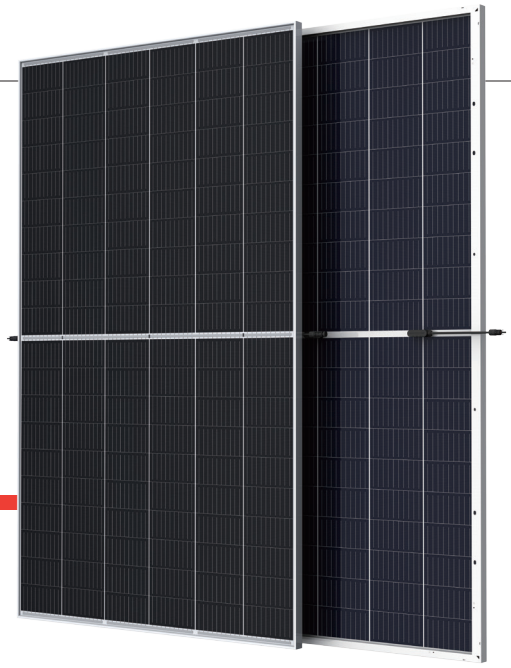
Mono Multi Solutions

Preliminary



THE Vertex

BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE

600W
MAXIMUM POWER OUTPUT

21.2%
MAXIMUM EFFICIENCY

0~+5W
POSITIVE POWER TOLERANCE

PRODUCTS	POWER RANGE
TSM-DEG20C.20	580-600W

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 customer value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance of System) cost, shorter payback time
- Lowest guaranteed first year and annual degradation; extended 30-year warranty
- Designed for compatibility with existing mainstream system components
- Higher return on Investment

High power up to 600W

- Up to 21.2% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection

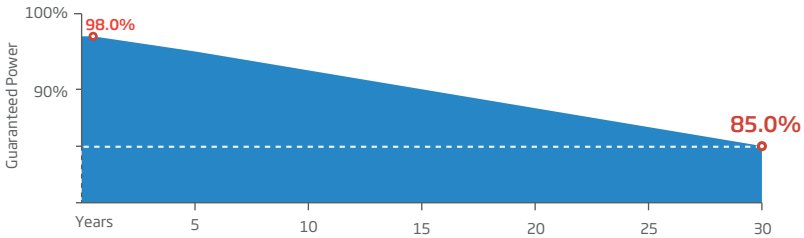
High reliability

- 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
- Certificated to fire class A

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

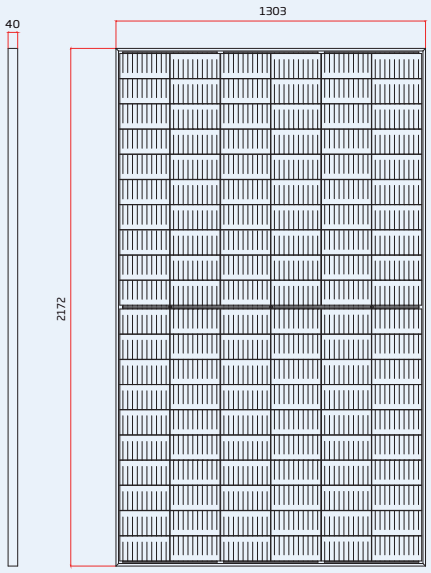


Trinasolar

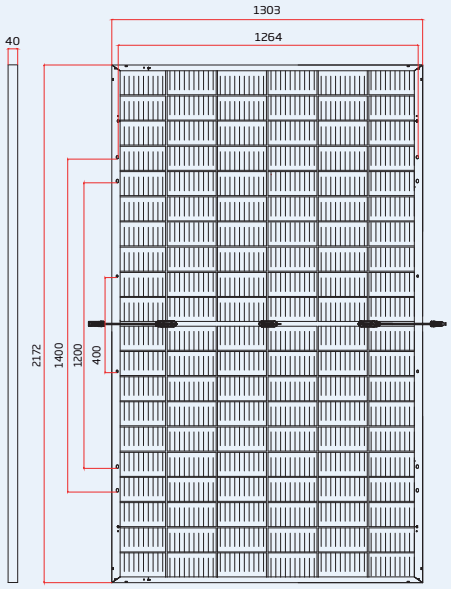
Vertex

BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE

DIMENSIONS OF PV MODULE(mm)

