The goal of this lab. is to measure the main parameters of the 2N7000 nMOS.

Pre-Lab

1. Look up the data Sheet of the 2N7000 (nMOST) and find out the values of the gate threshold voltage Vth,n and Kn= μ_nCoxW/L. You may have to extract the parameters from curves.

   Vth,n (avg) = _____

   Kn = _____

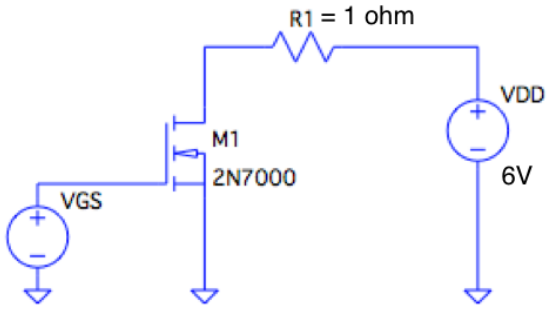
   Hint: for an nMOS operating in saturation $I_{Dn} = 0.5\ Kn\ (VGS,n - Vth,n)^2$

2. Develop a strategy to estimate Vth,n and Kn through a set of measurements on the physical component.

Lab.

In this lab. you are expected to estimate some of the parameters of the 2N7000 and compare them with the data provided on the data sheet of the component.

Build the following circuit:



By selecting proper values for VGS estimate the value of Kn and Vth,n

[Hint: you need at least two measurements]

Measurement #1:

VGS = _____

R1 = _____

VDS = _____

ID = _____

Measurement #2:

VGS = _____

R1 = _____

VDS = _____

ID = _____

Computations to estimate Kn and Vth,n:

Results Summary

Parameter	*Estimated [units]*	*Data Sheet [units]*	*% Error*
Kn			
Vth,n			

% Error = 100 x (estimated – theoretical)/theoretical