LESSO

SOLAR PV MODULES

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LESSO Group (2128) is listed in the Stock Exchange of Hong Kong.

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SOLAR SOLUTIONS MANUFACTURER

CONTENT

A LESSO Solar Publication, September 2025

A Bright and Exciting Journey

LESSO Group is a Hong Kong-listed (2128.HK) manufacturer of building materials with an annual revenue of over USD4.38 billion from its global operations.

LESSO Solar, a flagship division of LESSO Group, specialises in manufacturing solar panels, inverters, and energy storage systems, and providing solar-energy solutions.

Founded in 2022, LESSO Solar has been growing with spectacular pace, with global production capacity of over 15.3GW for solar panels and 6GW for solar cells.

USD4.38 bil
Annual Sales Revenue

5 major
Production Bases

39 years
Production Experience

15.3 GW
Solar Modules Manufacturing Capacity

Leading the Future with Intelligent Manufacturing

Our 5 production bases aim to grow into a large-scale global manufacturer of solar solutions, introduce advanced equipment, and create intelligent and automated production lines for intelligent building photovoltaic integrated BIPV, solar PV modules, and solar cells.

Our Production Bases

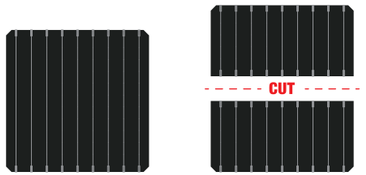
By utilizing only the finest raw materials and cutting-edge technology, we meticulously oversee every stage of the production process to provide our customers with the highest-quality products.

Our Certificates

IEC 61215, IEC 61730
ISO 9001:2015 Quality Management System
ISO 14001:2015 Environment Management System
ISO 45001:2018 Occupational Health and Safety Management System

HALF-CELL TECHNOLOGY

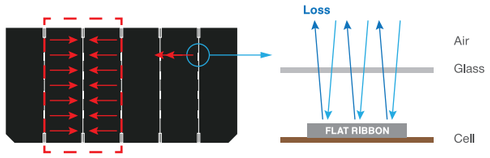
By adopting half-cell technology, electrical current density is reduced by 50%, resulting in a 25% decrease in internal power loss and an increase in rated output power.



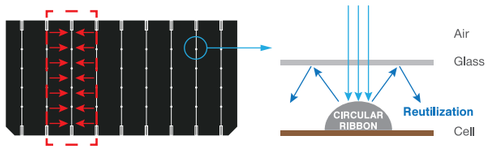
Full-cell Half-cell

MBB TECHNOLOGY

MBB technology shortens the current collection path by over 50%, minimizes lateral resistance losses, and enhances component poweroutput. LESSO PV modules utilize circular ribbons to reduce shading areasand optimize light reflection for improved energy generation.



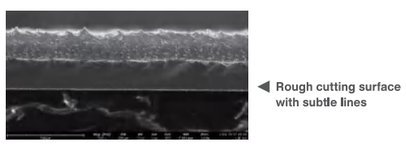
Common cell (5BB)



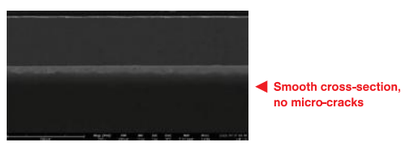
MBB cell

NON-DESTRUCTIVE CUTTING TECHNOLOGY

Featuring non-destructive cutting technology, this process ensures smooth cross-sections, reduces micro-crack risks, enhances cell strength. and delivers superior mechanical performance.



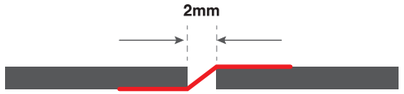
Cross-section from conventional cutting



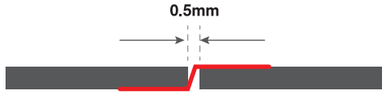
Cross-section from non-destructive cutting

HIGH-DENSITY PACKAGING TECHNOLOGY

Through high-density packaging technology, the effective power-generating area of modules is maximized under the same footprint, improving efficiency without compromising reliability.



