

ECEN 325 - 512
MOSFET AMPLIFIER CONFIGURATIONS

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Measurements

1. Common-source amplifier circuit in Fig. 3 using the 2N7000G transistor.

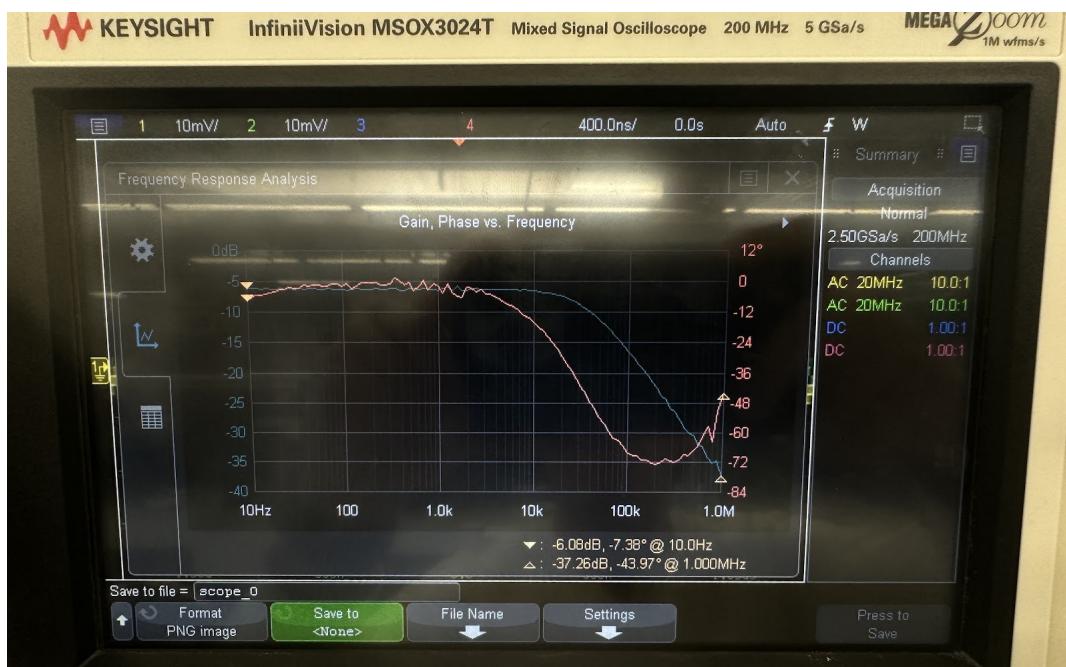
(a) - Measure DC values.

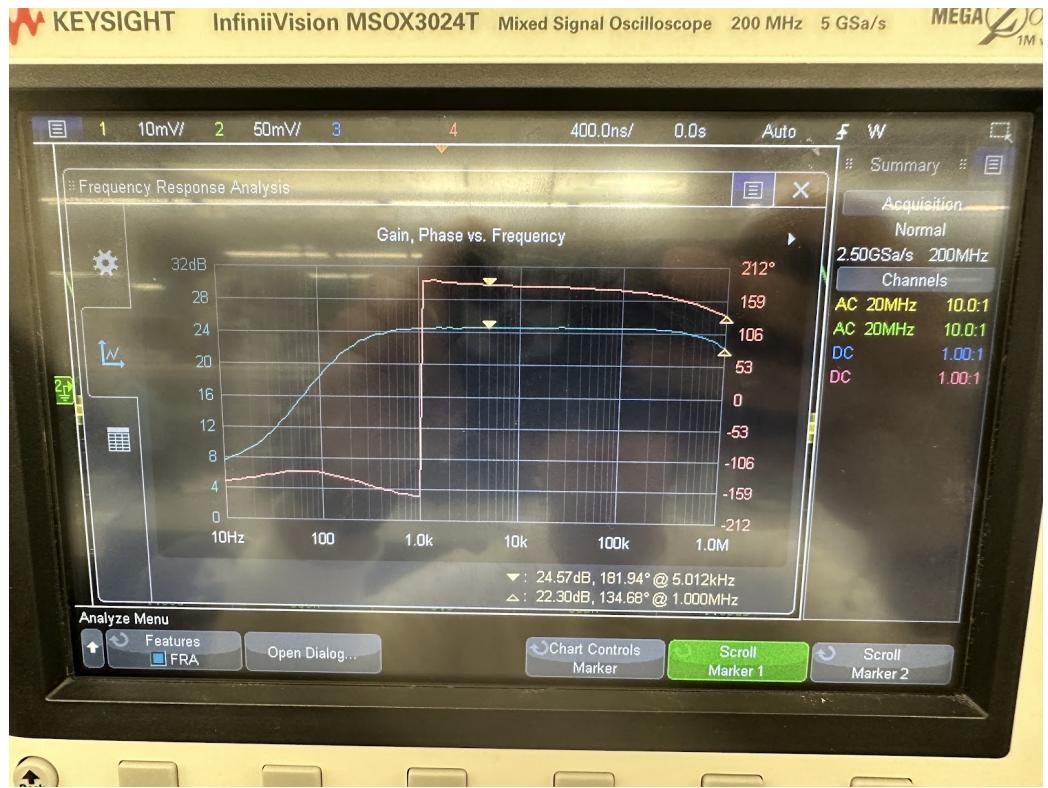
$$V_{GR2} = 3.416V, V_{RS} = 1.33V, V_{RD} = 3.589V, V_{o,dc} = 1.413V, I_C = 1.3mA$$

