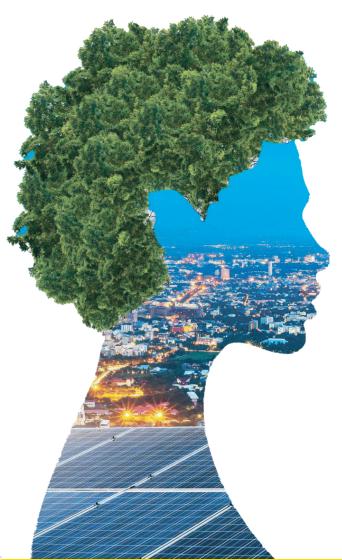




EASTMAN WORLD

Welcome to Eastman World - Your Global Partner in Energy Solutions!





SOLAR PANELS

P-TYPE: ES450MP | ES550MP | ES585MP

N-TYPE: ES565TP ~ ES585TP | ES565TP BF ~ ES585TP BF

Eastman Introduction

Founded in 2006

Established in 2006, Eastman Auto & Power Limited is a well-known name in the field of solar energy, energy storage, and power electronics, boasting a USD 300 million revenue and a dedicated workforce of over 3,000 professionals. Building on the group's decades-long success and maintaining the trust of our partners, Mr. Jagdish Rai Singal ventured into the future of energy with Eastman Auto & Power Limited. Today, the business spans over 25 countries across Asia and Africa, providing the world with cutting-edge products that have set new benchmarks in their respective segments. Driven by innovation, we continually set industry standards, ensuring uninterrupted power supply for residential, commercial, and industrial applications.

Our global solar distribution business provides reliable and high-quality solar solutions, including solar inverters, solar panels, solar batteries (tubular, carbon, gel and lithium) solar pump inverters, solar charge controllers, and more. Our products offer a range of solutions to help you make the switch to clean energy. With us as your unwavering partners, we forge a sustainable future, amplifying global excellence through transformative products and services.







SOLAR PANELS





SOLAR PANEL P-TYPE 450W

Monocrystalline Module Half-cell Module

Introduction

Introducing our P-TYPE Monocrystalline Module, an advanced solar panel that offers higher output power compared to traditional modules. With its advanced technology, this module boasts an impressive efficiency of up to 20.9%, ensuring maximum energy conversion from sunlight.

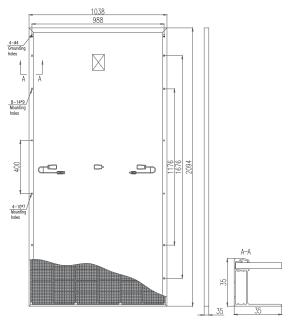
Product Features

- Higher output power
- Module efficiency up to 20.9%
- Lower temperature coefficient
- Lower LCOE (Levelized Cost Of Energy)
- High Power output lead to lower BOS cost
- Salt Mist Corrosion Protect
- Ammonia Resistance
- Excellent Potential Induced Degradation Resistance
- Excellent Wind Load 2400Pa & Snow Load 5400Pa
 Under Certain Installation Method

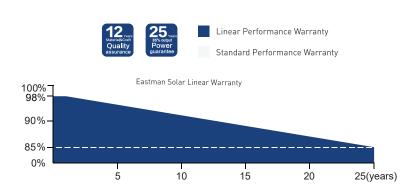
System & Product Certificates

- ISO9001:2015 Quality Management system
- ISO14001:2015 Environmental Management System
- ISO45001:2018 Occupational Health and Safety Management System

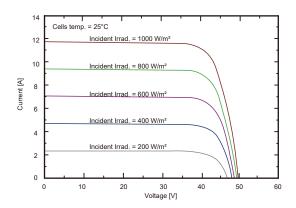
Module Structure Drawing



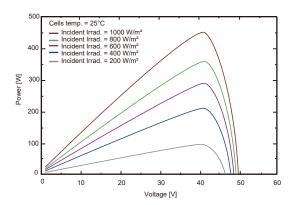
*400mm mounting holes are only suitable for 6005-T6 aluminum frame



