**PRODUCT:** TSM-DEG21C.20  
**POWER RANGE:** 645-665W

**BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE**

**665W**  
**MAXIMUM POWER OUTPUT**

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

**21.4%**  
**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

**High power up to 665W**
- Up to 21.4% 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**

- **Guaranteed Power (%)**
  - Years 5: 98.0%
  - Years 10: 90%
  - Years 15: 84.95%
  - Years 20: 84.95%
  - Years 25: 84.95%
  - Years 30: 84.95%

**Comprehensive Products and System Certificates**
- IEC61215/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(650 W)

P-V CURVES OF PV MODULE(650W)

I-V CURVES OF PV MODULE(650 W)

ELECTRICAL DATA (STC)

Peak Power Watts-Pmax (Wp)* 645 650 655 660 665
Power Tolerance-Pmax (W) 0 + 5
Maximum Power Voltage-Vmp (V) 37.5 37.7 37.9 38.1 38.3
Maximum Power Current-Imp (A) 17.23 17.27 17.31 17.35 17.39
Open circuit Voltage-Voc (V) 45.3 45.5 45.7 45.9 46.1
Short Circuit Current-Isc (A) 18.31 18.35 18.40 18.45 18.50
Module Efficiency-η (m (%)
20.8 20.9 21.1 21.2 21.4

Total Equivalent power -Pmax (Wp)
690 696 701 705 712
Maximum Power Voltage-Vmp (V) 37.5 37.7 37.9 38.1 38.3
Maximum Power Current-Imp (A) 18.44 18.48 18.52 18.56 18.60
Open circuit Voltage-Voc (V) 45.3 45.5 45.7 45.9 46.1
Short Circuit Current-Isc (A) 19.59 19.63 19.69 19.74 19.79
Irradiance ratio (rear/front) 10%

MECHANICAL DATA

Solar Cells Monocrystalline
No. of cells 132 cells
Module Dimensions 2384×1303×33 mm (93.86×51.30×1.30 inches)
Weight 38.3 kg (84.4 lb)
Front Glass 2.0 mm (0.08 inches), High Transmission, All-Coated Front Strengthened Glass
Encapsulant material POE/EVA
Back Glass 2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame 33mm(1.30 inches) Anodized Aluminum Alloy
J-Box IP 68 rated
Cables Photovoltaic Technology Cable 4.0mm² (0.006 inches²),
Portrait: 350/280 mm(13.78/11.02 inches)
Length can be customized

Connector MC4 EVO2 / TS4*

MAXIMUM RATINGS

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

PACKAGING CONFIGURATION

Modules per box: 33 pieces
Modules per 40 container: 594 pieces

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.
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