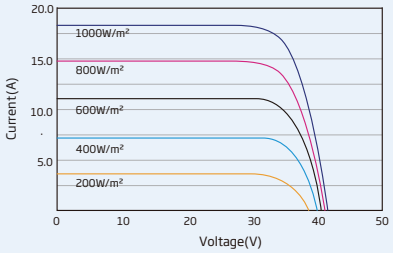


Front View

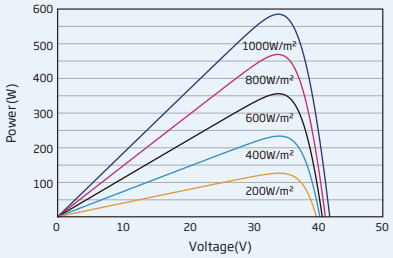


Back View

I-V CURVES OF PV MODULE(590 W)



P-V CURVES OF PV MODULE(590W)



ELECTRICAL DATA (STC)

Peak Power Watts-P_{MAX} (Wp)*	580	585	590	595	600
Power Tolerance-P_{MAX} (W)	0 ~ +5				
Maximum Power Voltage-V_{MPP} (V)	33.8	34.0	34.2	34.4	34.6
Maximum Power Current-I_{MPP} (A)	17.16	17.21	17.25	17.30	17.34
Open Circuit Voltage-V_{OC} (V)	40.9	41.1	41.3	41.5	41.7
Short Circuit Current-I_{SC} (A)	18.21	18.26	18.31	18.36	18.42
Module Efficiency η_m (%)	20.5	20.7	20.8	21.0	21.2

STC: Irradiance 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 -P_{MAX} (Wp)	621	626	631	637	642
Maximum Power Voltage-V_{MPP} (V)	33.8	34.0	34.2	34.4	34.6
Maximum Power Current-I_{MPP} (A)	18.36	18.41	18.46	18.51	18.55
Open Circuit Voltage-V_{OC} (V)	40.9	41.1	41.3	41.5	41.7
Short Circuit Current-I_{SC} (A)	19.48	19.54	19.59	19.65	19.71
Irradiance ratio (rear/front)	10%				

Power Bifaciality:70±5%.

ELECTRICAL DATA (NOCT)

Maximum Power-P_{MAX} (Wp)	439	443	447	451	454
Maximum Power Voltage-V_{MPP} (V)	31.5	31.7	31.9	32.0	32.2
Maximum Power Current-I_{MPP} (A)	13.93	13.97	14.01	14.06	14.10
Open Circuit Voltage-V_{OC} (V)	38.5	38.7	38.9	39.1	39.3
Short Circuit Current-I_{SC} (A)	14.68	14.72	14.76	14.80	14.84

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

MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	120 cells
Module Dimensions	2172×1303×40 mm (85.51×51.30×1.57 inches)
Weight	35.3 kg (77.8 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	40mm(1.57 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm² (0.006 inches²), Portrait: 280/280 mm(11.02/11.02 inches) Landscape: 2050/2050 mm(80.71/80.71 inches)
Connector	MC4 EVO2 / 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 SystemVoltage	1500V DC (IEC)
Max Series Fuse Rating	35 A

