

455 W

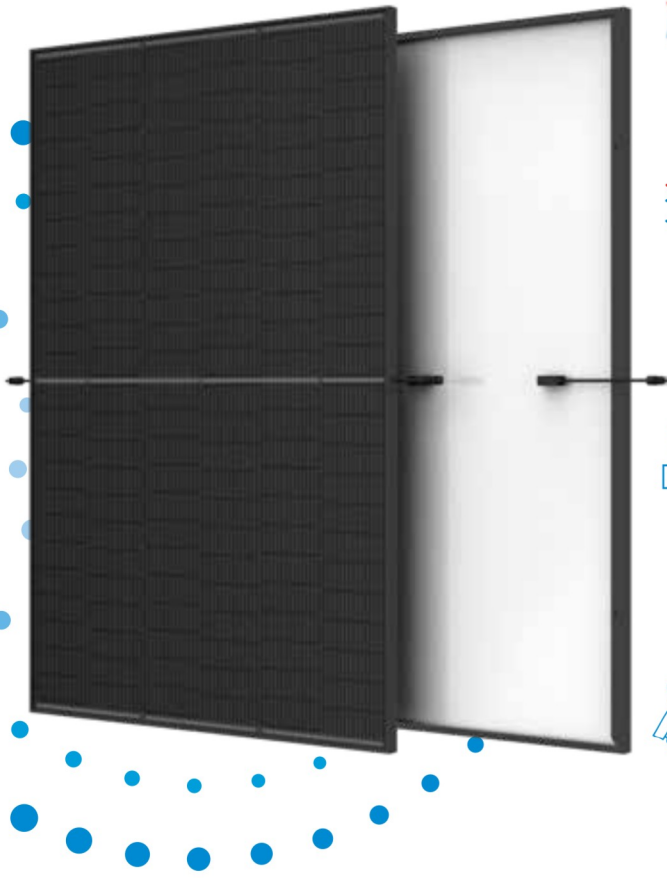
MAXIMUM POWER OUTPUT

0/+5 W

POSITIVE POWER TOLERANCE

22.8 %

MAXIMUM EFFICIENCY



Outstanding Visual Appearance

- Designed with aesthetics in mind
- Inheriting Trina Solar awards-winning full black design



Dual-glass Design, High Reliability

- Up to 25 years product warranty and 30 years power warranty
- Excellent fire rating and resistance to harsh environmental conditions
- 5,400 Pa snow load and 4,000 Pa wind load (test loads)



Small in size, bigger on power

- Up to 455 W, 22.8 % module efficiency with high density interconnect technology
- Reduces installation cost with higher power bin and efficiency
- Boost performance in warm weather with low temperature coefficient and operating temperature



Universal solution for residential and C&I rooftops

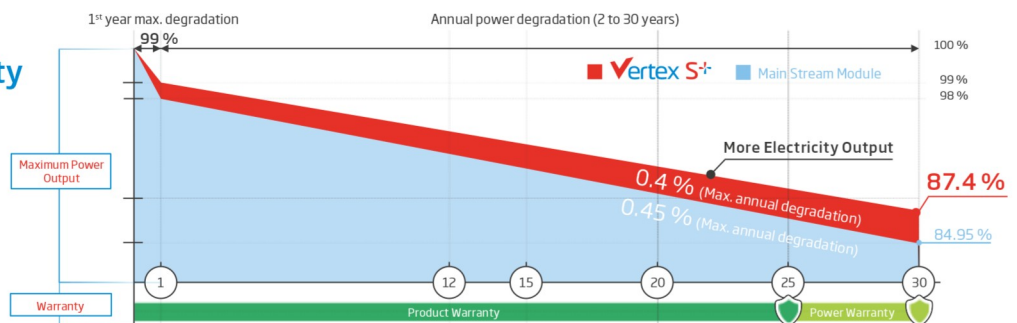
- Designed for compatibility with existing mainstream inverters, optimizers and mounting systems
- Perfect size and low weight for easy handling. Optimized transportation cost
- Flexible installation solutions for system deployment

