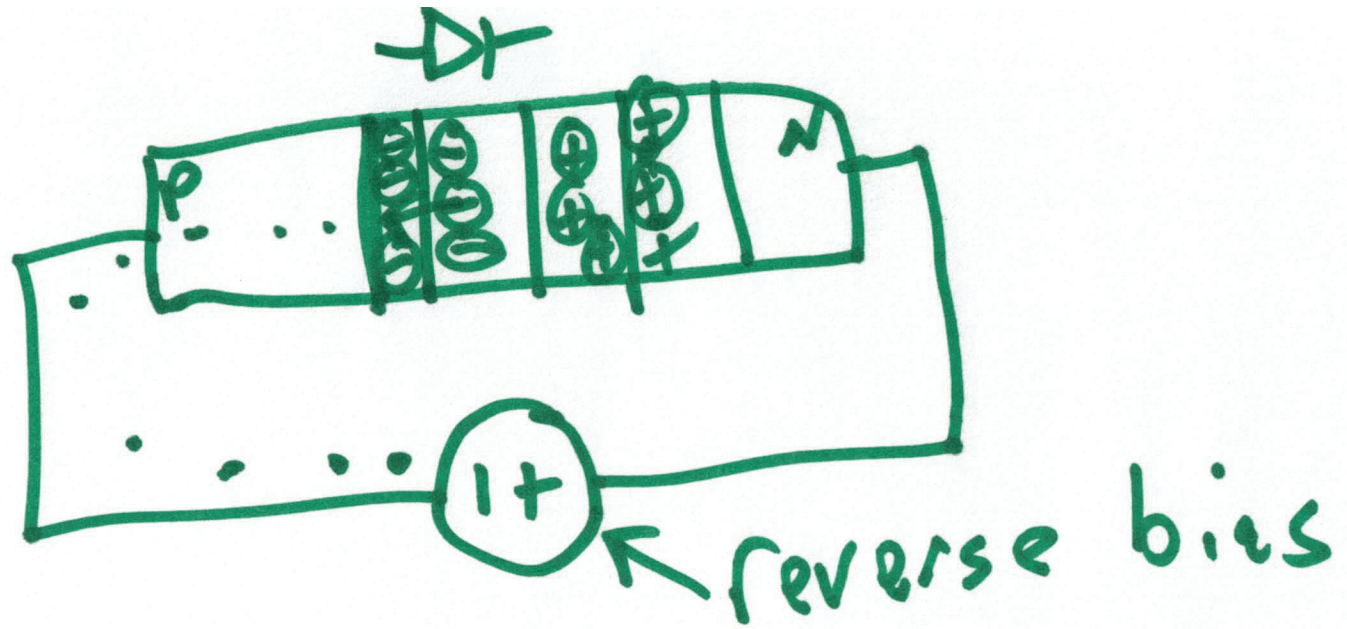
depletion CAP.





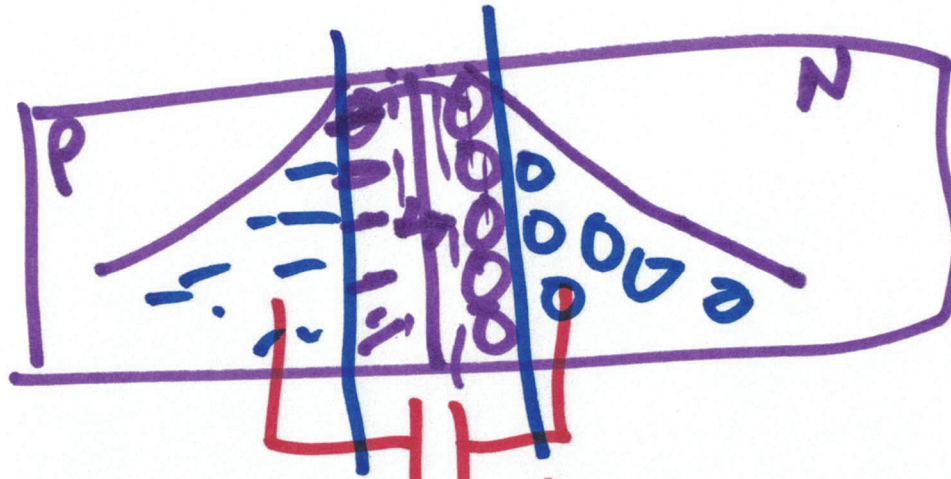
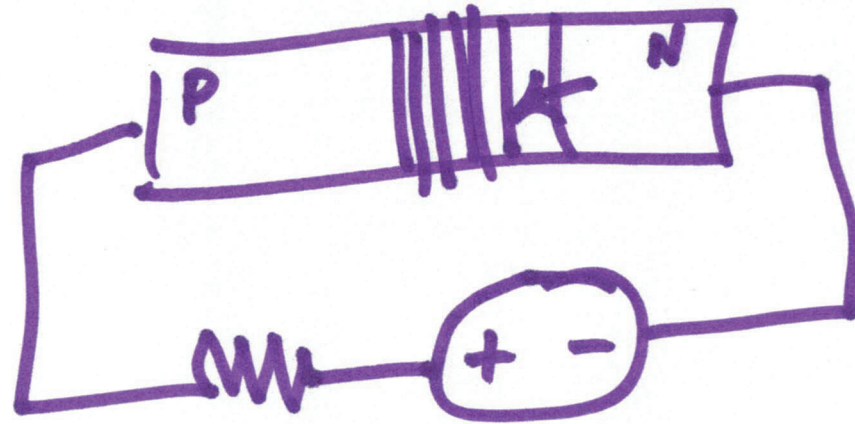


3)



$$C = \frac{A \cdot \epsilon}{t}$$

# FORWARD BIAS



diffusion current



$$\begin{aligned}
 t_s &= \tau_T \cdot \ln \frac{i_F - i_R}{-i_R} \\
 &= 45 \text{ ns} \cdot \ln \frac{100 \text{ nA} - (-100 \text{ nA})}{-(-100 \text{ nA})} \\
 &= 45 \text{ ns} \cdot \ln 2 \\
 &= 45 \text{ ns} \cdot .7 \\
 t_s &= 31.2 \text{ ns}
 \end{aligned}$$

