



# Vertex N

**N-type i-TOPCon bifacial dual glass**  
Monocrystalline module

PRODUCT: TSM-NEG21C.20

POWER RANGE: 695-720W

## 720W

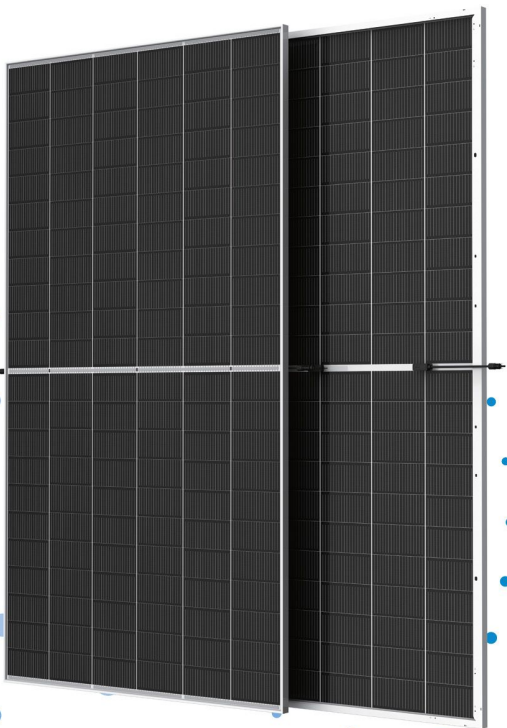
MAXIMUM POWER OUTPUT

## 0~+5W

POSITIVE POWER TOLERANCE

## 23.2%

MAXIMUM EFFICIENCY



### High customer value

- Standardized module size with flagship module power, 35W higher compared with conventional technology
- Low voltage design with higher string power, effectively reducing BOS (Balance of System) and LCOE (Levelized Cost of Energy) by 2%~6%
- Higher container space utilization effectively reduces the freight cost
- Certified Low-Carbon Footprint
- The Star of LCOE



### High power up to 720W

- Up to 23.2% 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



### High reliability

- Minimized micro-cracks with innovative non-destructive cutting technology and high-density packaging
- Reduced risks of hot-spot with half-cut technology
- Certified high resistance against salt, ammonia, sand, PID, LID, LeTID
- Sustainable in harsh environments and extreme weather conditions



### High energy yield

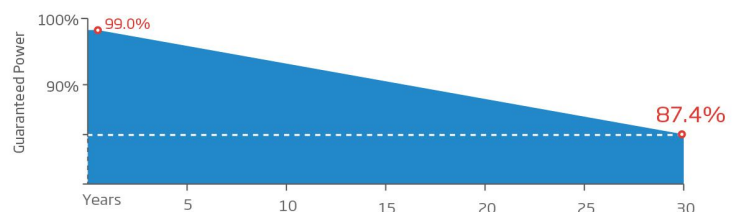
- Excellent low irradiation performance, validated by 3rd party
- Lower temperature coefficient (-0.29%/°C)
- Higher bifaciality, with up to 10%~20% additional power gain from back side depending on albedo
- Reliable dual-glass structure with 30-year power guarantee

Contact Us :

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### Trina Solar's Vertex Bifacial Dual Glass Performance Warranty