I-V Curves



P-V Curves



Product Specifications

Electrical Characteristics(STC*) Power Output(Wp)	Model	ES450MP		
Max Power Tolerance(W) 0-5 Module Efficiency(%) 20.7 Voltage Mpp-Vmpp(Y) 41.47 Current Mpp-Impp(A) 10.85 Voltage Open Circuit-Voc(Y) 49.51 Short Circuit Current-Isc(A) 11.78 Electrical Characteristics(MMOT*)	Electrical Characteristics(STC*)			
Module Efficiency (%) 20.7	Power Output(Wp)	450		
Voltage Mpp-Vmpp(V) 41.47 Current Mpp-Impp(A) 10.85 Voltage Open Circuit-Voc(V) 49.51 Short Circuit Current-Isc(A) 11.78 Electrical Characteristics(NMOT*) 11.78 Power Output(Wp) 345.71 Voltage Mpp-Vmpp(V) 37.80 Current Mpp-Impp(A) 9.14 Voltage Open Circuit-Voc(V) 45.71 Short Circuit Current-Isc(A) 10.02 Mechanical Data 10.02 Dimension Of Module 2094*1038*35mm Weight 24kg Class High transmission glass 3.2mm Cables 4mm*/500mm or Customized Length Junction Box IP88.3 Bypass-Diode Connector MC4 compatible Packaging Configuration MC4 compatible Container 40*HQ Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 682 Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 20A Maximum Load Capacity <td>Max Power Tolerance(W)</td> <td>0-5</td>	Max Power Tolerance(W)	0-5		
Current Mpp-Impp(A) 10.85 Voltage Open Circuit-Voc(V) 49.51 Short Circuit Current-Isc(A) 11.78 Electrical Characteristics(NMOT¹) 345.71 Power Output(Wp) 345.71 Voltage Mpp-Vmpp(V) 37.80 Current Mpp-Impp(A) 9,14 Voltage Open Circuit-Voc(V) 45.71 Short Circuit Current-Isc(A) 10.02 Mechanical Data 10.02 Dimension Of Module 2094*1038*35mm Weight 24kg Class High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box 1P68,3 Bypass-Diode Connector MC4 compatible Packaging Configuration MC4 compatible Container 40°HQ Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 682 Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 20A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Ope	Module Efficiency(%)	20.7		
Voltage Open Circuit-Voc(V) 49.51 Short Circuit Current-Isc(A) 11.78 Electrical Characteristics(NMOT*) 345.71 Power Output(Wp) 345.71 Voltage Mpp-Vmpp(V) 37.80 Current Mpp-Impp(A) 9.14 Voltage Open Circuit-Voc(V) 45.71 Short Circuit Current-Isc(A) 10.02 Mechanical Data 10.02 Dimension Of Module 2094*1038*35mm Weight 24kg Glass High transmission glass 3.2mm Cables 4mm*/300mm or Customized Length Junction Box 1P68.3 Bypass-Diode Connector MC4 compatible Packaging Configuration MC4 compatible Container 40°HQ Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 682 Working Conditions Max System Voltage(VDC) Max Series Fuse Rating 20A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class	Voltage Mpp-Vmpp(V)	41.47		
Short Circuit Current-Isc(A)	Current Mpp-Impp(A)	10.85		
Electrical Characteristics(NMOT*) Power Output(Wp)	Voltage Open Circuit-Voc(V)	49.51		
Power Output(Wp) Voltage Mpp-Vmpp(V) 37.80 Current Mpp-Impp(A) Voltage Open Circuit-Voc(V) Short Circuit Current-Isc(A) Mechanical Data Dimension Of Module 2094*1038*35mm Weight Class High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box IP68,3 Bypass-Diode Connector MC4 compatible Packaging Configuration Container Pieces Per Pallet 31 Pallets Per Container Pieces Per Container Pieces Per Container Working Conditions Max System Voltage(VDC) Max Series Fuse Rating Maximum Load Capacity Operating Temperature Safety Class Temperature Ratings	Short Circuit Current-Isc(A)	11.78		
Voltage Mpp-Vmpp(V) Current Mpp-Impp(A) 9.14 Voltage Open Circuit-Voc(V) Short Circuit Current-Isc(A) Mechanical Data Dimension Of Module Weight Class High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box IP68,3 Bypass-Diode Connector MC4 compatible Packaging Configuration Container Pieces Per Pallet Pallets Per Container Pieces Per Container Working Conditions Max System Voltage(VDC) Max Series Fuse Rating Maximum Load Capacity Operating Temperature Safety Class II Temperature Ratings	Electrical Characteristics(NMOT*)			
Current Mpp-Impp(A) 9.14 Voltage Open Circuit-Voc(V) 45.71 Short Circuit Current-Isc(A) 10.02 Mechanical Data 10.02 Dimension Of Module 2094*1038*35mm Weight 24kg Glass High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box IP68,3 Bypass-Diode Connector MC4 compatible Packaging Configuration 40°HQ Container 40°HQ Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 682 Working Conditions Max System Voltage(VDC) Max System Voltage(VDC) 1500V Max Series Fuse Rating 20A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings	Power Output(Wp)	345.71		
Voltage Open Circuit-Voc(V) 45:71 Short Circuit Current-Isc(A) 10.02 Mechanical Data 10.02 Dimension Of Module 2094*1038*35mm Weight 24kg Glass High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box IP68,3 Bypass-Diode Connector MC4 compatible Packaging Configuration MC4 compatible Container 40°HQ Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 682 Working Conditions Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 20A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings	Voltage Mpp-Vmpp(V)	37.80		
Short Circuit Current-Isc(A) Mechanical Data Dimension Of Module 2094*1038*35mm Weight Class High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box IP68,3 Bypass-Diode Connector MC4 compatible Packaging Configuration Container Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 22 Pieces Per Container 682 Working Conditions Max System Voltage(VDC) Max Series Fuse Rating Maximum Load Capacity Operating Temperature Safety Class II Temperature Ratings	Current Mpp-Impp(A)	9.14		
Mechanical Data Dimension Of Module 2094*1038*35mm Weight 24kg Glass High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box IP68,3 Bypass-Diode Connector MC4 compatible Packaging Configuration Container 40°HQ Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 682 Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 20A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature 40°C~+85°C Safety Class II Temperature Ratings	Voltage Open Circuit-Voc(V)	45.71		
Dimension Of Module Weight Class High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box IP68,3 Bypass-Diode Connector MC4 compatible Packaging Configuration Container 40'HQ Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 682 Working Conditions Max System Voltage(VDC) Max Series Fuse Rating Operating Temperature 5afety Class II Temperature Ratings	Short Circuit Current-Isc(A)	10.02		
Class High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box IP68,3 Bypass-Diode Connector MC4 compatible Packaging Configuration Container 40'HQ Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 682 Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 20A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~*85°C Safety Class II Temperature Ratings	Mechanical Data			
Cables 4mm²/300mm or Customized Length Junction Box IP68,3 Bypass-Diode Connector MC4 compatible Packaging Configuration Container 40'HQ Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 682 Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 20A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature 40°C~+85°C Safety Class II Temperature Ratings	Dimension Of Module	2094*1038*35mm		
Cables 4mm²/300mm or Customized Length Junction Box IP68,3 Bypass-Diode Connector MC4 compatible Packaging Configuration Container 40°HQ Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 682 Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 20A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings	Weight	24kg		
Junction Box Connector MC4 compatible Packaging Configuration Container 40'HQ Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 682 Working Conditions Max System Voltage(VDC) Max Series Fuse Rating Auximum Load Capacity Operating Temperature Safety Class II Temperature Ratings	Glass	High transmission glass 3.2mm		
Connector Packaging Configuration Container 40'HQ Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 682 Working Conditions Max System Voltage(VDC) Max Series Fuse Rating 20A Maximum Load Capacity Operating Temperature Safety Class II Temperature Ratings	Cables	4mm²/300mm or Customized Length		
Packaging Configuration Container 40'HQ Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 682 Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 20A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings	Junction Box	IP68,3 Bypass-Diode		
Container 40'HQ Pieces Per Pallet 31 Pallets Per Container 22 Pieces Per Container 682 Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 20A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings	Connector	MC4 compatible		
Pieces Per Pallet Pieces Per Container Pieces Per Container Pieces Per Container 682 Working Conditions Max System Voltage(VDC) Max Series Fuse Rating Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature Safety Class II Temperature Ratings	Packaging Configuration			
Pallets Per Container Pallets Per Container 682 Working Conditions Max System Voltage(VDC) Max Series Fuse Rating Maximum Load Capacity Operating Temperature Safety Class II Temperature Ratings	Container	40'HQ		
Pieces Per Container Working Conditions Max System Voltage(VDC) Max Series Fuse Rating Maximum Load Capacity Operating Temperature Safety Class II Temperature Ratings	Pieces Per Pallet	31		
Working Conditions Max System Voltage(VDC) Max Series Fuse Rating Maximum Load Capacity Operating Temperature Safety Class I Temperature Ratings	Pallets Per Container	22		
Max System Voltage(VDC) Max Series Fuse Rating 20A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings	Pieces Per Container	682		
Max Series Fuse Rating Maximum Load Capacity Operating Temperature Safety Class II Temperature Ratings	Working Conditions			
Maximum Load Capacity Operating Temperature Snow 5400Pa/Wind 2400Pa -40°C~+85°C Safety Class II Temperature Ratings	Max System Voltage(VDC)	1500V		
Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings	Max Series Fuse Rating	20A		
Safety Class II Temperature Ratings	Maximum Load Capacity	Snow 5400Pa/Wind 2400Pa		
Temperature Ratings	Operating Temperature	-40°C~+85°C		
	Safety Class	П		
Temperature Coefficients of Isc(%/°C) 0.046	Temperature Ratings			
	Temperature Coefficients of Isc(%/°C)	0.046		
Temperature Coefficients of Voc(%/°C) -0.266	Temperature Coefficients of Voc(%/°C)	-0.266		
Temperature Coefficients of Pmpp(%/°C) -0.354	Temperature Coefficients of Pmpp(%/°C)	-0.354		
NMOT 45±2°C	NMOT	45±2°C		

