



# P-type PERC

Bifacial Dual Glass Monocrystalline Module

TSM-DEG18MC.20(II) 490-510W

**510<sub>W</sub>** / MAXIMUM POWER OUTPUT

**21.2%** / MAXIMUM EFFICIENCY



## High customer value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower first year and annual degradation; extended 30-year warranty
- Designed for compatibility with existing mainstream system components
- Higher return on Investment



## High power up to 510W

- Large area cells based on 210mm wafers and 1/3-cut cell technology
- Up to 21.2% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection



## High reliability

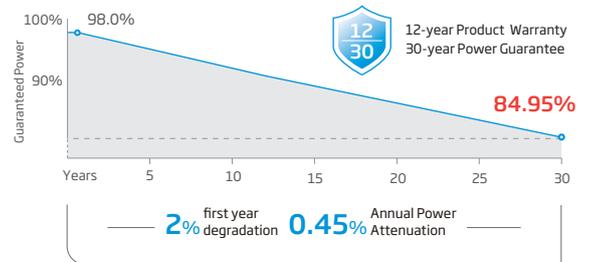
- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load



## High energy yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions
- Up to 25% additional power gain from back side depending on albedo

## Performance Warranty



\* Please refer to product warranty for details

## Comprehensive Products and System Certificates

IEC61215/IEC61730/IEC61701/IEC62716/UL61730

ISO 9001: Quality Management System

ISO 14001: Environmental Management System

ISO14064: Greenhouse Gases Emissions Verification

ISO45001: Occupational Health and Safety Management System



**ELECTRICAL DATA** (STC & NOCT)

Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Peak Power Watts- $P_{MAX}(W_p)^*$	490	369	495	373	500	377	505	381	510	384
Power Selection (W)**	0 ~ +5									
Maximum Power Voltage- $V_{MPP}(V)$	42.8	40.2	43.1	40.5	43.4	40.7	43.7	41.0	43.9	41.2
Maximum Power Current- $I_{MPP}(A)$	11.45	9.18	11.49	9.22	11.53	9.26	11.56	9.29	11.62	9.33
Open Circuit Voltage- $V_{oc}(V)$	51.1	48.0	51.3	48.2	51.5	48.4	51.7	48.5	51.9	48.7
Short Circuit Current- $I_{sc}(A)$	12.05	9.71	12.09	9.74	12.13	9.78	12.17	9.81	12.21	9.84
Module Efficiency $\eta_m$ (%)	20.3		20.5		20.7		21.0		21.2	

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5. NOCT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s. \*Measuring tolerance: ±3%. \*\*Power selection up to: +3%.

**Electrical characteristics with different power bin** (reference to 5% & 10% backside power gain)

Backside Power Gain	5%	10%	5%	10%	5%	10%	5%	10%	5%	10%
Peak Power Watts- $P_{MAX}(W_p)$	515	539	520	545	525	550	530	556	536	561
Maximum Power Voltage- $V_{MPP}(V)$	42.8	42.8	43.1	43.1	43.4	43.4	43.7	43.7	43.9	43.9
Maximum Power Current- $I_{MPP}(A)$	12.02	12.60	12.06	12.64	12.11	12.68	12.14	12.72	12.20	12.78
Open Circuit Voltage- $V_{oc}(V)$	51.1	51.1	51.3	51.3	51.5	51.5	51.7	51.7	51.9	51.9
Short Circuit Current- $I_{sc}(A)$	12.65	13.26	12.69	13.30	12.74	13.34	12.78	13.39	12.82	13.43

Power Bifaciality: 70±5%.

**TEMPERATURE RATINGS**

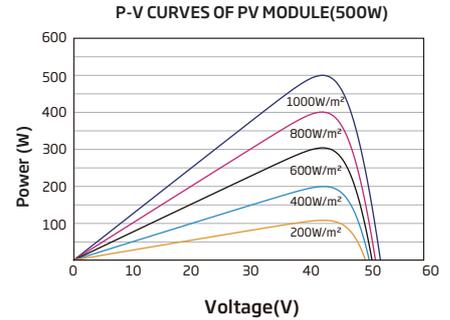
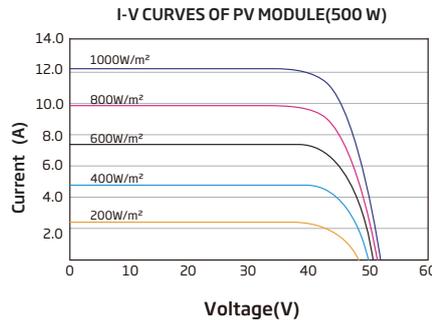
NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of $P_{MAX}$	-0.34% /°C
Temperature Coefficient of $V_{oc}$	-0.25% /°C
Temperature Coefficient of $I_{sc}$	0.04% /°C

Due to different testing methods, the actual performances might differ from the declared specifications.

**MAXIMUM RATINGS**

Operational Temperature	-40 ~ +85°C
Maximum System Voltage	1500V DC (IEC) 1500V DC (UL)
Max Series Fuse Rating	25A

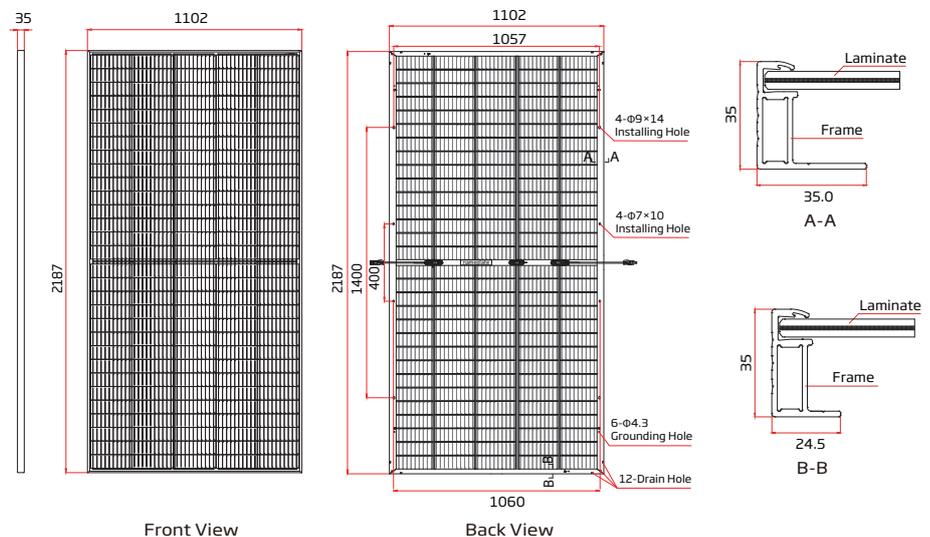
**CURVES OF PV MODULE**



**MECHANICAL DATA**

Solar Cells	Monocrystalline
No. of cells	150 cells
Module Dimensions	2187×1102×35 mm (86.10×43.39×1.38 inches)
Weight	30.1 kg (66.4 lb)
Front Glass	2.0 mm (0.08 inches), AR Coating Heat Strengthened Glass
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Coating)
Frame	35mm (1.38 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm <sup>2</sup> (0.006 inches <sup>2</sup> ) Portrait: 350/280 mm (13.78/11.02 inches) Length can be customized
Connector	MC4 EV02 / TS4 Plus / TS4*
PACKAGING CONFIGURATION	Modules per box: 31 pieces Modules per 40' container: 620 pieces

\*Please refer to regional datasheet for specified connector.



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CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.  
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