

Studentsgroup:

Date:

Professor:

Responsible:

Group Members:

Task 5:

MOS-Field-Effect Transistor

1.)

Measure the output characteristics $I_D = f(U_{DS})$ of a MOS-FET in the current range of $0 \leq I_D \leq 2mA$ and the voltage range of $0 \leq U_{DS} \leq 10V$ for 5 different values of gate-source-voltage U_{GS} .

Read the channel-length-modulation-parameter λ from your diagram.

2.)

Measure the transfer characteristics $I_D = f(U_{GS})$ of the same MOS-FET for a constant voltage $U_{DS} = 5V$ in the current range of $0 \leq I_D \leq 2mA$.

Read the threshold voltage U_{th} and the transconductance parameter β from your diagram, the last for an operating point of $I_D = 0.4mA$.

3.)

Measure the output characteristics according to 1. in the ohmic region for the current range of $-300mA \leq I_D \leq +300mA$ and the voltage range of $-100mV \leq U_{DS} \leq +100mV$ for the same 5 values of voltage as used in 1.).

Read the turn-on resistance r_{ON} for one of the curves and compare it with the theoretical value calculated from your values of U_{th} and β taken from 2.).