^{*}STC:Irradiance 1000 W/m2, Environment Temperature 25°C,Air Mass AM1.5

^{*}NMOT:Irradiance 800 W/m2, Environment Temperature 20°C, Air Mass AM1.5



SOLAR PANEL P-TYPE 550W

Monocrystalline Module Half-cell Module

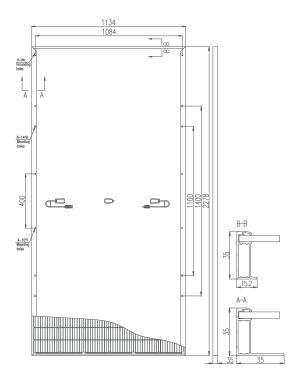
Introduction

Introducing our P-TYPE Monocrystalline Module, an advanced solar panel that offers higher output power compared to traditional modules. With its advanced technology, this module boasts an impressive efficiency of up to 21.3%, ensuring maximum energy conversion from sunlight.

System & Product Certificates

- ISO9001:2015 Quality Management system
- ISO14001:2015 Environmental Management System
- ISO45001:2018 Occupational Health and Safety Management System

Module Structure Drawing



Product Features

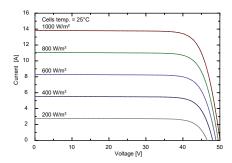
- · Higher output power
- Module efficiency up to 21.3%
- · Lower temperature coefficient
- Lower LCOE (Levelized Cost Of Energy)
- High Power output lead to lower BOS cost
- Salt Mist Corrosion Protect
- Ammonia Resistance
- Excellent Potential Induced Degradation Resistance
- Excellent Wind Load 2400Pa & Snow Load 5400Pa
 Under Certain Installation Method

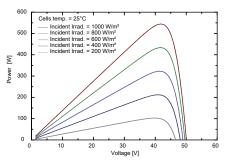
Performance Warranty

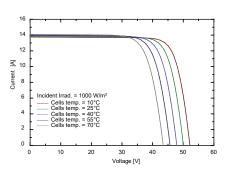


Note: 400mm hole distance is only applicable when specified by the customer

Curves







Product Specifications

Model	ES550MP
Electrical Characteristics(STC*)	
Power Output(Wp)	550
Max Power Tolerance(W)	0-5
Module Efficiency(%)	21.3
Voltage Mpp-Vmpp(V)	42.11
Current Mpp-Impp(A)	13.06
Voltage Open Circuit-Voc(V)	50.28
Short Circuit Current-Isc(A)	13.90
Electrical Characteristics(NMOT*)	
Power Output(Wp)	422.53
Voltage Mpp-Vmpp(V)	38.39
Current Mpp-Impp(A)	11.01
Voltage Open Circuit-Voc(V)	46.42
Short Circuit Current-Isc(A)	11.82
Mechanical Data	
Dimension Of Module	2278*1134*35mm
Weight	27kg
Glass	High transmission glass 3.2mm
Cables	4mm²/300mm or Customized Length
Junction Box	IP68,3 bypass diodes
Connector	MC4 compatible
Packaging Configuration	
Container	40'HQ
Pieces Per Pallet	31
Pallets Per Container	20
Pieces Per Container	620
Working Conditions	
Max System Voltage(VDC)	1500V
Max Series Fuse Rating	25A
Maximum Load Capacity	Snow 5400Pa/Wind 2400Pa
Operating Temperature	-40°C~+85°C
Safety Class	II
Temperature Ratings	
Temperature Coefficients of Isc(%/°C)	0.046
Temperature Coefficients of Voc(%/°C)	-0.266
Temperature Coefficients of Pmpp(%/°C)	-0.354
NMOT	45±2°C

^{*}STC:Irradiance 1000 W/m2, Environment Temperature 25°C,Air Mass AM1.5

^{*}NMOT:Irradiance 800 W/m2, Environment Temperature 20°C, Air Mass AM1.5



SOLAR PANEL P-TYPE 585W

Monocrystalline Module Half-cell Module

Introduction

Introducing our P-TYPE Monocrystalline Module, an advanced solar panel that offers higher output power compared to traditional modules. With its advanced technology, this module boasts an impressive efficiency of up to 21.4%, ensuring maximum energy conversion from sunlight.

