

# Trina smart

THE OPTIMIZED SOLUTION

**COMPATIBLE  
WITH MOST  
TRINA MODULES**

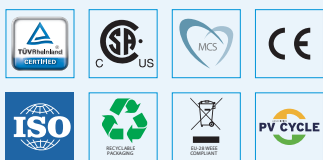
**265-305W**  
POWER OUTPUT RANGE

**FULLY  
INTEGRATED**  
SMART SOLUTION

Founded in 1997, Trina Solar is the world's leading comprehensive solutions provider for solar energy. We believe close cooperation with our partners is critical to success. Trina Solar now distributes its PV products to over 60 countries all over the world. Trina is able to provide exceptional service to each customer in each market and supplement our innovative, reliable products with the backing of Trina as a strong, bankable partner. We are committed to building strategic, mutually beneficial collaboration with installers, developers, distributors and other partners.

### Comprehensive Products And System Certificates

IEC61215/IEC61730/UL1703/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



### Safer Solar

- Panel-level disconnect to remotely deactivate modules
- Arc, fire and safety hazard mitigation



### More Efficient O&M

- Panel-level monitoring to pinpoint problems
- Detailed real-time alerts and analytics



### Highest Power Density

- Install more modules on any roof
- Uneven string lengths enables design flexibility



### Maximized Energy Harvest

- Impedance matching technology eliminates mismatch losses
- More power from each module



### Lower BOS Costs from Smart Curve Technology

- 30% lower max open circuit voltage, 30% longer strings
- Fewer combiners, fuses and copper wiring required

