EPSILON SOLAR S.R.L.

PROGETTO DEFINITIVO DI UN IMPIANTO AGRO-FOTOVOLTAICO DELLA POTENZA COMPLESSIVA DI 104,4 MWp, E RELATIVE OPERE DI CONNESSIONE ALLA RETE, DOTATO DI SISTEMA DI ACCUMULO CON POTENZA DI 17,6 MW DA REALIZZARSI NEL COMUNE DI TORREMAGGIORE (FG)

PROGETTO DEFINITIVO

GONZALEZ MATEO JUAN FERNANDO
2024.04.23 15:07:01
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RSA2048bits

COMMITTENTE: EPSILON SOLAR s.r.l.

PROGETTISTA:

TECHNITAL

ORDINE INGEGNERI VERONA E PROVINCIA

DIRETTORE TECNICO
Dott. Ing. Simone Venturini

TITOLO ELABORATO:

BROCHURE MODULI FOTOVOLTAICI

ELABORATO n° :	BI035F-D-TM00-IMP-SH-02-00
NOME FILE :	
SCALA :	-
DATA :	Marzo 2024

REVISIONE N.	DATA	DESCRIZIONE	ELABORATO	CONTROLLATO	APPROVATO
00	Marzo 2024	Emissione	N.Ostoich	M.Palvarini	S. Venturini
01					
02					
03					
04					

Vertex N

BIFACIAL DUAL GLASS MODULE

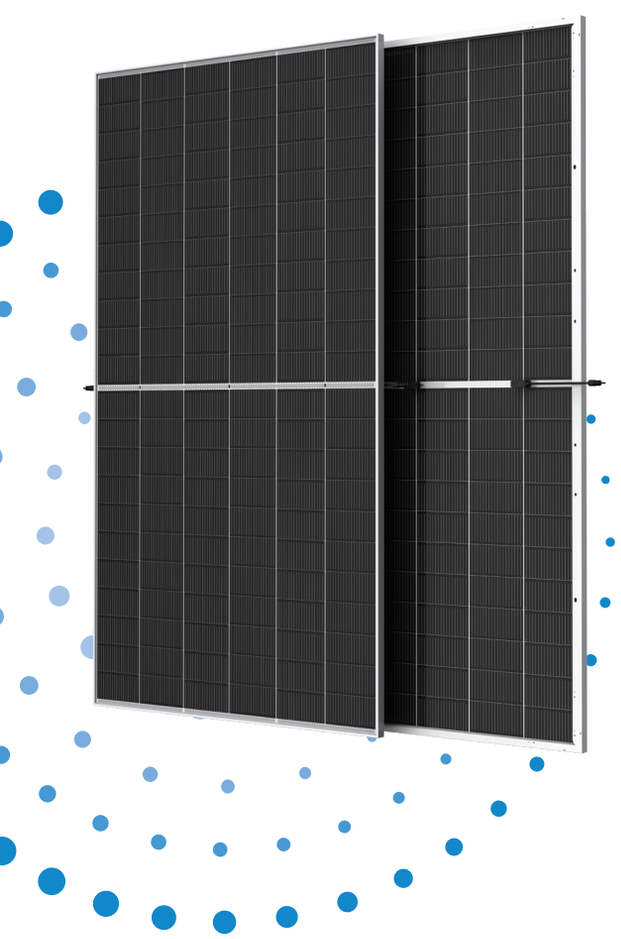
PRODUCT: TSM-NEG21C.20

PRODUCT RANGE: 685-710W

710W
MAXIMUM POWER OUTPUT

0~+5W
POSITIVE POWER TOLERANCE

22.9%
MAXIMUM EFFICIENCY



High customer value

- Lower LCOE (levelized cost of energy), reduced BOS (balance of system) cost, shorter payback time
- Guaranteed first year and annual degradation
- High module power; high string power and low voltage design

High power up to 710W

- Up to 22.9% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection

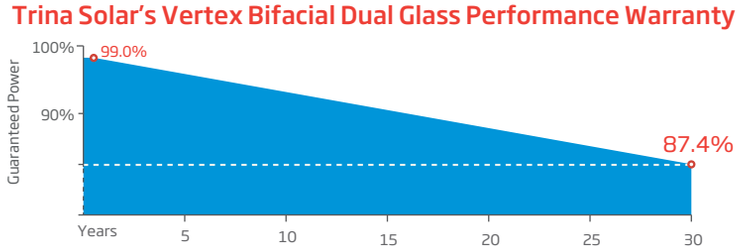
High reliability

- 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 product bifaciality and low irradiation performance, validated by 3rd party
- Extremely low 1% first year degradation and 0.4% annual power attenuation
- The unique design provides optimized energy production under inter-row shading conditions
- Lower temperature coefficient (-0.30%) and operating temperature
- Up to 30% additional power gain from back side depending on albedo