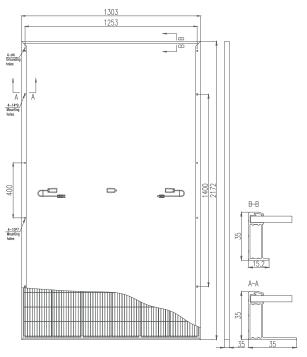
Product Features

- Higher output power
- Module efficiency up to 21.4%
- · Lower temperature coefficient
- Lower LCOE (Levelized Cost Of Energy)
- High Power output lead to lower BOS cost
- Salt Mist Corrosion Protect
- Ammonia Resistance
- Excellent Potential Induced Degradation Resistance
- Excellent Wind Load 2400Pa & Snow Load 5400Pa Under Certain Installation Method

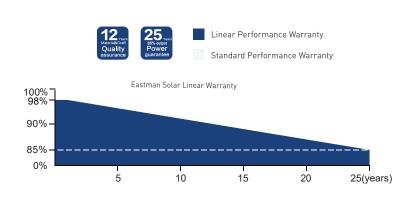
System & Product Certificates

- ISO9001:2015 Quality Management system
- ISO14001:2015 Environmental Management System
- ISO45001:2018 Occupational Health and Safety Management System

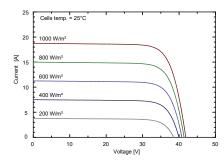
Module Structure Drawing

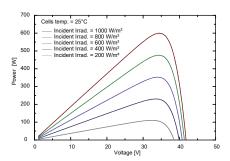


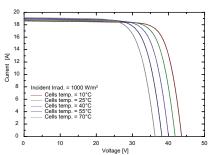
Note: 400mm hole distance is only applicable when specified by the customer