Conventional spacing

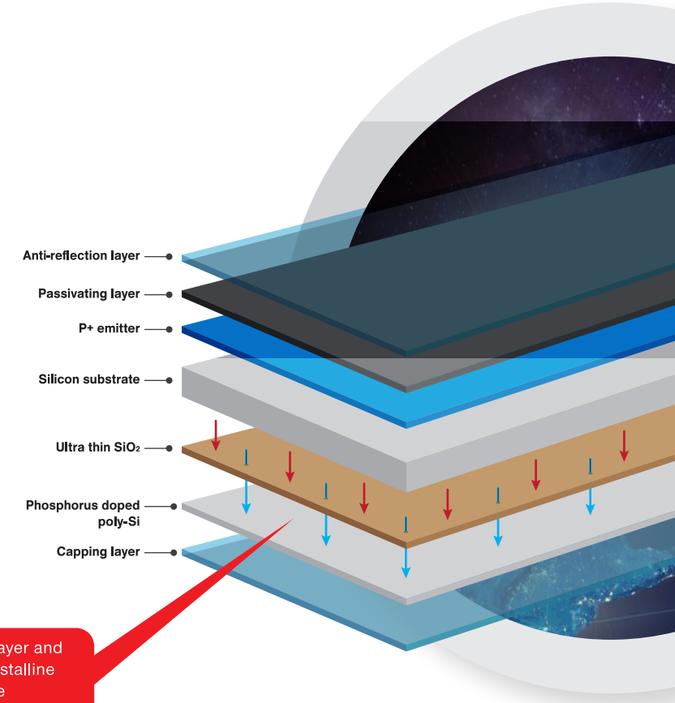


High-density packaging spacing

TOPCON TECHNOLOGY

TOPCon cells employ advanced surface passivation technology to significantly reduce surface and metal contact recombination.

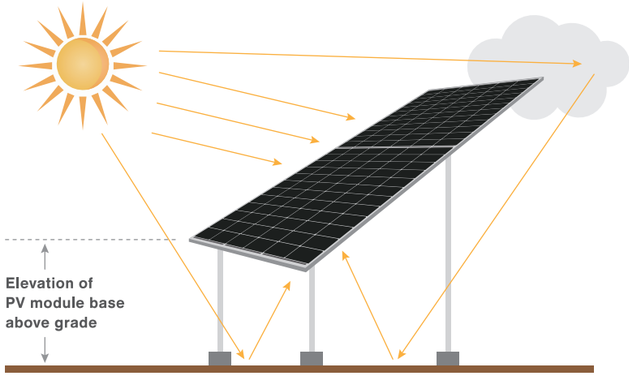
N-type modules exhibit superior degradation characteristics with only 1% first-year and 0.4% lower annual degradation rates compared to conventional counterparts, delivering 2.1% greater lifetime energy yield that directly enhances project profitability.



Micro-nano tunneling through the oxide layer and carrier-selective lamination with microcrystalline silicon thin films on the rear side enhance performance.

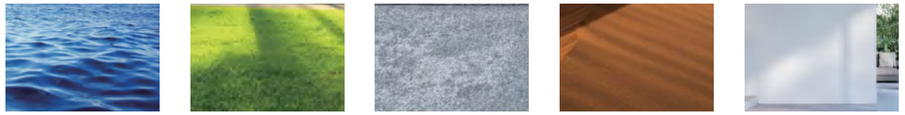
BIFACIAL TECHNOLOGY

Bifacial modules leverage reflected and scattered light, excelling in high-reflectivity environments with proven long-term reliability and superior quality.



