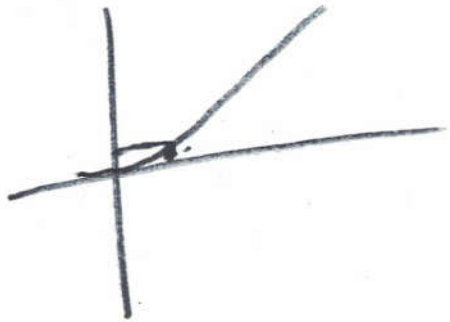


$V_{DS} = V_{GS}$
 $V_{GS} - V_{THN} = V_{DS} - V_{THN}$
 $V_{DS} \rightarrow V_{DS,sat}$

$V_{DS,sat} = V_{DS} - V_{THN}$

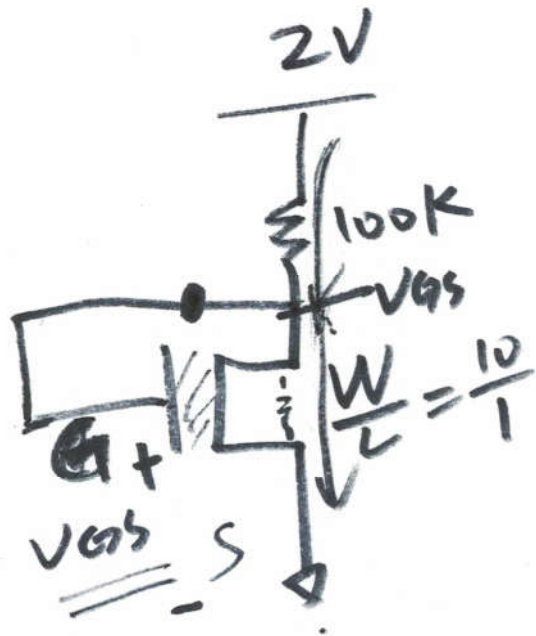
$V_{DS} > V_{DS,sat} ?$



$$I_{DS} = \frac{K_{PN} \cdot W}{2 \cdot L} (V_{GS} - V_{THN})^2$$

1 μm (Long-channel)

$$K_{PN} = 120 \mu A/V^2$$



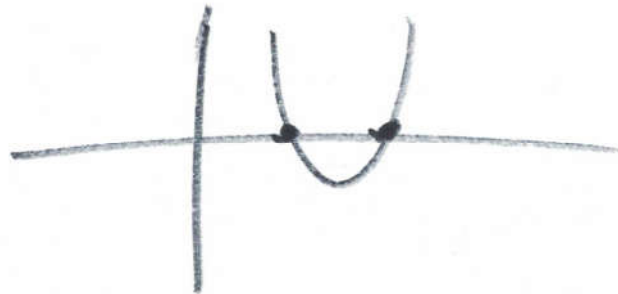
$K_{PN} = 120 \mu A/V^2$. Find I_{DS} ?

Assume it is in the saturation region.

$$\begin{cases} I_{DS} = \frac{K_{PN}}{2} \frac{W}{L} (V_{GS} - V_{THN})^2 \\ I_{DS} = I_R = \frac{2V - V_{DS}}{100K} \end{cases}$$

0.8V

$$V_{GS} = \begin{cases} \underline{\underline{0.933V}} \\ \underline{\underline{0.65V}} \end{cases}$$



$$I_{DS} = \frac{K_{Pn}}{2} \left(\frac{W}{L} \right) (V_{GS} - V_{THN})^2$$

$$V_{GG} = 5V \Rightarrow V_{THP} = \underline{\underline{0.9V}}$$

