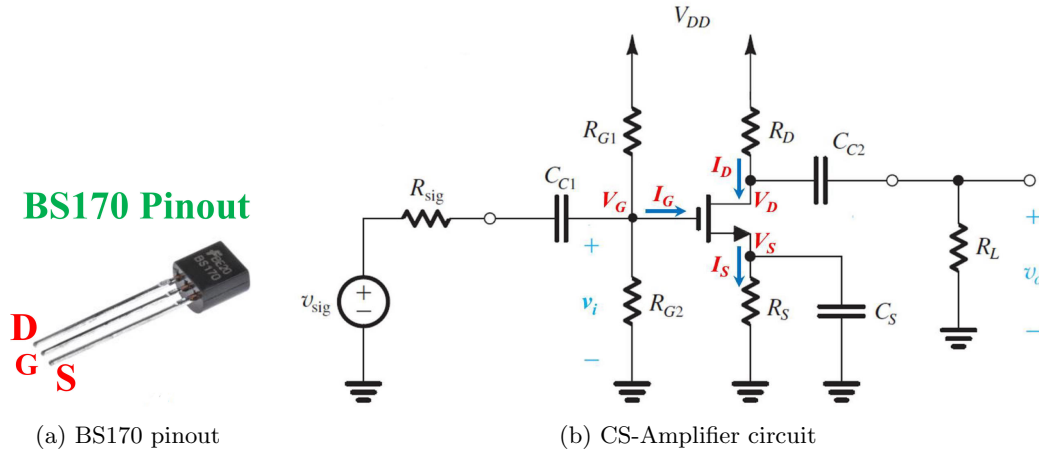


# Common-Source Amplifier Analysis Prelab

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## FET model: BS170

**Voltage source:**  $V_{DD} = +15$  V;  $v_{sig} = 0.2 \sin(2\pi ft)$ ,  $f = 200$  Hz  $\sim$  500 kHz

**Resistors:**  $R_{G1} = R_{G2} = 1$  M $\Omega$ ;  $R_D = R_S = R_L = 10$  k $\Omega$ ;  $R_{sig} = 100$  k $\Omega$

**Capacitors:**  $C_{C2} = C_S = 0.1$   $\mu$ F (104);  $C_{C1} = 0.01$   $\mu$ F (103)

## DC analysis

Measure  $V_G$ ,  $V_D$ ,  $V_S$ ,  $I_G$ ,  $I_D$  and  $I_S$

## Small-signal analysis

At a specific frequency ( $f = 1$  kHz  $\sim$  20 kHz),

measure  $\left| \frac{v_o}{v_{sig}} \right|$ ,  $\left| \frac{v_o}{v_i} \right|$  **WITH** and **WITHOUT**  $C_S$  respectively.

Record the input and output waveforms in **Y-t mode**.

Make a conclusion according to the experimental result.