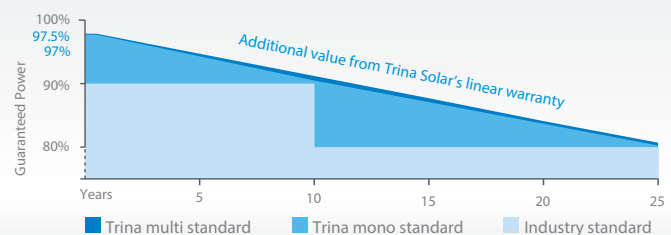


### Fully Integrated

- Compatible with any inverter
- No additional boxes to mount on module

### LINEAR PERFORMANCE WARRANTY

10 Year Product Warranty · 25 Year Linear Power Warranty

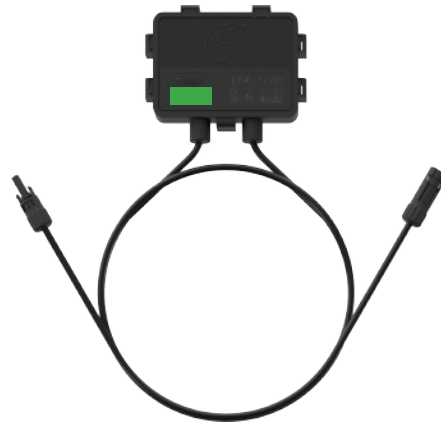


## THE OPTIMIZED SOLUTION

# TrinaSmart

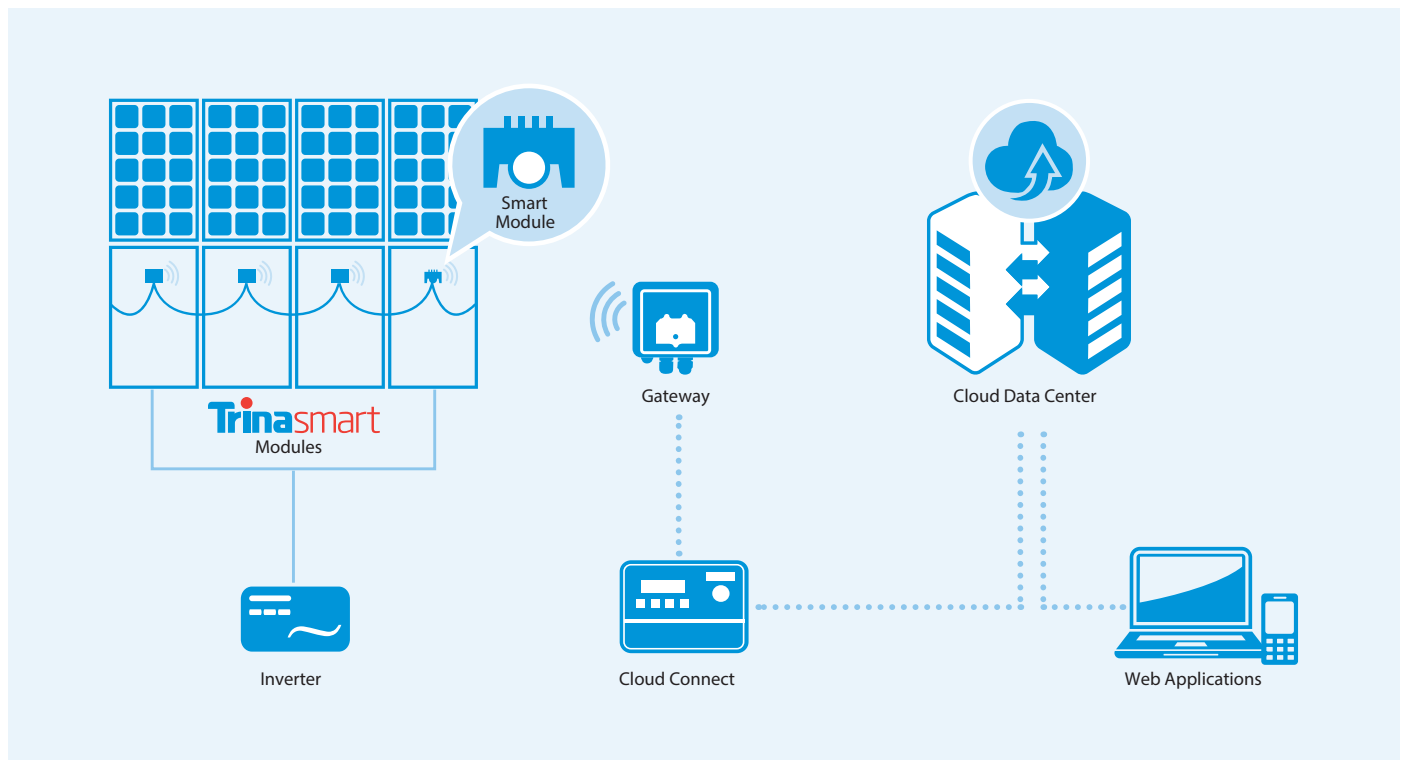
Trinasmart modules incorporate innovative power electronics from Tigo Energy to achieve module-level diagnostics, maximum energy harvest through module level DC power optimization, and reduction of arc, fire and safety hazards.

Integration of the module optimizer into the junction-box enables patented Smart Curve technology, which allows up to 30% longer strings and significant balance-of-system (BOS) savings.



## SYSTEM ARCHITECTURE

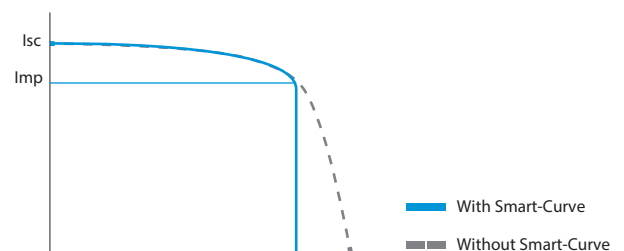
Trinasmart system components work together with any inverter to maximize energy harvest. Trinasmart modules communicate wirelessly through the gateway, allowing users to monitor system performance in real time.



## SMART CURVE TECHNOLOGY

Module-integrated Trinasmart technology reduces the open circuit voltage range for each module and allows longer strings to be designed. The maximum voltage is programmed by Trina Solar in the factory.

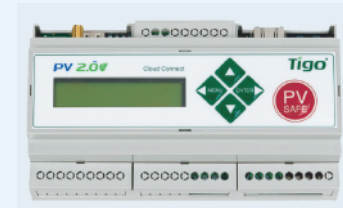
- Hardware voltage clamp prevents over-voltage
- Design up to 30% longer strings
- Fewer combiner boxes, fuses and wiring



## CLOUD CONNECT

The cloud connect controls processes in real time and sends data to a remote sever for monitoring.

