

# Lecture 2

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- Current-Amplifier Model

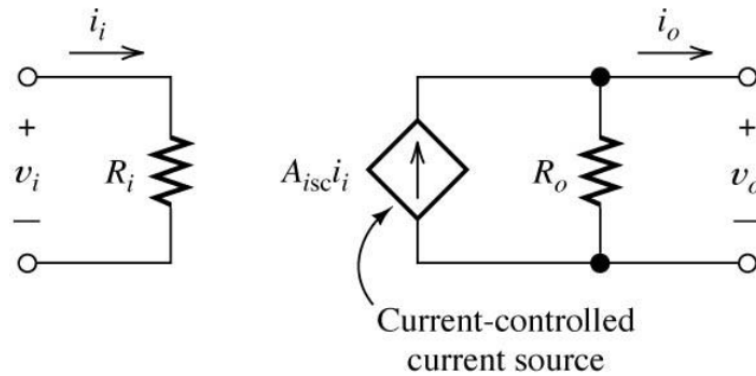


Figure 1: Reference Figure for Current-Amplifier Model

- Parameters
  - \*  $i_i$  is the input current, which ideally comes from a current source
  - \*  $R_i$  and  $R_o$  are the input and output resistances, respectively
  - \*  $A_{isc}$  is the short-circuit current gain
- Current gain with load impedance at the output:  $A_i = i_o/i_i$
- Application of Thévenin to Norton transformation
  - The connection of  $R_o$  is changed, but the value remains the same
- $A_{isc} = i_{osc}/i_i$  is obtained with a short-circuit at the output terminals
  - where:  $i_{osc} = A_{vo}v_i/R_o$  and  $i_i = v_i/R_i$
  - After substituting:  $A_{isc} = A_{vo}(R_i/R_o)$