Signal and Power Transistors

Component
École Nationale Supérieure d'Électrotechnique d'Électronique d'Informatique d'Hydraulique et des Télécommunications

Semester
Printemps

In brief

- **Ametys Code:** N6EE04B
- **Open to exchange students:** Yes

Presentation

Objectives

Present the operation of bipolar transistors, MOS capacitors, and MOS transistors. Write equations derived from physical phenomena. Define the models used in analog circuit design.

Description

Bipolar transistor: Bipolar effect. Current equations for NPN and PNP transistors - Operating modes - Static and dynamic models.

MOS transistor: MOS capacitance: Operating principle, steady-state analysis, dynamic analysis - MOS transistor: operating principle, electrical equations for NMOS and PMOS transistors, switch operation - Introduction to MOS technology

Model synthesis: ideal active component (IAC), real active component (RAC)

Pre-requisites

Semiconductor physics and PN junction