

TS-Suite100 WS

High Performance Low-Voltage Photovoltaic Modules

Toledo Solar Inc. manufactures cadmium telluride thin-film frameless solar modules. Using a proprietary advanced deposition process, the semiconductor film is uniform providing consistent performance.

Toledo Solar's mission is to produce cost effective energy efficient solar modules while managing all aspects of the product life cycle; from raw material sourcing, through end of life collection, and recycling. Toledo Solar manages product life cycle while maintaining continuous improvement of our environmental health and safety management systems, and in the quality of our products, processes and services.

Features and Benefits

Front (Substrate) and Back (Cover) Glass

The heat strengthened substrate (front) glass with the semiconductor film stack (sub-module) is laminated to the tempered substrate (cover) glass. This produces an impact resistant and environmentally stable module.

Semiconductor

CdTe compound semiconductor material forms the active photovoltaic cells, which convert sunlight into electricity.

- CdTe (Cadmium Telluride) is a direct band-gap semiconductor, which permits conversion of solar energy into electricity more efficiently by way of increased watts per gram of material than the indirect band-gap semiconductor.
- CdTe will generally produce more electricity under real world conditions than solar modules with comparable power ratings. The CdTe module produces 7% to 11% more output than most silicon modules when averaged across real life conditions.
- CdTe permits simple device structures and manufacturing processes, leading to low cost production.

Encapsulation

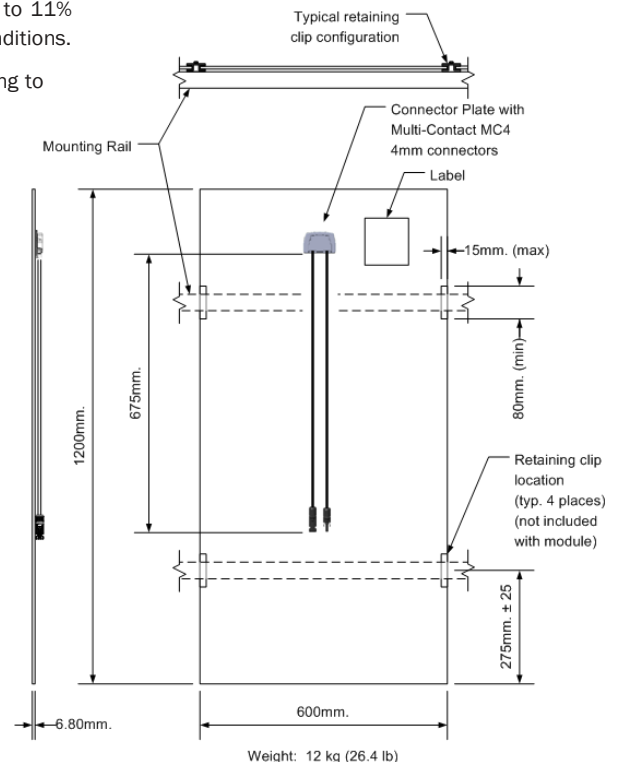
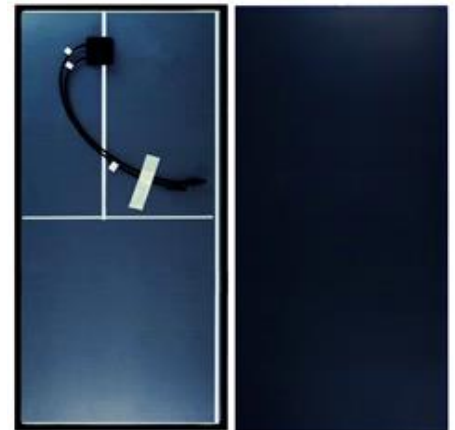
The advanced encapsulation material is used to bond the sub-module to the tempered substrate cover glass providing an impact resistant photovoltaic device and durable seal from the environment for the life of the product.

Junction Box

The junction box employs NEC compliant positive and negative cables, connectors, and the latest material technologies provide durable seal from the environment for the life of the product.

