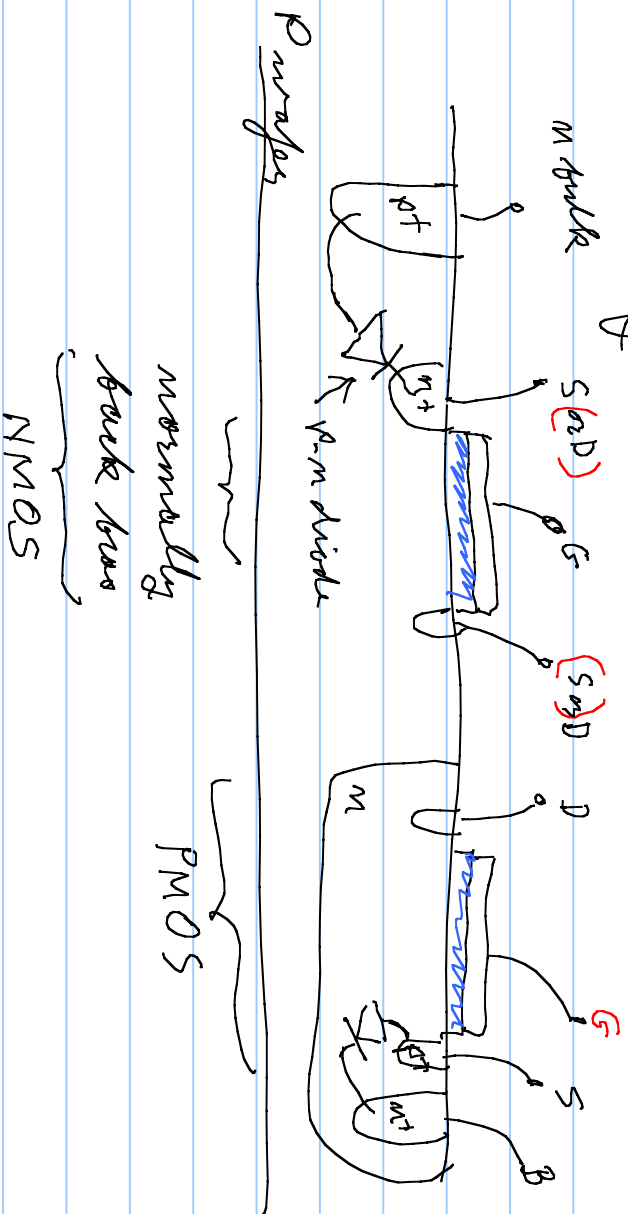


04/06/16

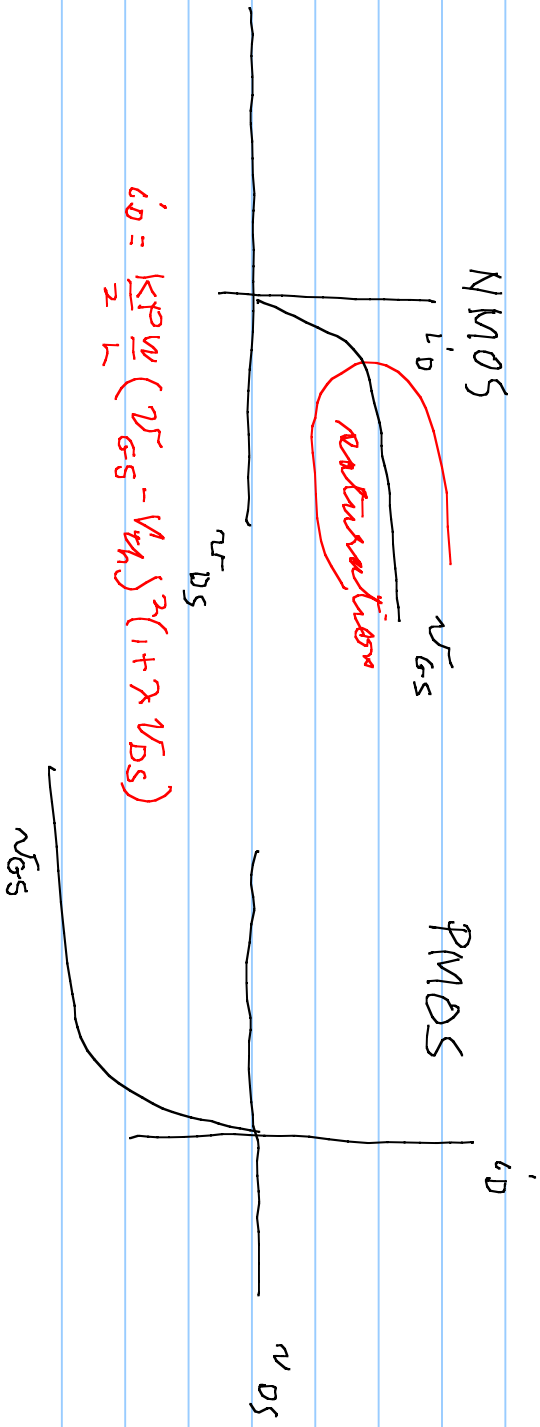
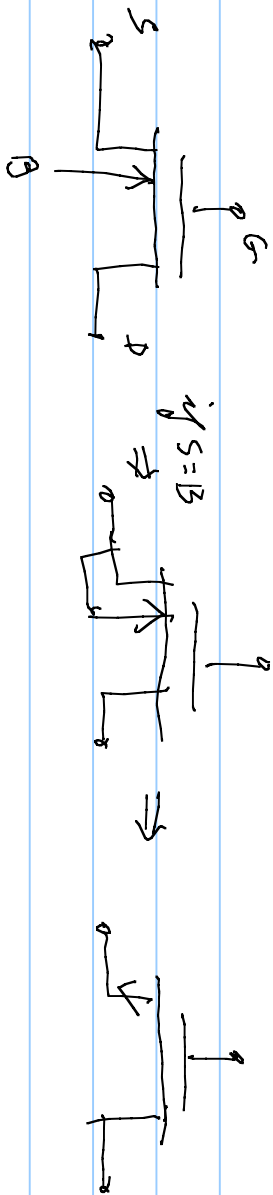
EE307

