

TS CIGS SERIES HIGH-EFFICIENCY CIGS SOLAR MODULE

140 W / 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 3% 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
- Module recycling available in EU / EFTA countries

Quality and Safety

- Dual glass module enhance module durability and prevent micro-cracks
- Free of potential induced degradation (PID) effects
- Certified for harsh environments: Salt Mist Corrosion (IEC 61701), Blowing Sand Resistant (DIN EN 60068-2-68) and Ammonia Corrosion Test (IEC 62716)
- UL, IEC and MCS certified
- Rated for snow and wind loads up to 2,400 Pa
- 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

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Electrical Characteristics

Standard Test Conditions (STC)

TS CIGS Series		TS-140C1	TS-145C1	TS-150C1	TS-155C1	TS-160C1	
Max power	P_{max}	140	145	150	155	160	W_p
Factory binning		+5/-0	+5/-0	+5/-0	+5/-0	+5/-0	W
Open-circuit voltage	V_{oc}	63.9	64.2	64.5	64.8	65.2	V
Short-circuit current	I_{sc}	3.61	3.61	3.61	3.61	3.61	A
Max power voltage	V_{mpp}	43.6	44.9	46.0	47.4	48.8	V
Max power current	I_{mpp}	3.21	3.23	3.26	3.27	3.28	A
Module efficiency	Eff%	12.9	13.3	13.8	14.3	14.7	%
Max reverse current	I_R	8 A					
Max 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. All IV ratings are +/- 10%.

Pre-binning power tolerance of +/-5%, as certified by UL/TÜV-SÜD. TSMC Solar only delivers modules with greater than or equal to nameplate power.

Normal Operating Cell Temperature Conditions (NOCT)

Max power	P_{max}	106.3	110.1	113.9	117.7	121.5	W
Open-circuit voltage	V_{oc}	59.3	59.5	59.8	60.1	60.4	V
Short-circuit current	I_{sc}	2.90	2.90	2.90	2.90	2.90	A
Max power voltage	V_{mpp}	41.3	42.5	43.6	44.9	46.2	V
Max power current	I_{mpp}	2.57	2.59	2.61	2.62	2.63	A

Conditions at NOCT: 800 W/m², ambient temperature 20°C, AM 1.5

Thermal Characteristics

NOCT	46.5 ± 1°C
Temperature Coefficient of P_{max}	-0.31% / °C
Temperature Coefficient of V_{oc}	-0.29% / °C
Temperature Coefficient of I_{sc}	0.01% / °C

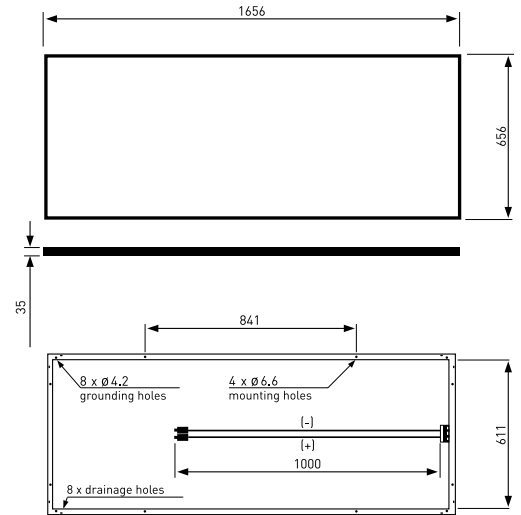
Mechanical Characteristics

Snow/wind load (IEC)	2,400 Pa
Dimensions in mm	1656 x 656 x 35
Weight in kg	17.5
Frame	Black anodised aluminum
Front cover	Textured, white tempered front glass
Junction box, connector	IP 67, MC-4 compatible
Output cable cross section and length	2.5 mm ² , 1000 mm
Cell type	100 CIGS cells
Safety class	II
Fire rating	Class C

The information contained herein is subject to change without notice.

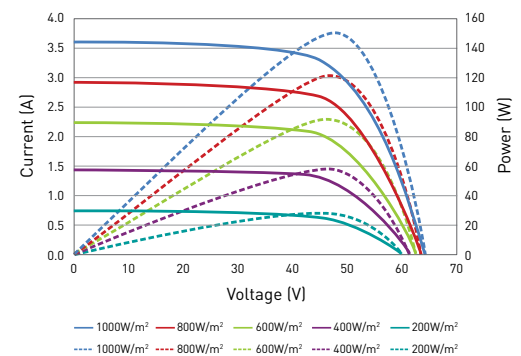
Caution: Read the installation guidelines before using, handling, installing or operating TSMC Solar modules.

Physical Specifications



All measurements in mm

I-V and P-V Curve (TS-150C1)



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 5%.

Certifications



tsmc solar.

Get in contact with us!
We look forward to your
call or your e-mail!

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