

- High Temperature and Low Light Performance
- 5-Year Limited Product Warranty
- Limited Power Output Warranty:  
92% at 10 years, 84% at 20 years, 80% at 25 years (of minimum power)
- Quick-Connect Terminals and Adhesive Backing
- Bypass Diodes for Shadow Tolerance



#### Performance Characteristics

Rated Power ( $P_{max}$ ): 68 Wp  
Production  $P_{max}$  Tolerance:  $\pm 5\%$

#### Construction Characteristics

Dimensions: Length: 2849 mm (112.1"), Width: 394 mm (15.5"), Depth: 4 mm (0.2"),  
16 mm (0.6") including potted terminal housing assembly  
Weight: 3.9 kg (8.7 lbs)  
Output Cables: 4 mm<sup>2</sup> (12 AWG) cable with weatherproof DC-rated quick-connect terminals  
560 mm (22") length  
Bypass Diodes: Connected across every solar cell  
Encapsulation: Durable ETFE high light-transmissive polymer  
Adhesive: Ethylene propylene copolymer adhesive sealant with microbial inhibitor  
Cell Type: 11 triple junction amorphous silicon solar cells 356 mm x 239 mm  
(14" x 9.4") connected in series

#### Qualifications and Safety



UL 1703 Listed by Underwriters Laboratories for electrical and fire safety (Class A Max. Slope 2/12, Class B Max. Slope 3/12, Class C Unlimited Slope fire ratings) for use in systems up to 600 VDC.



IEC 61646 and IEC 61730 certified by TÜV Rheinland for use in systems up to 1000 VDC.

#### Laminate Standard Configuration

Photovoltaic laminate with potted terminal housing assembly with output cables and quick-connect terminals on top.

#### Application Criteria\*

- Installation temperature between 10 °C - 40 °C (50 °F - 100 °F)
- Maximum roof temperature: 85 °C (185 °F)
- Minimum slope: 3° (1/2:12)
- Maximum slope: 60° (21:12)
- Approved substrates include certain membrane and metal roofing products. See United Solar for details.

\*Detailed installation requirements are specified in United Solar's installation manuals.



Flexible



Lightweight



Durable



No-Glass



Shadow Tolerant



More kWh

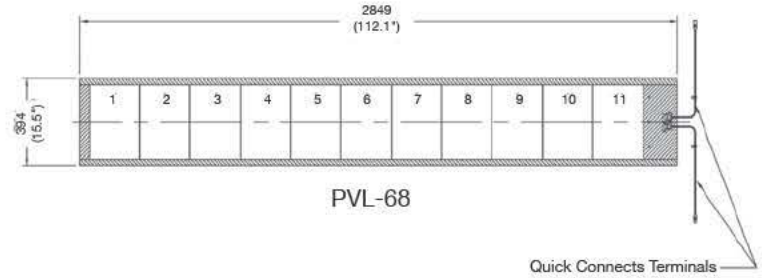
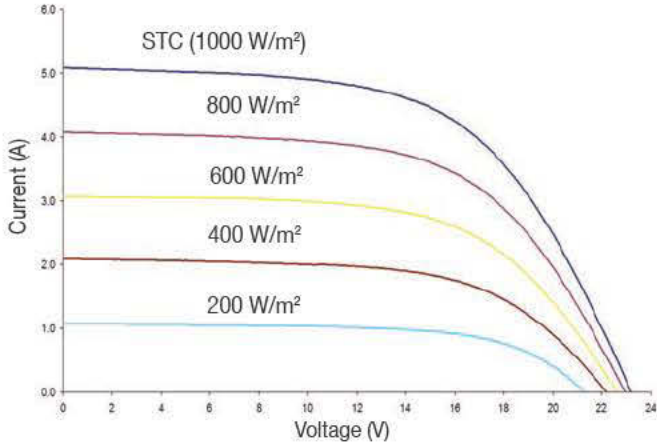


High Temp Performance



Low Light Performance

### IV Curves at various Levels of Irradiance at Air Mass 1.5 and 25 °C Cell Temperature



All measurements in mm  
Inches in parentheses  
Tolerances: Length: ± 5 mm (1/4"), Width: ± 3 mm (1/8")

### Electrical Specifications

#### STC

(Standard Test Conditions)  
(1000 W/m<sup>2</sup>, AM 1.5, 25 °C Cell Temperature)

Maximum Power ( $P_{max}$ ): 68 W  
Voltage at Pmax ( $V_{mpp}$ ): 16.5 V  
Current at Pmax ( $I_{mpp}$ ): 4.13 A  
Short-circuit Current ( $I_{sc}$ ): 5.1 A  
Open-circuit Voltage ( $V_{oc}$ ): 23.1 V  
Maximum Series Fuse Rating: 10 A (UL), 8 A (IEC)

#### NOCT

(Nominal Operating Cell Temperature)  
(800 W/m<sup>2</sup>, AM 1.5, 1 m/sec. wind)

Maximum Power ( $P_{max}$ ): 53 W  
Voltage at Pmax ( $V_{mpp}$ ): 15.4 V  
Current at Pmax ( $I_{mpp}$ ): 3.42 A  
Short-circuit Current ( $I_{sc}$ ): 4.1 A  
Open-circuit Voltage ( $V_{oc}$ ): 21.1 V  
NOCT: 46 °C

### Temperature Coefficients

(at AM 1.5, 1000 W/m<sup>2</sup> irradiance)

Temperature Coefficient (TC) of  $I_{sc}$ : 0.001/K (0.10%/°C)  
Temperature Coefficient (TC) of  $V_{oc}$ : -0.0038/K (-0.38%/°C)  
Temperature Coefficient (TC) of  $P_{max}$ : -0.0021/K (-0.21%/°C)  
Temperature Coefficient (TC) of  $I_{mpp}$ : 0.001/K (0.10%/°C)  
Temperature Coefficient (TC) of  $V_{mpp}$ : -0.0031/K (-0.31%/°C)

$$y = y_{reference} \cdot [1 + TC \cdot (T - T_{reference})]$$

#### Notes:

- During the first 8-10 weeks of operation, electrical output exceeds specified ratings. Power output may be higher by 15%, operating voltage may be higher by 11% and operating current may be higher by 4%.
- Production tolerance for  $P_{max}$  at standard test conditions (STC) is +/-5% and for other electrical parameters is +/-10%. Electrical specifications are based on measurements performed at standard test conditions of 1000 W/m<sup>2</sup> irradiance, Air Mass 1.5, and cell temperature of 25 °C after stabilization.
- Actual performance may vary up to 10% from rated power due to low temperature operation, spectral and other related effects. Maximum system open-circuit voltage not to exceed 600 VDC per UL, 1000 VDC per IEC regulations.
- Specifications subject to change without notice.