SPECIFICATIONS	ONE CC SUPPORTS UP TO 7 GATEWAYS, 360 TRINASMART MODULES	
Internet	Ethernet Interface	10/100M
Connectivity	Wireless Interface	Wi-Fi
Options	Other	Cellular LTE Modem
Electrical	Supply Voltage	24VDC +/-1V
	Power Consumption	Max 10W
	Power Supply	100-240VAC
	Din Rail	Terminal Block
	Socket	EU/UK/US/AU Interchangeable, 2-Pin Plug
Capacity(single CC)	Supports to Gateway	7 PCS
	Supports to Smart Modules	360 PCS
Mechanical Specifications	Mounting Type	DIN Rail/Wall Mount
	Dimensions (L x W x H)	159.5 x 90.2 x 57.5 mm (6.28 x 3.55 x 2.26 inches)
	Weight	0.5 kg (1.1 lb)
	Enclosure	Indoor NEMA 1
	Operating Temperature	-20°C ~ +60°C



### Cloud Connect

An internet connection is required for full monitoring functionality.

## GATEWAY

Radio transceiver that communicates with Trinasmart modules and relays data to the cloud connect.

SPECIFICATIONS	ONE GATEWAY SUPPORTS UP TO 120 TRINASMART MODULES	
Communication with modules	Wireless (802.15)	
Communication with CC	RS-485 cable connection; in series with other gateways	
Mounting Location	Center of array	
Mounting Method	Mounted to module frame or rack clips included for frame mounting	
Wireless Range	15m line-of-sight	
Capacity (single GW)	120 smart modules	
Mechanical Specifications	Dimensions	141.3 x 48.5 x 33.3 mm (with bracket) (5.56 x 1.91 x 1.31 inches)
	Weight	0.9kg (2.0 lb)
	Operating temperature range	-30°C ~ +70°C
	Enclosure environmental rating	IP 65 rated



### Gateway

The wireless communications system is FCC and CE Class 2 certified. Fixing hole comes with a M3.5X6 SST pan head screw.

## MONITORING SERVICE

Trinasmart monitoring provides total insight into the performance of any system. You can choose to upgrade online once your system is installed.

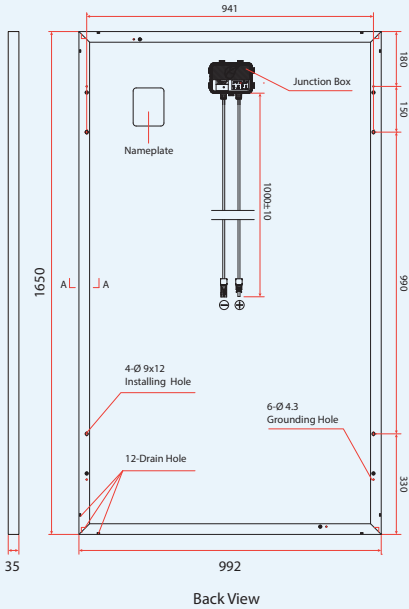


Explore the monitoring portal at [www.trinasmart.com](http://www.trinasmart.com)

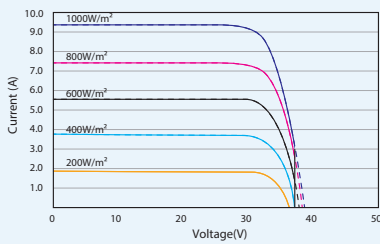
FEATURES	FREE	PREMIUM
Reports	Monthly	Daily
1-min data granularity	current&previous month	Full History
Full history	•	•
Safety alerts	•	•
Dashboard showing enviomental impact	•	•
Trending data charts	•	•
Performance analytics		•
Ability to download		•
Device Integration		•
Performance alerts		•
API access		•

PRODUCTS | POWER RANGE  
 TSM-PD05.082 | 265-280W

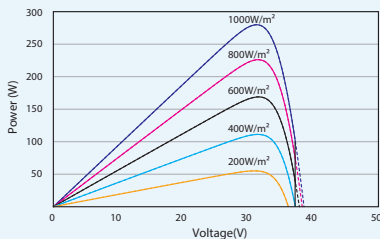
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE(280W)



P-V CURVES OF PV MODULE(280W)



ELECTRICAL DATA (STC)

Peak Power Watts- $P_{MAX}$ (Wp)*	265	270	275	280
Power Output Tolerance- $P_{MAX}$ (W)	0 ~ +5			
Maximum Power Voltage- $V_{MPP}$ (V)	30.8	30.9	31.1	31.4
Maximum Power Current- $I_{MPP}$ (A)	8.61	8.73	8.84	8.92
Open Circuit Voltage- $V_{OC}$ (V)	36.2			
Short Circuit Current- $I_{SC}$ (A)	12.5			
Module Efficiency $\eta_p$ (%)	16.2	16.5	16.8	17.1

