

TS CIGS SERIES HIGH-EFFICIENCY CIGS SOLAR MODULE

130 W / 135 W / 140 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
- Free module recycling

Quality and Safety

- UL and IEC certified
- 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

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Electrical Characteristics

Standard Test Conditions (STC)

TS CIGS Series		TS-130C	TS-135C	TS-140C ²	
Maximum power	P_{max}	130	135	140	W_p
Factory binning		+5/-0	+5/-0	+5/-0	W
Open-circuit voltage	V_{oc}	59.3	60.3	60.9	V
Short-circuit current	I_{sc}	3.34	3.34	3.34	A
Maximum power voltage	V_{mpp}	44.5	45.7	47.2	V
Maximum power current	I_{mpp}	2.92	2.95	2.98	A
Module efficiency	Eff%	12.0	12.4	12.9	%
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. All IV ratings are +/- 10%.

System design must accommodate relative increases of P_{max} , V_{oc} & V_{mpp} values due to light soaking in the field: P_{max} and V_{mpp} up to 10%, V_{oc} up to 4%.

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 UL certification covers 130W and 135W products only.

Normal Operating Cell Temperature Conditions (NOCT)

Maximum power	P_{max}	97.3	101.1	104.8	W
Open-circuit voltage	V_{oc}	54.6	55.4	56.0	V
Short-circuit current	I_{sc}	2.67	2.67	2.67	A
Maximum power voltage	V_{mpp}	41.8	42.9	44.2	V
Maximum power current	I_{mpp}	2.33	2.36	2.38	A

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

Thermal Characteristics

NOCT		46 ± 2°C
Temperature Coefficient of P_{max}		-0.35% / °C
Temperature Coefficient of V_{oc}		-0.33% / °C
Temperature Coefficient of I_{sc}		0.01% / °C

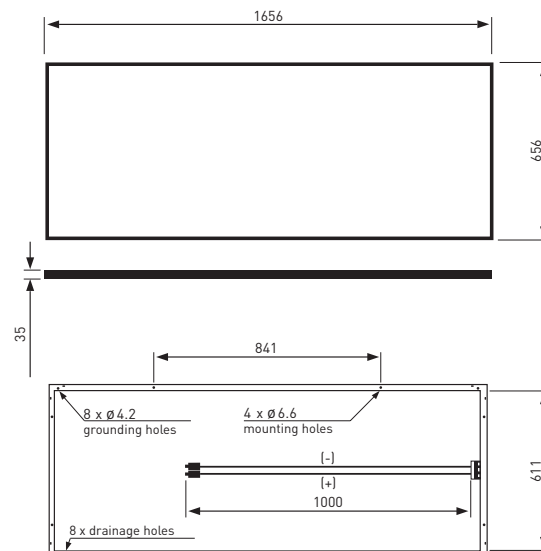
Mechanical Characteristics

Snow/wind load (IEC)		2,400 Pa
Dimensions in mm		1656 x 656 x 35
Weight in kg		16.6
Frame		Black anodised aluminum
Front cover		Textured, white tempered front glass
Junction box, connector		Yukita (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.

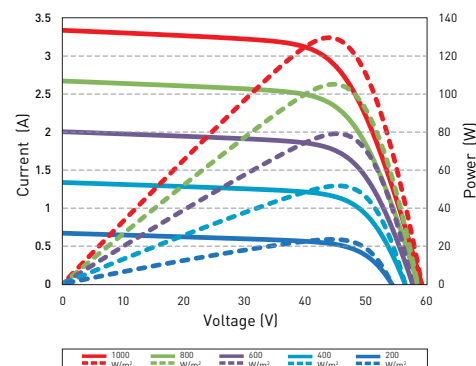
Physical Specifications



All measurements in mm

I-V and P-V Curve

(TS-130C)



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 10%.

Certifications



tsmc solar

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

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