Curves







Product Specifications

Electrical Characteristics STC') Power Output(Wo)	Model	ES585MP
Max Pewer Tolerance(W) 0.5 Module Efficiency(%) 20.7 Voltage Mpp-Vmpp(V) 33.95 Current Mpp-Impp(A) 17.23 Voltage Open Circuit-Voc(V) 41.24 Short Circuit Current-isct(A) 18.60 Electrical Characteristics(NMOT*) ***Pewer Output(Wp) Power Output(Wp) 449.42 Voltage Mpp-Vmpp(V) 30.95 Current Mpp-impp(A) 14.52 Voltage Open Circuit-Voc(V) 38.08 Short Circuit Current-isc(A) 18.81 Mchanical Data ***Dimension of Module Dimension of Module 27721303735mm Weight 31kg Class High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box (1983.3 bypass diodes Connector MC4 compatible Packaging Configuration MC4 compatible Container 40°HQ Pieces Per Pallet 31 Pallet Per Container 18 Pieces Per Container 588 Working Conditions	Electrical Characteristics(STC*)	
Module Efficiency(%) 20.7	Power Output(Wp)	585
Voltage Mpp-Vmpp(V) 33.95 Current Mpp-Impp(A) 1723 Voltage Open Circuit Voc(V) 4124 Short Circuit Current-Isc(A) 18.60 Electrical Characteristics(NMOT*) 88.60 Power Output(Vp) 449.42 Voltage Mpp-Vmpp(V) 30.95 Current Mpp-Impp(A) 14.52 Voltage Open Circuit-Voc(V) 38.08 Short Circuit Current-Isc(A) 15.81 Mechanical Data 15.81 Dimension Of Module 21727/303*35mm Weight 31kg Class High transmission glass 3.2mm Cables 4mm/300mm or Customized Length Junction Box [P68.3 bypass clicdes Connector MC4 compatible Packaging Configuration 40°HQ Pieces Per Pallet 31 Pallet Per Container 18 Pieces Per Container 558 Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 30A Maximum Load Capacity 5nox 5400Pa/Wind 2400Pa <t< td=""><td>Max Power Tolerance(W)</td><td>0-5</td></t<>	Max Power Tolerance(W)	0-5
Current Mpp-Impp(A) 1723 Voltage Open Circuit-Voc(V) 4124 Short Circuit Current-Isc(A) 18.60 Electrical Characteristics(MMOT*) 449.42 Power Output(Wp) 449.42 Voltage Mpp-Vmpp(V) 30.95 Current Mpp-Impp(A) 14.52 Voltage Open Circuit-Voc(V) 38.08 Short Circuit Current-Isc(A) 15.81 Mechanical Data 15.81 Dimension Of Module 2172*1303*35mm Weight 3lkg Class High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box IP68.3 bypass clickes Connector MC4 compatible Packaging Configuration 40°HQ Container 40°HQ Pieces Per Pallet 31 Pallet Per Container 18 Pieces Per Container 558 Working Conditions 30A Max System Voltage(VDC) 1500V Max Series Fuse Rating 30A Maximum Load Capacity 8now 5400Pa/Wind 2400Pa	Module Efficiency(%)	20.7
Voltage Open Circuit-Voc(V) 41.24 Short Circuit Current-Isc(A) 18.60 Electrical Characteristics(NMOT*) 449.42 Power Output(Wp) 449.42 Voltage Mpp-Vmpp(V) 30.95 Current Mpp-Impp(A) 14.52 Voltage Open Circuit-Voc(V) 38.08 Short Circuit Current-Isc(A) 15.81 Mechanical Data 15.81 Dimension Of Module 2172*1303*35mm Weight 31kg Glass High transmission glass 3.2mm Cables 4mm*/300mm or Customized Length Junction Box 1P68,3 bypass diodes Connector MC4 compatible Packaging Configuration 40°HQ Container 40°HQ Piccs Per Pallet 31 Pallet Per Container 18 Piccs Per Container 588 Working Conditions Max System Voltage(VDC) 1500V Max System Voltage(VDC) 1500V Max System Voltage(VDC) 5000 × 5000 × 5000 × 5000 × 5000 × 5000 × 5000 × 5000 × 5000 × 5000 × 5000 × 5000 × 5000 × 5000 × 5000 × 5000 × 5000 × 5000 × 500	Voltage Mpp-Vmpp(V)	33.95
Short Circuit Current-Isc(A) 18.60	Current Mpp-Impp(A)	17.23
Power Output(Wp)	Voltage Open Circuit-Voc(V)	41.24
Power Output(Wp)	Short Circuit Current-Isc(A)	18.60
Voltage Mpp-Ympp(V) 30.95 Current Mpp-Impp(A) 14.52 Voltage Open Circuit-Voc(V) 38.08 Short Circuit Current-Isc(A) 15.81 Mechanical Data IS.81 Dimension of Module 2172*1303*35mm Weight 31kg Class High transmission glass 3.2mm Cables 4mm*/500mm or Customized Length Junction Box 1P68.3 bypass diodes Connector MC4 compatible Packaging Confliguration WC4 compatible Container 40°HQ Pieces Per Pallet 31 Pallet Per Container 18 Pieces Per Container 558 Working Conditions Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 30A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings II Temperature Coefficients of Isc(%/°C) 0.046 Temperature Coefficients of Pmpp(%/°C) <td>Electrical Characteristics(NMOT*)</td> <td></td>	Electrical Characteristics(NMOT*)	
Current Mpp-Impp(A) 14.52 Voltage Open Circuit-Voc(V) 38.08 Short Circuit Current-Isc(A) 15.81 Mechanical Data	Power Output(Wp)	449.42
Voltage Open Circuit-Voc(V) 38.08 Short Circuit Current-Isc(A) 15.81 Mechanical Data 15.81 Dimension Of Module 2172*1303*35mm Weight 31kg Glass High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box 1P68,3 bypass diodes Connector MC4 compatible Packaging Configuration 40°HQ Pieces Per Pallet 31 Pallet Per Container 18 Pieces Per Container 558 Working Conditions Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 30A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature 40°C~+85°C Safety Class II Temperature Ratings 1 Temperature Coefficients of Isc(%/°C) 0.046 Temperature Coefficients of Voc(%/°C) -0.266 Temperature Coefficients of Popp(%/°C) -0.354	Voltage Mpp-Vmpp(V)	30.95
Short Circuit Current-Isc(A) 15.81 Mechanical Data Mechanical Data Dimension Of Module 2172*1303*35mm Weight 31kg Glass High transmission glass 3.2mm Cables 4mm/300mm or Customized Length Junction Box 1P68.3 typass diodes Connector MC4 compatible Packaging Configuration Container 40°HQ Pieces Per Pallet 31 Pallet Per Container 18 Pieces Per Pcontainer 558 Working Conditions Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 30A Maximum Load Capacity Snow \$400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings Temperature Coefficients of loc(%/°C) 0.046 Temperature Coefficients of Voc(%/°C) -0.266 Temperature Coefficients of Pmpp(%/°C) -0.354	Current Mpp-Impp(A)	14.52
Mechanical Data Dimension Of Module 2172*1303*35mm Weight 31kg Class High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box IP68,3 bypass diodes Connector MC4 compatible Packaging Configuration 40°HQ Pieces Per Pallet 31 Pallet Per Container 18 Pieces Per Container 558 Working Conditions 1500V Max System Voltage(VDC) 1500V Max Series Fuse Rating 30A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings Temperature Coefficients of Isc(%/°C) 0.046 Temperature Coefficients of Pmpp(%/°C) -0.266 Temperature Coefficients of Pmpp(%/°C) -0.354	Voltage Open Circuit-Voc(V)	38.08
Dimension Of Module 2172*1303*35mm Weight 31kg Class High transmission glass 3,2mm Cables 4mm²/300mm or Customized Length Junction Box IP68,3 bypass diodes Connector MC4 compatible Packaging Configuration Container 40'HQ Pieces Per Pallet 31 Pallet Per Container 18 Pieces Per Container 558 Working Conditions S8 Working Conditions 1500V Max System Voltage(VDC) 1500V Max Series Fuse Rating 30A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings II Temperature Coefficients of Isc(%/°C) 0.046 Temperature Coefficients of Pmpf(%/°C) -0.266 Temperature Coefficients of Pmpf(%/°C) -0.354	Short Circuit Current-Isc(A)	15.81