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

ELECTRICAL DATA (NOCT)

Maximum Power- $P_{MAX}$ (Wp)	197	200	204	207
Maximum Power Voltage- $V_{MPP}$ (V)	28.6	28.7	29.0	29.2
Maximum Power Current- $I_{MPP}$ (A)	6.89	6.97	7.03	7.10
Open Circuit Voltage- $V_{OC}$ (V)	36.2			
Short Circuit Current- $I_{SC}$ (A)	12.5			

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

MECHANICAL DATA

Solar Cells	Multicrystalline 156.75 × 156.75 mm (6 inches)
Cell Orientation	60 cells (6 × 10)
Module Dimensions	1650 × 992 × 35 mm (65.0 × 39.1 × 1.4 inches)
Weight	19.0 kg (41.9 lb)
Glass	3.2 mm (0.13 inches), High Transmission, AR Coated Tempered Glass
Backsheet	White
Frame	Black Anodized Aluminium Alloy
J-Box	IP 65 or IP 67 rated
Cables	Photovoltaic Technology Cable 4.0mm <sup>2</sup> (0.006 inches <sup>2</sup> ), 1000 mm (39.4 inches)
Connector	MC4

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	44°C (±2°C)
Temperature Coefficient of $P_{MAX}$	-0.41%/°C
Temperature Coefficient of $V_{OC}$	0%/°C
Temperature Coefficient of $I_{SC}$	0.05%/°C

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1000V DC (IEC) 1000V DC (UL)
Max Series Fuse Rating	15A

(DO NOT connect Fuse in Combiner Box with two or more strings in parallel connection)

WARRANTY

10 year Product Workmanship Warranty
25 year Linear Power Warranty

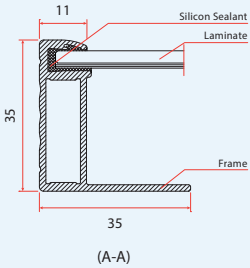
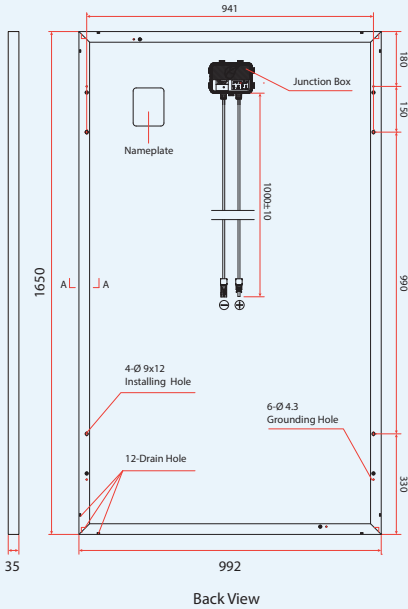
(Please refer to product warranty for details)

PACKAGING CONFIGURATION

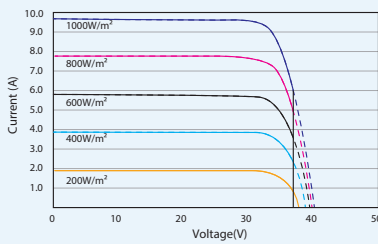
Modules per box: 30 pieces
Modules per 40' container: 840 pieces

PRODUCTS	POWER RANGE
TSM-DD05A.082(II)	280-305W
TSM-DD05A.052(II)	275-300W

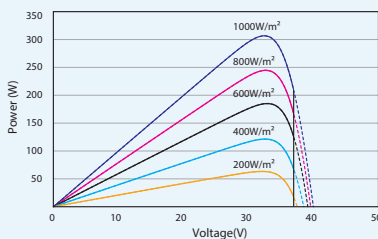
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE(305W)



P-V CURVES OF PV MODULE(305W)



ELECTRICAL DATA (STC)

Peak Power Watts- $P_{MAX}$ (Wp)*	275	280	285	290	295	300	305
Power Output Tolerance- $P_{MAX}$ (W)	0 ~ +5						
Maximum Power Voltage- $V_{MPP}$ (V)	31.4	31.7	31.8	32.2	32.5	32.6	32.9
Maximum Power Current- $I_{MPP}$ (A)	8.76	8.84	8.97	9.01	9.08	9.19	9.28
Open Circuit Voltage- $V_{OC}$ (V)	37.2						
Short Circuit Current- $I_{SC}$ (A)	12.5						
Module Efficiency $\eta_p$ (%)	16.8	17.1	17.4	17.7	18.0	18.3	18.6