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

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 40' container: 448 pieces

Trinasolar

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

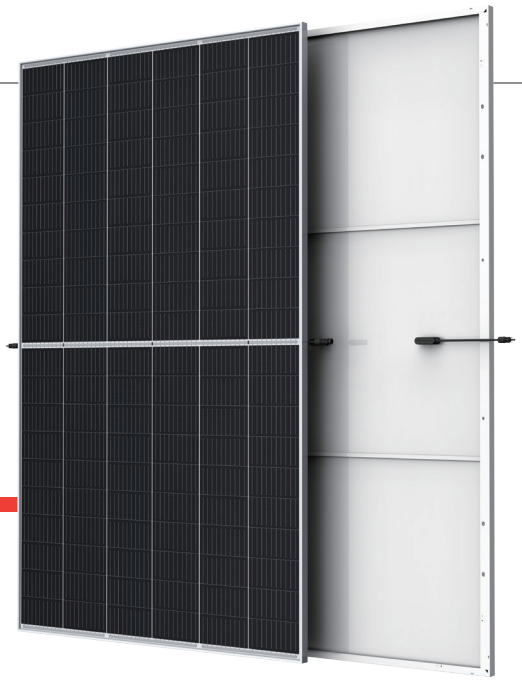
Version number: TSM_EN_2020_PA1

Mono Multi Solutions

Preliminary

THE Vertex

BACKSHEET MONOCRYSTALLINE MODULE



605W
MAXIMUM POWER OUTPUT

21.4%
MAXIMUM EFFICIENCY

0~+5W
POSITIVE POWER TOLERANCE

PRODUCTS	POWER RANGE
TSM-DE20	585-605W

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 605W

- 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

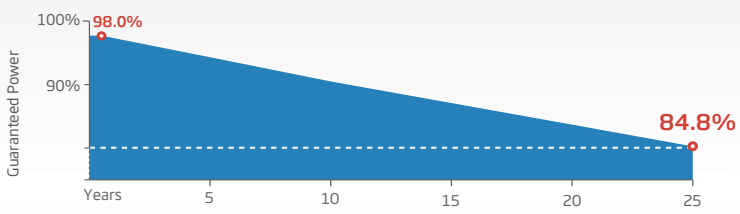
High reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- 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

Trina Solar's Vertex Backsheet Performance Warranty



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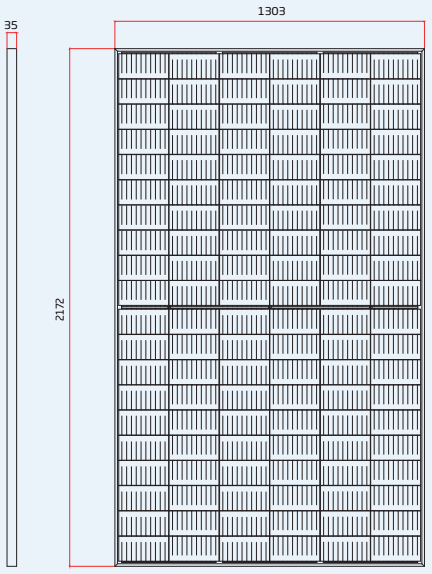
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse Gases Emissions Verification
ISO45001: Occupational Health and Safety Management System

Trinasolar

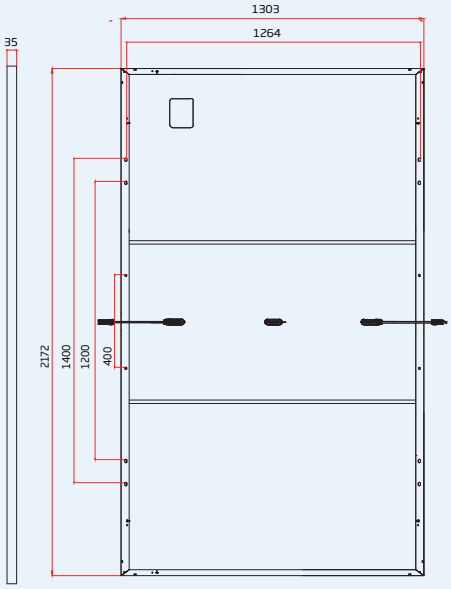
Vertex

BACKSHEET MONOCRYSTALLINE MODULE

DIMENSIONS OF PV MODULE(mm)

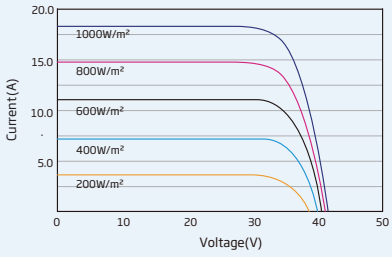


Front View

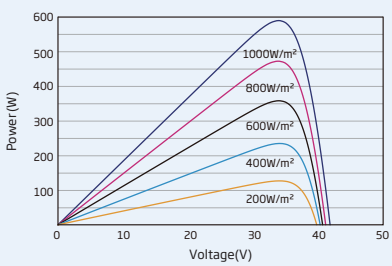


Back View

I-V CURVES OF PV MODULE(595 W)



