tsmc solar | New Power. New Thinking.

TS CIGS SERIES HIGH-EFFICIENCY CIGS SOLAR MODULE

140 W / 145 W / 150 W / 155 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
- 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

tsmc A TSMC Company

www.tsmc-solar.com

* This datasheet is for informational purposes only. No rights can be derived from the information contained herein. For detailed warranty information, please consult TSMC Solar's module warranty, which is available upon request.

Technical data

TS CIGS SERIES
HIGH-EFFICIENCY CIGS SOLAR MODULE

Electrical Characteristics

Standard Test Conditions (STC)

TS CIGS Series		TS-140C1	TS-145C1	TS-150C1	TS-155C1	
Maximum power	P_{max}	140	145	150	155	W_p
Factory binning		+5/-0	+5/-0	+5/-0	+5/-0	W
Open-circuit voltage	V_{oc}	60.6	61.5	62.5	63.4	V
Short-circuit current	I_{sc}	3.44	3.44	3.45	3.46	A
Maximum power voltage	V_{mpp}	46.0	46.9	48.1	49.2	V
Maximum power current	I_{mpp}	3.05	3.09	3.12	3.15	A
Module efficiency	Eff%	12.9	13.3	13.8	14.3	%
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%.

[1] Pre-binning power tolerance 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)

Maximum power	P_{max}	106.3	110.1	113.9	117.7	W
Open-circuit voltage	V_{oc}	56.5	57.3	58.1	58.9	V
Short-circuit current	I_{sc}	2.75	2.75	2.76	2.77	A
Maximum power voltage	V_{mpp}	43.6	44.5	45.7	46.7	V
Maximum power current	I_{mpp}	2.44	2.47	2.50	2.52	A

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

Thermal Characteristics

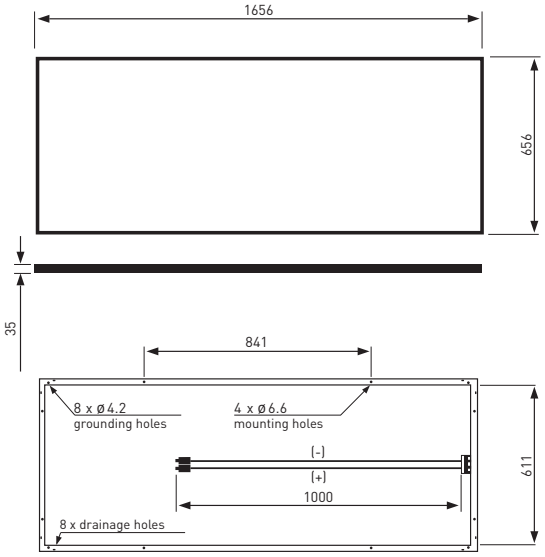
NOCT	46.5 ± 1°C
Temperature Coefficient of P_{max}	-0.31% / °C
Temperature Coefficient of V_{oc}	-0.29% / °C
Temperature Coefficient of I_{sc}	0.01% / °C

Mechanical Characteristics

Snow/wind load (IEC)	2,400 Pa
Dimensions in mm	1656 x 656 x 35
Weight in kg	16.6
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 mm², 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.

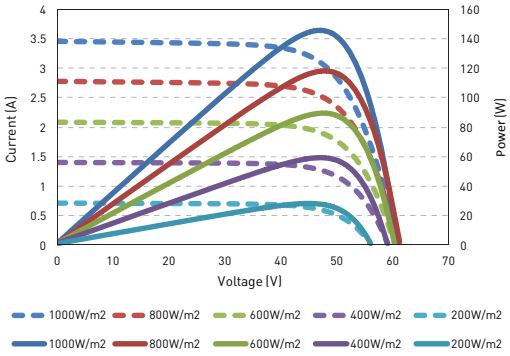
Physical Specifications



All measurements in mm

I-V and P-V Curve

(TS-145C1)



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

Safety Class II

tsmc solar

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

EUROPE
TSMC Solar Europe GmbH
Am Kaiserkai 1
20457 Hamburg, Germany
Tel.: +49 (0) 40 / 80 80 745 40
SolarEU@tsmc.com

NORTH AMERICA
TSMC Solar North America
2595 Junction Avenue
San Jose, CA 95134, USA
Tel.: +1 408 678 2816
SolarNA@tsmc.com

ASIA/REST OF WORLD
TSMC Solar Ltd.
5, Keya W. Rd., Daya Dist.
Taichung, Taiwan 428-82
Tel.: +886 4 27 03 66 88
SolarAsia@tsmc.com

A TSMC Company