

# Vertex S

BACKSHEET MONOCRYSTALLINE MODULE

PRODUCT: TSM-DE09C.07

PRODUCT RANGE: 380-405W

## 405W

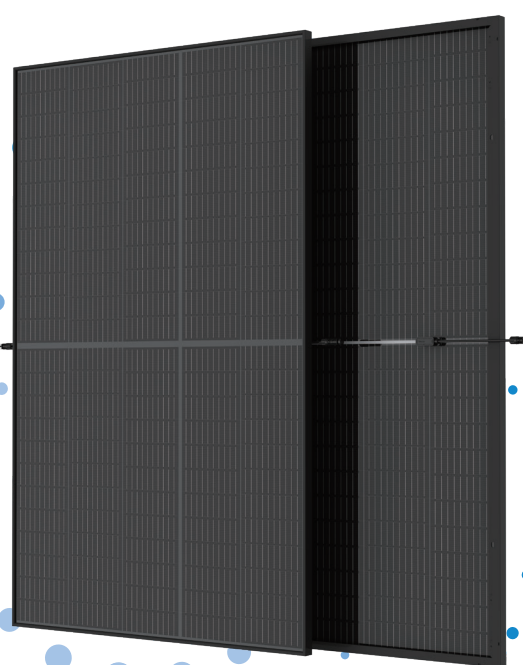
MAXIMUM POWER OUTPUT

## 0~+5W

POSITIVE POWER TOLERANCE

## 21.1%

MAXIMUM EFFICIENCY



### High value

- More productivity from same roof size.
- Outstanding visual appearance.
- Leading 210mm cell technology.



### Small in size, big on power

- Small format module allow greater energy generation in limited space.
- Up to 405W, 21.1% module efficiency with high density interconnect technology.
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current.
- Reduce installation cost with higher power bin and efficiency.
- Boost performance in warm weather with lower temperature coefficient (-0.34%) and operating temperature.



### Universal solution for residential and C&I rooftops

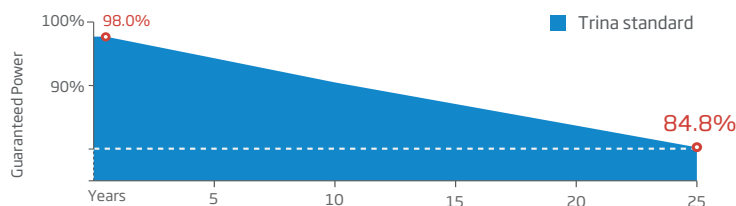
- Designed for compatibility with existing mainstream optimizers, inverters and mounting systems.
- Perfect size and low weight makes handling and transportation easier and more cost-effective.
- Diverse installation solutions for flexibility in system deployment



### High Reliability

- 25 year product warranty.
- 25 year performance warranty with lowest degradation.
- Minimized micro-cracks with innovative non-destructive cutting technology.
- Ensured PID resistance through cell process and module material control.
- Mechanical performance up to +6000 Pa and -4000 Pa negative load