P-V CURVES OF PV MODULE(595W)



ELECTRICAL DATA (STC)

Peak Power Watts-P_{MAX} (Wp)*	585	590	595	600	605
Power Tolerance-P_{MAX} (W)	0 ~ +5				
Maximum Power Voltage-V_{MPP} (V)	33.8	34.0	34.2	34.4	34.6
Maximum Power Current-I_{MPP} (A)	17.31	17.35	17.40	17.44	17.49
Open Circuit Voltage-V_{OC} (V)	40.9	41.1	41.3	41.5	41.7
Short Circuit Current-I_{SC} (A)	18.37	18.42	18.47	18.52	18.57
Module Efficiency η_m (%)	20.7	20.8	21.0	21.2	21.4

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.
*Measuring tolerance: ±3%.

ELECTRICAL DATA (NOCT)

Maximum Power-P_{MAX} (Wp)	443	447	451	454	458
Maximum Power Voltage-V_{MPP} (V)	31.5	31.7	31.9	32.0	32.2
Maximum Power Current-I_{MPP} (A)	14.05	14.09	14.13	14.18	14.22
Open Circuit Voltage-V_{OC} (V)	38.5	38.7	38.9	39.1	39.3
Short Circuit Current-I_{SC} (A)	14.81	14.85	14.88	14.92	14.96

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

MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	120 cells
Module Dimensions	2172×1303×35 mm (85.51×51.30×1.38 inches)
Weight	30.9 kg (68.1 lb)
Glass	3.2 mm (0.13 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	EVA
Backsheet	White
Frame	35mm(1.38 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm² (0.006 inches²), Portrait: 280/280 mm(11.02/11.02 inches) Landscape: 1400/1400 mm(55.12/55.12 inches)
Connector	MC4 EVO2 / 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 SystemVoltage	1500V DC (IEC)
Max Series Fuse Rating	30A