LESSO BIFACIAL MODULE DELIVERS UP TO **25%** POWER GAIN

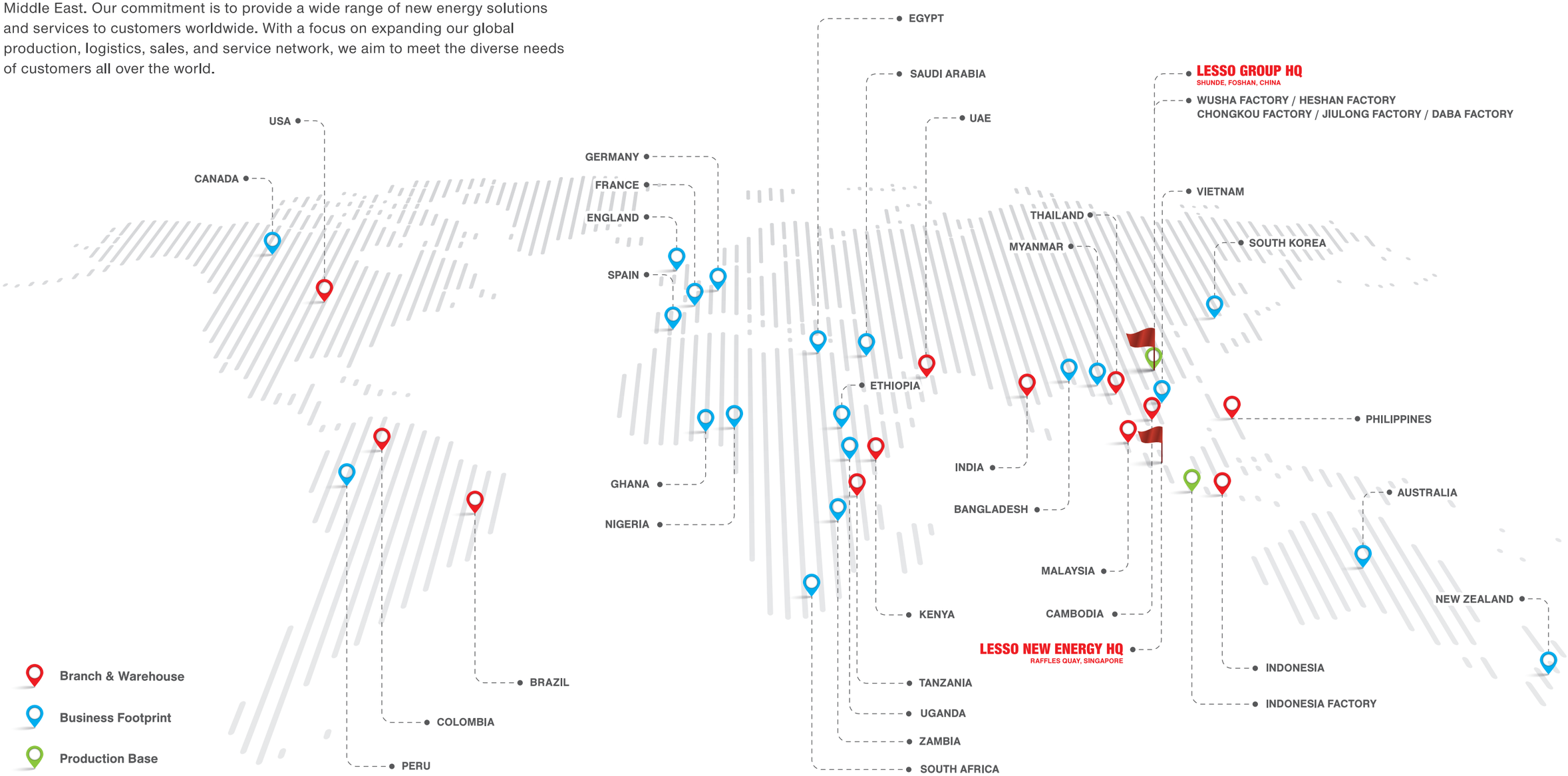
Power generation gain in different scenarios (%)



Water	Grass	Cement	Sand	White paint
3~5%	5~10%	5~10%	5~10%	15~25%

LESSO Solar Global Footprint

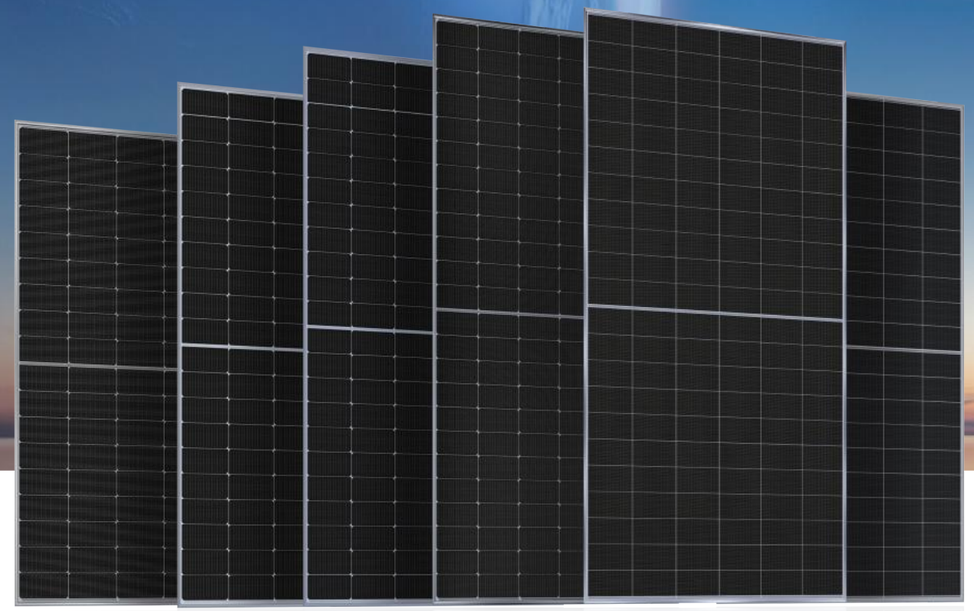
Drawing upon the extensive resources of LESSO, the global footprint of LESSO solar has covered Asia, North America, South America, Europe, South Africa, and the Middle East. Our commitment is to provide a wide range of new energy solutions and services to customers worldwide. With a focus on expanding our global production, logistics, sales, and service network, we aim to meet the diverse needs of customers all over the world.



N series

Unleash Unlimited Power, Pioneering Innovation

The LESSO Solar N Series leverages advanced TOPCon technology to achieve a maximum module efficiency of 23.18%. Featuring N-type cells with zero light-induced degradation (LID), this series ensures superior energy yield. With an annual degradation rate of just 1% in the first year and 0.4% thereafter, the N Series delivers exceptional long-term power generation performance, maximizing revenue potential for customers.