### Trina Solar's Backsheet Performance Warranty



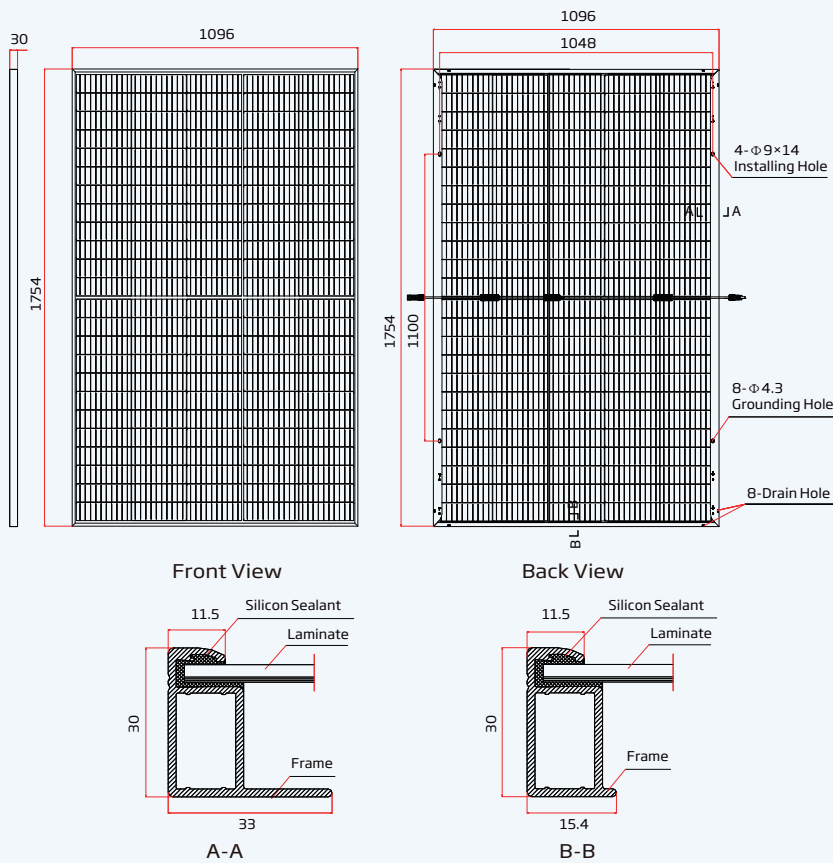
### Comprehensive Products and System Certificates



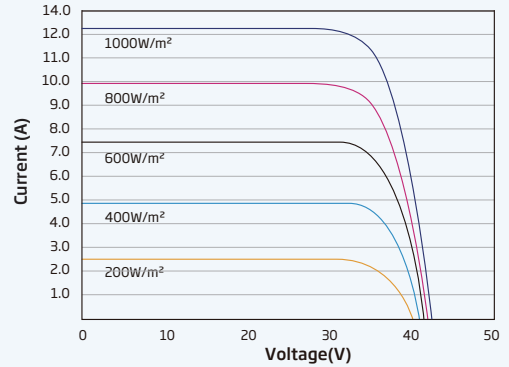
IEC61215/IEC61730/IEC61701/IEC62716/UL61730  
 ISO 9001: Quality Management System  
 ISO 14001: Environmental Management System  
 ISO14064: Greenhouse Gases Emissions Verification  
 ISO45001: Occupational Health and Safety Management System



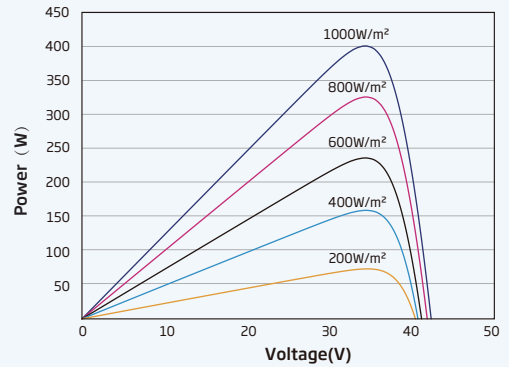
## DIMENSIONS OF PV MODULE(mm)



## I-V CURVES OF PV MODULE(400W)



## P-V CURVES OF PV MODULE(400W)



## ELECTRICAL DATA (STC)

| Peak Power Watts-P <sub>MAX</sub> (Wp)*    | 380    | 385   | 390   | 395   | 400   | 405   |
|--|--------|-------|-------|-------|-------|-------|
| Power Tolerance-P <sub>MAX</sub> (W)       | 0 ~ +5 |       |       |       |       |       |
| Maximum Power Voltage-V <sub>MPP</sub> (V) | 33.4   | 33.6  | 33.8  | 34.0  | 34.2  | 34.4  |
| Maximum Power Current-I <sub>MPP</sub> (A) | 11.38  | 11.46 | 11.54 | 11.62 | 11.70 | 11.77 |
| Open Circuit Voltage-V <sub>OC</sub> (V)   | 40.4   | 40.6  | 40.8  | 41.0  | 41.2  | 41.4  |
| Short Circuit Current-I <sub>SC</sub> (A)  | 12.00  | 12.07 | 12.14 | 12.21 | 12.28 | 12.34 |
| Module Efficiency η <sub>m</sub> (%)       | 19.8   | 20.0  | 20.3  | 20.5  | 20.8  | 21.1  |

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5. \*Measuring tolerance: ±3%.

