

EE105 - Fall 2005
Microelectronic Devices and Circuits

Lecture 25

Bipolar Junction Transistor

Announcements

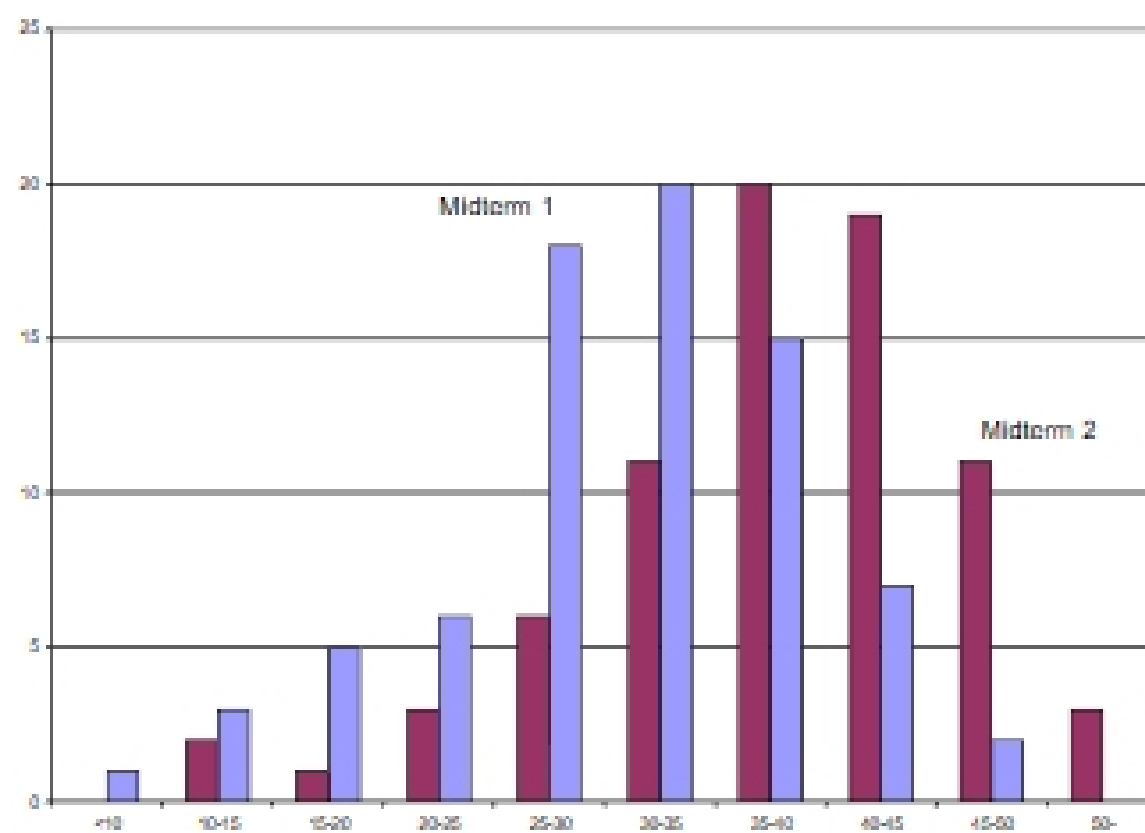
- › **Homework 11 due after Thanksgiving**
- › **No lab this week**
 - › Lab 9 next week
- › **Reading: Chapter 7 (7.1-3.)**

Midterm 2

- > Hi: 50
- > Lo: 12
- > Average: 38
- > Median 39.5

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Midterm 2



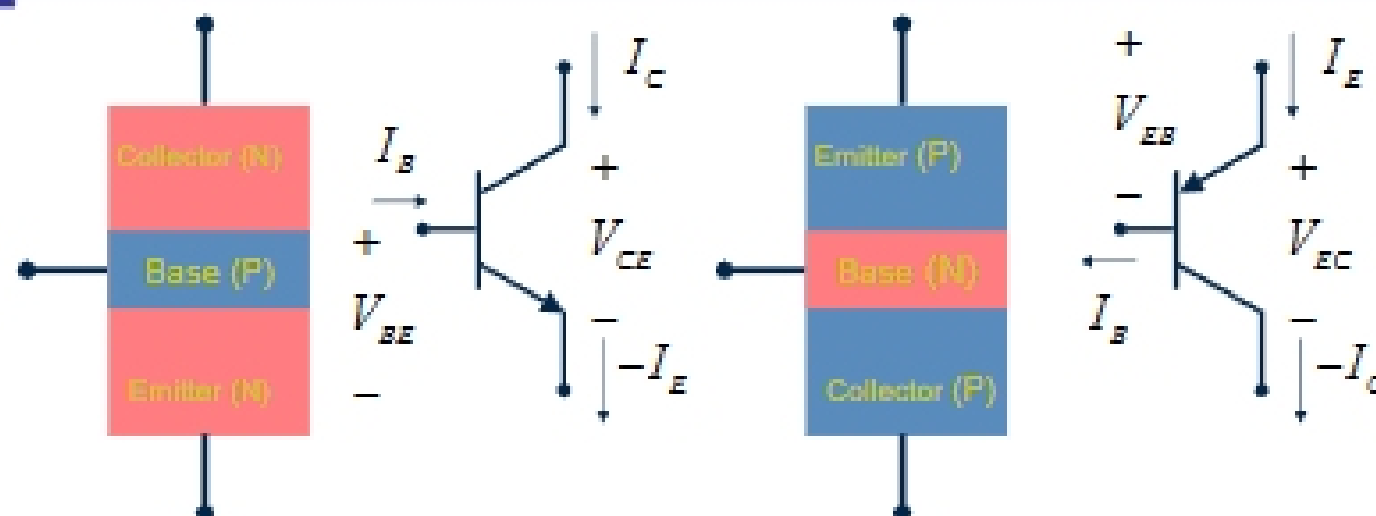
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Lecture Material

- › Last lecture
 - › Multistage amplifiers
 - › Cascode amplifier design example
- › This lecture
 - › Finish cascode amplifier
 - › Bipolar junction transistor

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Ideal BJT Structure



- › **NPN or PNP sandwich (Two back-to-back diodes)**
- › **How does current flow? Base is very thin.**
- › **A good BJT satisfies the following**

$$I_C \approx -I_E$$
$$I_C \gg I_B \quad I_C \approx I_S e^{\frac{qV_{BE}}{kT}}$$

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