



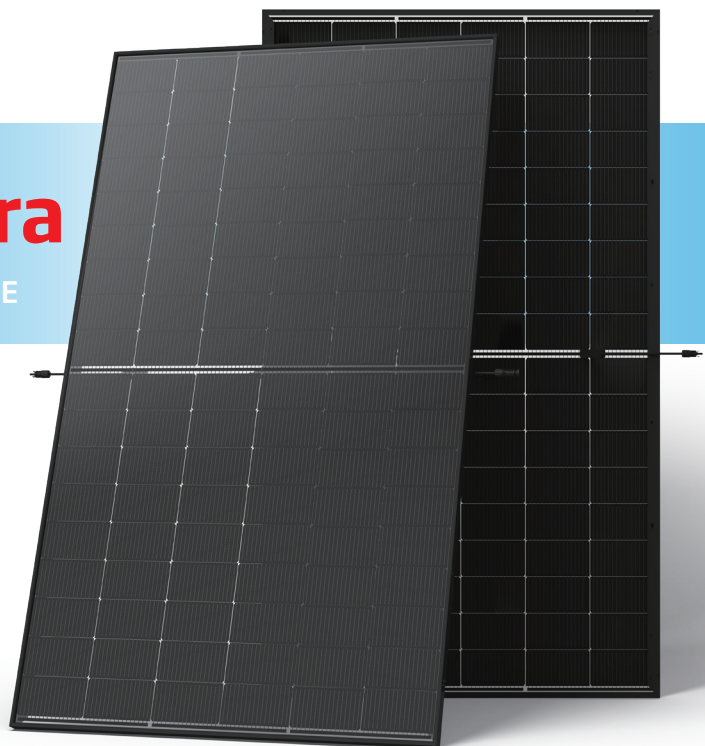
N-type i-TOPCon Ultra

BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE

TSM-NEG18RC.27 495-520W

520_W / MAXIMUM
POWER OUTPUT

23.4% / MAXIMUM
EFFICIENCY



High customer value

- Clear black, designed with aesthetics in mind, suitable for residential and C&I rooftop
- Lower LCOE (levelized cost of energy), reduced BOS (balance of system) cost, shorter payback time
- Designed for compatibility with existing mainstream system components
- Easy to handle and install on roofs with excellent size and light weight



High power up to 520W

- Up to 23.4% module efficiency, on 210 innovation platform
- Patented i-TOPCon technology with continuous efficiency improvement, including contact resistance reduction, rear reflection enhancement and edge quality repairment



Dual-glass design, high reliability

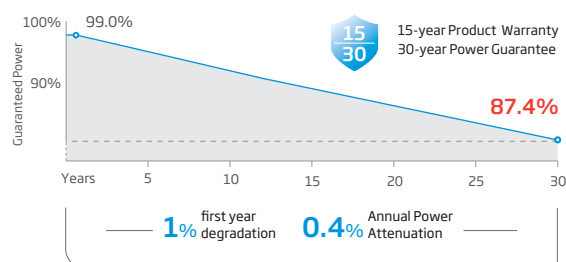
- Less prone to micro-cracks and scratches on the back during installation
- Excellent fire rating and weather resistance, proven durability in salt, sand, and ammonia environments.
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load



High energy yield

- Excellent low irradiation performance, validated by 3rd party
- Lower temperature coefficient (-0.29%/°C) and operating temperature
- Higher bifaciality, with up to 10%~20% 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

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 & BNPI)