TOPCon Technology
Higher Power Generation

MBB Technology
Reducing String &
Busbar Loss

High Density Packaging
Improving Energy Density

Even Cloudy or Foggy Days
Better Weak Illumination
Response

Zero LID
Increase Power Generation

Better Temperature
Coefficient
More Power Generation

Higher Power Output
Lower BOS Cost

Multiple Weather
Resistance Tests
Wider Applicability

Double-sided Generation
Powerfully Energy Boost

Power Range
425W ~ 720W

Maximum Efficiency
23.18%

- 12 years product workmanship warranty
- 25/30 years linear power output warranty
- 1% 1st-year degradation 0.40% annual degradation

N Series Mainstream Products

Product	Power (W)	Maximum Efficiency	Size (mm)
182 N-type (54) single glass 182 N-type (54) double glass	425 - 445	22.79%	1722x1134x30
182 N-type (60) single glass 182 N-type (60) double glass	475 - 495	22.87%	1909x1134x30
182 N-type (66) single glass 182 N-type (66) double glass	525 - 545	22.95%	2094x1134x30
182 N-type (72) single glass 182 N-type (72) double glass	575 - 595	23.03%	2278x1134x30
182 N-type (78) double glass	625 - 640	22.90%	2465x1134x30
210 N-type (54) double glass	560 - 580	22.71%	1960x1303x30
210 N-type (60) double glass	620 - 640	22.61%	2172x1303x30
210 N-type (66) double glass	700 - 720	23.18%	2384x1303x33
210R N-type (54) single glass 210R N-type (54) double glass	490 - 510	22.95%	1960x1134x35 1960x1134x30
210R N-type (60) single glass 210R N-type (60) double glass	545 - 565	22.94%	2172x1134x35 2172x1134x30
210R N-type (66) single glass 210R N-type (66) double glass	595 - 615	22.77%	2382x1134x35 2382x1134x30

Note: see datasheet for details

182 N-type Monofacial Module (54)

Power Range
425W ~ 445W

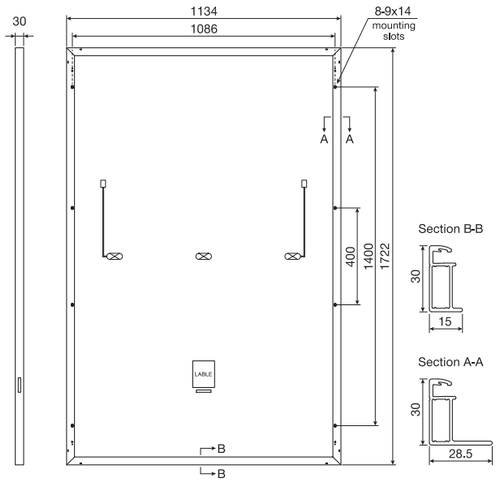
Power Output Tolerance
0W ~ +5W

Maximum Efficiency
22.79%

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1722×1134×30mm
Weight	20.7kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	936pcs

(Unit: mm)

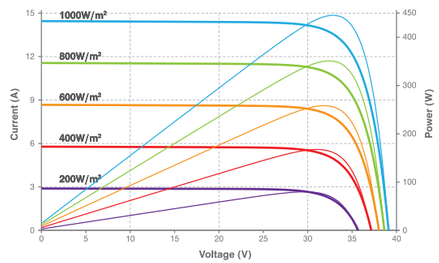


Electrical Performance Parameters

Model Type		425C(HPM)54(182)		430C(HPM)54(182)		435C(HPM)54(182)		440C(HPM)54(182)		445C(HPM)54(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	425	320	430	323	435	327	440	331	445	335
Max. Power Voltage	V_{MP} (V)	31.82	29.69	32.00	29.75	32.18	29.97	32.35	30.11	32.54	30.26
Max. Power Current	I_{MP} (A)	13.36	10.78	13.44	10.86	13.52	10.93	13.60	11.00	13.68	11.08
Open Circuit Voltage	V_{OC} (V)	38.35	36.43	38.54	36.61	38.73	36.79	38.92	36.97	39.11	37.15
Short Circuit Current	I_{SC} (A)	14.13	11.42	14.21	11.49	14.29	11.56	14.37	11.63	14.45	11.70
Module Efficiency	(%)	21.76		22.02		22.28		22.53		22.79	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (445C)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.043%
Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

