



# BLACK DRAGON SOLAR PANEL

Data sheet

Preliminary

Mono Multi Solutions

# Vertex

BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE

PRODUCT: TSM-DEG19RC.20

PRODUCT RANGE: 550-575W

## 575W

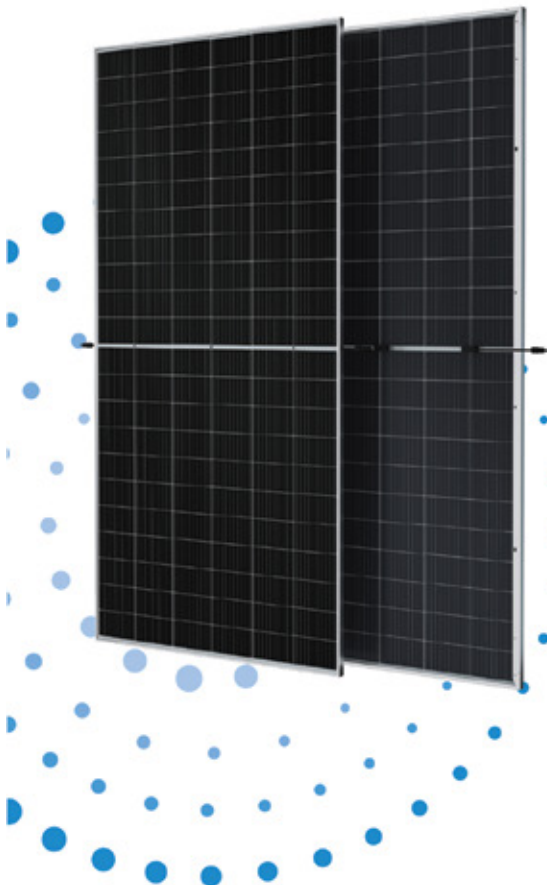
MAXIMUM POWER OUTPUT

## 0~+5W

POSITIVE POWER TOLERANCE

## 21.3%

MAXIMUM EFFICIENCY



### High customer value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance of System) cost, shorter payback time
- Lowest guaranteed first year and annual degradation;
- Designed for compatibility with existing mainstream system components
- Higher return on Investment



### High power up to 575W

- Up to 21.3% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection



### High reliability

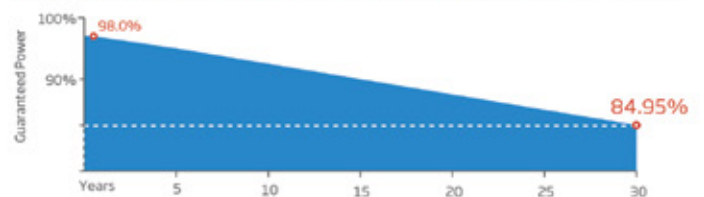
- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load



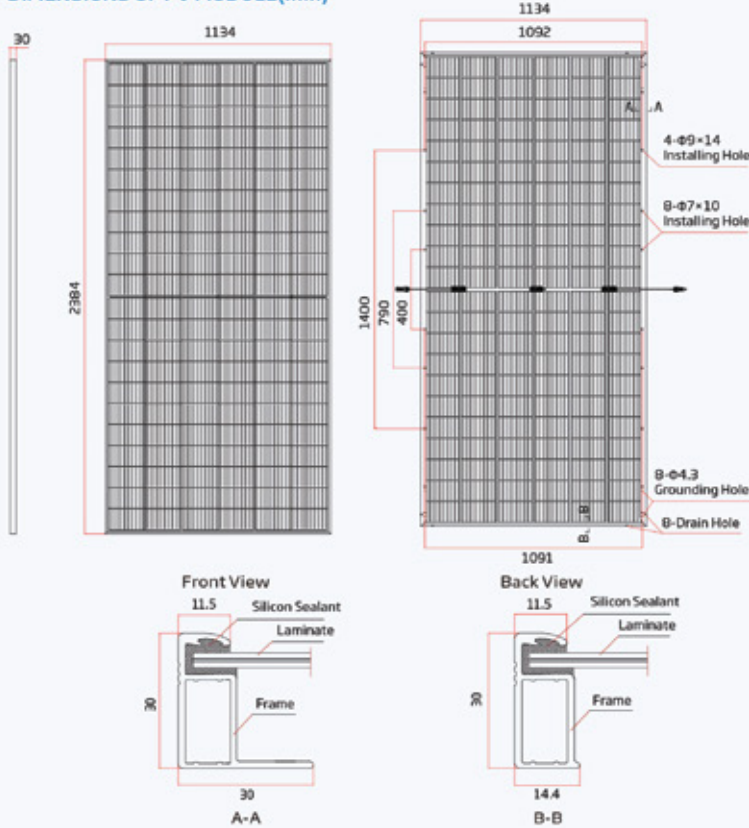
### High energy yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions
- Lower temperature coefficient (-0.34%) and operating temperature
- Up to 25% additional power gain from back side depending on albedo