Weight 31kg Class High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box IP68,3 bypass diodes Connector MC4 compatible Packaging Configuration Container 40°HQ Pieces Per Pallet 31 Pallet Per Container 18 Pieces Per Container 558 Working Conditions Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 30A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature 40°C~+85°C Safety Class II Temperature Ratings I Temperature Coefficients of Isc(%/°C) 0.046 Temperature Coefficients of Pmpf(%/°C) -0.266 Temperature Coefficients of Pmpf(%/°C) -0.354	Mechanical Data	
Class High transmission glass 3.2mm Cables 4mm²/300mm or Customized Length Junction Box IP68,3 bypass diodes Connector MC4 compatible Packaging Configuration Container 40°HQ Pieces Per Pallet 31 Pallet Per Container 18 Pieces Per Container 558 Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 30A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature 40°C~+85°C Safety Class II Temperature Ratings Temperature Coefficients of Isc(%/°C) 0.046 Temperature Coefficients of Voc(%/°C) -0.266 Temperature Coefficients of Pmpp(%/°C) -0.354	Dimension Of Module	2172*1303*35mm
Cables 4mm²/300mm or Customized Length Junction Box IP68,3 bypass diodes Connector MC4 compatible Packaging Configuration Container 40°HQ Pieces Per Pallet 31 Pallet Per Container 18 Pieces Per Container 558 Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 30A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature 40°C~+85°C Safety Class II Temperature Ratings Temperature Coefficients of Isc(%/°C) 0.046 Temperature Coefficients of Voc(%/°C) -0.266 Temperature Coefficients of Pmpp(%/°C) -0.354	Weight	31kg
Junction Box Connector MC4 compatible Packaging Configuration Container 40'HQ Pieces Per Pallet 31 Pallet Per Container 18 Pieces Per Container 558 Working Conditions Max System Voltage(VDC) Max Series Fuse Rating 30A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature 5afety Class II Temperature Ratings Temperature Coefficients of Isc(%/°C) Temperature Coefficients of Voc(%/°C) Temperature Coefficients of Pmpp(%/°C)	Glass	High transmission glass 3.2mm
Connector Packaging Configuration Container Pieces Per Pallet Pallet Per Container Pieces Per Container Pieces Per Container Ba Pieces Per Container Ba Pieces Per Container Ba Pieces Per Container Working Conditions Max System Voltage(VDC) Max Series Fuse Rating Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature Safety Class II Temperature Ratings Temperature Coefficients of Isc(%/°C) Temperature Coefficients of Voc(%/°C) Temperature Coefficients of Pmpp(%/°C)	Cables	4mm²/300mm or Customized Length
Packaging Configuration Container 40'HQ Pieces Per Pallet 31 Pallet Per Container 18 Pieces Per Container 558 Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 30A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings Temperature Coefficients of Isc(%/°C) 0.046 Temperature Coefficients of Voc(%/°C) -0.266 Temperature Coefficients of Pmpp(%/°C) -0.354	Junction Box	IP68,3 bypass diodes
Container 40'HQ Pieces Per Pallet Pallet Per Container Pallet Per Container Pieces Per Container Pieces Per Container S58 Working Conditions Max System Voltage(VDC) Max Series Fuse Rating Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature Safety Class II Temperature Ratings Temperature Coefficients of Isc(%/°C) Temperature Coefficients of Pmpp(%/°C) Temperature Coefficients of Pmpp(%/°C) Pallet Per A0'HQ 18 18 1500V 1500V Snow 5400Pa/Wind 2400Pa II 16 17 18 18 18 10 10 10 10 10 10 10	Connector	MC4 compatible
Pieces Per Pallet Pallet Per Container Pieces Per Container S58 Working Conditions Max System Voltage(VDC) Max Series Fuse Rating Maximum Load Capacity Operating Temperature Safety Class II Temperature Ratings Temperature Coefficients of Voc(%/°C) Temperature Coefficients of Pmpp(%/°C)	Packaging Configuration	
Pallet Per Container Pieces Per Container S58 Working Conditions Max System Voltage(VDC) Max Series Fuse Rating Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature Safety Class II Temperature Ratings Temperature Coefficients of Isc(%/°C) Temperature Coefficients of Pmpp(%/°C)	Container	40'HQ
Pieces Per Container Working Conditions Max System Voltage(VDC) Max Series Fuse Rating Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature Safety Class I Temperature Ratings Temperature Coefficients of Isc(%/°C) Temperature Coefficients of Pmpp(%/°C) Temperature Coefficients of Pmpp(%/°C) Temperature Coefficients of Pmpp(%/°C) Temperature Coefficients of Pmpp(%/°C) SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS	Pieces Per Pallet	31
Working Conditions Max System Voltage(VDC) 1500V Max Series Fuse Rating 30A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings Temperature Coefficients of Isc(%/°C) 0.046 Temperature Coefficients of Voc(%/°C) -0.266 Temperature Coefficients of Pmpp(%/°C) -0.354	Pallet Per Container	18
Max System Voltage(VDC) Max Series Fuse Rating 30A Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature Safety Class I Temperature Ratings Temperature Coefficients of Isc(%/°C) Temperature Coefficients of Voc(%/°C) Temperature Coefficients of Pmpp(%/°C)	Pieces Per Container	558
Max Series Fuse Rating Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings Temperature Coefficients of Isc(%/°C) Temperature Coefficients of Voc(%/°C) Temperature Coefficients of Pmpp(%/°C) Temperature Coefficients of Pmpp(%/°C) -0.354	Working Conditions	
Maximum Load Capacity Snow 5400Pa/Wind 2400Pa Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings Temperature Coefficients of Isc(%/°C) Temperature Coefficients of Voc(%/°C) Temperature Coefficients of Pmpp(%/°C) Temperature Coefficients of Pmpp(%/°C) -0.354	Max System Voltage(VDC)	1500V
Operating Temperature -40°C~+85°C Safety Class II Temperature Ratings Temperature Coefficients of Isc(%/°C) 0.046 Temperature Coefficients of Voc(%/°C) -0.266 Temperature Coefficients of Pmpp(%/°C) -0.354	Max Series Fuse Rating	30A
Safety Class II Temperature Ratings Temperature Coefficients of Isc(%/°C) 0.046 Temperature Coefficients of Voc(%/°C) -0.266 Temperature Coefficients of Pmpp(%/°C) -0.354	Maximum Load Capacity	Snow 5400Pa/Wind 2400Pa
Temperature Ratings Temperature Coefficients of Isc(%/°C) 0.046 Temperature Coefficients of Voc(%/°C) -0.266 Temperature Coefficients of Pmpp(%/°C) -0.354	Operating Temperature	-40°C~+85°C
Temperature Coefficients of Isc(%/°C) Temperature Coefficients of Voc(%/°C) Temperature Coefficients of Pmpp(%/°C) -0.266 Temperature Coefficients of Pmpp(%/°C) -0.354	Safety Class	II
Temperature Coefficients of Voc(%/°C) -0.266 Temperature Coefficients of Pmpp(%/°C) -0.354	Temperature Ratings	
Temperature Coefficients of Pmpp(%/°C) -0.354	Temperature Coefficients of Isc(%/°C)	0.046
	Temperature Coefficients of Voc(%/°C)	-0.266
NMOT 45±2°C	Temperature Coefficients of Pmpp(%/°C)	-0.354
	NMOT	45±2°C

