

TS CIGS SERIES HIGH-EFFICIENCY CIGS SOLAR MODULE

145 W / 150 W / 155 W / 160 W

Features

- Advanced proprietary CIGS thin-film technology
- Plus sorting at +5 W to -0 W
- Up to 5% additional energy yield due to light soaking effect
- Low temperature coefficient provides energy yield benefits
- Aesthetically appealing all-black appearance
- Framed module designed for easy use with industry-standard mounting systems
- Etched, unchangeable serial numbers for full traceability of each module

Quality and Safety

- UL and IEC certified
- California Energy Commission (CEC) listed
- Rated for snow and wind loads up to 2,400 Pa
- Free of potential induced degradation (PID) effects
- Salt mist corrosion test certification
- Manufactured at an ISO 9001:2008, ISO 14001 and OHSAS 18001 certified facility

Warranty

- Product warranty*: 10 years for material and workmanship
- Power output warranty*: 90% at 10 years and 80% at 25 years of minimum rated power output



A TSMC Company

www.tsmc-solar.com

Technical data

TS CIGS SERIES HIGH-EFFICIENCY CIGS SOLAR MODULE

Electrical Characteristics

Standard Test Conditions (STC)

TS CIGS Series		TS-145C2	TS-150C2	TS-155C2 ²	TS-160C2 ²	
Maximum power	P_{max}	145	150	155	160	W_p
Factory binning		+5/-0	+5/-0	+5/-0	+5/-0	W
Open-circuit voltage	V_{oc}	82.8	83.6	84.7	85.8	V
Short-circuit current	I_{sc}	2.64	2.64	2.65	2.65	A
Maximum power voltage	V_{mpp}	61.7	63.7	65.7	67.8	V
Maximum power current	I_{mpp}	2.35	2.35	2.36	2.36	A
Module efficiency	Eff%	13.3	13.8	14.3	14.7	%
Power tolerance ¹		+/-5%				
Maximum reverse current	I_R	8 A				
Maximum system voltage		1000 Vdc (IEC), 600 Vdc (UL)				
Operating temperature		-40°C to 85°C				

IV Parameters measured at STC: 1000 W/m², module temperature 25°C AM 1.5 after factory light soaking.

¹ Pre-binning power tolerance as certified by UL / TÜV SÜD, TSMC Solar only delivers modules with greater than or equal to nameplate power.

² TÜV SÜD certification covers 145W and 150W products only.

Normal Operating Cell Temperature Conditions (NOCT)

Maximum power	P_{max}	109.1	112.8	116.6	120.3	W
Open-circuit voltage	V_{oc}	77.7	78.4	79.4	80.8	V
Short-circuit current	I_{sc}	2.11	2.12	2.12	2.12	A
Maximum power voltage	V_{mpp}	58.0	59.7	61.7	63.7	V
Maximum power current	I_{mpp}	1.88	1.89	1.89	1.89	A

Conditions at NOCT: 800 W/m², module temperature 20°C, AM 1.5, after factory light soaking.

All IV ratings are +/- 10%.

Thermal Characteristics

NOCT	46.5 ± 1°C
Temperature Coefficient of P_{max}	-0.30% / °C
Temperature Coefficient of V_{oc}	-0.29% / °C
Temperature Coefficient of I_{sc}	0.01% / °C

Mechanical Characteristics

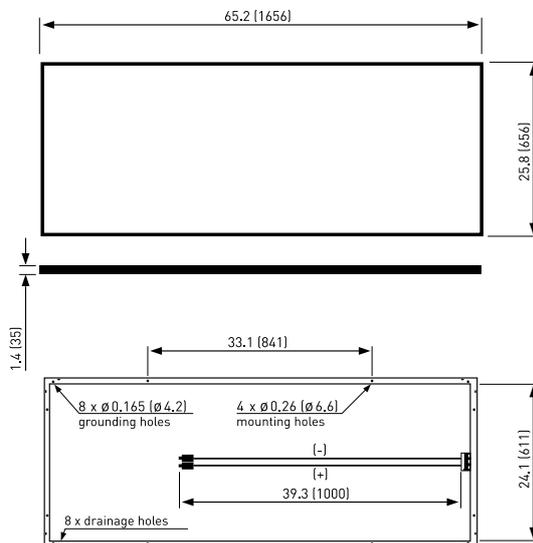
Snow/wind load (IEC)	50 lb/ft ² (2,400 Pa)
Snow/wind load (UL)*	35 lb/ft ² (1695 Pa) design load
Dimensions in inches (mm)	65.2 (1656) x 25.8 (656) x 1.4 (35)
Weight in lbs (kg)	36.6 (16.6)
Frame	Black anodised aluminum
Front cover	Textured, white tempered front glass
Junction box, connector	IP 67, MC-4 compatible
Output cable in inches (mm)	14 AWG (2.5mm ²), 39.3 (1000)
Cell type	133 CIGS cells
Safety class	II
Fire rating	Class C

* UL testing applies loading 50% above design load. i.e. >2500 Pa was applied to achieve 1695 Pa design load rating

The information contained herein is subject to change without notice.

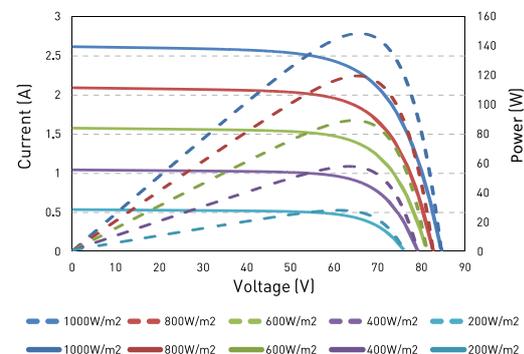
Caution: Read the installation guidelines before using, handling, installing or operating TSMC Solar modules.

Physical Specifications



All measurements in inches (mm)

I-V and P-V Curve (TS-150C2)



Performance at Low Irradiance

Typical relative efficiency reduction of maximum power from an irradiance of 1,000 W/m² to 200 W/m² at 25°C is 7%.

Certifications



tsmc solar

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We look forward to your call or your e-mail!

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DS-INTL-EN-05/13-01