



**BACKSHEET MONOCRYSTALLINE MODULE**

PRODUCT: TSM-NE09RC.05

PRODUCT RANGE: 400-430W

**430W**

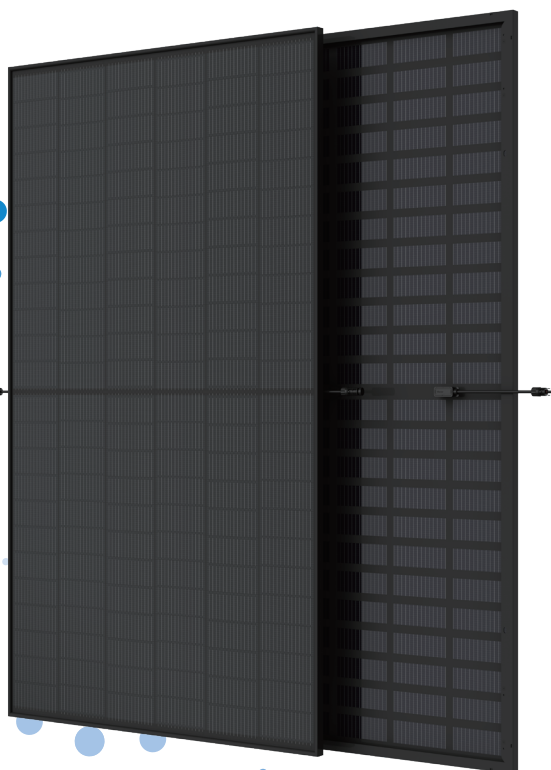
MAXIMUM POWER OUTPUT

**0~+5W**

POSITIVE POWER TOLERANCE

**21.5%**

MAXIMUM EFFICIENCY



**Small in size, bigger on power**

- Up to 430W, 21.5% module efficiency with high density interconnect technology
- Reduce installation cost with higher power bin and efficiency
- Boost performance in warm weather with low temperature coefficient and operating temperature



**High Reliability**

- Innovative non-destructive cutting for improved mechanical resistance and strength
- Excellent fire rating, weather resistance, salt spray, sand dust, ammonia performance which is fully applicable in coastal, high temperature, humidity area and harsh environment



**Ultra-low Degradation, longer warranty, higher output**

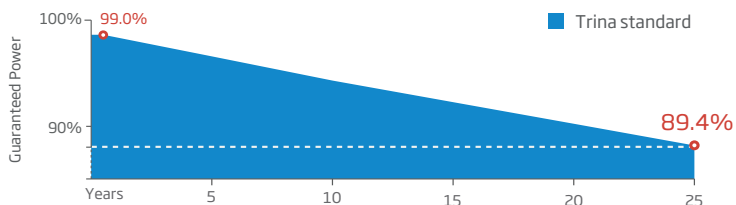
- First-year degradation 1% and annual degradation at 0.4%
- Up to 25 years product warranty and 25 years power warranty



**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 6000 Pa positive load and 4000 Pa negative load

**Trina Solar's Vertex Bifacial Backsheet Performance Warranty**



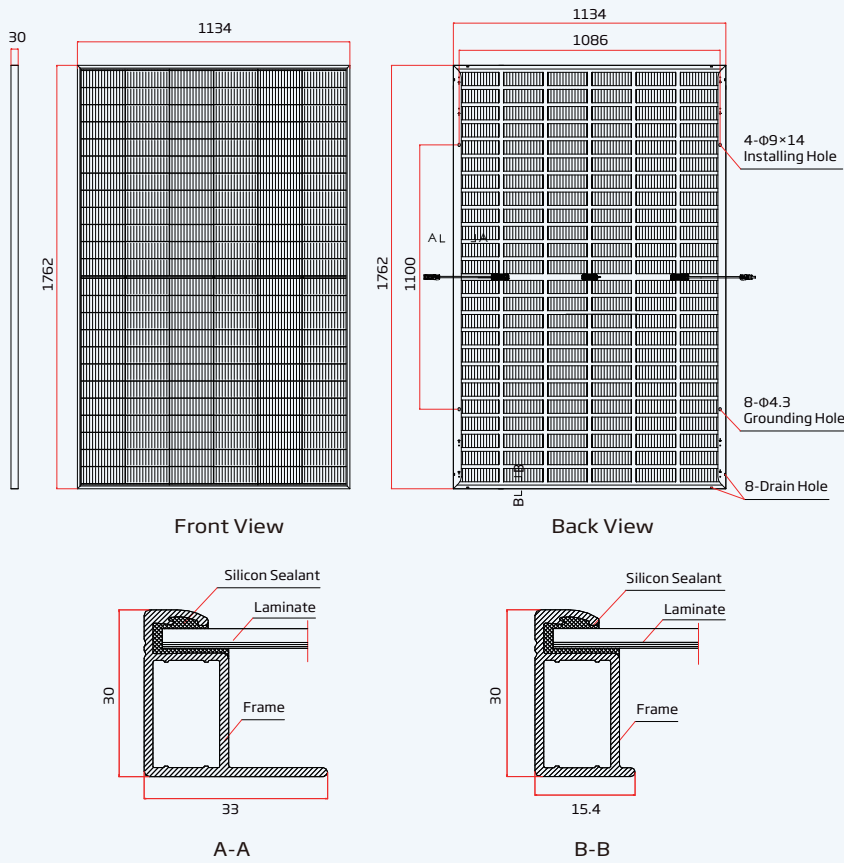
**Comprehensive Products and System Certificates**



