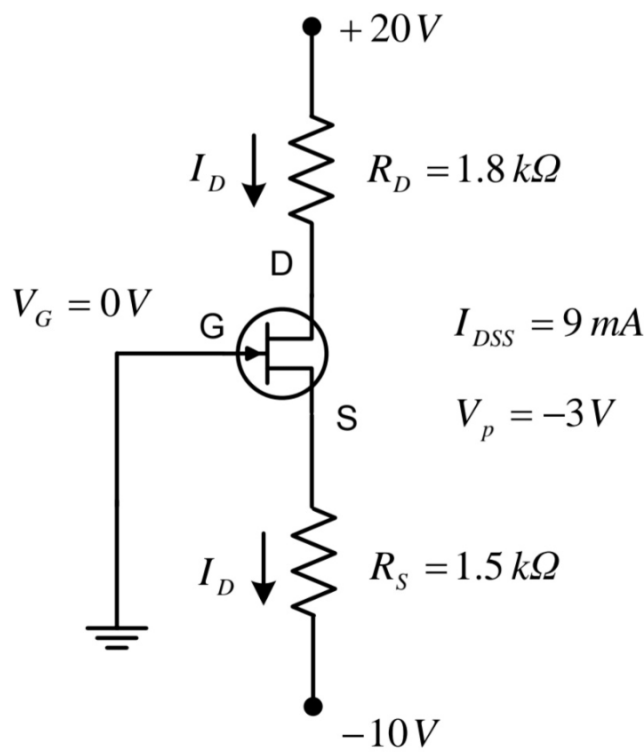


I_D ve V_{DS} kaçtır?



$$0 = \frac{10}{-10} = V_{GS} + I_D R_S$$

$$20 - \frac{30}{-10} = I_D R_D + V_{DS} + I_D R_S$$

$$I_D = I_{DSS} \left(1 + \frac{V_{GS}}{V_p} \right)^2$$

$$\frac{10 - V_{GS}}{1.5 k\Omega} = \frac{9mA}{9} (9 + 6V_{GS} + V_{GS}^2)$$

$$10 - V_{GS} = 13.5 + 9V_{GS} + 1.5V_{GS}^2$$

$$\frac{1.5V_{GS}^2}{15} + \frac{10V_{GS}}{100} + \frac{2.5}{35} = 0$$

$$V_{GS} = \frac{-0.37}{-6.29}$$

$$0 < V_{GS} < \frac{-3}{V_p}$$

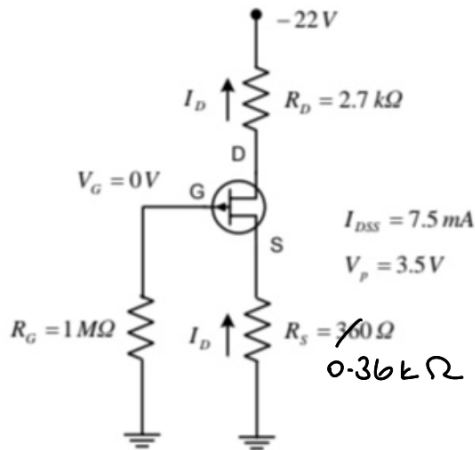
$I_D = 6.9$

Bu aralıkları seçmeyi dikkatli

$$I_D R_D + V_{DS} + I_D R_S = 30$$

$$V_{DS} = 30 - I_D (R_D + R_S) = 7.23$$

Örnek 3. Şekil 7.31 deki devrenin (p-kanallı JFET) I_D ve V_{DS} değerlerini hesaplayınız.



$$I_D = I_{DSS} \left(1 - \frac{V_{GS}}{V_p} \right)^2$$

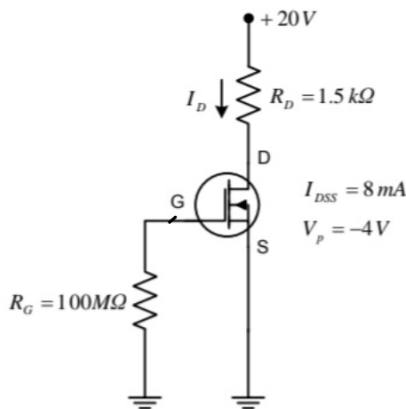
$$I_D R_S + V_{SG} = 0$$

$$V_{SG} = I_D R_S$$

?

