



### Characteristics of a PV module

Manufacturer, model : **Stion, STO 145**  
 Availability : Prod. from 2013  
 Data source : RETC, LLC 20140917  
 File : Stion\_STO145\_RETC\_20140917.PAN of 17/09/14 18h10

|                                 |               |                |                        |                             |
|---------------------------------|---------------|----------------|------------------------|-----------------------------|
| <b>STC power (manufacturer)</b> | <b>Pnom</b>   | <b>145 Wp</b>  | <b>Technology</b>      | <b>CIS</b>                  |
| Module size (W x L)             | 0.656 x 1.656 | m <sup>2</sup> | Rough module area      | Amodule 1.09 m <sup>2</sup> |
| Number of cells                 | 1 x 134       |                | Sensitive area (cells) | Acells N/A m <sup>2</sup>   |

#### Specifications for the model (manufacturer or measurement data)

|                          |      |         |                             |       |                       |
|--------------------------|------|---------|-----------------------------|-------|-----------------------|
| Reference temperature    | TRef | 25 °C   | Reference irradiance        | GRef  | 1000 W/m <sup>2</sup> |
| Open circuit voltage     | Voc  | 79.6 V  | Short-circuit current       | Isc   | 2.68 A                |
| Max. power point voltage | Vmpp | 61.0 V  | Max. power point current    | Impp  | 2.38 A                |
| => maximum power         | Pmpp | 145.2 W | Isc temperature coefficient | mulsc | 0.3 mA/°C             |

#### One-diode model parameters

|                               |         |            |                             |         |            |
|-------------------------------|---------|------------|-----------------------------|---------|------------|
| Shunt resistance              | Rshunt  | 550 ohm    | Diode saturation current    | IoRef   | 87 nA      |
| Serie resistance              | Rserie  | 2.77 ohm   | Voc temp. coefficient       | MuVoc   | 0 mV/°C    |
|                               |         |            | Diode quality factor        | Gamma   | 1.35       |
| Specified Pmax temper. coeff. | muPMaxR | -0.26 %/°C | Diode factor temper. coeff. | muGamma | 0.002 1/°C |

#### Reverse Bias Parameters, for use in behaviour of PV arrays under partial shadings or mismatch

|                                     |      |                        |                                  |        |
|-------------------------------------|------|------------------------|----------------------------------|--------|
| Reverse characteristics (dark)      | BRev | 3.20 mA/V <sup>2</sup> | (quadratic factor (per cell))    |        |
| Number of by-pass diodes per module |      | 1                      | Direct voltage of by-pass diodes | -0.7 V |

#### Model results for standard conditions (STC: T=25°C, G=1000 W/m<sup>2</sup>, AM=1.5)

|                           |           |          |                           |        |            |
|---------------------------|-----------|----------|---------------------------|--------|------------|
| Max. power point voltage  | Vmpp      | 61.0 V   | Max. power point current  | Impp   | 2.38 A     |
| Maximum power             | Pmpp      | 145.2 Wc | Power temper. coefficient | muPmpp | -0.27 %/°C |
| Efficiency(/ Module area) | Eff_mod   | 13.4 %   | Fill factor               | FF     | 0.681      |
| Efficiency(/ Cells area)  | Eff_cells | N/A %    |                           |        |            |

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