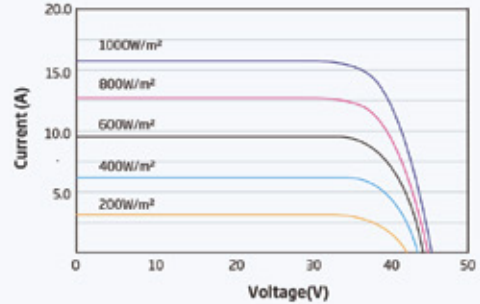
### Trina Solar's Vertex Bifacial Dual Glass Performance Warranty



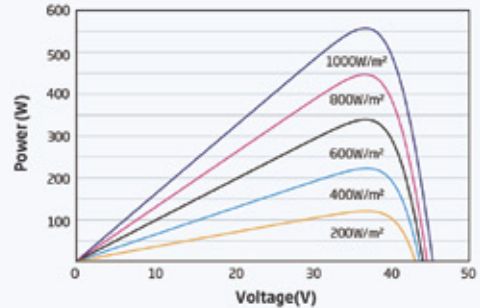
## DIMENSIONS OF PV MODULE(mm)



## I-V CURVES OF PV MODULE(560 W)



## P-V CURVES OF PV MODULE(560 W)



## ELECTRICAL DATA (STC)

Peak Power Watts- $P_{max}$ (Wp)*	550	555	560	565	570	575
Power Tolerance- $P_{max}$ (W)	0 ~ +5					
Maximum Power Voltage- $V_{mp}$ (V)	37.2	37.4	37.7	37.9	38.2	38.4
Maximum Power Current- $I_{mp}$ (A)	14.78	14.82	14.86	14.90	14.94	14.97
Open Circuit Voltage- $V_{oc}$ (V)	44.8	45.0	45.2	45.5	45.7	46.0
Short Circuit Current- $I_{sc}$ (A)	15.76	15.80	15.86	15.90	15.93	15.97
Module Efficiency $\eta_m$ (%)	20.3	20.5	20.7	20.9	21.1	21.3

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)	589	594	599	605	610	615
Maximum Power Voltage- $V_{mp}$ (V)	37.2	37.4	37.7	37.9	38.2	38.4
Maximum Power Current- $I_{mp}$ (A)	15.82	15.86	15.90	15.94	15.98	16.02
Open Circuit Voltage- $V_{oc}$ (V)	44.8	45.0	45.2	45.5	45.7	46.0
Short Circuit Current- $I_{sc}$ (A)	16.86	16.91	16.96	17.01	17.05	17.09
Irradiance ratio (rear/front)	10%					

Power Bifaciality: 70±5%.

## ELECTRICAL DATA (NOCT)

Maximum Power- $P_{max}$ (Wp)	415	419	424	427	431	435
Maximum Power Voltage- $V_{mp}$ (V)	34.5	34.7	34.9	35.1	35.4	35.6
Maximum Power Current- $I_{mp}$ (A)	12.03	12.07	12.13	12.15	12.19	12.21
Open Circuit Voltage- $V_{oc}$ (V)	42.2	42.4	42.6	42.9	43.0	43.3
Short Circuit Current- $I_{sc}$ (A)	12.70	12.73	12.78	12.81	12.83	12.87

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

## MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	132 cells
Module Dimensions	2384×1134×30 mm (93.86×44.65×1.18 inches)
Weight	33.4 kg (73.63 lb)
Front Glass	2.0 mm (0.08 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	EVA/POE
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	30mm(1.18 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: 350/280 mm(13.78/11.02 inches) Length can be customized
Connector	MC4 EV02 / TS4*

\*Please refer to regional datasheet for specified connector.

## 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

## MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC) 1500V DC (UL)
Max Series Fuse Rating	35A

## WARRANTY

12 year Product Workmanship Warranty  
30 year Power Warranty  
2% first year degradation  
0.45% Annual Power Attenuation

(Please refer to product warranty for details)

## PACKAGING CONFIGURATION

Modules per box: 36 pieces  
Modules per 40' container: 720 pieces

# BLACK DRAGON



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FOR A BRIGHTER FUTURE



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