Extended Vertex S⁺ Warranty

1 %
1st year max. degradation

0.4 %
Max. annual degradation from year 2 to 30

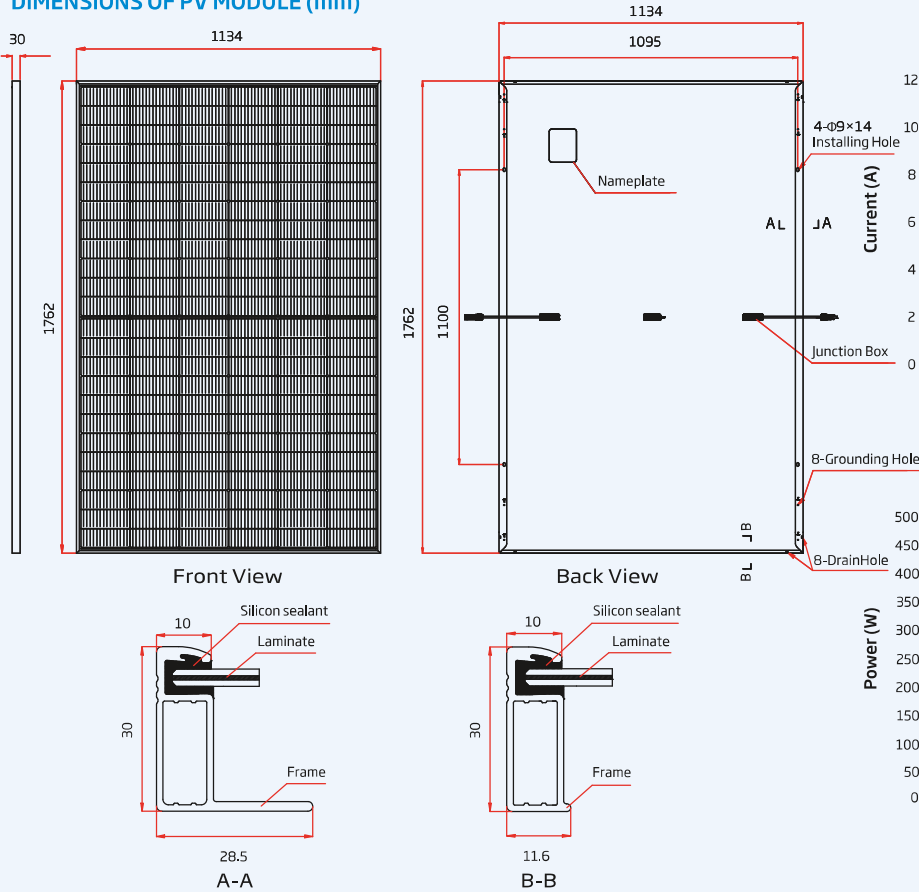
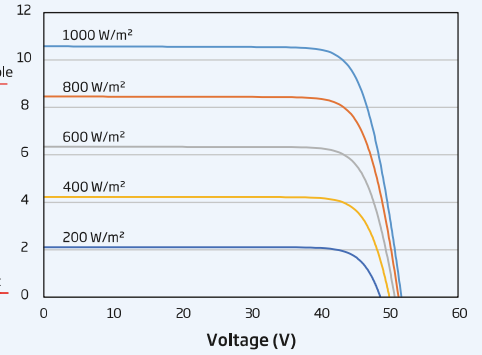
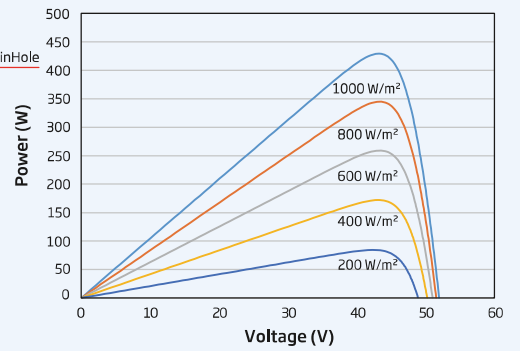
25 Years
Product Workmanship Warranty



Comprehensive Products and System Certificates



IEC61215/IEC61730/IEC61701/IEC62716
 ISO 9001: Quality Management System
 ISO 14001: Environmental Management System
 ISO14064: Greenhouse Gases Emissions Verification
 ISO 45001: Occupational Health and Safety Management System
 ISO14025: Environmental Product Declaration

DIMENSIONS OF PV MODULE (mm)

I-V CURVES OF PV MODULE (440 W)

P-V CURVES OF PV MODULE (440 W)

ELECTRICAL DATA (STC)

	TSM-430 NEG9R.25	TSM-435 NEG9R.25	TSM-440 NEG9R.25	TSM-445 NEG9R.25	TSM-450 NEG9R.25	TSM-455 NEG9R.25
Peak Power Watts- P_{MAX} (Wp)*	430	435	440	445	450	455
Power Tolerance- P_{MAX} (W)**	0/+5					
Maximum Power Voltage- V_{MPP} (V)	43.2	43.6	44.0	44.3	44.6	45.0
Maximum Power Current- I_{MPP} (A)	9.96	9.99	10.01	10.05	10.09	10.11
Open Circuit Voltage- V_{OC} (V)	51.4	51.8	52.2	52.6	52.9	53.4
Short Circuit Current- I_{SC} (A)	10.59	10.64	10.67	10.71	10.74	10.77
Module Efficiency η_m (%)	21.5	21.8	22.0	22.3	22.5	22.8

STC: Irradiance 1000 W/m², Cell Temperature 25 °C, Air Mass AM1.5. *Measuring tolerance: $\pm 3\%$. ** Power selection up to: +3%

ELECTRICAL DATA (NOCT)

	TSM-430 NEG9R.25	TSM-435 NEG9R.25	TSM-440 NEG9R.25	TSM-445 NEG9R.25	TSM-450 NEG9R.25	TSM-455 NEG9R.25
Maximum Power- P_{MAX} (Wp)	329	333	337	341	344	348
Maximum Power Voltage- V_{MPP} (V)	40.7	41.0	41.4	41.7	42.0	42.3
Maximum Power Current- I_{MPP} (A)	8.08	8.12	8.14	8.17	8.19	8.22
Open Circuit Voltage- V_{OC} (V)	48.7	49.1	49.5	49.9	50.2	50.6
Short Circuit Current- I_{SC} (A)	8.54	8.58	8.60	8.63	8.66	8.68

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

MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	144 cells
Module Dimensions	1762x1134x30 mm
Weight	21.0 kg
Front Glass	1.6 mm, High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	POE/EVA
Back Glass	1.6 mm, Heat Strengthened Glass
Frame	30 mm Anodized Aluminium Alloy, Black
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0 mm ² Landscape: 1100/1100 mm Portrait: 280/350 mm*
Connector	TS4/TS4 Plus/MC4 EVO2*

*Special order only

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 to +85 °C
Maximum System Voltage	1500 V DC (IEC)
Max Series Fuse Rating	25 A

WARRANTY

25 year Product Workmanship Warranty
 30 year Power Warranty
 1% first year degradation
 0.4 % Annual Power Attenuation

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box:	36 pieces
Modules per 40' container:	936 pieces