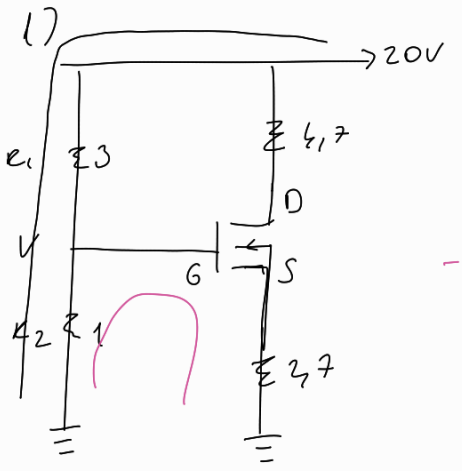
Ders Örnek

1)




$I_{DSS} = 10mA$

$V_p = -4V$

$I = \frac{20}{3+1} = 5mA$

$I_G = 0$

$-5 + V_{GS} + I_D R_S = 0$

$I_D = \frac{5 - V_{GS}}{2,5} = 2,57$

$1 + \frac{V_{GS}}{4} = \frac{4+V_{GS}}{4}$

$\frac{5-V_{GS}}{27} = \frac{27}{10}\left(16 + 8V_{GS} + V_{GS}^2\right)$

$80 - 16V_{GS} = 432 + 216V_{GS} + 27V_{GS}^2$

$27V_{GS}^2 + 232V_{GS} + 352 = 0$

$\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{-232 \pm 175,72}{27.2} = -1,96 = V_{GS}$

$V_S = 2,7\, I_D = 5,292$

$20 = 4,7 + 7,4 I_D + V_{DS}$

$V_D = 5,486$

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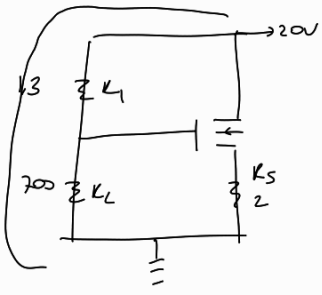


$I_{DSS} = 10$

$V_p = -8V$

$I = \frac{20}{1,3+0,7} = 10mA$

$V_G = 0,7 \cdot 10 = 7V$

$V_G = V_{GS} + 2kI_D$

$I_D = 4,74$

$\frac{7 - V_{GS}}{2} = \frac{10^5}{32\,16}\left(64 + 16V_{GS} + V_{GS}^2\right)$

$112 - 16V_{GS} = 370 + 80V_{GS} + 5V_{GS}^2$

$5V_{GS}^2 + 96V_{GS} + 208 = 0$

$\frac{-96 \pm 71,105}{10} = -2,48$

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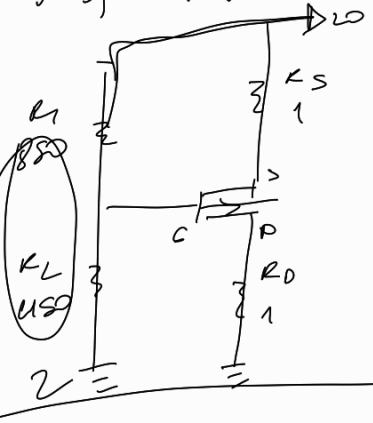
Mosfet tipi gelecek!




$I_{DSS} = 8mA$

$V_p = 5V$

$I = \frac{20}{2} = 10$

$V_G = 11,5$

$V_{GS} = 11,5 - 10R_D$

$\frac{11,5 - V_{GS}}{1} = \frac{8}{25}\left(25 - 10V_{GS} + V_{GS}^2\right)$

$281,25 - 25V_{GS} = 200 - 80V_{GS} + 8V_{GS}^2$

$8V_{GS}^2 - 55V_{GS} - 81,25 = 0$

$\frac{-b \pm \sqrt{\Delta}}{2a} = \frac{55 \pm 75}{16} \rightarrow 8,2$ veya $-1,25$

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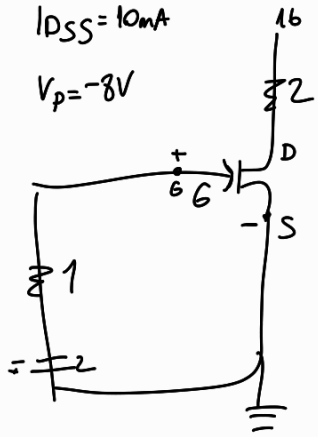



$I_{DSS} = 10mA$

$V_p = -8V$

$V_S = 0$

$I_G = 0$

$V_G = -2V$

$V_{GS} = -2V$

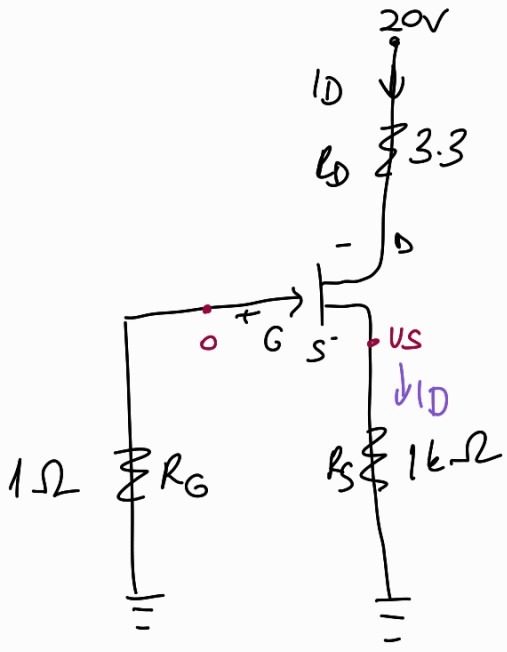
$I_D = 10\left(1 - \frac{-2V}{-8V}\right)^2$

$I_D = 5,62$

$16 = 2 \cdot I_D + V_{DS}$

$V_{DS} = 4,76$

$V_D = 4,76$


20V
$I_D$
$R_D$
3.3
D
+
G
S
-
0
US
$I_D$
1Ω
$R_G$
$R_S$
1kΩ