Electronics with the Modular System

Basic Electronic Circuits

Solar cells

Short-circuit current of a solar cell

Objective of the experiment

To measure the short-circuit current I_0 of a solar cell as a function of the solar cell area A.

Setup

Apparatus

1	539 042	Solar cell, BST
2	539 004	Connector blocks BST, 90° angle
2	539 000	Bridging plug, BST
1	531 906	Demo multimeter, passive
2	500 644	Safety connection lead, 100 cm
1	301 300	Demonstration experiment frame
1	301 301	Adhesive magnetic board
additionally required		
1	500 644	Strip of cardboard approx. 5 cm x 10 cm

BST 2012-02-24

Carrying out the experiment

Note
This experiment can be performed during normal daylight. Direct solar radiation is not necessary.

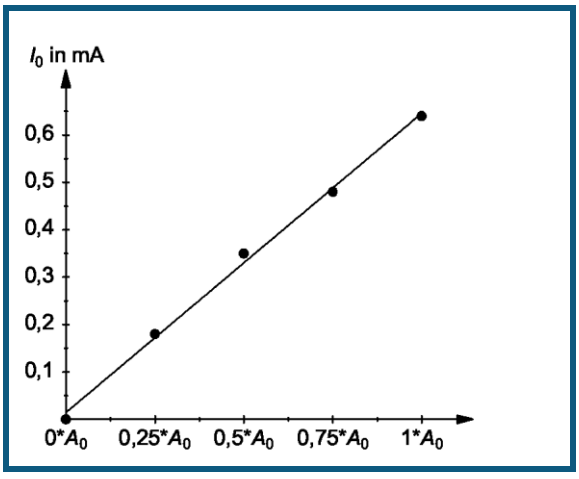
- Set up the circuit.
- Initially, cover the solar cell with a strip of cardboard.
- Pulling away the strip of cardboard, enlarge the solar cell area A by ¼ intervals.
- Read the current I_0 from the demo multimeter for each solar cell area A.

Measuring example

Solar cell area A	Current I_0 / mA
$0*A_0$	0
$1/4*A_0$	18
$1/2*A_0$	35
$3/4*A_0$	48
$1*A_0$	64

Evaluation

An illuminated solar cell's measured current is known as its short-circuit current I_0.



The short-circuit current I_0 is proportional to the area A of the solar cell:
$I_0 \sim A$.