Shell Solar

Product Information Sheet

Shell S105 Photovoltaic Solar Module

General

The Shell S105 module contains 54 series connected 125 x 125 mm multi-crystalline silicon solar cells.

The Shell S105 can generate a peak power of 105 watt at 25.5 volt.

The Shell S105 solar module has been designed for grid connected applications.

Qualifications and Certificates

The Shell S105 solar module meets the following requirements:

- **IEC 61215**
- **TÜV Isolation Class II**

ISO 9001

All Shell Solar modules are produced in EN-ISO 9001 certified factories.

Limited Warranties

- **Peak Power for 20 years**
- **Product workmanship for 2 years**

Shell S105 Module

Junction Box

The junction box provides a high quality, dust protected and splash proof IP54-rated housing. The housing contains a rigid connection block with cage clamps and by-pass diodes providing "hot spot" protection for the solar cells.

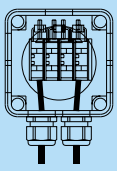
For ease of installation the junction box is finished with male and female MultiContact® flying cables.

Spelsberg Junction Box

Maximum conductor cross-section: 4 mm²

Type of protection: IP54

Number of by-pass diodes: 3



Benefits

- **Tolerance on the peak power output is ±5% ensuring that you receive the power that we promise.**
- **Highly transparent tempered glass delivering more power and ensuring high impact resistance and protection against hail, snow, ice and storms.**
- **New upgraded frame offers class leading strength in applications where heavy snow or high winds may be experienced.**
- **Specially designed aluminium anodized frame with mounting slots and a close-to-square cross section to enable secure rear or front clamp mounting options.**
- **MultiContact® flying cables as standard to reduce installation time in grid connected applications.**
- **Nearly 50MW of cumulative installed experience has been applied to the evolution of our multi-crystalline range to ensure that our products have a long and reliable service life backed by a 20 year warranty.**

ELECTRICAL EQUIPMENT, CHECK WITH YOUR INSTALLER

Due to continuous research and product improvement the specifications in this Product Information Sheet are subject to change without notice. Specifications can vary slightly. For installation and operation instructions, see the applicable manuals. No rights can be derived from this Product Information Sheet and Shell Solar assumes no liability whatsoever connected to or resulting from the use of any information contained herein.

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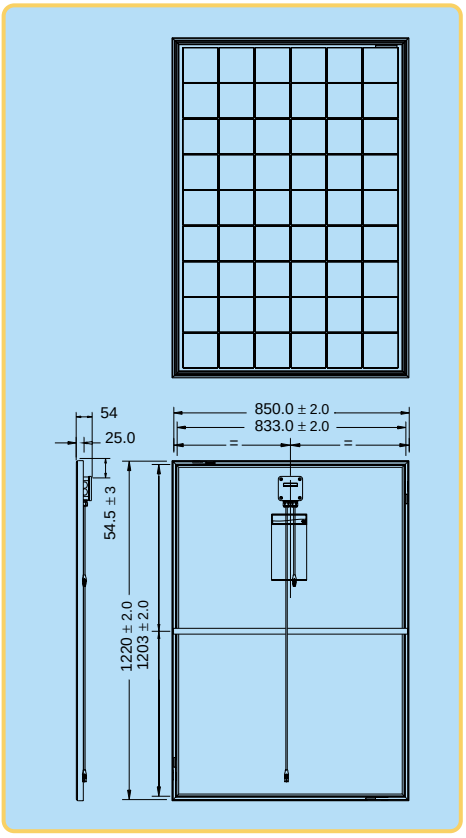
Mechanical Specifications Module

The module frame is provided with a slot on each side in which M8 bolts can be inserted. The bolts are able to slide over almost the entire length of the frame. This provides a simple and easy to use mounting method for fixing the solar module to mechanical constructions. Simple clamps can be designed to mount the module from the front-side.



Outside dimensions (mm)	1220 x 850
Thickness (inc. junction box) (mm)	54
Thickness (exc. junction box) (mm)	25
Weight (kg)	14
Cable length (M)(mm)	1000
Cable length (F)(mm)	400

For installation instructions, please refer to the **Installation Manual** which is available from Shell Solar.

Electrical Characteristics

Data at Standard Test Conditions (STC)

STC: irradiance level 1000W/m^2, spectrum AM 1.5 and cell temperature 25°C

Rated power	P_r	105W
Peak power*	P_{mpp}*	105W
Peak power voltage	V_{mpp}	25.5V
Open circuit voltage	V_{oc}	31.8V
Short circuit current	I_{sc}	4.5A
Minimum peak power	$P_{mpp\ min}$	99.75W
*Tolerance on Peak Power		±5%

The abbreviation 'mpp' stands for Maximum Power Point.

Typical data at Nominal Operating Cell Temperature (NOCT) conditions

NOCT: 800W/m^2 irradiance level, AM 1.5 spectrum, wind velocity 1m/s, T_{amb} 20°C

Temperature	T_{NOCT}	44°C
Mpp power	P_{mpp}	77W
Mpp voltage	V_{mpp}	23.1V
Open circuit voltage	V_{oc}	29.4V
Short circuit current	I_{sc}	3.6A

Typical data at low irradiance

The relative reduction of module efficiency at an irradiance of 200W/m^2 in relation to 1000W/m^2 both at 25°C cell temperature and AM 1.5 spectrum is 9%.

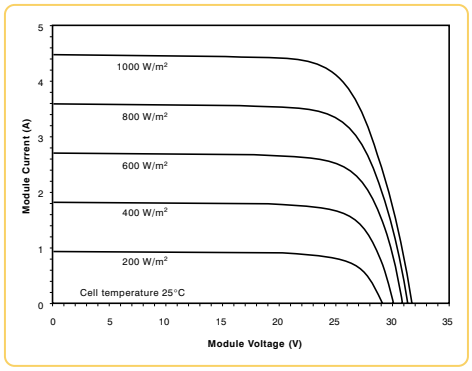
Temperature coefficients

$\alpha\ P_{mpp}$	−0.45 %/°C
$\alpha\ V_{mpp}$	−115 mV/°C
$\alpha\ I_{sc}$	+2 mA/°C
$\alpha\ V_{oc}$	−115 mV/°C

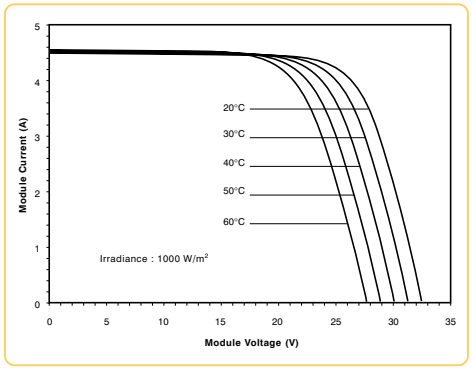
Maximum system voltage: 600Vdc

Typical I/V Characteristics

The I/V graph below shows the typical performance of the solar module at various levels of irradiance.



The I/V graph below shows the typical performance of the solar module at various cell temperatures.



References in this Product Information Sheet to 'Shell Solar' are to companies and other organisational entities within the Royal Dutch/Shell Group of Companies that are engaged in the photovoltaic solar energy business. Shell Solar was set up in 1999 and has its principal office in Amsterdam, the Netherlands.

For further information on all Shell Solar products contact:

Shell Solar
Customer Service Centre
P.O.Box 849 5700 AV Helmond The Netherlands
Tel +31 492-508 751 Fax +31 492-508 700
E-mail solarinfo@si.shell.com
Web www.shellsolar.com

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