(b) - Measure Av and Ri.

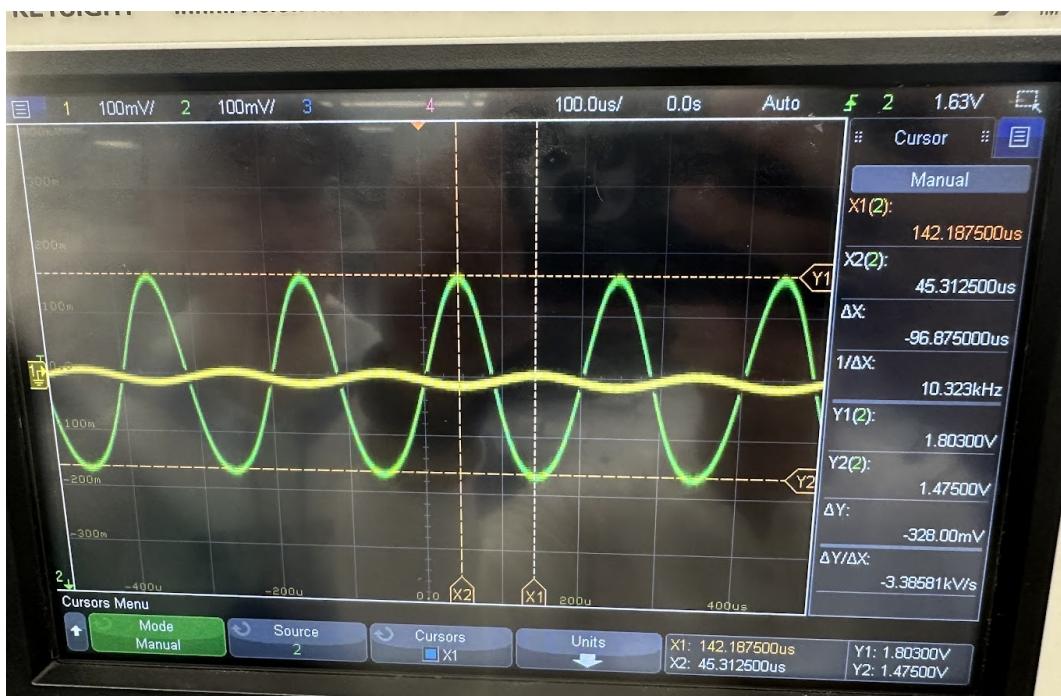
$$Av = 24.57\text{dB} \rightarrow 16.92 \text{ V/V}$$