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

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 40' container: 512pieces

Trinasolar

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

Version number: TSM_EN_2020_PA1

Vertex 至尊

超高功率双面双玻组件

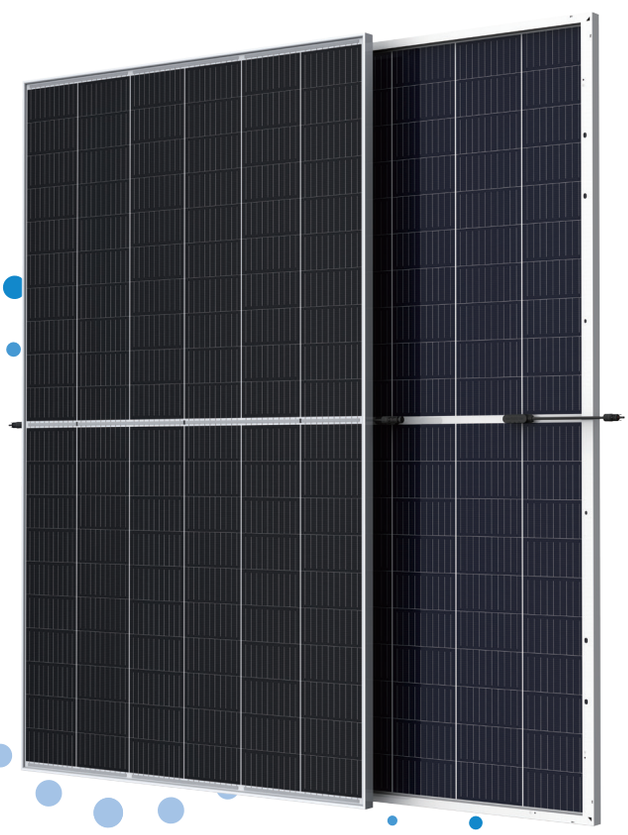
初 稿

组件型号:TSM-DEG20MC.20(II)
功率范围:580-600W

600W
最大输出功率

0~+5W
功率公差

21.2%
最高效率



更高的客户价值

- 有效降低系统BOS成本，实现更低的度电成本，提高项目收益率
- 首年及逐年衰减值更低.
- 产品与主流的系统设计兼容

最高功率提升至600W

- 应用210mm大硅片技术，及切半组件技术
- 应用密排技术，组件效率提升至21.2%
- 应用了多主栅(MBB)技术，有效提高光学利用率，并降低内部电流损耗

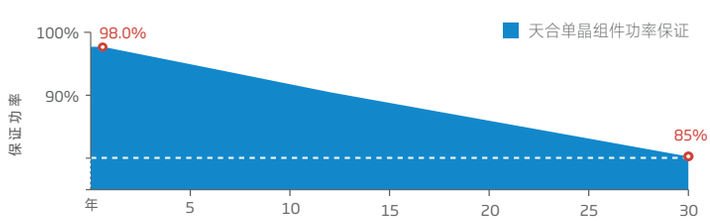
高可靠性

- 应用创新的无损切割技术，降低隐裂风险
- 通过电池工艺优化及材料管控提升抗PID性能
- 通过正面5400帕，背面2400帕机械载荷测试

高发电性能

- 经第三方验证具有优秀的IAM及弱光响应性能
- 更低的温度系数(-0.34%) 及更低的工作温度带来更多的发电量
- 独特的版型设计带来更强的抗阴影遮挡能力
- 双面发电，根据不同安装环境，背面发电量提升最高可达25%

天合光能单晶组件功率保证



全面的产品和体系证书

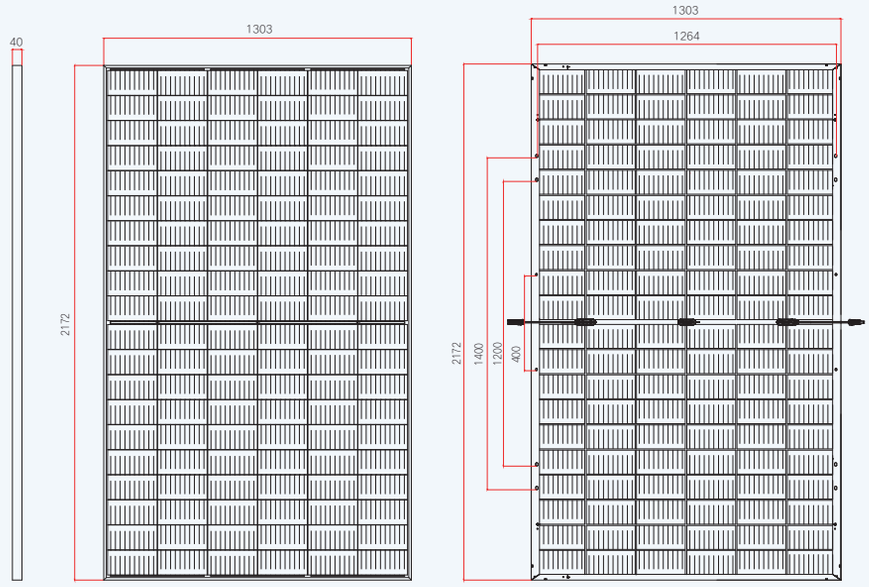
IEC61215/IEC61730/IEC61701/IEC62716
ISO 9001: 质量管理体系
ISO 14001: 环境管理体系
ISO 14064: 温室气体排放核查
ISO 45001: 职业健康安全管理体系

Trinasolar 天合光能

Vertex 至尊

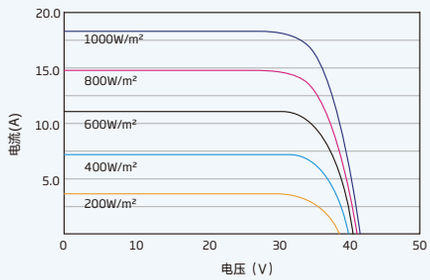
双面双玻组件

组件尺寸(mm)

