

# Vertex S

BACKSHEET MONOCRYSTALLINE MODULE

PRODUCT: TSM-XXXDE09R.08

PRODUCT RANGE: 415-435W

**435W**

MAXIMUM POWER OUTPUT

**0~+5W**

BINNING TOLERANCE

**21.8%**

MAXIMUM EFFICIENCY

**25** Years **PRODUCT WARRANTY**  
**25** Years **POWER WARRANTY**



### Small in size, big on power

- Small form factor. Generate a huge amount of energy even in limited space.
- Up to 435W Mono Perc, 21.8% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection
- Reduce installation cost with higher power bin and efficiency
- Boost performance in warm weather lower temperature coefficient (-0.34%) and operating temperature



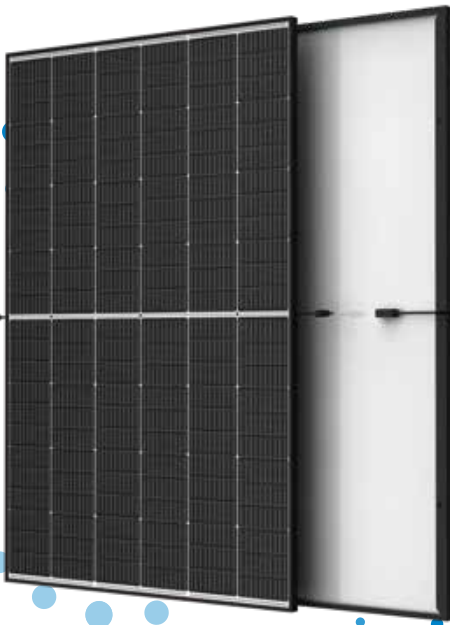
### Universal solution for residential and C&I rooftops

- Designed for compatibility with existing mainstream optimizers, inverters and mounting systems
- Perfect size and low weight. Easy for handling. Economy for transporting
- Diverse installation solutions. Flexible for system deployment

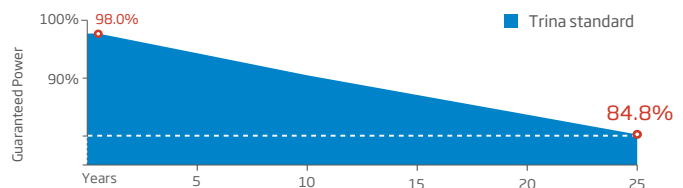


### High Reliability

- 25 year product warranty
- 25 year performance warranty with lowest degradation;
- Minimized micro-cracks with innovative non-destructive cutting technology
- Mechanical performance up to 6000 Pa positive load and 4000 Pa negative load
- Fire Class rating C



### Trina Solar's Backsheet Performance Warranty



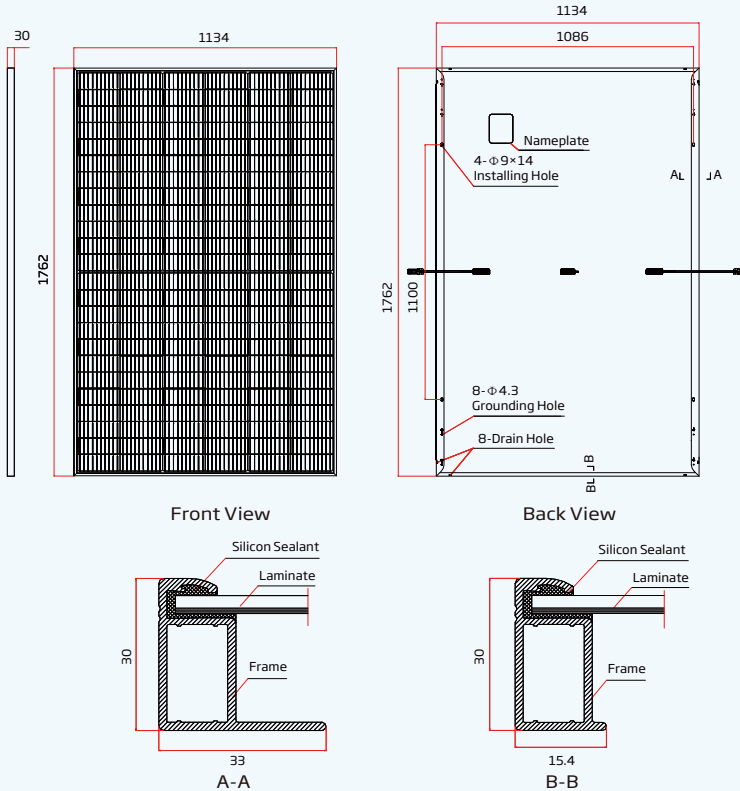
### Comprehensive Products and System Certificates