^{*}STC:Irradiance 1000 W/m2, Environment Temperature 25°C,Air Mass AM1.5

^{*}NMOT:Irradiance 800 W/m2, Environment Temperature 20°C, Air Mass AM1.5



SOLAR PANEL N-TYPE 565W~585W TP

Half-cell Mono Module

Introduction

Introducing our N-TYPE cutting-edge solar panel: engineered for maximum power output and reliability, even in low-light conditions like cloudy days. Featuring zero Light Induced Degradation (LID) and superior temperature coefficient for consistent performance. Certified to withstand harsh environments, it's your reliable solution for sustainable energy.

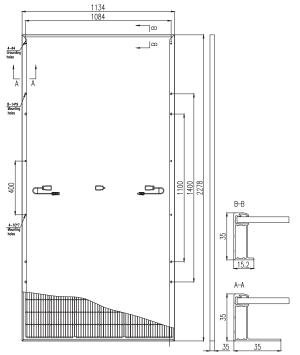
Product Features

- High Power Output: Better light trapping and current collection to improve module power output and reliability
- Outstanding Low Light Performance: Higher power output even under low-light environments like on cloudy or foggy days.
- Zero LID (Light Induced Degradation): N-type solar cell has no LID naturally which can increase power generation
- Better Temperature Coefficient: Higher power generation under working conditions, thanks to passivating contact cell technology
- PID Resistance: Excellent Anti-PID performance guarantee via optimized mass-production process and materials control
- Enhanced Mechanical Load: Certified to withstand: wind load (2400 Pascal) and snow load (5400 Pascal)
- Withstanding Harsh Environment: Reliable quality leads to a better sustainability even in harsh environment like desert, farm and coastline.

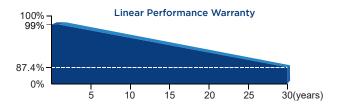
System & Product Certificates

- IEC61215, IEC61730
- ISO9001:2015: Quality Management System
- ISO14001:2015: Environment Management System
- ISO45001:2018: Occupational health and safety management systems

Module Structure Drawing

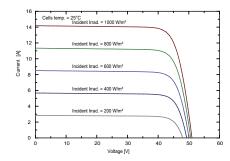


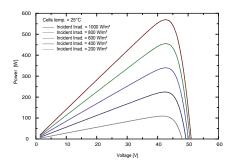
Note: 400mm hole distance is only applicable when specified by the customer

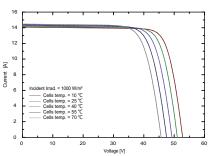


- 12 Years Product Warranty on Materials and Workmanship
- 30 Years Linear Performance Warranty
- 0.40% Subsequent Annual Degradation

Characteristic Curves(570W)







Product Specifications

Model	ES565TP	ES570TP	ES575TP	ES580TP	ES585TP
Electrical Properties(STC*)					
Power Output(Wp)	565	570	575	580	585
Max Power Tolerance(W)	0-5	0-5	0-5	0-5	0-5
Module Efficiency(%)	21.87	22.07	22.26	22.45	22.65
Voltage Mpp-Vmpp(V)	42.35	42.51	42.69	42.87	43.02
Current Mpp-Impp(A)	13.34	13.41	13.47	13.53	13.60
Voltage Open Circuit-Voc(V)	50.83	51.03	51.23	51.43	51.63
Short Circuit Current-Isc(A)	14.12	14.18	14.24	14.30	14.36
Electrical Properties(NMOT*)					
Power Output(Wp)	427	431	435	439	443
Voltage Mpp-Vmpp(V)	39.79	39.98	40.13	40.28	40.44
Current Mpp-Impp(A)	10.73	10.78	10.84	10.90	10.96
Voltage Open Circuit-Voc(V)	48.45	48.64	48.83	49.02	49.21
Short Circuit Current-Isc(A)	11.40	11.45	11.49	11.54	11.59
Mechanical Properties					
Cell Size			182mm*91mm		
Number of Cells			144 [2 x (12x 6)]		
Module Dimension		227	8*1134*30&2278*1134*35n	nm	
Weight			27 kg		
Front Glass		Hig	h transmission glass 3.2r	mm	
Frame		А	nodized Aluminium Allo	ру	
Junction Box			IP68 (3 diodes)		
Cable Lenth		TUV 1x4.0mm², (+)	:300mm/(-):200mm or C	Customized length	
Operating Properties					
Operating Temperature			-40°C~+85°C		
Maximum System Voltage			1500V DC (IEC)		
Maximum Series Fuse Rating			25A		
Power Tolerance			0~+5W		
Temperature Coefficient					
Temperature Coefficient of Pmax			-0.310%/°C		
Temperature Coefficients of Voc			-0.26%/°C		
Temperature Coefficients of Isc			0.046%/°C		
Nominal Operating cell Temperature(NOCT)			42±2°C		

Packaging Configuration

Frame	30mm	35mm
Packing Type	40'HQ	40'HQ
Piece/Pallet	36	31
Piece/Container	740	620