Testing Condition	STC	NOCT	BNPI	STC	NOCT	BNPI	STC	NOCT	BNPI	STC	NOCT	BNPI	STC	NOCT	BNPI	STC	NOCT	BNPI
Peak Power Watts- $P_{MAX}(W_p)^*$	495	378	548	500	382	554	505	386	559	510	390	565	515	394	570	520	396	576
Power Selection (W)**	0 ~ +5																	
Maximum Power Voltage- V_{MPP} (V)	33.10	31.30	33.10	33.30	31.50	33.30	33.50	31.80	33.50	33.70	31.90	33.70	33.90	32.20	33.90	34.10	32.3	34.10
Maximum Power Current- I_{MPP} (A)	14.97	12.08	16.55	15.03	12.11	16.63	15.09	12.15	16.68	15.14	12.21	16.77	15.20	12.23	16.83	15.25	12.26	16.90
Open Circuit Voltage- V_{oc} (V)	39.80	37.70	39.80	40.10	38.00	40.10	40.30	38.30	40.30	40.60	38.50	40.60	40.90	38.80	40.90	41.20	39.0	41.20
Short Circuit Current- I_{sc} (A)	15.83	12.76	17.57	15.86	12.78	17.61	15.89	12.81	17.65	15.93	12.84	17.68	15.96	12.86	17.68	15.99	12.89	17.72
Module Efficiency η_m (%)	22.3			22.5			22.7			22.9			23.2			23.4		

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5. NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s. BNPI: Irradiance: front 1000W/m², rear 135W/m², Temperature 25°C, Air Mass AM1.5
 *Measuring tolerance: $\pm 3\%$. **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%	5%	10%
Peak Power Watts- $P_{MAX}(W_p)$	520	545	525	550	530	556	536	561	541	567	546	572
Maximum Power Voltage- V_{MPP} (V)	33.10	33.10	33.30	33.30	33.50	33.50	33.70	33.70	33.90	33.90	34.10	34.10
Maximum Power Current- I_{MPP} (A)	15.72	16.47	15.78	16.53	15.84	16.60	15.90	16.65	15.96	16.72	16.01	16.78
Open Circuit Voltage- V_{oc} (V)	39.80	39.80	40.10	40.10	40.30	40.30	40.60	40.60	40.90	40.90	41.20	41.20
Short Circuit Current- I_{sc} (A)	16.62	17.41	16.65	17.45	16.68	17.48	16.73	17.52	16.76	17.56	16.79	17.59

Power Bifaciality: $80 \pm 5\%$.

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature) 43°C ($\pm 2^\circ\text{C}$)

Temperature Coefficient of P_{MAX} -0.29% /°C

Temperature Coefficient of V_{oc} -0.24% /°C

Temperature Coefficient of I_{sc} 0.04% /°C

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

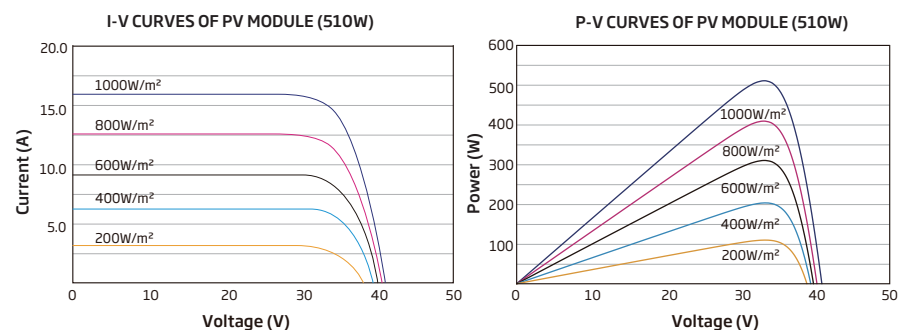
APPLICATION CONDITIONS

Operating Temperature -40~+70°C

Maximum System Voltage 1500V DC (IEC)

Max Series Fuse Rating 30A

CURVES OF PV MODULE



MECHANICAL DATA

Solar Cells	N-type i-TOPCon Monocrystalline
No. of cells	108 cells
Module Dimensions	1961×1134×30 mm (77.20×44.65×1.18 inches)
Weight	23.5 kg (51.8 lb)
Front Glass	1.6mm (0.06inches), AR Coating Heat Strengthened Glass
Back Glass	1.6mm (0.06inches), Heat Strengthened Glass
Frame	30mm (1.18inches) Anodized Aluminium Alloy, Black
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² (0.006 inches ²) Portrait: 200/320 mm (7.87/12.60 inches) Length can be customized
Connector	TS4 Plus / TS4 / MC4 EV02*
Packaging	Modules per box: 36 pieces Modules per 40' container: 864 pieces

*The connector names listed are general names; specific types are subject to the certification documents.

