ELEC-313
Lab 7: MOSFET Amplifier Circuits

November 11, 2013

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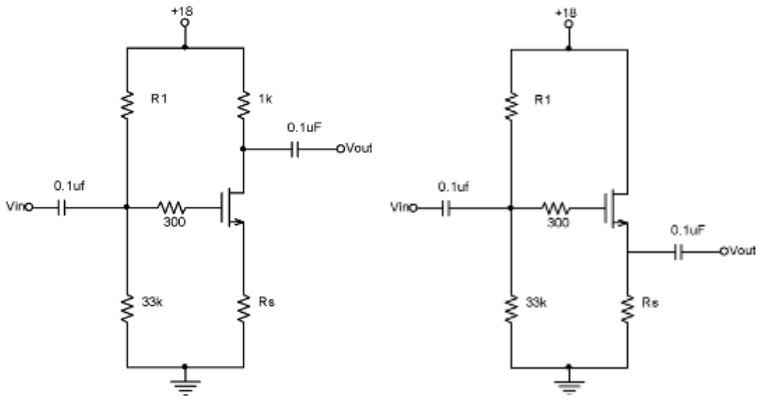
Partners: Charles Pittman
Stephen Wilson

1 Objective

2 Equipment

Transistor: 2N7000	Power supply: HP E3631A
Function Generator: HP 33120	Multimeter: HP 34401A
Oscilloscope: Agilent 54622D	Capacitors: 0.1 µF
Resistors: 100 Ω, 300 Ω, 470 Ω, 1 kΩ (x2) 33 kΩ, 100 kΩ (x2)	

3 Schematics



(a) Common-source amplifier (b) Source-follower amplifier

Figure 1: Circuits used in this lab. $R_1 = 100\,\text{k}\Omega$, $R_s = 470\,\Omega$

4 Procedure

4.1 Common-Source Amplifier

4.2 Source-Follower Amplifier

5 Results

5.1 Common-Source Amplifier

V_G	V_D	V_S	I_D
4.391 V	13.498 V	2.11 V	4.52 mA

Table 1: Transistor characteristics

V_{in} (mV)	V_{out} (V)
200	0.382
300	0.566
400	0.760
500	0.939
600	1.140
700	1.340
800	1.530
900	1.721
1000	1.90

Table 2: Common-source amplifier

5.2 Source-Follower Amplifier

V_G	V_D	V_S	I_D
4.391 V	18.003 V	2.12 V	4.579 mA

Table 3: Transistor characteristics

V_{in} (mV)	V_{out} (mV)
200	182
300	268
400	360
500	451
600	541
700	634
800	725
900	813
1000	906

Table 4: Source-follower amplifier

6 Conclusion

7 Equations

$$V_{o,L} = V_{o,NL} \frac{R_L}{R_o + R_L} \tag{1}$$