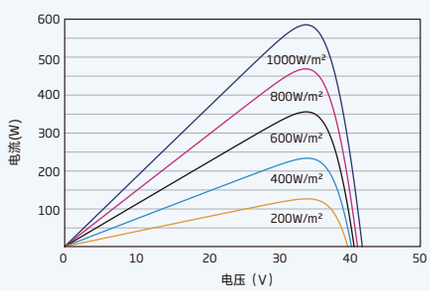


正视图　　后视图

组件的I-V曲线（590W）



组件的P-V曲线（590W）



电气参数（标准测试条件下）

最大功率-PMAX (Wp)	580	585	590	595	600
功率公差-PMAX (W)			0 ~ +5		
最大功率点的工作电压-VMPP (V)	33.8	34.0	34.2	34.4	34.6
最大功率点的工作电流-IMPP (A)	17.16	17.21	17.25	17.30	17.34
开路电压-Voc (V)	40.9	41.1	41.3	41.5	41.7
短路电流-Isc (A)	18.21	18.26	18.31	18.36	18.42
组件效率ηm (%)	20.5	20.7	20.8	21.0	21.2

标准测试条件(大气质量AM1.5,辐照度1 000W/m2，电池温度25℃)下的测量值 测量公差: +3%

电性能参数与不同的背面功率增益（以10%辐照比为例）

最大功率-PMAX (Wp)	621	626	631	637	642
最大功率点的工作电压-VMPP (V)	33.8	34.0	34.2	34.4	34.6
最大功率点的工作电流-IMPP (A)	18.36	18.41	18.46	18.51	18.55
开路电压-Voc (V)	40.9	41.1	41.3	41.5	41.7
短路电流-Isc (A)	19.48	19.54	19.59	19.65	19.71
辐照比率（rear/front）			10%		

电气参数(电池额定工作温度条件下)

最大功率-PMAX (Wp)	439	443	447	451	454
最大功率点的工作电压-VMPP (V)	31.5	31.7	31.9	32.0	32.2
最大功率点的工作电流-IMPP (A)	13.93	13.97	14.01	14.06	14.10
开路电压-Voc (V)	38.5	38.7	38.9	39.1	39.3
短路电流-Isc (A)	14.68	14.72	14.76	14.80	14.84

NMOT:辐照度800W/m2，环境温度20℃，风速1 m/s

机械参数

电池片类型	单晶
电池片数量	120片
组件尺寸	2172 × 1303 × 40 mm
重量	35.3 kg
玻璃	2.0 mm, 高透、AR涂层热强化玻璃
封装材料	POE/EVA
背板	2.0 mm，热强化玻璃(白色网格玻璃)
边框	40 mm铝边框
接线盒	防护等级IP 68
电缆	4.0mm2，光伏专用电缆 竖装:负极280mm/正极280mm 横装:负极2050mm/正极2050mm
连接器	TS4 / MC4-EV02

温度额定值

NMOT (额定电池工作温度)	43℃（±2℃）
最大功率(PMAx)温度系数	- 0.34% /℃
开路电压(Voc) 温度系数	- 0.25% /℃
短路电流(Isc) 温度系数	0.04% /℃

(禁止并联两路或更多组串在同一路汇流箱熔丝中)

极限参数

工作温度	- 40~+85℃
最大系统电压	1500V DC (IEC)
最大保险丝额定电流	35A

质量保证

12年产品质保

30年功率保证

2%首年衰减

0.45%逐年功率衰减

(详细信息请参阅产品质量保证书)