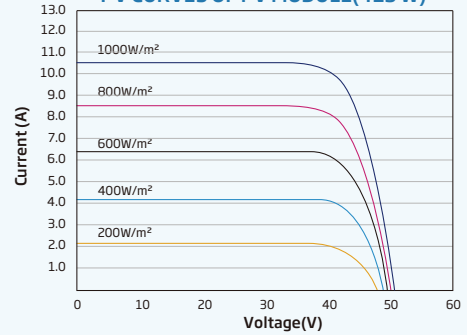
IEC61215/IEC61730/IEC61701/IEC62716  
 ISO 9001: Quality Management System  
 ISO 14001: Environmental Management System  
 ISO14064: Greenhouse Gases Emissions Verification  
 ISO45001: Occupational Health and Safety Management System



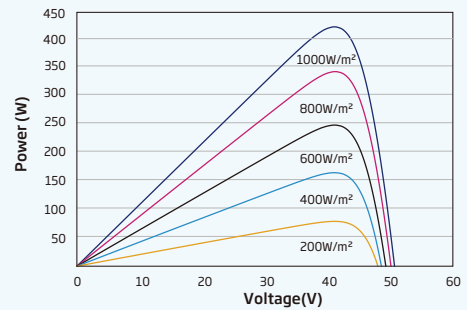
## DIMENSIONS OF PV MODULE(mm)



## I-V CURVES OF PV MODULE(425 W)



## P-V CURVES OF PV MODULE(425 W)



## ELECTRICAL DATA (STC) TSM-XXXDE09R.08(XXX=415-435)

Parameter	415	420	425	430	435
Peak Power Watts- $P_{MAX}$ (Wp)*	415	420	425	430	435
Binning Tolerance- $P_{MAX}$ (W)	0 ~ +5				
Maximum Power Voltage- $V_{MPP}$ (V)	41.7	42.0	42.2	42.3	42.5
Maximum Power Current- $I_{MPP}$ (A)	9.94	10.01	10.08	10.17	10.24
Open Circuit Voltage- $V_{oc}$ (V)	50.0	50.1	50.2	50.3	50.4
Short Circuit Current- $I_{sc}$ (A)	10.55	10.58	10.61	10.64	10.67
Module Efficiency $\eta_m$ (%)	20.8	21.0	21.3	21.5	21.8

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

## ELECTRICAL DATA (NOCT)

Parameter	312	317	321	325	329
Maximum Power- $P_{MAX}$ (Wp)	312	317	321	325	329
Maximum Power Voltage- $V_{MPP}$ (V)	38.7	39.2	39.5	39.7	40.0
Maximum Power Current- $I_{MPP}$ (A)	8.07	8.10	8.13	8.17	8.23
Open Circuit Voltage- $V_{oc}$ (V)	47.1	47.1	47.2	47.4	47.5
Short Circuit Current- $I_{sc}$ (A)	8.50	8.53	8.55	8.60	8.65

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

## MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	144 cells
Module Dimensions	1762×1134×30 mm (69.37×44.65×1.18 inches)
Weight	21.8 kg (48.1 lb)
Glass	3.2 mm (0.13 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	EVA/POE
Backsheet	White
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> ), Length: 1100mm/1100mm(43.3/43.3 inches)
Connector	Stabuli MC4 EVO2 / Trina TS4

## 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

## MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC)
Max Series Fuse Rating*	20A / 25A

\*Default 20A / 25A upon special request

## 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: 936 pieces