

# Block 03 — Electric Resistance and Power

## Student Group

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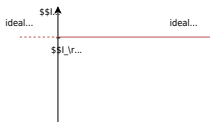
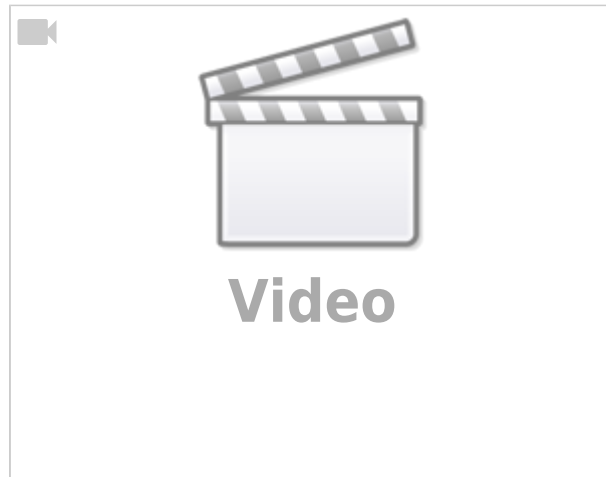
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## Ideal current source

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

<p><b>Conductor</b></p> <p>Charge carriers are freely movable in the conductor.</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Metals</li> <li>• Plasma</li> </ul>	<p><b>Semiconductor</b></p> <p>In semiconductors, charge carriers can be generated by heat and light irradiation. Often a small movement of electrons is already possible at room temperature.</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Silicon</li> <li>• Diamond</li> </ul>	<p><b>Isolator</b></p> <p>In the insulator, charge carriers are firmly bound to the atomic shells.</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• many plastics and salts</li> </ul>
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