^{*}STC:Irradiance 1000 W/m2, Environment Temperature 25°C,Air Mass AM1.5

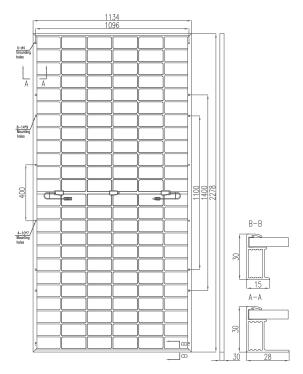
^{*}NMOT:Irradiance 800 W/m2, Environment Temperature 20°C, Air Mass AM1.5 $\,$



System & Product Certificates

- IEC61215, IEC61730
- ISO9001:2015: Quality Management System
- ISO14001:2015: Environment Management System
- ISO45001:2018: Occupational health and safety management systems

Module Structure Drawing



Note: 400mm hole distance is only applicable when specified by the customer

SOLAR PANEL N-TYPE 565W~585W TP BF

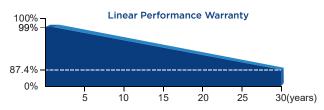
Bifacial Dual Glass Mono Module

Introduction

Introducing our N-TYPE cutting-edge solar panel: engineered for maximum power output and reliability, even in low-light conditions like cloudy days. Featuring zero Light Induced Degradation (LID) and superior temperature coefficient for consistent performance. Certified to withstand harsh environments, it's your reliable solution for sustainable energy.

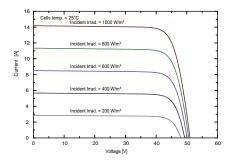
Product Features

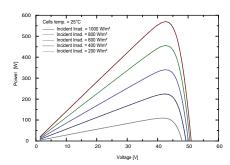
- 10%-30% Additional Power Generation 30 years lifespan brings 10%-30% additional power generation comparing with conventional P-type module
- Outstanding Low Light Performance Higher power output even under low-light environments like on cloudy or foggy days.
- Zero LID (Light Induced Degradation) N-type solar cell has no LID naturally which can increase power generation
- Better Temperature Coefficient Higher power generation under working conditions, thanks to passivating contact cell technology
- PID Resistance Excellent Anti-PID performance guarantee via optimized mass-production process and materials control
- Enhanced Mechanical Load Certified to withstand: wind load (2400 Pascal) and snow load (5400 Pascal)
- Withstanding Harsh Environment Reliable quality leads to a better sustainability even in harsh environment like desert, farm and coastline.
- Lower LCOE Higher bifaciality, higher power output and lower BOS cost
- **Wider Applicability** More application scenes like BIPV, vertical installation, snowfield, high-humid, windy and dusty area

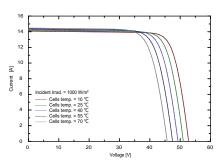


- 12 Years Product Warranty on Materials and Workmanship
- **30** Years Linear Performance Warranty
- 0.40% Subsequent Annual Degradation

Characteristic Curves(570W)







Product Specifications

Model	ES565TP BF	ES570TP BF	ES575TP BF	ES580TP BF	ES585TP BF
Electrical Properties(STC*)					
Power Output(Wp)	565	570	575	580	585
Max Power Tolerance(W)	0-5	0-5	0-5	0-5	0-5
Module Efficiency(%)	21.87	22.07	22.26	22.45	22.65
Voltage Mpp-Vmpp(V)	42.35	42.51	42.69	42.87	43.02
Current Mpp-Impp(A)	13.34	13.41	13.47	13.53	13.60
Voltage Open Circuit-Voc(V)	50.83	51.03	51.23	51.43	51.63
Short Circuit Current-Isc(A)	14.12	14.18	14.24	14.30	14.36
Electrical Properties(NMOT*)					
Power Output(Wp)	427	431	435	439	443
Voltage Mpp-Vmpp(V)	39.79	39.98	40.13	40.28	40.44
Current Mpp-Impp(A)	10.73	10.78	10.84	10.90	10.96
Voltage Open Circuit-Voc(V)	48.45	48.64	48.83	49.02	49.21
Short Circuit Current-Isc(A)	11.40	11.45	11.49	11.54	11.59

With Different Power Generation Gain (regarding 570W as an example)

Power Gain (%)	Power Output (Wp)	Voltage Mpp-Vmpp (V)	Current Mpp-Vmpp (A)	Voltage Open Circuit-Voc (%)	Short Circuit Current-Isc (A)
10	627	42.51	14.75	51.03	15.60
15	656	42.51	15.42	51.03	16.31
20	684	42.51	16.09	51.03	17.02
25	713	42.51	16.76	51.03	17.73
30	741	42.51	17.43	51.03	18.43

Mechanical Properties

Cell Size	182mm*91mm
Number of Cells	144 [2 x (12x 6)]
Module Dimension	2278*1134*30
Weight	32.5 kg
Front Glass	2.0mm, Anti-Reflection Coating
Rear Glass	2.0mm, Heat Strengthened Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68 (3 diodes)
Cable Lenth	TUV 1x4.0mm², (+):300mm/ (-):200mm or Customized length
Operating Properties	

Operating Properties

Operating Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC (IEC)
Maximum Series Fuse Rating	30A
Power Tolerance	0~+5W
Bifaciality	80±5%

^{*}STC:Irradiance 1000 W/m2, Environment Temperature 25°C,Air Mass AM1.5 $\,$

Packaging Configuration

Frame	30mm
Packing Type	40'HQ
Piece/Pallet	36
Piece/Container	720

Temperature Coefficient

Temperature Coefficient of Pmax	-0.310%/°C
Temperature Coefficients of Voc	-0.26%/°C
Temperature Coefficients of Isc	0.046%/°C
Nominal Operating cell Temperature(NOCT)	42±2°C

^{*}NMOT:Irradiance 800 W/m2, Environment Temperature 20°C, Air Mass AM1.5



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