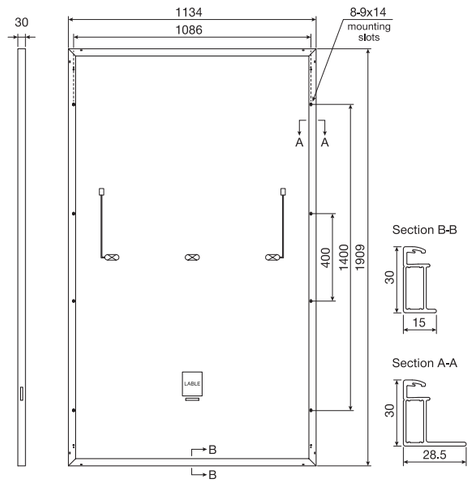
182 N-type Monofacial Module (60)

Power Range	Power Output Tolerance	Maximum Efficiency
475W ~ 495W	0W ~ +5W	22.87%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	1909×1134×30mm
Weight	22.1kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	864pcs

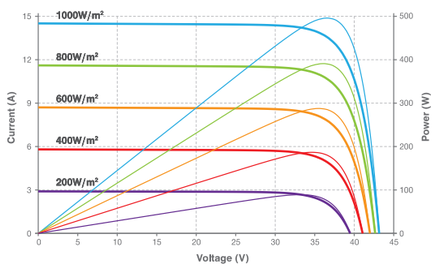


Electrical Performance Parameters

Model Type		475C(HPM)60(182)		480C(HPM)60(182)		485C(HPM)60(182)		490C(HPM)60(182)		495C(HPM)60(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	475	358	480	362	485	366	490	370	495	374
Max. Power Voltage	V_{MP} (V)	35.35	33.34	35.51	33.52	35.66	33.71	35.82	33.90	35.99	34.09
Max. Power Current	I_{MP} (A)	13.44	10.74	13.52	10.80	13.60	10.86	13.68	10.92	13.76	10.98
Open Circuit Voltage	V_{OC} (V)	42.50	40.45	42.67	40.61	42.83	40.77	42.99	40.93	43.15	41.09
Short Circuit Current	I_{SC} (A)	14.19	11.49	14.27	11.56	14.35	11.63	14.43	11.70	14.51	11.77
Module Efficiency	(%)	21.94		22.17		22.40		22.63		22.87	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (495C)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.043%
Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

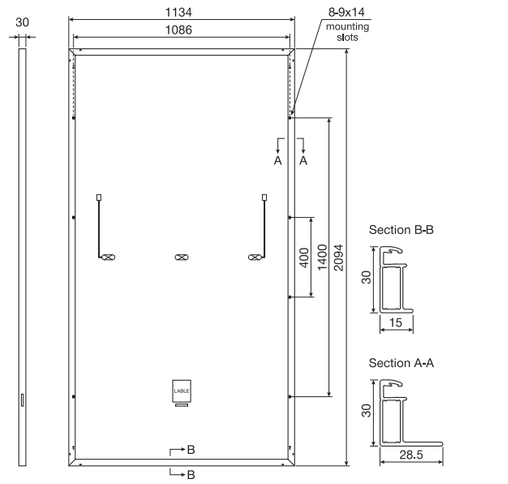
182 N-type Monofacial Module (66)

Power Range	Power Output Tolerance	Maximum Efficiency
525W ~ 545W	0W ~ +5W	22.95%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2094×1134×30mm
Weight	23.8kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	792pcs

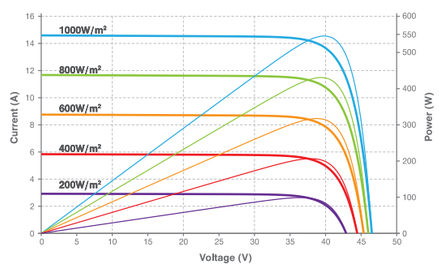


Electrical Performance Parameters

Model Type		525C(HPM)66(182)		530C(HPM)66(182)		535C(HPM)66(182)		540C(HPM)66(182)		545C(HPM)66(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	525	395	530	399	535	403	540	407	545	411
Max. Power Voltage	V_{MP} (V)	38.83	36.75	38.97	36.92	39.11	37.08	39.24	37.25	39.39	37.42
Max. Power Current	I_{MP} (A)	13.52	10.75	13.60	10.81	13.68	10.87	13.76	10.93	13.84	10.99
Open Circuit Voltage	V_{OC} (V)	46.31	44.15	46.36	44.29	46.41	44.43	46.46	44.57	46.51	44.71
Short Circuit Current	I_{SC} (A)	14.25	11.56	14.33	11.63	14.41	11.70	14.49	11.77	14.57	11.84
Module Efficiency	(%)	22.11		22.32		22.53		22.74		22.95	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (545C)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.043%
Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