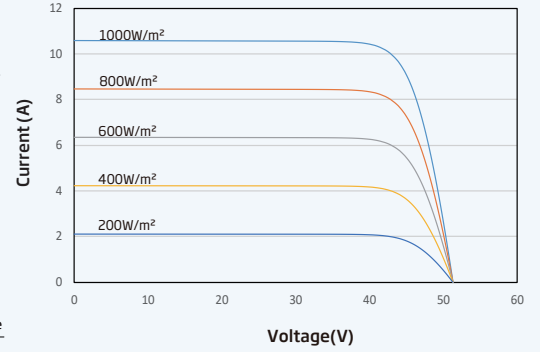
IEC61215/IEC61730/IEC61701/IEC62716/UL61730  
 ISO 9001: Quality Management System  
 ISO 14001: Environmental Management System  
 ISO14064: Greenhouse Gases Emissions Verification  
 ISO45001: Occupational Health and Safety Management System



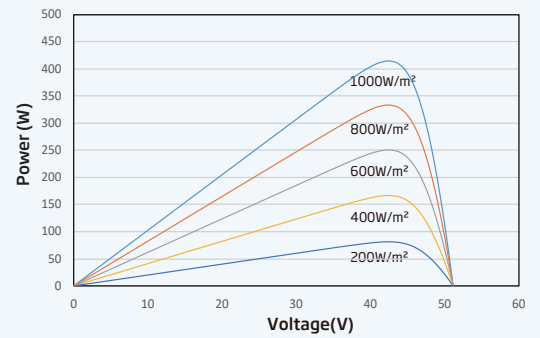
**DIMENSIONS OF PV MODULE(mm)**



**I-V CURVES OF PV MODULE(415 W)**



**P-V CURVES OF PV MODULE(415W)**



**ELECTRICAL DATA (STC)**

Peak Power Watts- $P_{MAX}$ (Wp)*	400	405	410	415	420	425	430
Power Tolerance- $P_{MAX}$ (W)	0 ~ +5						
Maximum Power Voltage- $V_{MPP}$ (V)	41.3	41.7	42.1	42.5	42.8	43.2	43.6
Maximum Power Current- $I_{MPP}$ (A)	9.68	9.71	9.73	9.77	9.80	9.84	9.87
Open Circuit Voltage- $V_{oc}$ (V)	49.2	49.6	50.1	50.5	50.9	51.4	51.8
Short Circuit Current- $I_{sc}$ (A)	10.30	10.33	10.37	10.40	10.43	10.47	10.50
Module Efficiency $\eta_m$ (%)	20.0	20.3	20.5	20.8	21.0	21.3	21.5

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 - $P_{MAX}$ (Wp)	426	431	437	442	447	453	458
Maximum Power Voltage- $V_{MPP}$ (V)	41.3	41.7	42.1	42.5	42.8	43.2	43.6
Maximum Power Current- $I_{MPP}$ (A)	10.31	10.34	10.36	10.41	10.44	10.48	10.51
Open Circuit Voltage- $V_{oc}$ (V)	49.2	49.6	50.1	50.5	50.9	51.4	51.8
Short Circuit Current- $I_{sc}$ (A)	10.97	11.00	11.04	11.08	11.11	11.15	11.18
Irradiance ratio (rear/front)	10%						

Power Bifaciality: 65±10%.

**ELECTRICAL DATA (NOCT)**

Maximum Power- $P_{MAX}$ (Wp)	312	308	312	316	319	324	328
Maximum Power Voltage- $V_{MPP}$ (V)	38.6	39.0	39.3	39.7	40.0	40.4	40.7
Maximum Power Current- $I_{MPP}$ (A)	7.88	7.91	7.93	7.96	7.98	8.01	8.04
Open Circuit Voltage- $V_{oc}$ (V)	46.6	47.0	47.5	47.8	48.2	48.7	49.1
Short Circuit Current- $I_{sc}$ (A)	8.30	8.32	8.36	8.38	8.41	8.44	8.46

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

**MECHANICAL DATA**

Solar Cells	Topcon Bifacial
No. of cells	144cells
Module Dimensions	1762×1134×30 mm (69.37×44.65×1.18 inches)
Weight	21.3kg (47.0 lb)
Front Glass	3.2 mm (0.12inches), High Transmission, Tempered Glass
Encapsulant material	POE/EVA
BackSheet	Black Grid Transparent Backsheet
Frame	30mm (1.18 inches) Anodized Aluminium Alloy, Black
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm <sup>2</sup> (0.006 inches <sup>2</sup> ) Landscape: N 1100 mm / P 1100 mm (43.31/43.31 inches)
Connector	MC4 EV02
Fire Type	Type 1 or Type 2

**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

**MAXIMUM RATINGS**

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

**WARRANTY**

- 25 year Product Workmanship Warranty
- 25 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: 792 pieces
- Pallet dimensions (L x W x H): 1800 x 1135 x 1259 mm
- Pallet weight: 829 kg (1827 lb)