

THE

# DUOMAX **twin**

## BIFACIAL DUAL GLASS 144 HALF-CELL MODULE



**144-Cell**  
MONOCRYSTALLINE MODULE

**380-405W**  
POWER OUTPUT RANGE

**19.7%**  
MAXIMUM EFFICIENCY

**0~+5W**  
POSITIVE POWER TOLERANCE

PRODUCT | POWER RANGE  
TSM-DEG15HC.20(II) | 380-405W



### High power output

- Up to 405W front power and 19.7% module efficiency with half-cut technology enabling higher BOS savings
- Lower resistance of half-cut cells ensures higher power



### Certified to perform in highly challenging environments

- High PID resistance through cell process and module material control
- Resistant to salt, acid, sand, and ammonia
- Proven to be reliable in high temperature and humidity areas
- Certified to the best fire class A
- Minimizes micro-crack and snail trails
- Certified to 2400 Pa positive load and 2400 Pa negative load



### High energy generation, low LCOE

- Up to 25% additional power gain from back side, depending on the albedo
- Excellent 3rd party validated IAM and low light performance with cell process and module material optimization
- Low temp coefficient (-0.35%) and NMOT increases energy production
- Better anti-shading performance and lower operating temperature
- Higher power from same installation footprint as standard modules



### Easy to install, wide application

- Frame design enables compatibility with standard installation methods
- Deployable for ground mounted utility, carports, and agricultural projects
- Safe and easy to transport, handle, and install like normal framed modules

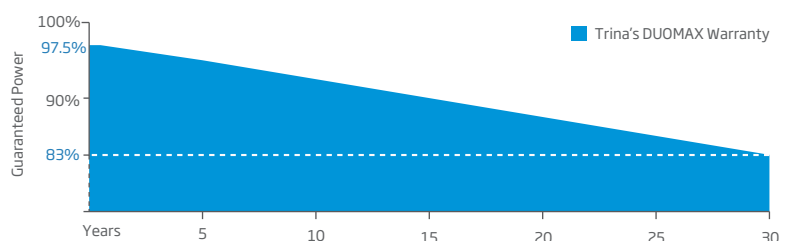
Founded in 1997, Trina Solar is the world's leading total solution provider for solar energy. With local presence around the globe, Trina Solar is able to provide exceptional service to each customer in each market and deliver our innovative, reliable products with the backing of Trina as a strong, bankable 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  
OHSAS 18001: Occupation Health and Safety Management System

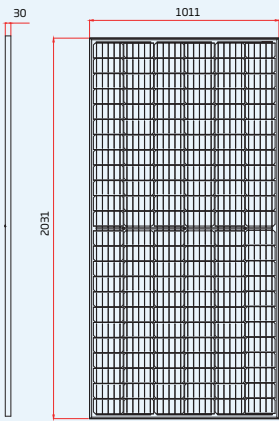


Trina Solar's DUOMAX Performance Warranty

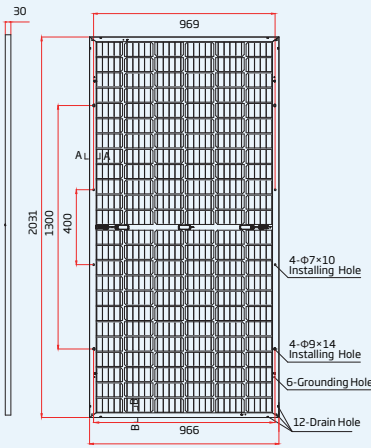


From the 2nd year to the 30th year, the average annual power decline will be no more than 0.5%.

