Vertex S+

DUAL GLASS MONOCRYSTALLINE MODULE

PRODUCT: **TSM-XXXNEG9R.28**

PRODUCT RANGE: **420-445W**

445W
MAXIMUM POWER OUTPUT

0~+5W
BINNING TOLERANCE

22.3%
MAXIMUM EFFICIENCY

Small in size, bigger on power

- Up to 445W, 22.3% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping, lower series resistance, improved current collection and enhanced reliability
- Reduce installation cost with higher power bin and efficiency
- Boost performance in warm weather with low temperature coefficient and operating temperature

Dual-glass Design, more secure and sustainable

- Upgraded dual glass of Vertex S, less prone to micro-cracks and scratches on the back during installation
- Fire rating class C, weather resistance, salt spray, ammonia performance which is fully applicable in coastal, high temperature, humidity area and harsh environment
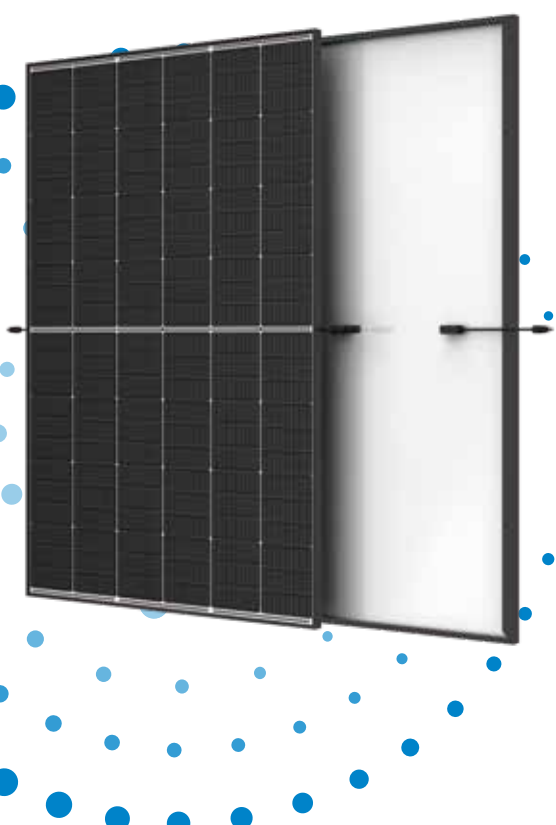
Ultra-low Degradation, longer warranty, higher output

- First-year degradation 1% and annual degradation at 0.4%
- Up to 25 years product warranty and 30 years power warranty
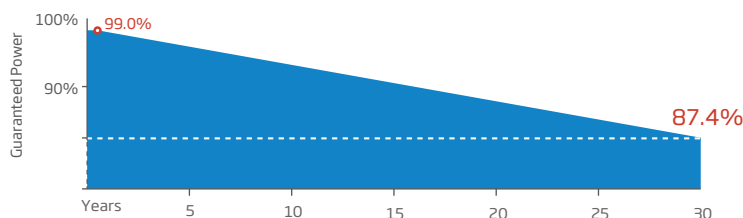
Universal solution for residential and C&I rooftops

- Easy for integration, designed for compatibility with existing mainstream inverters and diverse mounting systems
- Perfect size and low weight for handling and installation
- Most valuable solution on low load capacity rooftops (weight similar to backsheet version)
- Mechanical performance up to 5400 Pa positive load and 4000 Pa negative load