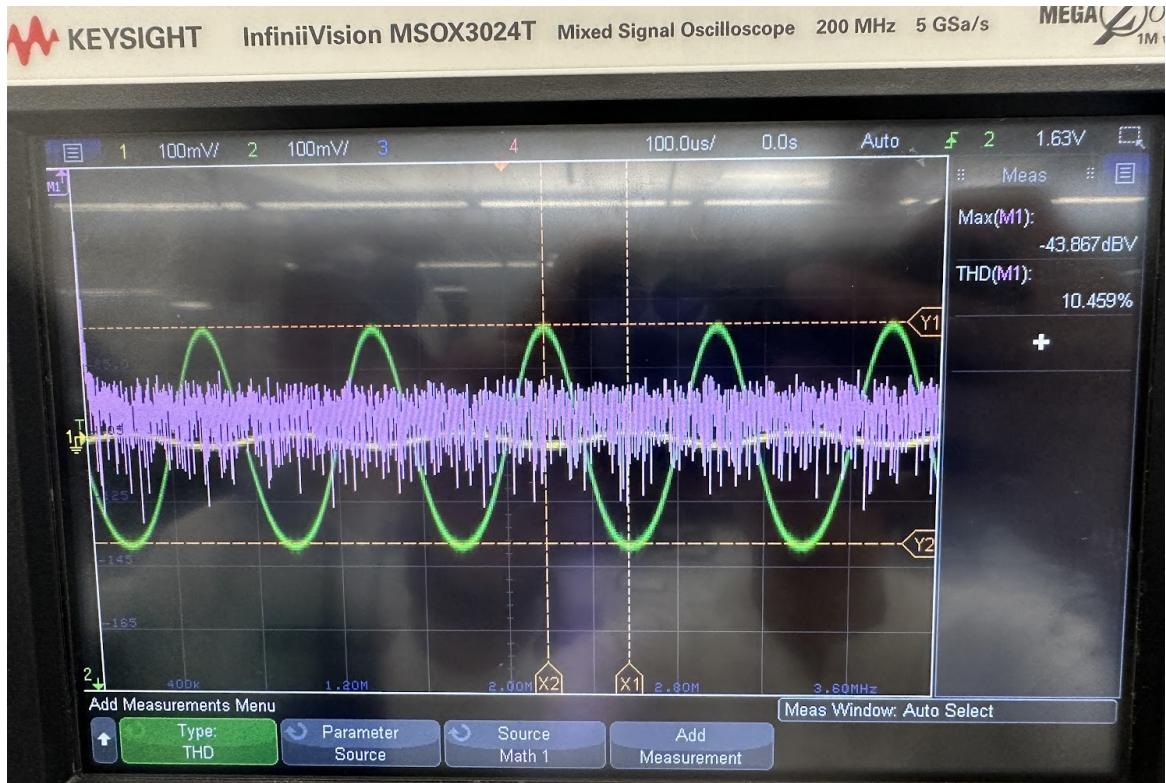
$$R_i = 9,661\Omega$$



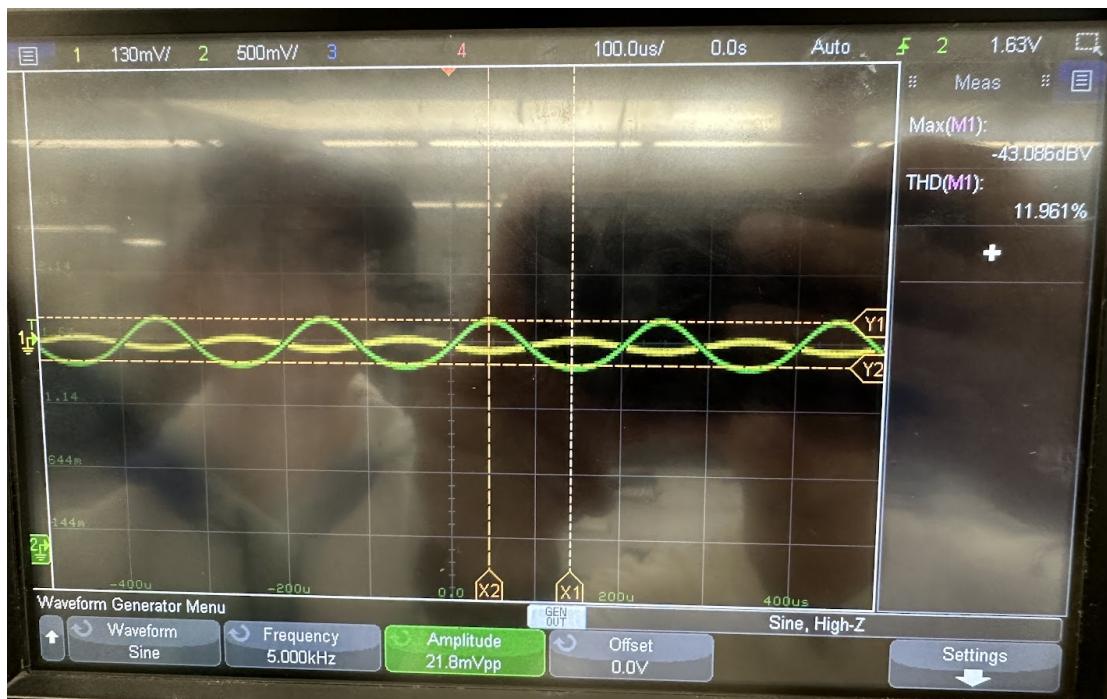


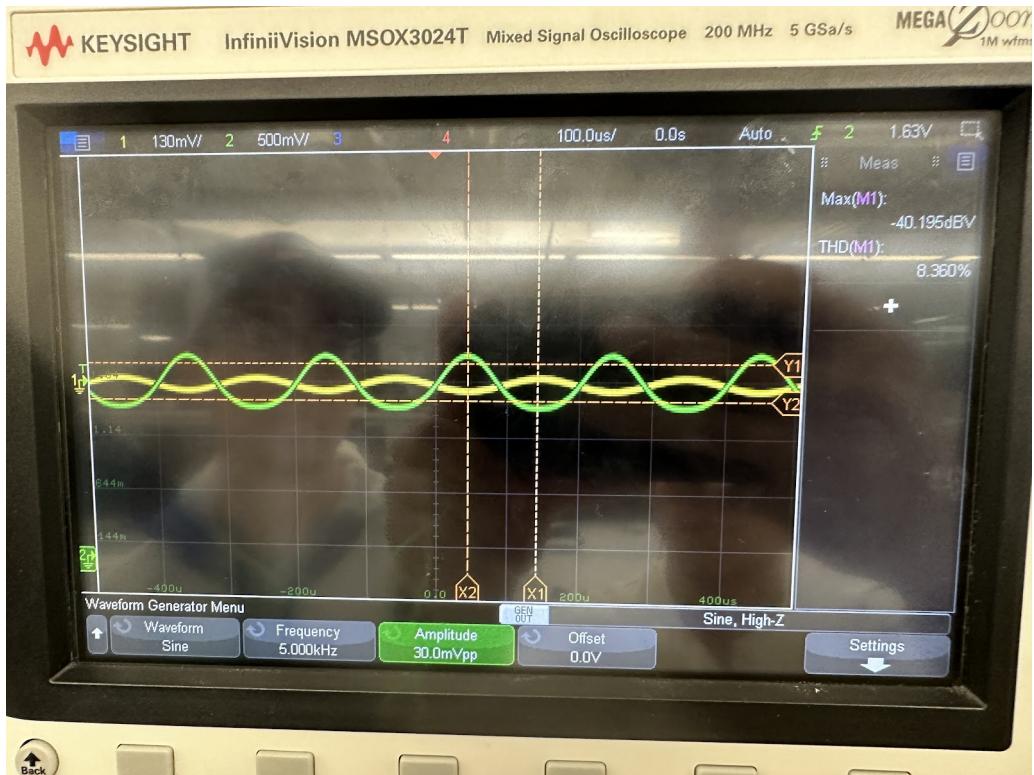
(c) - Time-domain Waveforms and THD (Total Harmonic Distortion).





(d) - Clipping levels at output voltage.





