



SUNdidactics
SolarEnergyDidactics
SolarEducation
SolarEngineering
Photovoltaics+Solarthermal
 innovative Solarsysteme für Schule und Ausbildung
 innovative solar- systems for school, college, technical education

NILS ISFH
 Vertrieb
 Auslieferung
 Rechnungsservice
 Solartechnik
 Solardidaktik
 Solare
 Wissenschaft

Photovoltaik-
 System
SUSE
 Solartechnik
 Experimentiergeräte
 Solare Experimente
 von der Grundschule
 bis zum Abitur

BNE
 Bildung
 für
 nachhaltige
 Entwicklung

Solardidactic – Solarzellen – Solarmodule – PV- Experimentiergeräte – Solarthermie -Experimentieranleitungen
 Solarspielzeug – didaktische Konzepte – Solarberatung – Fortbildung – solare Aus- und Weiterbildung
 Solardidactics + solar cells + solar modules + photovoltaic experiment devices + solar toys + solar education and training

SUNdidactics Solar Systems

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SUSEmod8 – a powerful and robust 1,26 V solar module for PV experiments

The solar module **SUSEmod8** contains 2 solar cells in **internal series connection**. Module size: 60mm x 60mm,

2 solar cells with 26mm x 52mm each
 Left: Front side of the solar module
 Right: Back side of the solar module

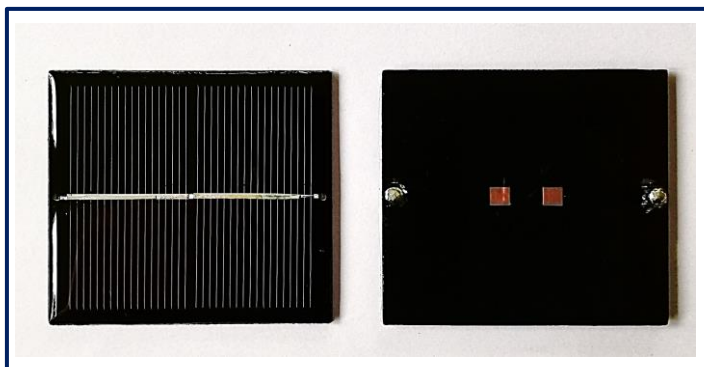
The solar module **SUSEmod8** contains 2 solar cells (0,63V/450mA) in internal series connection. The solar cells are embedded break-proof in a synthetic plate of the dimensions 60mm x 60mm.

The top side above the solar cell is super-transparently laminated with epoxy resin. On the back side, 2 soldering contacts are located to solder on the positive and negative conductors.

The solar module can be attached to flat surfaces with double-faced adhesive tape or glue on the back side. In delivery condition the front surface is covered with a protective film, which is removed before first use.

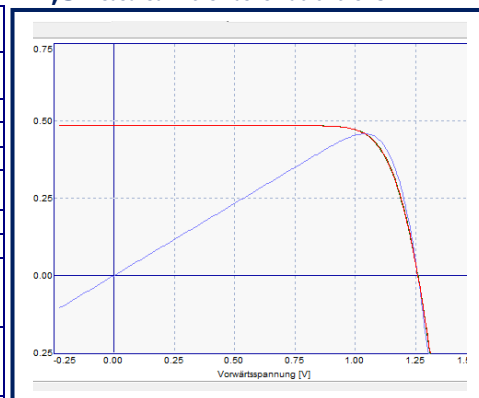
Module: Synthetic support 60mm x 60mm with super-transparent surface, very robust mechanically

Solar cells: 2 high-quality monocrystalline PERC solar cells 26mm x 52mm in internal series connection



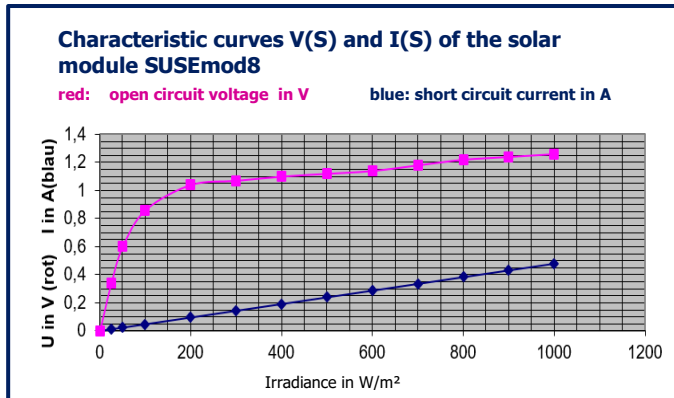
Technical data with an irradiance of $S = 1000 \text{ W/m}^2$, $T = 25^\circ\text{C}$, $AM = 1,5$ measured in the flasher lab of the ISFH

Physical value	Symbol	Numerical value	Physical unit	Annotations
Dimensions of the solar cells	s	2x 26 x 52	mm	2 monocrystalline solar cells
Open circuit voltage	V_{oc}	1,26	V	Typical for silicon
Short-circuit current	I_{sc}	0,48	A	Proportional to light intensity S
El. power at MPP	P	0,475	W	With solar spectrum, AM 1.5
Efficiency factor (cell)	η	17,5	%	Efficiency factor of the energy conversion
Filling factor	FF	78,24	%	FF is a quality feature
Current density	j	35,6	mA/cm^2	j is a quality feature
Thermal behavior open circuit voltage U_{oc}		- 0,36	% /K	The voltage decreases by 0,36% with an increase in temperature of 1K
Thermal behavior short-circuit current I_{sc}		+ 0,06	% /K	The short-circuit current increases by 0.06 % per 1K
Voltage at MPP	V_{MPP}	1,04	V	
Current at MPP	I_{MPP}	0,46	A	



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 the 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 of the solar cell.

The point of the intersection with the x-axis is the open circuit voltage V_{oc} of the solar cell, the point of intersection with the y-axis is the short-circuit current I_{sc} . The power curve (blue) shows the maximum power point (MPP) at its maximum