## Electrical characteristics with different power bin (reference to 10% Irradiance ratio)

|   |       |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|-------|
| Total Equivalent power -P <sub>MAX</sub> (Wp) | 407   | 412   | 417   | 423   | 428   | 433   |
| Maximum Power Voltage-V <sub>MPP</sub> (V)    | 33.4  | 33.6  | 33.8  | 34.0  | 34.2  | 34.4  |
| Maximum Power Current-I <sub>MPP</sub> (A)    | 12.19 | 12.26 | 12.34 | 12.44 | 12.51 | 12.59 |
| Open Circuit Voltage-V <sub>OC</sub> (V)      | 40.4  | 40.6  | 40.8  | 41.0  | 41.2  | 41.4  |
| Short Circuit Current-I <sub>SC</sub> (A)     | 12.92 | 13.00 | 13.08 | 13.20 | 13.25 | 13.36 |
| Irradiance ratio (rear/front)                 | 10%   |       |       |       |       |       |

Power Bifaciality:70±5%.

## ELECTRICAL DATA (NOCT)

|  |      |      |      |      |      |      |
|--|------|------|------|------|------|------|
| Maximum Power-P <sub>MAX</sub> (Wp)        | 286  | 290  | 294  | 298  | 302  | 305  |
| Maximum Power Voltage-V <sub>MPP</sub> (V) | 31.4 | 31.6 | 31.8 | 31.9 | 32.1 | 32.4 |
| Maximum Power Current-I <sub>MPP</sub> (A) | 9.12 | 9.18 | 9.24 | 9.32 | 9.38 | 9.42 |
| Open Circuit Voltage-V <sub>OC</sub> (V)   | 38.0 | 38.2 | 38.4 | 38.6 | 38.8 | 38.9 |
| Short Circuit Current-I <sub>SC</sub> (A)  | 9.67 | 9.73 | 9.78 | 9.84 | 9.90 | 9.94 |

NOCT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s.

## MECHANICAL DATA

|                      |  |
|----------------------|--|
| Solar Cells          | Monocrystalline  |
| No. of cells         | 120 cells  |
| Module Dimensions    | 1754×1096×30 mm (69.06×43.15×1.18 inches)  |
| Weight               | 21.0 kg (46.3 lb)  |
| Glass                | 3.2 mm (0.13 inches), High Transmission, AR Coated Heat Strengthened Glass   |
| Encapsulant material | EVA/POE  |
| Backsheet            | Transparent backsheet  |
| Frame                | 30mm(1.18 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>Landscape: N 1100 mm /P 1100 mm (43.31/43.31 inches) |
| Connector            | MC4 EVO2 / TS4*  |

\*Please refer to regional datasheet for specified connector.

## TEMPERATURE RATINGS

|   |             |
|---|-------------|
| NOCT (Nominal Operating Cell Temperature)   | 43°C (±2°C) |
| Temperature Coefficient of P <sub>MAX</sub> | -0.34%/°C   |
| Temperature Coefficient of V <sub>OC</sub>  | -0.25%/°C   |
| Temperature Coefficient of I <sub>SC</sub>  | 0.04%/°C    |

## MAXIMUM RATINGS

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

## WARRANTY

|                                      |
|--------------------------------------|
| 25 year Product Workmanship Warranty |
| 25 year Power Warranty               |
| 2% first year degradation            |
| 0.55% Annual Power Attenuation       |

(Please refer to product warranty for details)

## PACKAGING CONFIGURATION

|                                       |
|---------------------------------------|
| Modules per box: 36 pieces            |
| Modules per 40' container: 828 pieces |