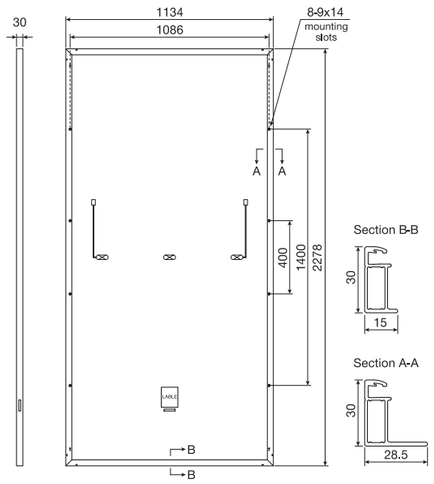
182 N-type Monofacial Module (72)

Power Range	Power Output Tolerance	Maximum Efficiency
575W ~ 595W	0W ~ +5W	23.03%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×30mm
Weight	26.9kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	720pcs

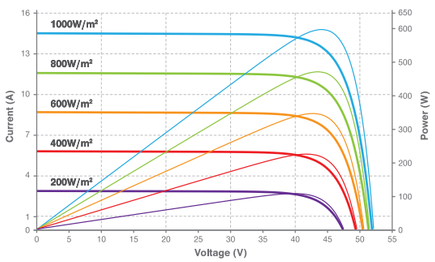


Electrical Performance Parameters

Model Type		575C(HPM)72(182)		580C(HPM)72(182)		585C(HPM)72(182)		590C(HPM)72(182)		595C(HPM)72(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	575	433	580	437	585	441	590	445	595	449
Max. Power Voltage	V_{MP} (V)	42.38	39.84	42.53	39.95	42.67	40.10	42.82	40.24	42.97	40.37
Max. Power Current	I_{MP} (A)	13.57	10.87	13.64	10.94	13.71	11.00	13.78	11.06	13.85	11.13
Open Circuit Voltage	V_{OC} (V)	52.23	48.29	52.43	48.42	52.63	48.56	52.83	48.70	53.03	48.83
Short Circuit Current	I_{SC} (A)	14.35	11.58	14.43	11.64	14.51	11.71	14.59	11.77	14.67	11.84
Module Efficiency	(%)	22.26		22.45		22.65		22.84		23.03	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (595C)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.043%
Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

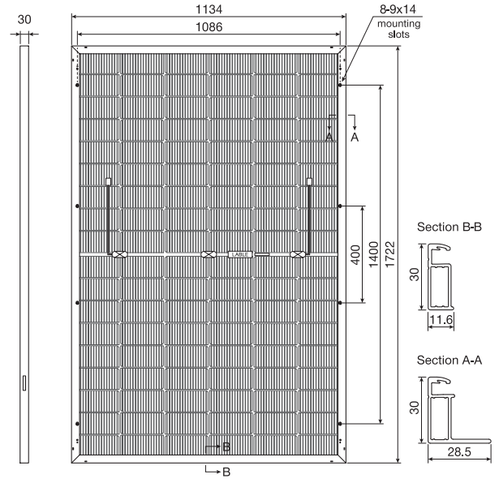
182 N-type Bifacial Module (54)

Power Range	Power Output Tolerance	Maximum Efficiency
425W ~ 445W	0W ~ +5W	22.79%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1722×1134×30mm
Weight	23.1kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy / Polyurethane Composite Frame
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	936pcs

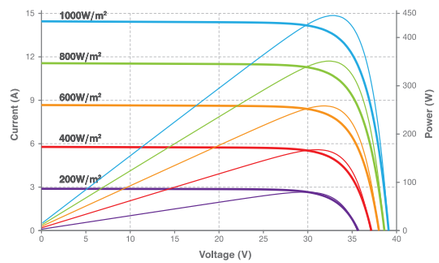


Electrical Performance Parameters

Model Type		425C(HBD)54(182)		430C(HBD)54(182)		435C(HBD)54(182)		440C(HBD)54(182)		445C(HBD)54(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	425	319	430	323	435	327	440	331	445	335
Max. Power Voltage	V_{MP} (V)	31.65	29.82	31.88	30.02	32.11	30.23	32.34	30.43	32.57	30.64
Max. Power Current	I_{MP} (A)	13.43	10.70	13.49	10.76	13.55	10.82	13.61	10.88	13.67	10.94
Open Circuit Voltage	V_{OC} (V)	37.17	34.68	37.37	34.87	37.57	35.06	37.77	35.25	37.97	35.44
Short Circuit Current	I_{SC} (A)	14.67	11.90	14.73	11.95	14.79	12.00	14.85	12.05	14.91	12.10
Module Efficiency	(%)	21.76		22.02		22.28		22.53		22.79	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (445C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	446	452	457	462	467
	Module Efficiency	(%)	22.85	23.12	23.39	23.66	23.93
10%	Maximum Power	P_{MAX} (W)	468	473	479	484	490
	Module Efficiency	(%)	23.94	24.22	24.50	24.79	25.07
25%	Maximum Power	P_{MAX} (W)	531	538	544	550	556
	Module Efficiency	(%)	27.21	27.53	27.85	28.17	28.49

