

E1.1 A Discrete Common-Source Amplifier

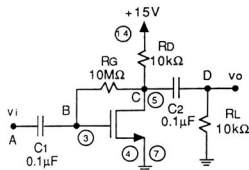


Figure 9.2 A Feedback-Biased Amplifier

- Measure the dc voltages at nodes B C D with your DVM.
- Inject a 0.2 Vpp sine wave at 1kHz into node A. Use your oscilloscope to measure the voltages at nodes A and D. Find the gains from node A to nodes D.
- Insert a 10 MΩ resistor from the generator (node I) to node A of the amplifier, repeating the previous exploration with measurements at nodes I, A, D using a 10kHz 0.2Vpp input signal (at node I). Use the concept of equivalent circuit to calculate input resistance of the amplifier

E1.3 A Discrete Common-Drain Amplifier – The Source Follower

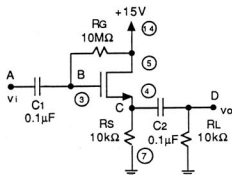


Figure 9.3 A Source Follower (Power) Amplifier

- With no input signal, measure the dc voltage at node C
- Now, apply a 0.2Vpp signal at 10kHz to node A, and measure nodes A, D with your oscilloscope. What is the gain from A to D?
- Now, superimposing the signal at node A and node D on your oscilloscope, slowly raise the input amplitude and note changes in output waveform and gain, as well as a distortion happens.
- * Repeat the exploration above, using a triangle wave and observing nodes A and C

符號使用法：

直流值：以大寫字母，大寫字母下標。如 I_B

交流瞬間值：以小寫字母，小寫字母下標。如 i_b

交流有效值：以大寫字母，小寫字母下標。如 I_b

總值：以小寫字母，大寫字母下標。如 i_B

$$i_B = I_B + i_b$$

$$I_b = I_m / \sqrt{2}$$