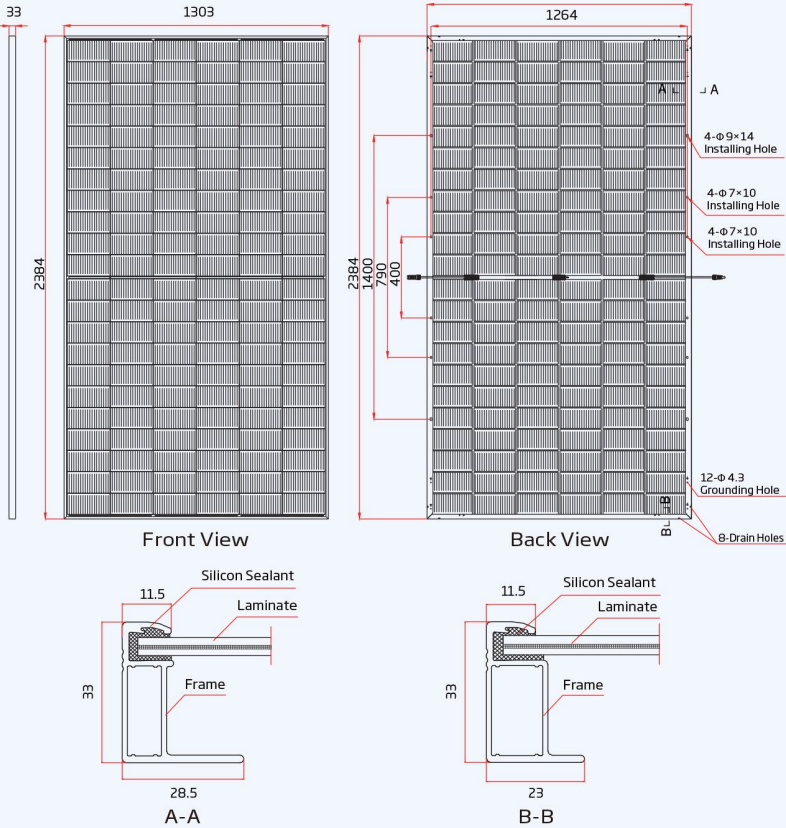
### Comprehensive Products and System Certificates



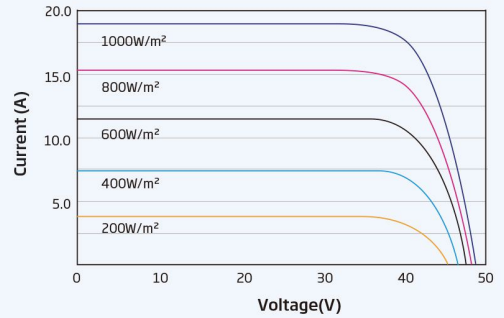
IEC61215/IEC61730/IEC61701/IEC62716  
ISO 9001: Quality Management System  
ISO 14001: Environmental Management System  
ISO14064: Greenhouse Gases Emissions Verification  
ISO45001: Occupational Health and Safety Management System  
ISO14067: Product Carbon Footprint Limited Assurance

# Trinasolar

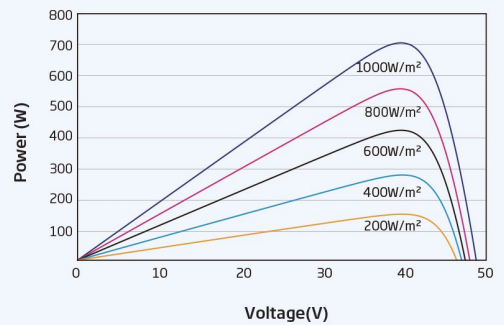
## DIMENSIONS OF PV MODULE(mm)



## I-V CURVES OF PV MODULE(705 W)



## P-V CURVES OF PV MODULE(705 W)



## MECHANICAL DATA

|                      |                                                                            |
|----------------------|----------------------------------------------------------------------------|
| Solar Cells          | N-type i-TOPCon Monocrystalline                                            |
| No. of cells         | 132 cells                                                                  |
| Module Dimensions    | 2384×1303×33 mm (93.86×51.30×1.30 inches)                                  |
| Weight               | 38.3 kg (84.4 lb)                                                          |
| Front Glass          | 2.0 mm (0.08 inches), High Transmission, AR Coated Heat Strengthened Glass |
| Encapsulant material | POE/EVA                                                                    |
| Back Glass           | 2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)           |

|           |                                                                                                                                                       |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frame     | 33mm(1.30 inches) Anodized Aluminium Alloy                                                                                                            |
| J-Box     | IP 68 rated                                                                                                                                           |
| Cables    | Photovoltaic Technology Cable 4.0mm <sup>2</sup> (0.006 inches <sup>2</sup> )<br>Portrait: 350/280 mm(13.78/11.02 inches)<br>Length can be customized |
| Connector | MC4 EV02 / TS4 Plus / TS4*                                                                                                                            |

\*Please refer to regional datasheet for specified connector.