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

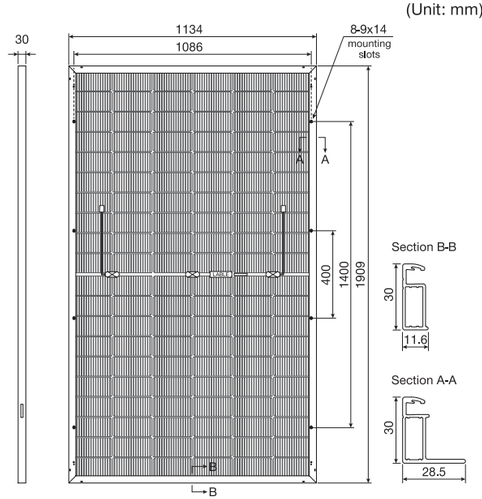
Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

182 N-type Bifacial Module (60)

Power Range	Power Output Tolerance	Maximum Efficiency
475W ~ 495W	0W ~ +5W	22.87%

(Unit: mm)



Structure Performance

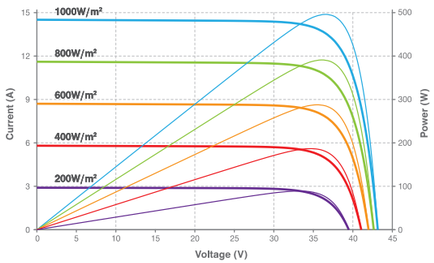
Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	1909×1134×30mm
Weight	25.7kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy / Polyurethane Composite Frame
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	864pcs

Electrical Performance Parameters

Model Type		475C(HBD)60(182)		480C(HBD)60(182)		485C(HBD)60(182)		490C(HBD)60(182)		495C(HBD)60(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	475	357	480	361	485	365	490	369	495	373
Max. Power Voltage	V_{MP} (V)	35.27	33.25	35.48	33.43	35.69	33.61	35.90	33.80	36.11	33.98
Max. Power Current	I_{MP} (A)	13.47	10.74	13.53	10.80	13.59	10.86	13.65	10.92	13.71	10.98
Open Circuit Voltage	V_{OC} (V)	41.87	39.34	42.07	39.53	42.27	39.72	42.47	39.91	42.67	40.10
Short Circuit Current	I_{SC} (A)	14.55	11.84	14.61	11.89	14.67	11.94	14.73	11.99	14.79	12.04
Module Efficiency	(%)	21.94		22.17		22.40		22.63		22.87	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (495C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	499	504	509	515	520
	Module Efficiency	(%)	23.04	23.28	23.52	23.77	24.01
10%	Maximum Power	P_{MAX} (W)	523	528	534	539	545
	Module Efficiency	(%)	24.14	24.39	24.64	24.90	25.15
25%	Maximum Power	P_{MAX} (W)	594	600	606	613	619
	Module Efficiency	(%)	27.43	27.72	28.00	28.29	28.58

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

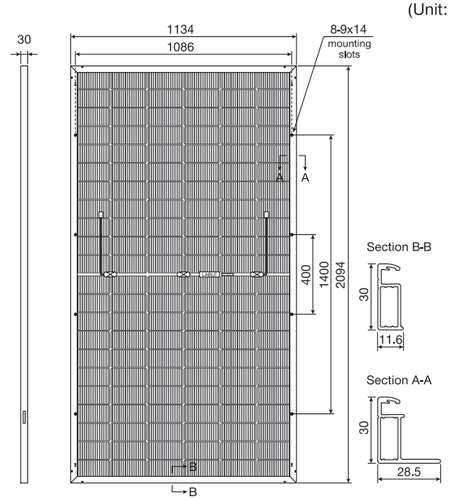
Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

182 N-type Bifacial Module (66)

Power Range	Power Output Tolerance	Maximum Efficiency
525W ~ 545W	0W ~ +5W	22.95%

(Unit: mm)



Structure Performance

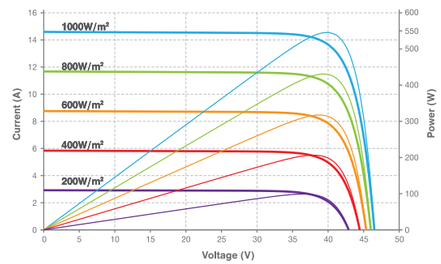
Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	132pcs(6x22)
Module Dimension	2094×1134×30mm
Weight	28.4kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy / Polyurethane Composite Frame
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	792pcs

