

Electronics with the Modular System

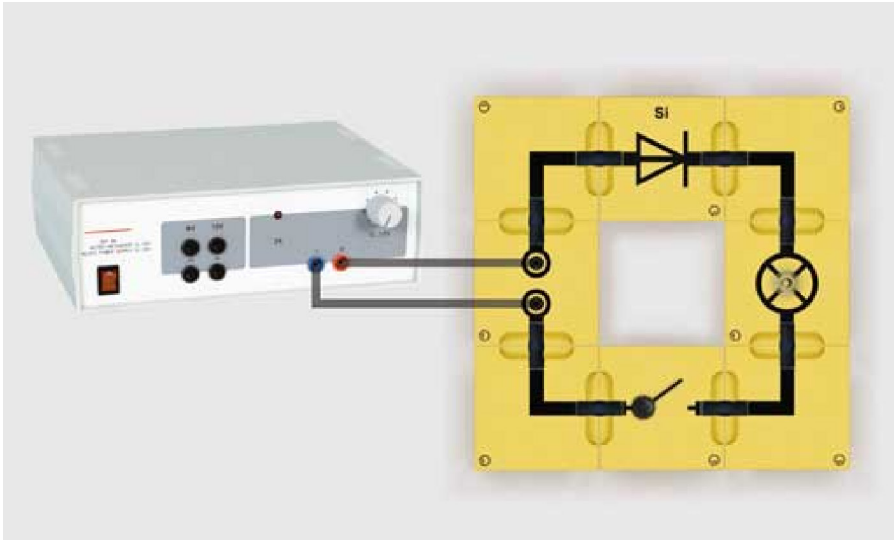
Basic Electronic Circuits
Semiconductor diodes

Silicon diode in a
DC circuit

Objective of the experiment

To investigate the characteristic of a silicon diode in a DC circuit.

Setup



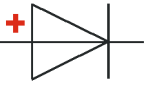
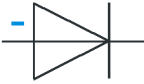
Apparatus

1	539 035	Diode Si, BST
1	539 024	Lamp socket E10, BST
1	505 15	Incandescent lamp, 6 V / 0.05 A, E10
1	539 025	Toggle switch, BST
1	539 003	Connector block BST, straight, 2 sockets
4	539 004	Connector blocks BST, 90° angle
8	539 000	Bridging plug, BST
1	521 49	Power supply, 12 V DC, 230 V
2	500 644	Safety connection lead, 100 cm
1	301 300	Demonstration experiment frame
1	301 301	Adhesive magnetic board

Carrying out the experiment

- Set up the circuit, close the toggle switch, and observe the lamp.
- Open the switch again.
- Reverse the voltage and repeat the experiment.

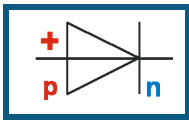
Observation

Polarity of the Si diode	Lamp lit up
	yes
	no

Evaluation

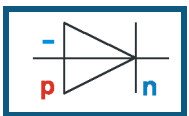
A silicon diode conducts electrical current when it is connected in the forward direction.

The forward direction is achieved by the following polarity:



The p-doped part of the silicon diode is then on the positive pole of the voltage source and the n-doped part, on the negative pole. A silicon diode does not conduct electrical current when it is connected in the reverse direction.

The reverse direction is achieved by the following polarity:



The p-doped part of the silicon diode is then on the negative pole of the voltage source and the n-doped part, on the positive pole.

Due to the fact that they allow current through in one direction only, semiconductor diodes are used for rectifying AC voltages.