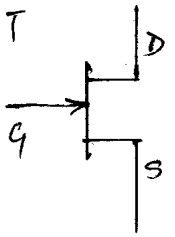
JFET

(n-channel)



$V_p < 0$

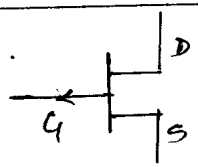
D.C. Analysis

- KVL to GS loop : $V_{GS} =$ _____
- Schokley's eqn : $I_D = I_{DSS}\left(1 - \frac{V_{GS}}{V_p}\right)^2$

$I_D =$ _____

- KVL to DS loop : $V_{DS} =$ _____

(p-channel)



$V_p > 0$

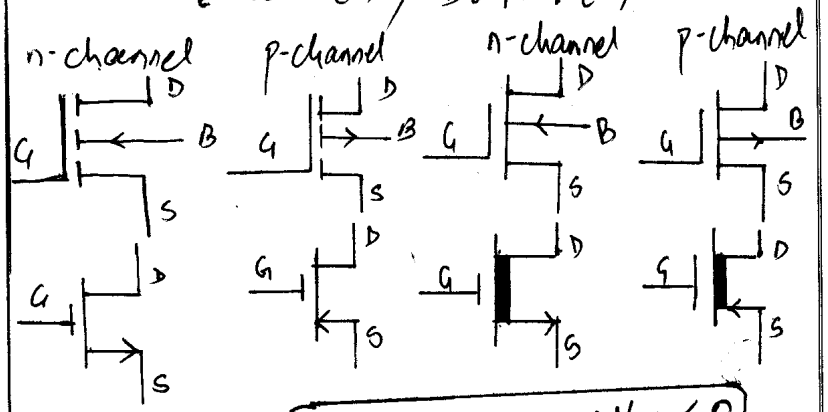
D.C. Analysis

- KVL to S-G loop : $V_{SG} =$ _____
- Schokley's eqn : $I_D = I_{DSS}\left(1 + \frac{V_{SG}}{V_p}\right)^2$

$I_D =$ _____

- KVL to DS loop : $V_{DS} =$ _____

EMOSFET / DMOSFET



(n-channel) E: $V_{TN} > 0$ D: $V_{TN} < 0$

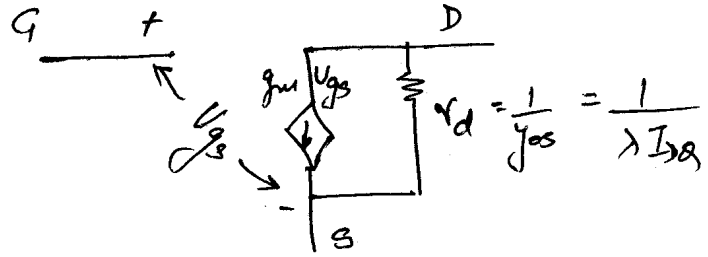
- KVL to GS loop : $V_{GS} =$ _____
- If saturation region : $I_D = K_n(V_{GS} - V_{TN})^2$ $(V_{DS} > V_{GS} - V_{TN})$ $=$ _____
- KVL to DS loop : $V_{DS} =$ _____

(p-channel) E : $V_{TP} < 0$ D: $V_{TP} > 0$

- KVL to GSG loop : $V_{SG} =$ _____
- If saturation region : $I_D = K_p(V_{SG} + V_{TP})^2$ $V_{SD} > V_{SG} + V_{TP}$ $I_D =$ _____
- KVL to SD loop : $V_{SD} =$ _____

Navlakhi™

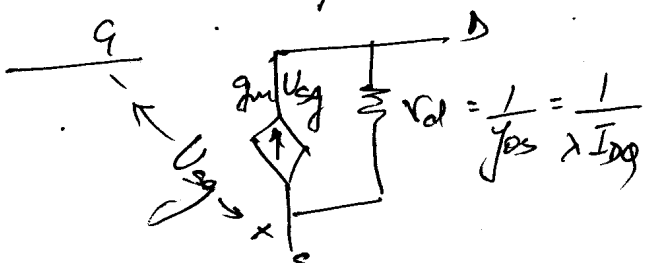
JFET (n-channel)



$$g_m = g_{mo}\left(1 - \frac{V_{GS}}{V_p}\right)$$

$$g_{mo} = \frac{2 I_{DSS}}{|V_p|}$$

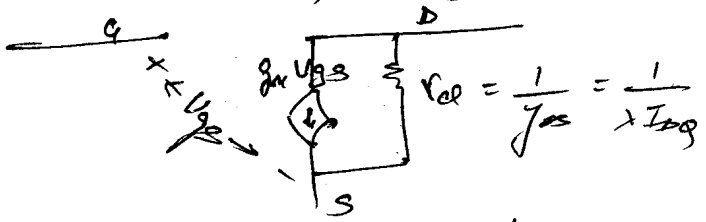
(p-channel)



$$g_m = g_{mo}\left(1 - \frac{V_{SG}}{V_p}\right)$$

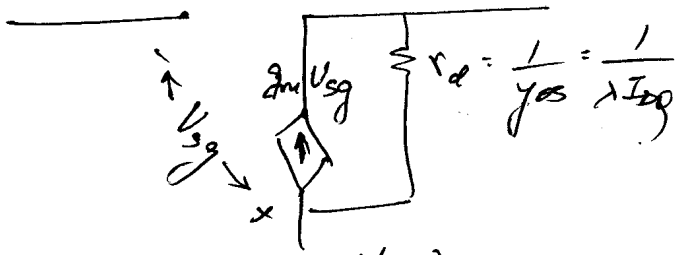
$$g_{mo} = \frac{2 I_{DSS}}{|V_p|}$$

EMOSFET/DMOSFET (n-channel/NMOS)



$$g_m = 2K_n(V_{GS} - V_{TN})$$
$$= 2\sqrt{K_n I_D}$$

(p-channel)



$$g_m = 2K_p(V_{SG} + V_{TP})$$
$$= 2\sqrt{K_p I_D}$$