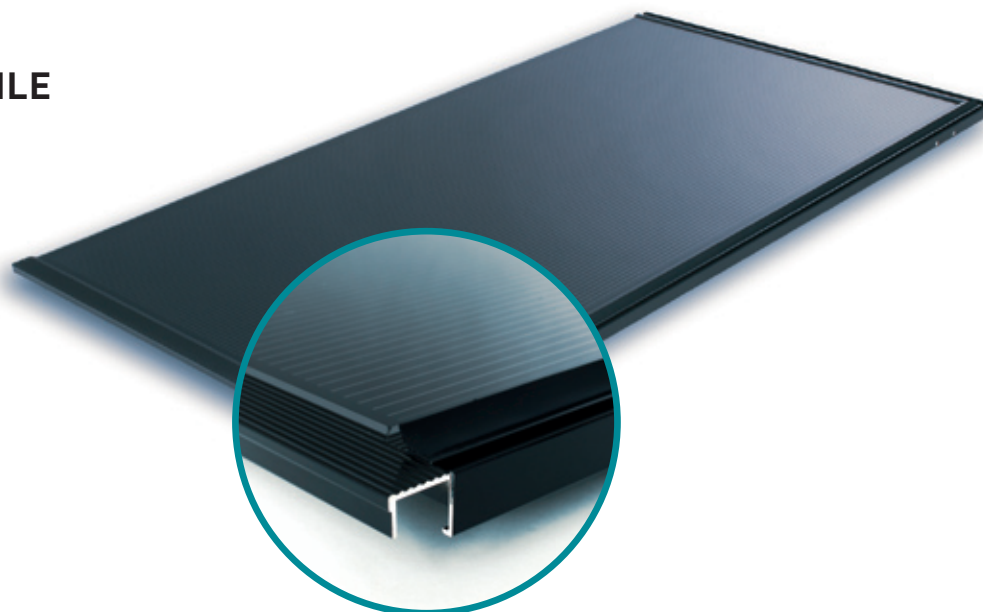


## SOLAR ROOF TILE



- Integrated**
- Module with twin benefits: Roof tile and energy generator
  - Elegant, building-integrated solution that enhances the building

- Easy installation**
- Modules laid like tiles on roof battens
  - Compact module format enables easy mounting by a single installer

- High yields**
- Positive output tolerance (+8/-2 per cent), excellent self-cleaning
  - Excellent temperature coefficient also ensures high yields at hot locations

### Quality made in Germany

Sulfurcell's production accords with the high quality standards of the semiconductor industry and it manufactures its CIS-based thin-film solar modules solely in Germany. The uniformly black glass surfaces provide visible proof of the quality and make the modules amongst the most attractive on the market. Sulfurcell products are fully mature: they were already launched on the market in 2005 and have been continually improved since then. The modules are IEC-certified and more than meet this standard: for example, they maintain their performance capability not only when they are aged for the standard 1 000 hours at 85 °C and 85% humidity but also after 2 000 hours. This durability is reflected in the comprehensive warranty: Sulfurcell not only grants its end customers an independent product warranty lasting 10 years for all modules but also grants an output warranty for 25 years\*\*\*.

### Roof-integrated modules are suitable for:

- Building-integrated photovoltaics (BIPV)
- Large-scale sloping roofs on private and commercial properties
- And as an intelligent roofing material for new buildings and refurbishments

### About Sulfurcell Solartechnik GmbH

The Sulfurcell technology company is one of the leading manufacturers of CIS-based thin-film solar modules and is the exclusive partner for the Helmholtz Centre Berlin, Europe's largest research facility for thin-film photovoltaics. Its shareholders and owners include Intel Capital, Vattenfall Europe and Gaz de France Suez.



| Module  | SCG57-HV-RI | SCG60-HV-RI | SCG62-HV-RI | SCG65-HV-RI |
|---|-------------|-------------|-------------|-------------|
| <b>Electrical Characteristics at 1000 W/m<sup>2</sup>, 25 °C, AM1.5</b>             |             |             |             |             |
| Rated power**   | 57.5 W      | 60 W        | 62.5 W      | 65 W        |
| Tolerance   | +8/-2%      | +8/-2%      | +8/-2%      | +8/-2%      |
| Module efficiency   | 7.0%        | 7.3%        | 7.6%        | 7.9%        |
| Voltage at V <sub>mpp</sub> *   | 39.7 V      | 40.3 V      | 41.5 V      | 42.2 V      |
| Current at I <sub>mpp</sub> *   | 1.45 A      | 1.49 A      | 1.51 A      | 1.54 A      |
| Open-circuit voltage* V <sub>oc</sub>   | 51.4 V      | 52.1 V      | 53.7 V      | 53.9 V      |
| Short-circuit current* I <sub>sc</sub>  | 1.71 A      | 1.74 A      | 1.76 A      | 1.78 A      |
| Max. system voltage   | 1000 V      | 1000 V      | 1000 V      | 1000 V      |
| Reverse current load  | 5 A         | 5 A         | 5 A         | 5 A         |
| <b>Electrical Characteristics at 800 W/m<sup>2</sup> and NOCT</b>                   |             |             |             |             |
| Voltage at V <sub>mpp</sub> *   | 36.7 V      | 36.7 V      | 36.9 V      | 37.3 V      |
| Current at I <sub>mpp</sub> *   | 1.20 A      | 1.22 A      | 1.24 A      | 1.26 A      |
| Open-circuit voltage* V <sub>oc</sub>   | 47.1 V      | 47.7 V      | 47.8 V      | 48.5 V      |
| Short-circuit current* I <sub>sc</sub>  | 1.41 A      | 1.42 A      | 1.43 A      | 1.44 A      |
| Power at 800 W/m <sup>2</sup> and NOCT  | 44.1 W      | 44.7 W      | 45.9 W      | 47.0 W      |
| <b>Electrical Characteristics at 200 W/m<sup>2</sup>, 25 °C, AM1.5</b>              |             |             |             |             |
| Absolute efficiency reduction (from 1000 W/m <sup>2</sup> to 200 W/m <sup>2</sup> ) | 0.8%        | 0.8%        | 0.8%        | 0.8%        |