## ELECTRICAL DATA (STC & NOCT )

| Testing Condition                    | STC    | NOCT  | STC   | NOCT  | STC   | NOCT  | STC   | NOCT  | STC   | NOCT  | STC   | NOCT  |
|--------------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Peak Power Watts- $P_{MAX}$ (W)*     | 695    | 531   | 700   | 534   | 705   | 540   | 710   | 543   | 715   | 547   | 720   | 551   |
| Power Tolerance- $P_{MAX}$ (W)       | 0 ~ +5 |       |       |       |       |       |       |       |       |       |       |       |
| Maximum Power Voltage- $V_{MPP}$ (V) | 40.3   | 37.9  | 40.5  | 38.0  | 40.7  | 38.3  | 40.9  | 38.5  | 41.1  | 38.7  | 41.3  | 38.8  |
| Maximum Power Current- $I_{MPP}$ (A) | 17.25  | 14.00 | 17.29 | 14.04 | 17.33 | 14.08 | 17.36 | 14.12 | 17.40 | 14.14 | 17.44 | 14.19 |
| Open Circuit Voltage- $V_{oc}$ (V)   | 48.3   | 45.9  | 48.6  | 46.1  | 48.8  | 46.3  | 49.0  | 46.5  | 49.2  | 46.7  | 49.4  | 46.9  |
| Short Circuit Current- $I_{sc}$ (A)  | 18.28  | 14.72 | 18.32 | 14.76 | 18.36 | 14.80 | 18.40 | 14.83 | 18.44 | 14.86 | 18.49 | 14.90 |
| Module Efficiency $\eta_m$ (%)       | 22.4   |       | 22.5  |       | 22.7  |       | 22.9  |       | 23.0  |       | 23.2  |       |

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%.

## 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%   |
|-----------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Equivalent power - $P_{MAX}$ (Wp) | 730   | 765   | 735   | 770   | 740   | 776   | 746   | 781   | 751   | 787   | 756   | 792   |
| Maximum Power Voltage- $V_{MPP}$ (V)    | 40.3  | 40.3  | 40.5  | 40.5  | 40.7  | 40.7  | 40.9  | 40.9  | 41.1  | 41.1  | 41.3  | 41.3  |
| Maximum Power Current- $I_{MPP}$ (A)    | 18.11 | 18.98 | 18.15 | 19.02 | 18.20 | 19.06 | 18.23 | 19.10 | 18.27 | 19.14 | 18.31 | 19.18 |
| Open Circuit Voltage- $V_{oc}$ (V)      | 48.3  | 48.3  | 48.6  | 48.6  | 48.8  | 48.8  | 49.0  | 49.0  | 49.2  | 49.2  | 49.4  | 49.4  |
| Short Circuit Current- $I_{sc}$ (A)     | 19.19 | 20.11 | 19.24 | 20.15 | 19.28 | 20.20 | 19.32 | 20.24 | 19.36 | 20.28 | 19.41 | 20.34 |

Power Bifaciality: 90±5%.

## TEMPERATURE RATINGS

|                                           |             |
|-------------------------------------------|-------------|
| NOCT (Nominal Operating Cell Temperature) | 43°C (±2°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    |

## MAXIMUM RATINGS

|                         |                                 |
|-------------------------|---------------------------------|
| Operational Temperature | -40~+85° C                      |
| Maximum System Voltage  | 1500V DC (IEC)<br>1500V DC (UL) |
| Max Series Fuse Rating  | 35A                             |

## WARRANTY

|                                      |
|--------------------------------------|
| 12 year Product Workmanship Warranty |
| 30 year Power Warranty               |
| 1% first year degradation            |
| 0.40% Annual Power Attenuation       |

(Please refer to product warranty for details)

## PACKAGING CONFIGURATION

|                                       |
|---------------------------------------|
| Modules per box: 33 pieces            |
| Modules per 40' container: 594 pieces |