0

Örnek 4. Şekil 7.33 deki n-kanallı kanal ayarlamalı bir MOFSET devresi için I_D ve V_D değerlerini hesaplayınız.



$$V_S = 0$$

$$I_G = 0 \quad V_G = 0$$

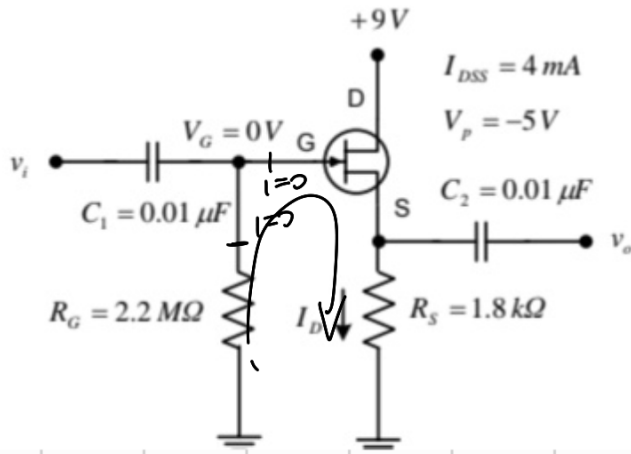
$$V_{GS} = 0$$

$$I_D = I_{DSS} \left(1 - \frac{V_{GS}}{V_p} \right)^2$$

$$I_D = I_{DSS} = 8mA$$

$$20 - I_D R_D = V_D = 8V$$

Örnek 5. Şekil 7.34 deki n-kanallı bir JFET devresi için I_D ve V_S değerlerini hesaplayınız.



$$I_D = I_{DSS} \left(1 - \frac{V_{GS}}{V_P}\right)^2$$

$$V_{GS} + I_D R_S = 0$$

$$I_D = \frac{-V_{GS}}{R_S}$$

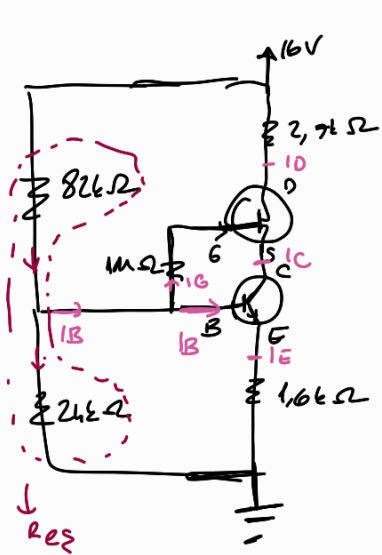
$$I_D = \frac{2.22}{1.8} = 1.23$$

$$V_S = I_D R_S = 2.22$$

$$V_{GS} = -2.22$$

$$0 < V_{GS} < V_P$$

$$-2.22$$



$$I_{DSS} = 12 \text{ mA}$$

$$V_P = -6 \text{ V}$$

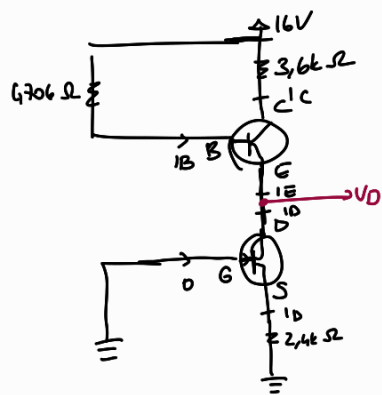
$$B = 180$$

$$I_D = I_C$$

$$I_G = 0$$

$$I_B = 2.7 \text{ k} \Omega + V_{DSS} + V_{CE} + 1.6 \text{ k} \Omega$$

?



$$I_{DSS} = 8 \text{ mA}$$

$$V_D = ?$$

$$V_P = -4 \text{ V}$$

$$B = 80$$

$$16 - V_D = 470 \text{ k} \Omega I_B + V_{BE}$$

$$V_D = 16 - 470 \text{ k} \Omega \cdot 13.074 \cdot 10^{-6} - 0.7 \text{ V}$$

$$V_D = 9.15 \text{ V}$$

$$I_D = I_{DSS} \left(1 - \frac{V_{GS}}{V_P}\right)^2 \frac{4 + V_{GS}}{4}$$

$$0 + V_{GS} + I_D R_S = 0$$

$$I_D = \frac{-V_{GS}}{2.4 \text{ k} \Omega}$$

$$\frac{-V_{GS}}{2.4 \text{ k} \Omega} = \frac{8}{16 \text{ k} \Omega} (16 + 8V_{GS} + V_{GS}^2)$$

$$V_S = 2.4 \text{ k} \Omega I_D = 2.5416 \text{ V}$$

$$I_D = 1.059 \text{ mA}$$

$$-5V_{GS} = 96 + 4.8V_{GS} + 6V_{GS}^2$$

$$I_D = I_E$$

$$1.059 = 81 I_B$$

$$6V_{GS}^2 + 5.3V_{GS} + 96 = 0$$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-5.3 \pm 22.47}{12} = -2.54 \text{ V} = V_{GS}$$

$$I_B = 13.074 \text{ } \mu\text{A}$$

mikro amper
0.001

$$I_B = 0.013074 \text{ mA}$$

$\sim 10^{-3}$ wie saß es schon

Diyotlar