SUNdidactics

SolarEnergyDidactics
SolarEducation
SolarEngineering

innovative Solarsysteme für Schule und Ausbildung
innovative solar- systems for school, college, technical education

- Solardidaktik
- Solarzellen
- Solarmodule
- Photovoltaik- Experimentiergeräte
- Photovoltaik- Gerätentwicklung
- Experimentieranleitungen didaktische Konzepte
- Solarberatung
- Solar- Workshops
- Solar- Fortbildung für Lehrkräfte
- solare Aus- und Weiterbildung
- Solarspielzeuge

- solardidactics
- solar cells
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- solar- workshops
- solar consulting
- solar education
- solar training for teachers
- solar toys

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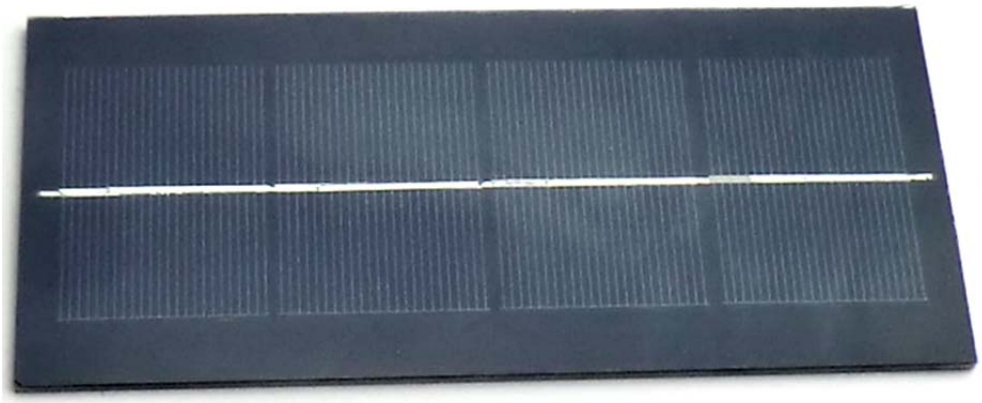
SUSEmod6 – a powerful and robust 2,48 V solar module for PV experiments



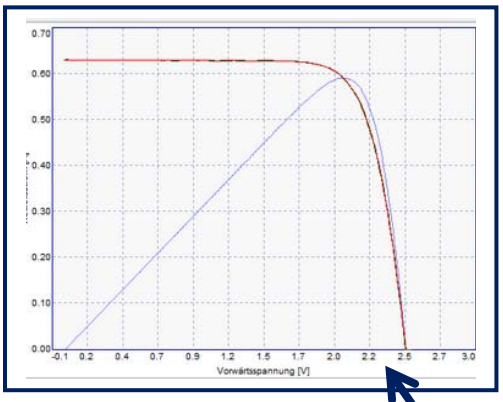
The solar module SUSEmod6 contains 4 solar cells in intern series connection
Module dimensions 160x 75 mm
4 solar cells with 52 x 35 mm each

The solar module **SUSEmod6** contains 4 solar cells in intern series connection. The solar cells are embedded break-proof in a plastic plate of the dimensions 160 x 75 mm. The surface on top of the solar cell is laminated super-transparent. On the rear side there are 2 soldering contacts for soldering on the positive and negative conductors. The solar module can be stuck to smooth surfaces on the rear side with double-faced adhesive tape or with glue. With this solar module single experiments as well as trials with series and parallel connections can be conducted or it can be used as a solar filling station for solar vehicles, e.g. in the modules SUSE 4.34, SUSE 4.35, and with the SUSE solar boat 4. The module is especially suited for experiments with storage GoldCaps 2.5 V and with LEDs.

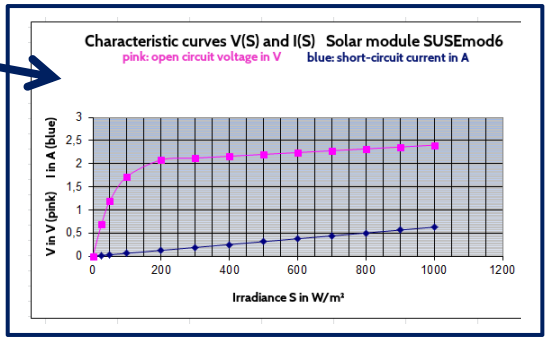
Module: plastic base plate 160 x 75 mm with super-transparent surface, mechanically very robust
Solar cell: multicrystalline solar cells 52 x 35 mm

Technical data with an irradiation of 1000 W/m², T = 25°C, AM = 1.5

Physical value	Symbol	Numerical value	Physical unit	Annotations
Dimensions cells		52 x 35	mm	Multicrystalline cells
Open circuit voltage	V_{oc}	2,48	V	Typical for silicon
Short circuit current	I_{sc}	0,63	A	Proportional to light intensity S
El. power	P	1,2	W	With solar spectrum AM 1,5
Efficiency factor	η	mind. 16,0	%	Quality feature
Filling factor	FF	77	%	FF is a Quality feature
Current density	j	34,6	mA/cm²	j is a Quality feature
Thermal behavior U_{oc}		- 0,36	% /K	The voltage decreases with an increase in temp. with 0.36 per 1K
Thermal behavior I_{sc}		+ 0,06	% /K	The short circuit current increases with 0.06 % per 1 K
Voltage at MPP	V_{MPP}	2,03	V	
Current at MPP	I_{MPP}	0,59	A	
Power at MPP	P_{MPP}	1,2	W	



The V(S) (pink) and I(S) (blue) characteristic curves
The characteristic curves show the dependency of the open circuit voltage V (exponential function) and the short-circuit current I (linear function) on the irradiance S (light intensity)
0 = absolute darkness
1000 = bright sunshine in the summer half-year with deep blue sky



The I(V) and P(V) characteristic curves
The red I(V) characteristic curve shows the dependency of the solar cell current on the solar cell voltage with a resistive load on the solar cell. The intersection point with the x-axis is the open circuit voltage of the solar cell, the intersection point with the y-axis is the short-circuit current.
The power curve (blue) shows the maximum power point MPP.