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

ELECTRICAL DATA (NOCT)

Maximum Power- $P_{MAX}$ (Wp)	205	209	212	216	220	223	227
Maximum Power Voltage- $V_{MPP}$ (V)	29.2	29.4	29.6	29.9	30.2	30.4	30.6
Maximum Power Current- $I_{MPP}$ (A)	7.02	7.10	7.17	7.23	7.28	7.35	7.42
Open Circuit Voltage- $V_{OC}$ (V)	37.2						
Short Circuit Current- $I_{SC}$ (A)	12.5						

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

MECHANICAL DATA

Solar Cells	Monocrystalline 156.75 × 156.75 mm (6 inches)
Cell Orientation	60 cells (6 × 10)
Module Dimensions	1650 × 992 × 35 mm (65.0 × 39.1 × 1.4 inches)
Weight	19.0 kg (41.9 lb)
Glass	3.2 mm (0.13 inches), High Transmission, AR Coated Tempered Glass
Backsheet	White [DD05A.082(II)]; Black [DD05A.052(II)]
Frame	Black Anodized Aluminium Alloy
J-Box	IP 65 or IP 67 rated
Cables	Photovoltaic Technology Cable 4.0mm <sup>2</sup> (0.006 inches <sup>2</sup> ), 1000 mm (39.4 inches)
Connector	MC4

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	44°C (±2°C)
Temperature Coefficient of $P_{MAX}$	-0.39%/°C
Temperature Coefficient of $V_{OC}$	0%/°C
Temperature Coefficient of $I_{SC}$	0.05%/°C

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1000V DC (IEC) 1000V DC (UL)
Max Series Fuse Rating	15A

(DO NOT connect Fuse in Combiner Box with two or more strings in parallel connection)

WARRANTY

10 year Product Workmanship Warranty
25 year Linear Power Warranty

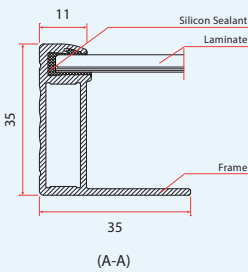
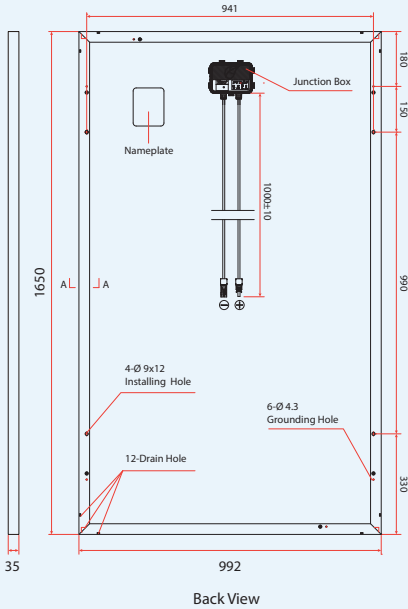
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PACKAGING CONFIGURATION

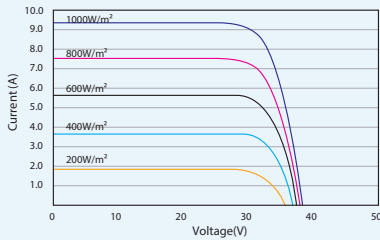
Modules per box: 30 pieces
Modules per 40' container: 840 pieces

PRODUCTS | POWER RANGE  
TSM-PD05.08U | 265-280W

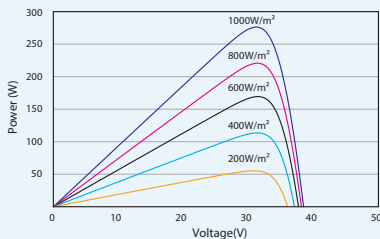
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE(280W)



P-V CURVES OF PV MODULE(280W)



ELECTRICAL DATA (STC)