CMOS use a 4007 package
but for Spice use a CA3600 model

side view of CMOS chip

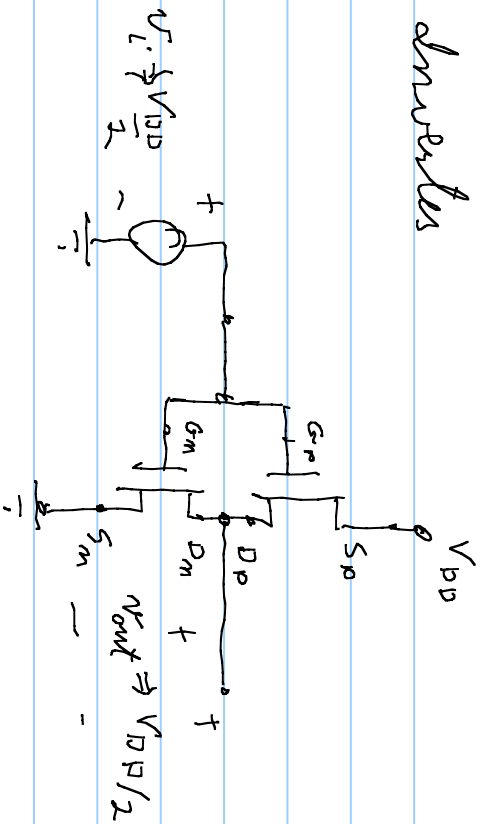


device normally to turn off these diodes

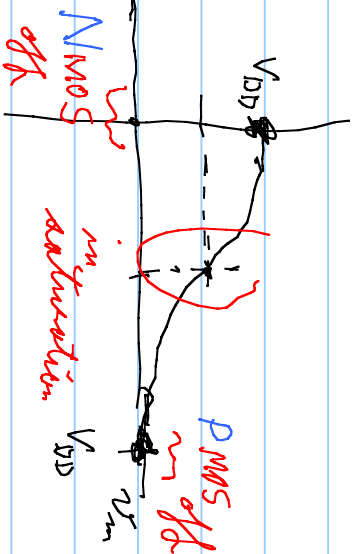


$$i_D = \frac{k_P W}{2 L} (v_{GS} - V_{th})^2 (1 + \lambda v_{DS})$$

inverter



v_{out}



$$v_i = v_o = \frac{V_{DD}}{2}$$

$$\frac{v_{GS}}{V_{GS}} \sim \frac{1}{k_{NM}}$$

$$\frac{v_{DS}}{V_{DS}} \sim \frac{1}{k_{PM}}$$

n channel \Rightarrow in saturation

$$\left| \frac{v_{GS}}{V_{GS}} \right| - \left| \frac{v_{GS}}{V_{GS}} \right|$$

$$\frac{V_{DD} - \frac{V_{DD}}{2}}{2} = \frac{V_{DD}}{2} \sim \left| \frac{v_{GS}}{V_{GS}} \right|$$

$$\frac{V_{DD} - \frac{V_{DD}}{2}}{2} = \frac{V_{DD}}{2}$$

p channel in saturation