Trina Solar's Vertex Bifacial Dual Glass Performance Warranty



Comprehensive Products and System Certificates

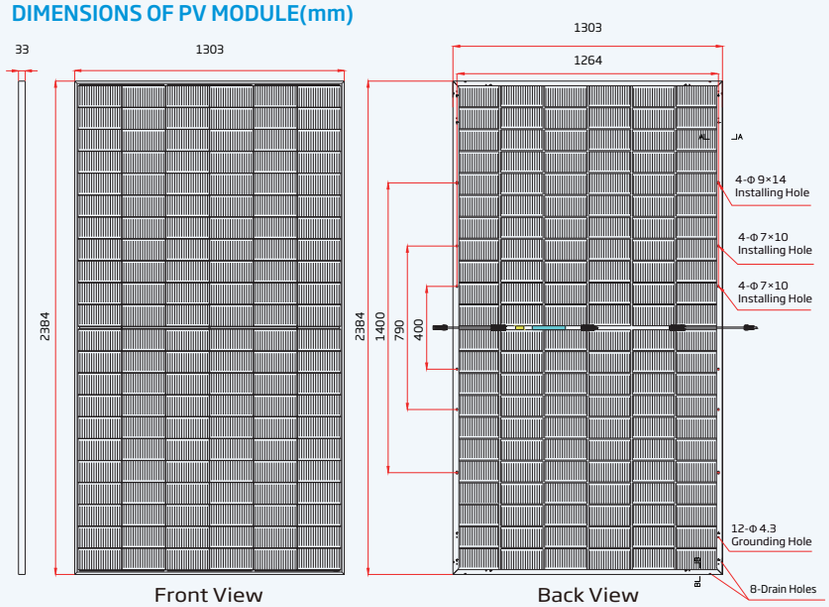
IEC61215/IEC61730/IEC61701/IEC62716
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse Gases Emissions Verification
ISO45001: Occupational Health and Safety Management System

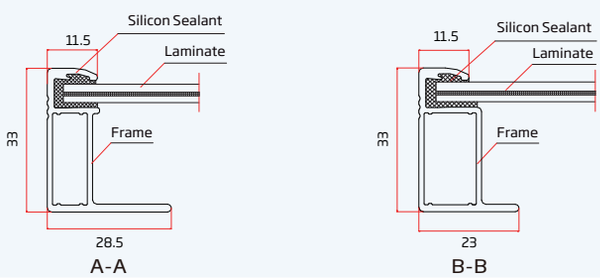
Trinasolar

Vertex N

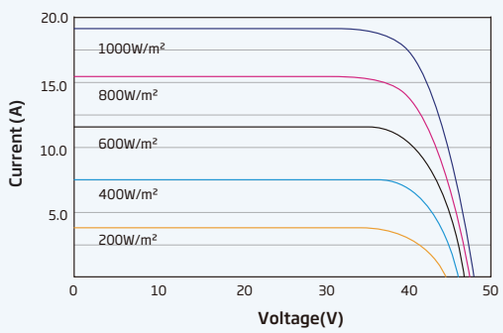
BIFACIAL DUAL GLASS MODULE

DIMENSIONS OF PV MODULE(mm)

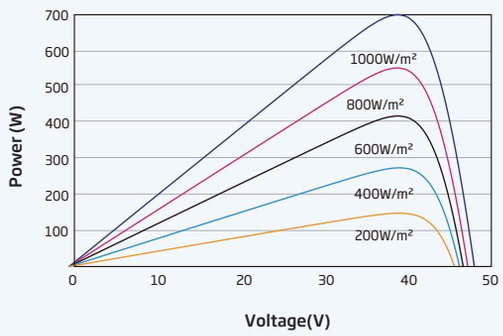




I-V CURVES OF PV MODULE(700W)



P-V CURVES OF PV MODULE(700W)



ELECTRICAL DATA (STC)

Peak Power Watts-PMAX (Wp)*	685	690	695	700	705	710
Power Tolerance-PMAX (W)	0 ~ +5					
Maximum Power Voltage-VMPP (V)	39.8	40.1	40.3	40.5	40.7	40.9
Maximum Power Current-IMPP (A)	17.19	17.23	17.25	17.29	17.33	17.36
Open Circuit Voltage-VOC (V)	47.7	47.9	48.3	48.6	48.8	49.0
Short Circuit Current-ISC (A)	18.21	18.25	18.28	18.32	18.36	18.40
Module Efficiency η m (%)	22.1	22.2	22.4	22.5	22.7	22.9

STC: Irrdiance 1000W/m2, 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 -PMAX (Wp)	740	745	751	756	761	767
Maximum Power Voltage-VMPP (V)	39.8	40.1	40.3	40.5	40.7	40.9
Maximum Power Current-IMPP (A)	18.57	18.61	18.63	18.67	18.72	18.76
Open Circuit Voltage-VOC (V)	47.7	47.9	48.3	48.6	48.8	49.0
Short Circuit Current-ISC (A)	19.67	19.71	19.74	19.79	19.83	19.87
Irradiance ratio (rear/front)	10%					

Product Bifaciality:80±5%.

ELECTRICAL DATA (NOCT)

Maximum Power-PMAX (Wp)	522	526	530	534	538	542
Maximum Power Voltage-VMPP (V)	37.4	37.7	37.8	38.0	38.2	38.4
Maximum Power Current-IMPP (A)	13.97	13.96	14.02	14.05	14.08	14.12
Open Circuit Voltage-VOC (V)	45.2	45.4	45.8	46.0	46.2	46.4
Short Circuit Current-ISC (A)	14.68	14.71	14.73	14.76	14.80	14.83

NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

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, AR Coated Heat 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 Aluminium 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 Plus /TS4*

*Please refer to regional datasheet for specified connector.

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of PMAX	- 0.30%/°C
Temperature Coefficient of VOC	- 0.24%/°C
Temperature Coefficient of ISC	0.04%/°C

MAXIMUM RATINGS

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

WARRANTY

12 year Product Workmanship Warranty

30 year Power Warranty

1% first year degradation

0.4% Annual Power Attenuation

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box: 33 pieces

Modules per 40' container: 594 pieces

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

Version number: TSM_EN_2023_A_S4

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