Block 03 — Electric Resistance and Power

Student Group

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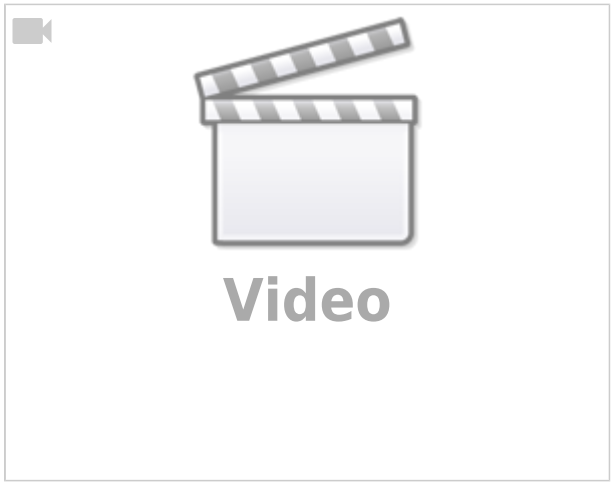
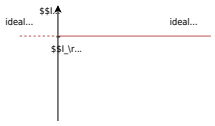
Ideal current source

From circuit theory, we abstract the **ideal current source**:

- Delivers a fixed current I_s, independent of load voltage.
- Symbol: circle with arrow.
- U–I characteristic: vertical line at $I = I_s$.

Fig. ##: ideal current source





Conductivity of Matter

Conductor

Charge carriers are freely movable in the conductor.

Examples:

- Metals
- Plasma

Semiconductor

In semiconductors, charge carriers can be generated by heat and light irradiation. Often a small movement of electrons is already possible at room temperature.

Examples:

- Silicon
- Diamond

Isolator

In the insulator, charge carriers are firmly bound to the atomic shells.

Examples:

- many plastics and salts