包装方式

每40英尺集装箱装载容量: 448片

Trinasolar 天合光能

版本号: TSM_CN_2020_PA1

www.trinasolar.com

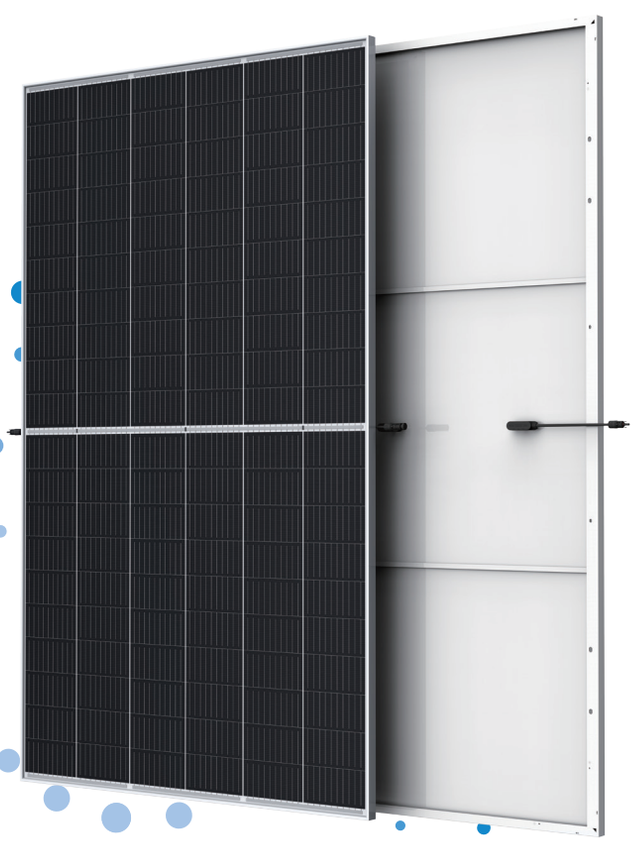
Vertex 至尊

超高功率单面组件

初稿

组件型号:TSM-DE20M(II)
功率范围:585-605W

605W	0~+5W	21.4%
最大输出功率	功率公差	最高效率



更高的客户价值

- 有效降低系统BOS成本，实现更低的度电成本，提高项目收益率
- 首年及逐年衰减值更低.
- 产品与主流的系统设计兼容

最高功率提升至605W

- 应用210mm大硅片技术，及切半组件技术
- 应用密排技术，组件效率提升至21.4%
- 应用了多主栅(MBB)技术，有效提高光学利用率，并降低内部电流损耗

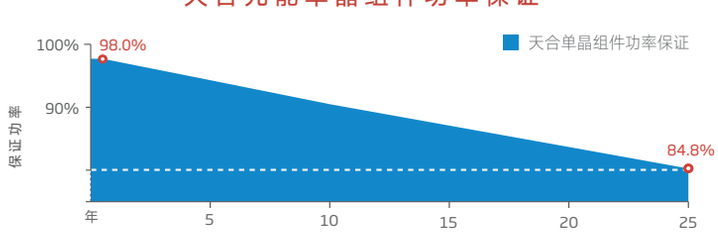
高可靠性

- 应用创新的无损切割技术，降低隐裂风险
- 通过电池工艺优化及材料管控提升抗PID性能
- 通过正面5400帕，背面2400帕机械载荷测试

高发电性能

- 经第三方验证具有优秀的IAM及弱光响应性能
- 更低的温度系数(-0.34%) 及更低的工作温度带来更多的发电量
- 独特的版型设计带来更强的抗阴影遮挡能力

天合光能单晶组件功率保证



全面的产品和体系证书

IEC61215/IEC61730/IEC61701/IEC62716
ISO 9001: 质量管理体系
ISO 14001: 环境管理体系
ISO 14064: 温室气体排放核查
ISO 45001: 职业健康安全管理体系

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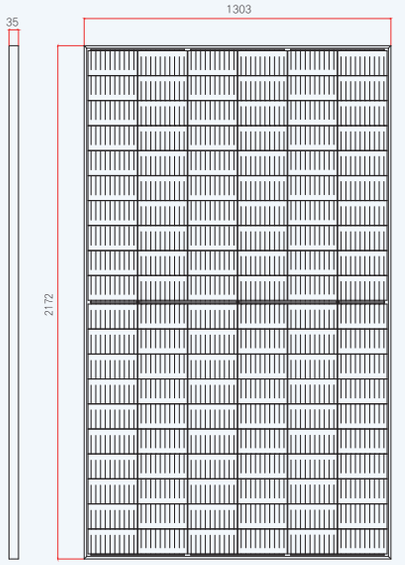
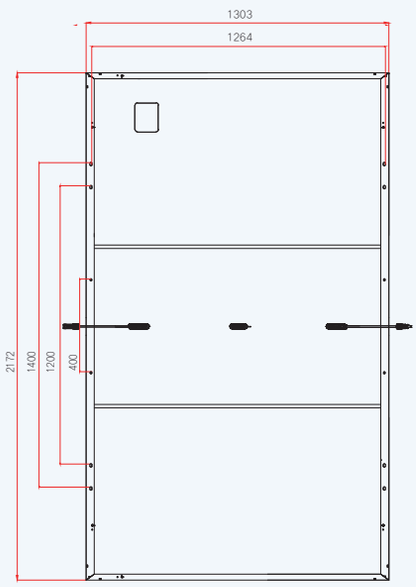
Vertex 至尊