Peak Power Watts- $P_{MAX}$ (Wp)*	265	270	275	280
Power Output Tolerance- $P_{MAX}$ (W)	0 ~ +5			
Maximum Power Voltage- $V_{MPP}$ (V)	30.8	30.9	31.1	31.4
Maximum Power Current- $I_{MPP}$ (A)	8.61	8.73	8.84	8.92
Open Circuit Voltage- $V_{OC}$ (V)	38.3	38.4	38.5	38.7
Short Circuit Current- $I_{SC}$ (A)	9.10	9.18	9.25	9.34
Module Efficiency $\eta_p$ (%)	16.2	16.5	16.8	17.1

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

ELECTRICAL DATA (NOCT)

Maximum Power- $P_{MAX}$ (Wp)	197	200	204	207
Maximum Power Voltage- $V_{MPP}$ (V)	28.6	28.7	29.0	29.2
Maximum Power Current- $I_{MPP}$ (A)	6.89	6.97	7.03	7.10
Open Circuit Voltage- $V_{OC}$ (V)	35.5	35.5	35.6	35.8
Short Circuit Current- $I_{SC}$ (A)	7.35	7.41	7.47	7.55

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

MECHANICAL DATA

Solar Cells	Multicrystalline 156.75 × 156.75 mm (6 inches)
Cell Orientation	60 cells (6 × 10)
Module Dimensions	1650 × 992 × 35 mm (65.0 × 39.1 × 1.4 inches)
Weight	18.6 kg (41.0 lb)
Glass	3.2 mm (0.13 inches), High Transmission, AR Coated Tempered Glass
Backsheet	White
Frame	Black Anodized Aluminium Alloy
J-Box	IP 65 or IP 67 rated
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Connector	MC4

TEMPERATURE RATINGS

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MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum System Voltage	1000V DC (IEC) 1000V DC (UL)
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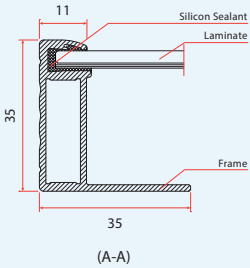
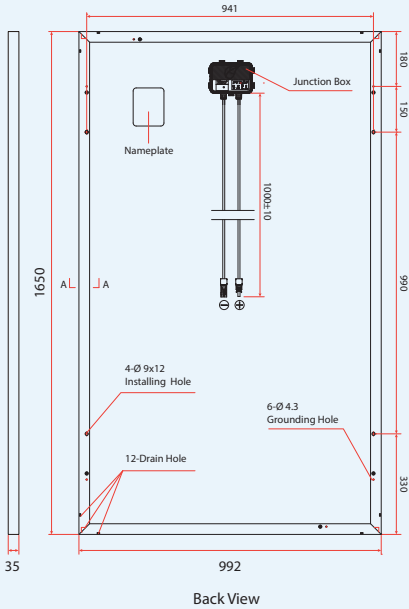
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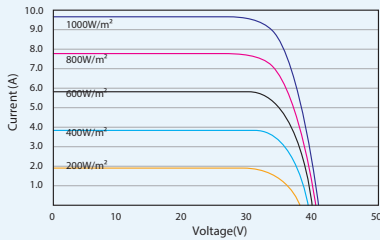
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PRODUCTS	POWER RANGE
TSM-DD05A.08U(II)	280-305W
TSM-DD05A.05U(II)	275-300W

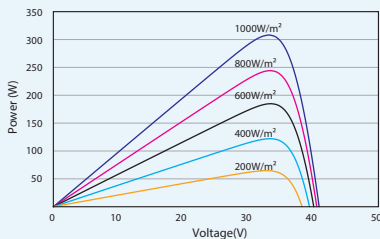
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE(305W)



P-V CURVES OF PV MODULE(305W)



ELECTRICAL DATA (STC)

Parameter	275	280	285	290	295	300	305
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Maximum Power Current- $I_{MPP}$ (A)	8.76	8.84	8.97	9.01	9.08	9.19	9.28
Open Circuit Voltage- $V_{OC}$ (V)	38.7	39.0	39.3	39.5	39.7	39.9	40.2
Short Circuit Current- $I_{SC}$ (A)	9.26	9.35	9.45	9.50	9.55	9.64	9.72
Module Efficiency $\eta_p$ (%)	16.8	17.1	17.4	17.7	18.0	18.3	18.6

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Open Circuit Voltage- $V_{OC}$ (V)	36.0	36.3	36.6	36.7	36.9	37.1	37.3
Short Circuit Current- $I_{SC}$ (A)	7.48	7.55	7.63	7.67	7.71	7.78	7.84

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