Trina Solar's Dual Glass Performance Warranty

Guaranteed Power

100% — 99.0%

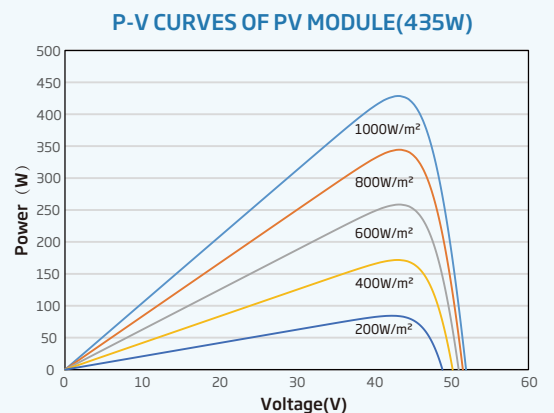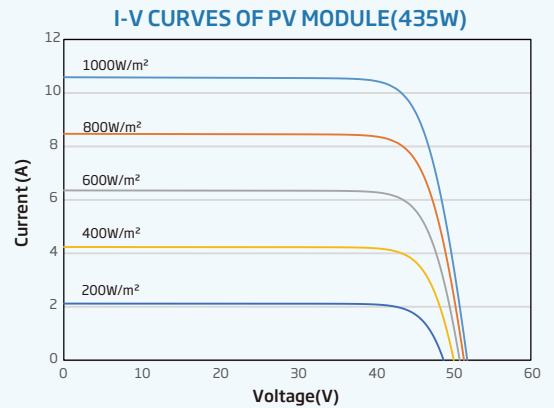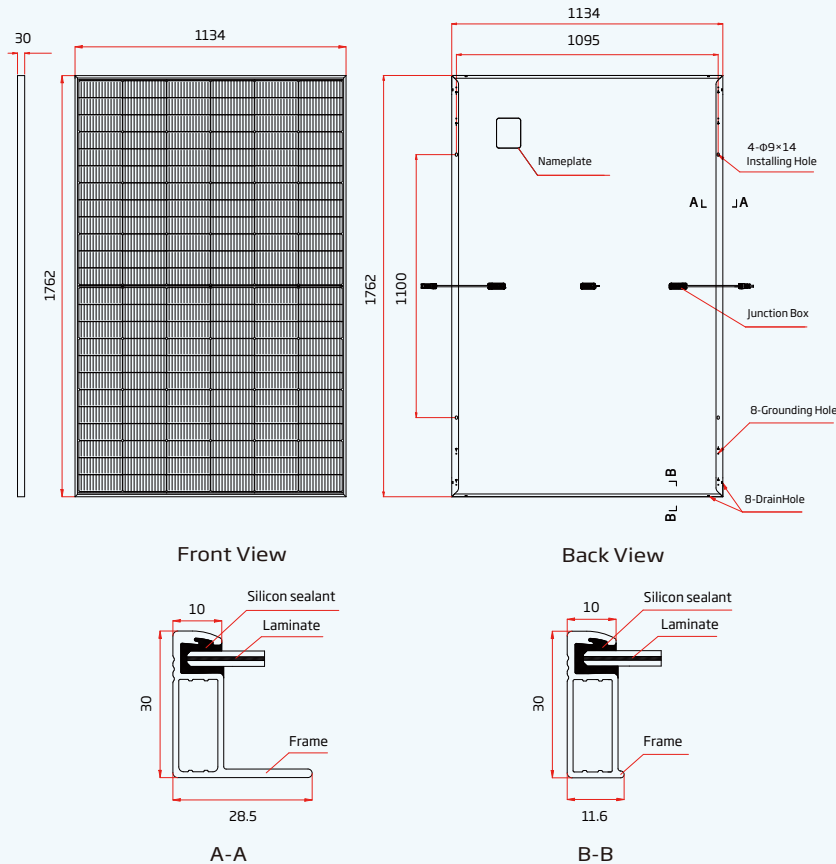90%

87.4%

Years   5   10   15   20   25   30

Comprehensive Products and System Certificates

ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse Gases Emissions Verification
ISO45001: Occupational Health and Safety Management System

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Vertex S+ Dual Glass MONOCRYSTALLINE MODULE

DIMENSIONS OF PV MODULE(mm)

30 1134

1762

1134
1095

Nameplate

4-Φ9×14
Installing Hole

1762 1100

Junction Box

8-Grounding Hole

8-DrainHole

Front View

10 Silicon sealant

Laminate

30

Frame

28.5

A-A

Back View

10 Silicon sealant

Laminate

30

Frame

11.6

B-B

I-V CURVES OF PV MODULE(435W)

P-V CURVES OF PV MODULE(435W)

ELECTRICAL DATA (STC) TSM-XXXNEG9R.28(XXX=420-445)

Peak Power Watts-P MAX (Wp)*	420	425	430	435	440	445
Binning Tolerance-P MAX (W)			0 ~ +5			
Maximum Power Voltage-V MPP (V)	42.5	42.9	43.2	43.6	44.0	44.3
Maximum Power Current-I MPP (A)	9.89	9.92	9.96	9.99	10.01	10.05
Open Circuit Voltage-V OC (V)	50.5	50.9	51.4	51.8	52.2	52.6
Short Circuit Current-I SC (A)	10.53	10.56	10.59	10.64	10.67	10.71
Module Efficiency η m (%)	21.0	21.3	21.5	21.8	22.0	22.3

STC: Irrdiance 1000W/m2, Cell Temperature 25°C, Air Mass AM1.5.   *Measuring tolerance: ±3%.

ELECTRICAL DATA (NOCT)

Maximum Power-P MAX (Wp)	320	324	328	332	335	339
Maximum Power Voltage-V MPP (V)	39.7	40.0	40.4	40.7	41.0	41.3
Maximum Power Current-I MPP (A)	8.07	8.09	8.11	8.15	8.17	8.20
Open Circuit Voltage-V OC (V)	47.8	48.2	48.7	49.1	49.4	49.8
Short Circuit Current-I SC (A)	8.49	8.51	8.53	8.57	8.60	8.63

NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	144 cells
Module Dimensions	1762×1134×30 mm (69.06×43.15×1.18 inches)
Weight	21.0kg (46.3 lb)
Front Glass	1.6 mm (0.06 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	EVA/POE
Back Glass	1.6mm(0.06 inches), Heat Strengthened Glass
Frame	30mm (0.06 inches) Anodized Aluminium Alloy, Black
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm² (0.006 inches²), Portrait: 350/280 mm(13.78/11.02 inches) Length can be customized
Connector	Stabuli MC4 EVO2 / Trina Solar TS4 Plus / Trina Solar TS4

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of P MAX	- 0.30%/°C
Temperature Coefficient of V OC	- 0.24%/°C
Temperature Coefficient of I SC	0.04%/°C

MAXIMUMRATINGS

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

WARRANTY

25 year Product Workmanship Warranty**

30 year Power Warranty

1% first year degradation

0.4% Annual Power Attenuation

PACKAGING CONFIGUREATION

Modules per box: 36 pieces

Modules per 40' container: 936 pieces

(**Please refer to Limited Warranty Supplement that applies to the TSM-***NEG9R.28,TSM-***NEG9RC.27,Products supplied after 1st Jan 2023 and installed within Australia & New Zealand residential rooftop market.)

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