### Notes

\* Tolerance of the electrical parameters ± 10%  
 \*\* Determined under standard test conditions: 25 °C, 1000 W/m<sup>2</sup>, AM1.5  
 The modules are not suitable for mobile and maritime applications.  
 Please note that if the modules are stored in darkness for longer periods of time, they only attain their rated output once they have been exposed to sufficient solar radiation. **Please refer to our user information, which is available at [www.sulfurcell.com](http://www.sulfurcell.com). Since we continually optimise our solar modules, this can lead to changes in the technical data specified in the data sheet.** All data applies exclusively to modules produced from the given date.  
 \*\*\* See Sulfurcell Solartechnik GmbH's independent manufacturer's warranty for end customers for SCG-type PV modules (as of July 2010). The modules are currently permitted for use in the following countries: EU Member States, Switzerland, Norway, Turkey, Liechtenstein, Israel, Lebanon, Croatia, Bosnia-Herzegovina, Serbia. (09/2010)

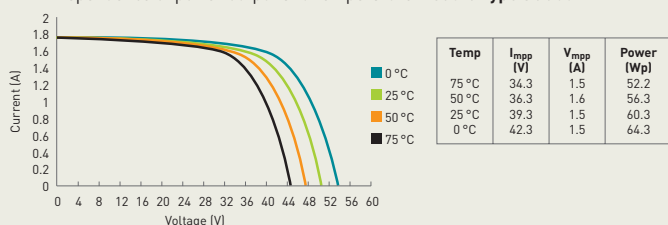


- Qualified, IEC EN 61646
- Safety tested, IEC EN 61730
- Periodic Inspection
- Salt corrosion resistance tested, IEC EN 61701
- Ammoniac-tested in accordance to DIN 50916:1985

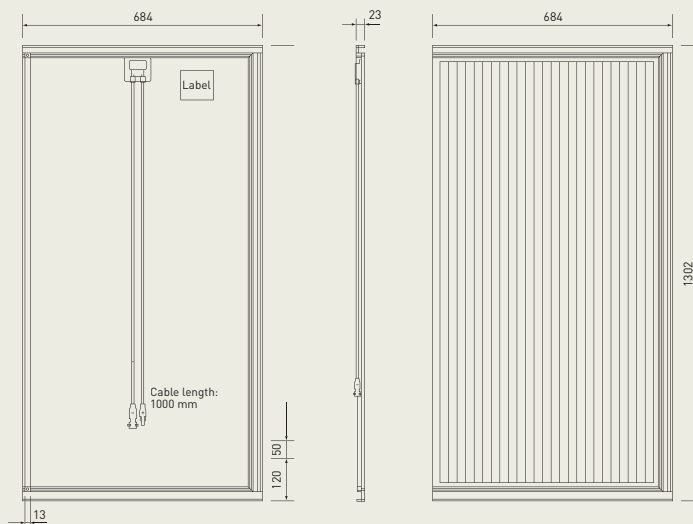
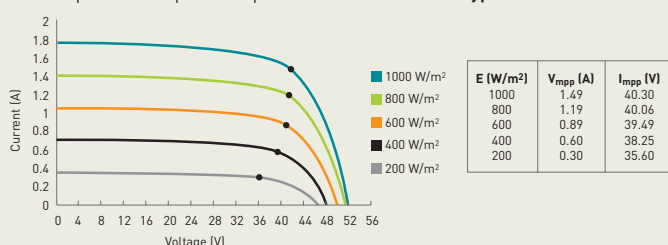
| Thermal Parameters                                    |                               |
|---|-------------------------------|
| NOCT  | 47 °C                         |
| Temperature coefficient of (I <sub>sc</sub> ) in %/K  | 0.04%                         |
| Temperature coefficient of (V <sub>oc</sub> ) in %/K  | -0.26%                        |
| Temperature coefficient of (P <sub>max</sub> ) in %/K | -0.30%                        |
| Operating Conditions                                  |                               |
| Temperature range                                     | -40 °C/+85 °C                 |
| Static load   | 2400 Pa/245 kg/m <sup>2</sup> |
| Max. torsion  | 1.2°                          |
| Hail test   | passed                        |

| Mechanical Characteristics   |                       |               |   |
|------------------------------|-----------------------|---------------|---|
| Length/Width                 | 1302 mm/684 mm        | IP Code       | 65  |
| Thickness incl. junction box | 23 mm                 | Cell type     | CIS thin-film technology                                      |
| Frame thickness              | 20 mm                 | Cover pane    | 4 mm tempered glass   |
| Weight                       | 14.6 kg               | Rear pane     | 2 mm float glass  |
| Output cables length (mm)    | (+) 1000; (-) 1000    | Encapsulation | EVA   |
| Connector                    | Y-SOL 4               | Frame type    | Anodized aluminium  |
| Bypass diode                 | 1 x Diotec BY550-1000 | Certification | IEC EN 61646, IEC EN 61730, IEC EN 61701, Protection Class II |

Dependence of power output and temperature **Module Type SCG60-HV-RI**



Dependence of power output and irradiance **Module Type SCG60-HV-RI**



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