单面组件

组件尺寸(mm)

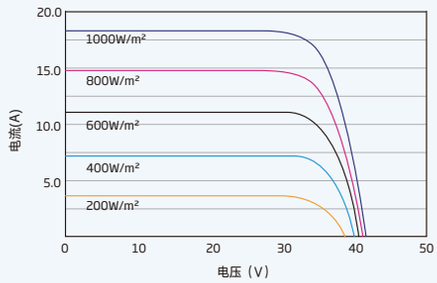


正视图

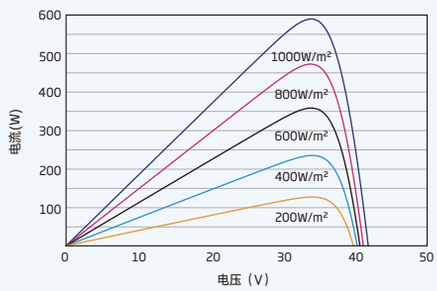


后视图

组件的I-V曲线（595W）



组件的P-V曲线（595W）



电气参数（标准测试条件下）

最大功率-PMAX (Wp)	585	590	595	600	605
功率公差-PMAX (W)			0 ~ +5		
最大功率点的工作电压-VMPP (V)	33.8	34.0	34.2	34.4	34.6
最大功率点的工作电流-IMPP (A)	17.31	17.35	17.40	17.44	17.49
开路电压-Voc (V)	40.9	41.1	41.3	41.5	41.7
短路电流-Isc (A)	18.37	18.42	18.47	18.52	18.57
组件效率ηm (%)	20.7	20.8	21.0	21.2	21.4

标准测试条件(大气质量AM1.5,辐照度1 000W/m2，电池温度25°C)下的测量值 测量公差: +3%

电气参数(电池额定工作温度条件下)

最大功率-PMAX (Wp)	443	447	451	454	458
最大功率点的工作电压-VMPP (V)	31.5	31.7	31.9	32.0	32.2
最大功率点的工作电流-IMPP (A)	14.05	14.09	14.13	14.18	14.22
开路电压-Voc (V)	38.5	38.7	38.9	39.1	39.3
短路电流-Isc (A)	14.81	14.85	14.88	14.92	14.96

NMOT:辐照度800W/m2，环境温度20°C，风速1 m/s

机械参数

电池片类型	单晶
电池片数量	120片
组件尺寸	2172 × 1303 × 35 mm
重量	30.9 kg
玻璃	3.2 mm, 高透、AR涂层热强化玻璃
封装材料	EVA
背板	白色
边框	35 mm铝边框
接线盒	防护等级IP 68
电缆	4.0mm2，光伏专用电缆 竖装:负极280mm/正极280mm 横装:负极1400mm/正极1400mm
连接器	TS4 / MC4-EV02

温度额定值

NMOT (额定电池工作温度)	43℃（±2℃）
最大功率(PMAx)温度系数	- 0.34% /℃
开路电压(Voc) 温度系数	- 0.25% /℃
短路电流(Isc) 温度系数	0.04% /℃

(禁止并联两路或更多组串在同一路汇流箱熔丝中)

极限参数

工作温度	- 40~+85℃
最大系统电压	1500V DC (IEC)
最大保险丝额定电流	30A

质量保证

12年产品质保

25年功率保证

2%首年衰减

0.55%逐年功率衰减

(详细信息请参阅产品质量保证书)

包装方式

每40英尺集装箱装载容量: 512片

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