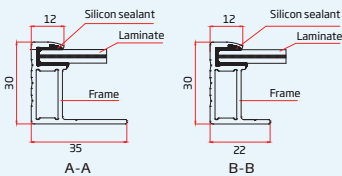
### DIMENSIONS OF PV MODULE(mm)



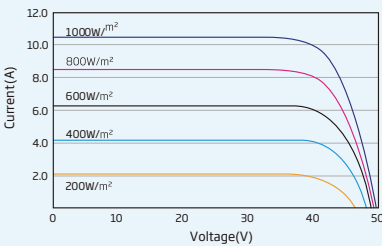
Front View



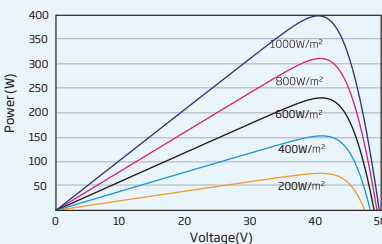
Back View



### I-V CURVES OF PV MODULE(400W)



### P-V CURVES OF PV MODULE(400W)



### ELECTRICAL DATA (STC)

Peak Power Watts- $P_{MAX}$ (Wp)*	380	385	390	395	400	405
Power Output Tolerance- $P_{MAX}$ (W)	0 ~ +5					
Maximum Power Voltage- $V_{MPP}$ (V)	40.3	40.4	40.5	40.6	40.7	40.8
Maximum Power Current- $I_{MPP}$ (A)	9.43	9.53	9.63	9.73	9.83	9.93
Open Circuit Voltage- $V_{OC}$ (V)	49.2	49.4	49.6	49.7	49.9	50.1
Short Circuit Current- $I_{SC}$ (A)	9.99	10.09	10.19	10.29	10.39	10.49
Module Efficiency $\eta_m$ (%)	18.5	18.7	19.0	19.2	19.5	19.7

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

### ELECTRICAL DATA (NMOT)

Maximum Power- $P_{MAX}$ (Wp)	289	292	296	300	304	308
Maximum Power Voltage- $V_{MPP}$ (V)	38.1	38.2	38.3	38.4	38.6	38.7
Maximum Power Current- $I_{MPP}$ (A)	7.58	7.65	7.73	7.81	7.88	7.95
Open Circuit Voltage- $V_{OC}$ (V)	46.6	46.8	47.0	47.1	47.2	47.4
Short Circuit Current- $I_{SC}$ (A)	8.05	8.13	8.21	8.29	8.37	8.45

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

### Electrical characteristics with different rear side power gains (referenced specific to 400 Wp front)\*\*

Maximum Power- $P_{MAX}$ (Wp)	420	440	460	480	500
Maximum Power Voltage- $V_{MPP}$ (V)	40.7	40.7	40.7	40.7	40.7
Maximum Power Current- $I_{MPP}$ (A)	10.32	10.81	11.30	11.80	12.29
Open Circuit Voltage- $V_{OC}$ (V)	49.9	50.0	50.0	50.0	50.1
Short Circuit Current- $I_{SC}$ (A)	10.91	11.43	11.95	12.47	12.99
$P_{max}$ gain	5%	10%	15%	20%	25%

Bifaciality Factor: 70±5%.

### MECHANICAL DATA

Solar Cells	Monocrystalline
Cell Orientation	144 cells (6 × 24)
Module Dimensions	2031 × 1011 × 30 mm (79.96 × 39.80 × 1.18 inches)
Weight	26.8 kg (59.1 lb)
Front Glass	2.0 mm (0.08 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	POE /EVA
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	30 mm (1.18 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0 mm <sup>2</sup> (0.006 inches <sup>2</sup> ) Portrait: 280/280 mm (11.02/11.02 inches) Landscape: 1900/1900 mm (74.80/74.80 inches)
Connector	Trina TS4

### TEMPERATURE RATINGS

NMOT(Nominal Module Operating Temperature)	41°C (±3°C)
Temperature Coefficient of $P_{MAX}$	-0.35%/°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) 1500V DC (UL)
Max Series Fuse Rating	20A

### WARRANTY

12 year Product Workmanship Warranty

30 year Power Warranty

(Please refer to product warranty for details)

### PACKAGING CONFIGURATION

Modules per box: 32 pieces

Modules per 40' container: 672 pieces

\*\* Back-side power gain varies depending upon the specific project albedo