Mechanical

■ Length	1200 mm
■ Width	600 mm
■ Weight	12 kg (26.4 lb)
■ Thickness	6.80 mm
■ Cell Type	CdTe thin cell semiconductor, 152 active cells
■ Front Cover Type	3.2mm heat strengthened glass
■ Back Cover Type	3.2mm tempered glass
■ Encapsulant	Polyolefin
■ Frame	Frameless
■ Bypass Diode	None



Warranty

Five year warranty on workmanship and material. Twenty-five year warranty on power output (90% of minimum rated power for the first 10 years, and 80% for 25 years from the original purchase). Toledo Solar offers no-cost reclamation and recycling of modules at the end of their life cycle.

Electrical

RATINGS AT 1000 W/m² IRRADIANCE, 25 °C CELL TEMPERATURE, AND AM 1.5 SPECTRUM

MODEL	TS2-100	TS2-105	TS2-110	TS2-115
Maximum Power (P _{mp} , W) (-0/+5W)	100.1	105.1	110.4	115.1
Voltage @ Max Power (V _{mp} , V)	54.7	57.1	60.0	62.2
Current @ Max Power (I _{mp} , A)	1.83	1.84	1.84	1.85
Open Circuit Voltage (V _{oc} , V)	69.5	72.5	76.2	79.0
Short Circuit Current (I _{sc} , A)	1.99	1.99	2.00	2.01

RATINGS AT 800 W/m² IRRADIANCE, 45 °C CELL TEMPERATURE, AND AM 1.5 SPECTRUM

Maximum Power (P _{mp} , W) (-0/+5W)	83.8	88.0	92.4	96.3
Voltage @ Max Power (V _{mp} , V)	52.9	55.2	58.0	60.1
Current @ Max Power (I _{mp} , A)	1.59	1.60	1.60	1.61
Open Circuit Voltage (V _{oc} , V)	65.7	68.6	72.0	74.7
Short Circuit Current (I _{sc} , A)	1.73	1.73	1.74	1.75

OTHER RATINGS

Maximum System Voltage	1000 V (600 V UL)
Safety Class	Class II
Application Class	Class A
Fire Rating	Type 3
Temperature Coefficient of P _{mpp}	-0.33%/°C
Temperature Coefficient of V _{oc}	-0.30%/°C
Temperature Coefficient of I _{sc}	+0.03%/°C
Efficiency at 200 W/m ²	2% greater than efficiency at 1000 W/m ²
Normal Operating Cell Temperature (NOCT)	45 °C
Limiting Reverse Current (I _R)	4 A
Maximum Source Circuit Fuse (I _{CF})	4 A

1. Class A Spread of Flame / Class C Burning Brand. Roof mounted fire rating is established by assessing rack and solar module as a unit
2. Limited power output and product warranties subject to warranty terms and conditions
3. Ensures 98% rated power in first year, -0.5%/year through year 25
4. All ratings ± 10%, unless specified otherwise. Specifications are subject to change
5. Measurement uncertainty applies
6. UL&IEC 61215, 61730 certified.
7. Application Class A for 600V (class II), Application Class B for 1000V (class 0) with MC4; Application Class A for 600V and 1000V (class II) with MC4-EVO
8. Multi-Contact: MC4 (PV-KST4/PV-KBT4) MC4 EVO 2 (PV-KST-EVO 2 / PV-KBT-EVO 2).
9. Higher load ratings can be met with additional clips or wider clips, subject to testing

Certifications

- Is compliant with European directives
- CERTIFICATIONS & TESTS
 - PID-Free
 - ISO 9001:2015 Certified and ISO 14001:2015 Compliant
 - CEC (California, USA)
- IEC 61215/61646 1000V, IEC 61626:2008, IEC 61730 1000V, CE Certified
- IEC 61701 Salt Mist Corrosion, IEC 60068-2-68 Dust and Sand Resistance Compliant

* Ratings are +/- 10% unless otherwise specified.
 * Specifications are subject to change without notice.
 This data sheet summarizes product specifications and warranty which are subject to change without notice.



Made in the U.S.A.