

Block 11 — Semiconductor Fundamentals and Diodes

Student Group

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Table of Contents

TBD

1. Semiconductor components

(approx. 4 blocks, based on previous lectures on [Diodes](#) and [Transistors](#))

1. Fundamentals (conductors, semiconductors, insulators, doping, band model, intrinsic conductivity)
2. Diodes (real characteristic curve, operating point, equivalent circuit)
3. Zener diode
4. LED
5. Protective circuit with diodes
6. Rectifier circuits (single-phase rectifier, center tap circuit, bridge rectifier, smoothing capacitor)
7. Bipolar transistor (structure, designations, characteristic curve, characteristic values)
8. Transistor as a switch (circuit, switching times and behavior)
9. MOSFET (structure, comparison with bipolar transistor)
10. Optional: Transistor as an amplifier

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