

# THE TALLMAX<sup>M</sup>

## FRAMED 144 LAYOUT MODULE



**144 LAYOUT**  
MONOCRYSTALLINE MODULE

**435-460W**  
POWER OUTPUT RANGE

**21.0%**  
MAXIMUM EFFICIENCY

**0~+5W**  
BINNING TOLERANCE

**PRODUCTS**

TSM-DE17M(II)

**POWER RANGE**

435-460W

Founded in 1997, Trina Solar is the world's leading total solution provider for solar energy. With local presence around the globe, Trina Solar is able to provide exceptional service to each customer in each market and deliver our innovative, reliable products with the backing of Trina as a strong, bankable brand. Trina Solar now distributes its PV products to over 100 countries all over the world. We are committed to building strategic, mutually beneficial collaborations with installers, developers, distributors and other partners in driving smart energy together.

**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



**High power Mono Perc**



- Up to 460W front power and 21.0% module efficiency with half-cut and MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance of half-cut and good reflection effect of MBB ensure high power

**High reliability**



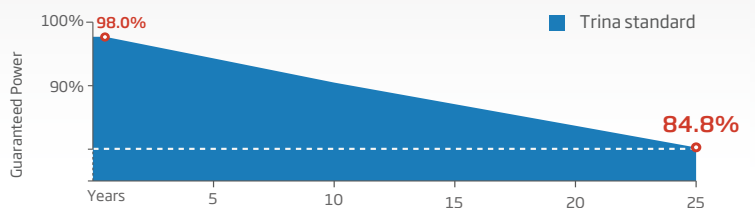
- Ensured PID resistance through cell process and module material control
- Resistant to salt, acid and ammonia
- Mechanical performance: Up to 5400 Pa positive load and 2400 Pa negative load

**High energy generation**

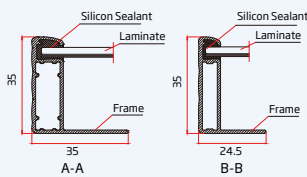
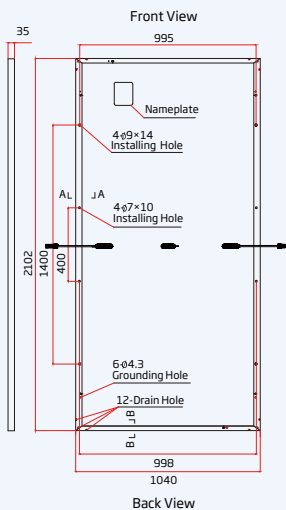
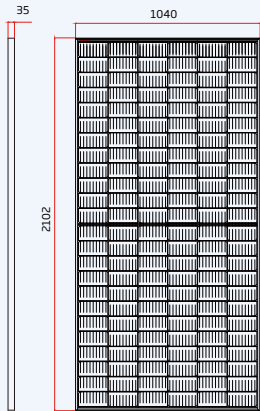


- Excellent IAM and low light performance validated by 3rd party with cell process and module material optimization
- Better anti-shading performance and lower operating temperature

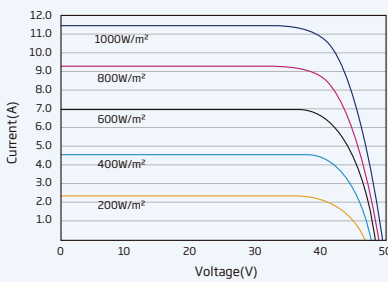
**PERFORMANCE WARRANTY**



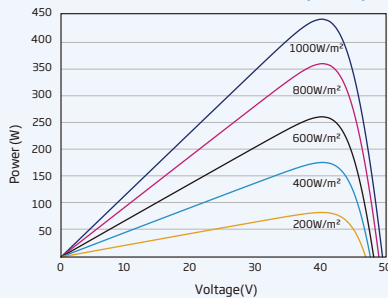
### DIMENSIONS OF PV MODULE(mm)



### I-V CURVES OF PV MODULE(445W)



### P-V CURVES OF PV MODULE(445W)



### ELECTRICAL DATA (STC)

Peak Power Watts- $P_{MAX}$ (Wp)*	435	440	445	450	455	460
Binning Tolerance- $P_{MAX}$ (W)	0 ~ +5					
Maximum Power Voltage- $V_{MPP}$ (V)	40.5	40.7	40.8	41.0	41.2	41.3
Maximum Power Current- $I_{MPP}$ (A)	10.74	10.82	10.90	10.98	11.06	11.13
Open Circuit Voltage- $V_{OC}$ (V)	49.0	49.2	49.4	49.6	49.8	50.0
Short Circuit Current- $I_{SC}$ (A)	11.31	11.39	11.46	11.53	11.61	11.68
Module Efficiency $\eta_m$ (%)	19.9	20.1	20.4	20.6	20.8	21.0

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

### ELECTRICAL DATA (NOCT)

Maximum Power- $P_{MAX}$ (Wp)	328	332	336	340	344	347
Maximum Power Voltage- $V_{MPP}$ (V)	38.2	38.4	38.5	38.7	38.9	39.1
Maximum Power Current- $I_{MPP}$ (A)	8.60	8.66	8.71	8.77	8.84	8.89
Open Circuit Voltage- $V_{OC}$ (V)	46.1	46.3	46.5	46.6	46.8	47.0
Short Circuit Current- $I_{SC}$ (A)	9.11	9.18	9.24	9.29	9.36	9.41

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

### MECHANICAL DATA

Solar Cells	Monocrystalline
Cell Orientation	144 cells (6 × 24)
Module Dimensions	2102 × 1040 × 35 mm (82.76 × 40.94 × 1.38 inches)
Weight	24.0 kg ( 52.9lb)
Glass	3.2 mm (0.13 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	EVA/POE
Backsheet	White
Frame	35 mm ( 1.38 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm <sup>2</sup> (0.006 inches <sup>2</sup> ), Portrait: N 280mm/P 280mm(11.02/11.02inches) Landscape: N 1400 mm /P 1400 mm (55.12/55.12 inches)
Connector	MC4 EVO2 / 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

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

### MAXIMUM RATINGS

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

### WARRANTY

12 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: 31 pieces
Modules per 40' container: 682 pieces