2. Source follower circuit in Fig. 5(a) using the 2N7000G transistor.

(a) - Measure DC Values.

$$V_{GR2} = 3.42V, V_{RS} = 1.264V, I_D = 1.26mA$$

(b) - Measure A_v , R_i , R_o .

$$A_v = 0.912 \text{ V/V}$$

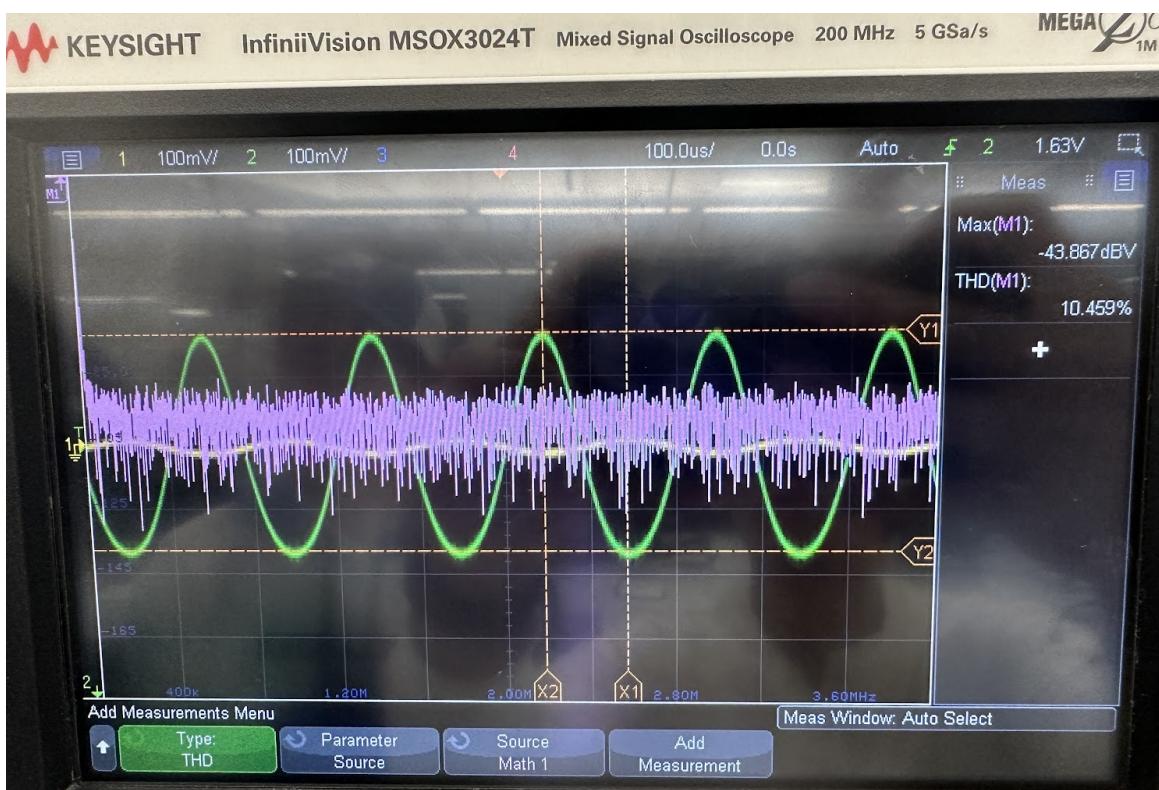
$$R_i = 95.7\Omega$$

$$R_o = 78.3\Omega$$





(c) - Time-domain waveforms and THD (Total Harmonic Distortion).



Data Results:**Figure 3a**

	Measured Value
VRG2	3.416V
VRS	1.33V
VRD	3.589V
V _{odc}	1.413V
I _C	1.3mA
A _v	24.57dB
R _i	9,661Ω
THD	10.459%

Figure 5a

	Measured Value
VRG2	3.417V
VRS	1.264V
I _C	1.264mA
A _v	-0.78dB
R _i	95.95Ω
R _o	78.25Ω
THD	10.5%

Results:

The data collected in this laboratory experiment closely aligned with our initial expectations, reflecting a high degree of congruence between our hypotheses and the actual outcomes. The entire lab procedure proceeded smoothly, devoid of any significant complications or unexpected challenges. The seamless execution of the experiment allowed us to focus more attentively on the fascinating aspects of the data and its implications.