Electronics II

Lecture 07
BJT Small Signal Analysis

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Previous Lecture

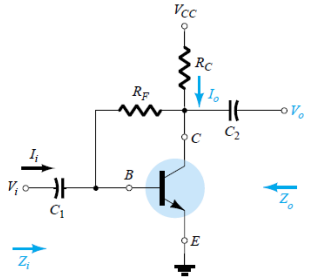
- BJT Small Signal Analysis
  - CE Voltage Divider Bias Configuration.
  - CE Emitter Bias Configuration.

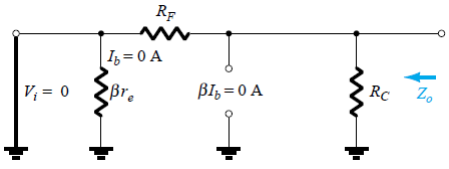
Session Overview

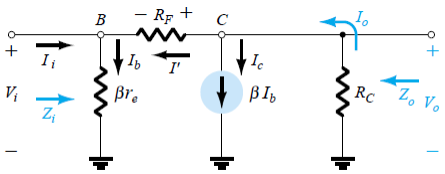
Topic	BJT Small Signal Analysis
Concepts	Small Signal Analysis of CE ▪ Collector Feedback Configuration. ▪ Emitter Follower Configuration. ▪ Common Base Configuration.
Recommended Reading	Sections 8.5, 8.6 & 8.7 of [1]
Keywords	Emitter Bias, Collector Feedback, Emitter Follower, Common Base .

Collector Feed Back Configuration

- Input Impedance, Zi
- Output Impedance, Zo



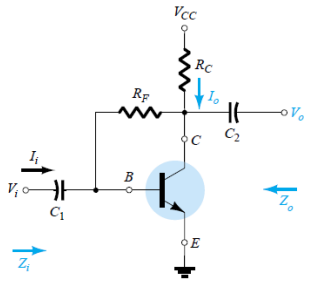


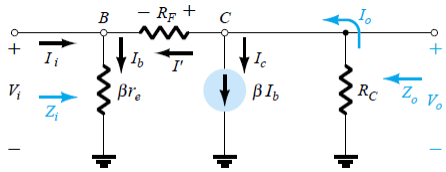


Robert L. Boylestad, *Electronic Devices and Circuit Theory*, 8th Edition, Pearson Education Inc, ISBN: 81-7808-590-9.

Collector Feed Back Configuration

- Voltage Gain, Av
- Current Gain, Ai





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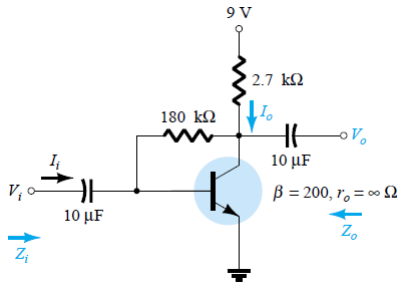
Collector Feed Back Configuration

- *Example 8.9 (Boylestad):* For given network, calculate re, Zi, Zo, Av and Ai.
  - Calculate with ro= 20 kOhm



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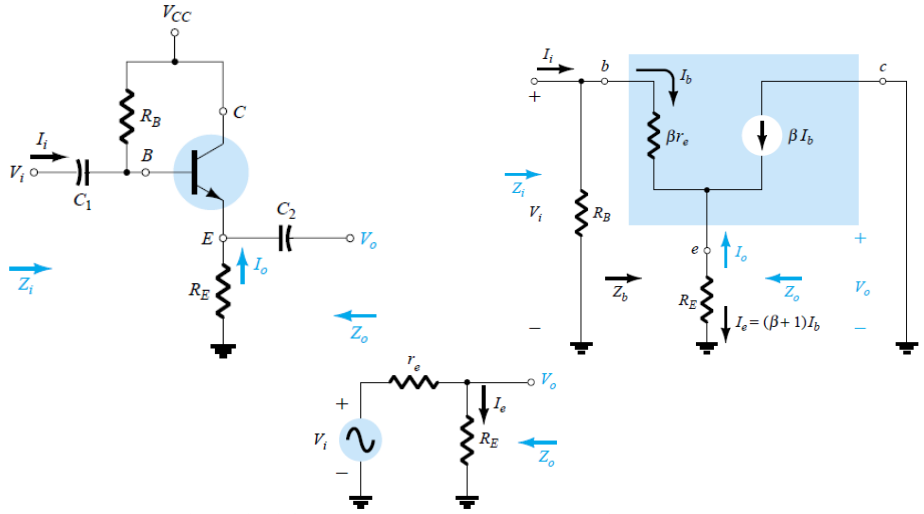
Emitter Follower Configuration



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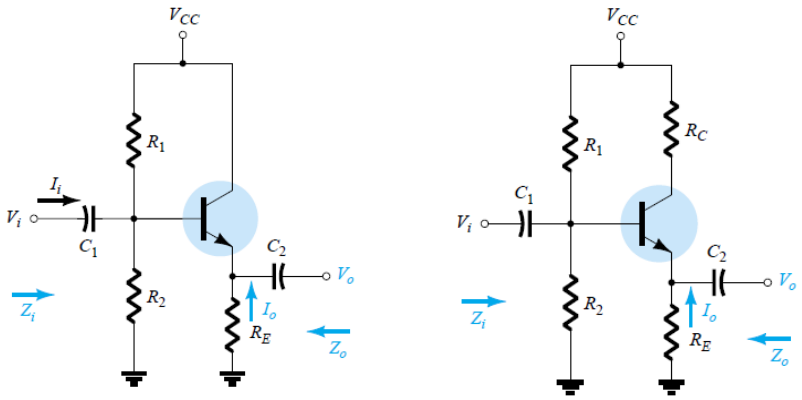
Emitter Follower Configuration



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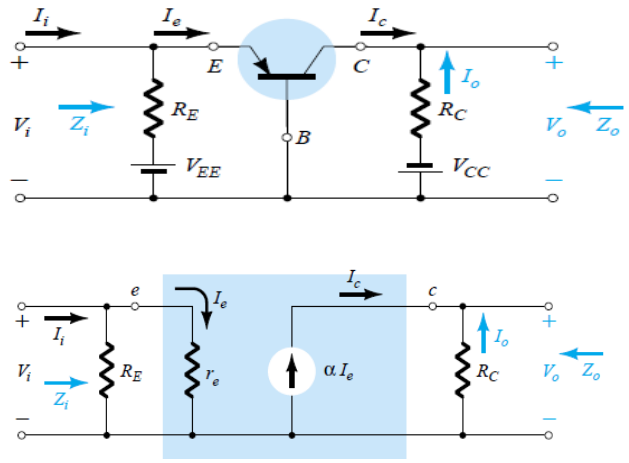
Common Base Configuration



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References

[1] Robert L. Boylestad, *Electronic Devices and Circuit Theory,* 8th Edition, Pearson Education Inc, ISBN: 81-7808-590-9.