Electrical Performance Parameters

Model Type		525C(HBD)66(182)		530C(HBD)66(182)		535C(HBD)66(182)		540C(HBD)66(182)		545C(HBD)66(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	525	394	530	398	535	402	540	406	545	410
Max. Power Voltage	V_{MP} (V)	38.89	36.55	39.09	36.72	39.29	36.89	39.49	37.06	39.69	37.22
Max. Power Current	I_{MP} (A)	13.50	10.78	13.56	10.84	13.62	10.90	13.68	10.96	13.74	11.02
Open Circuit Voltage	V_{OC} (V)	46.57	44.00	46.77	44.19	46.97	44.38	47.17	44.57	47.37	44.76
Short Circuit Current	I_{SC} (A)	14.43	11.68	14.49	11.73	14.55	11.78	14.61	11.83	14.67	11.88
Module Efficiency	(%)	22.11		22.32		22.53		22.74		22.95	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (545C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	551	557	562	567	572
	Module Efficiency	(%)	23.21	23.44	23.66	23.88	24.10
10%	Maximum Power	P_{MAX} (W)	578	583	589	594	600
	Module Efficiency	(%)	24.32	24.55	24.78	25.01	25.25
25%	Maximum Power	P_{MAX} (W)	656	663	669	675	681
	Module Efficiency	(%)	27.64	27.90	28.16	28.43	28.69

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

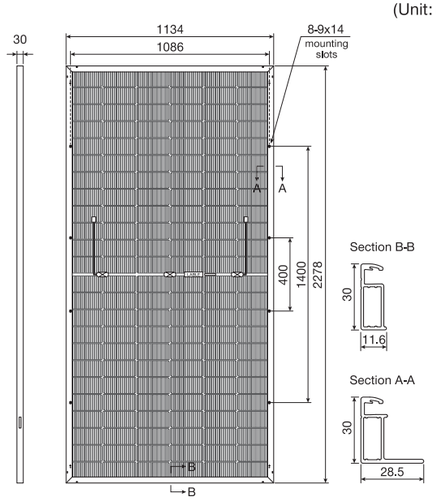
Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

182 N-type Bifacial Module (72)

Power Range	Power Output Tolerance	Maximum Efficiency
575W ~ 595W	0W ~ +5W	23.03%

(Unit: mm)



Structure Performance

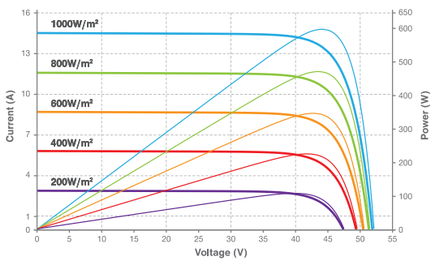
Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×30mm
Weight	31.2kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy / Polyurethane Composite Frame
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	720pcs

Electrical Performance Parameters

Model Type		575C(HBD)72(182)		580C(HBD)72(182)		585C(HBD)72(182)		590C(HBD)72(182)		595C(HBD)72(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	575	433	580	437	585	441	590	445	595	449
Max. Power Voltage	V_{MP} (V)	42.60	40.02	42.75	40.17	42.89	40.32	43.04	40.47	43.18	40.62
Max. Power Current	I_{MP} (A)	13.50	10.82	13.57	10.88	13.64	10.94	13.71	11.00	13.78	11.06
Open Circuit Voltage	V_{OC} (V)	51.23	48.66	51.43	48.85	51.63	49.04	51.83	49.23	52.03	49.42
Short Circuit Current	I_{SC} (A)	14.27	11.51	14.33	11.56	14.39	11.61	14.45	11.66	14.51	11.70
Module Efficiency	(%)	22.26		22.45		22.65		22.84		23.03	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (595C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	604	609	614	620	625
	Module Efficiency	(%)	23.37	23.57	23.78	23.98	24.18
10%	Maximum Power	P_{MAX} (W)	633	638	644	649	655
	Module Efficiency	(%)	24.48	24.70	24.91	25.12	25.34
25%	Maximum Power	P_{MAX} (W)	719	725	731	738	744
	Module Efficiency	(%)	27.82	28.07	28.31	28.55	28.79

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

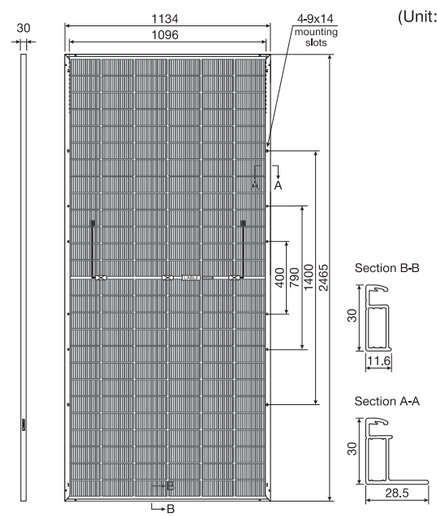
Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

182 N-type Bifacial Module (78)

Power Range	Power Output Tolerance	Maximum Efficiency
625W ~ 640W	0W ~ +5W	22.90%

(Unit: mm)



Structure Performance

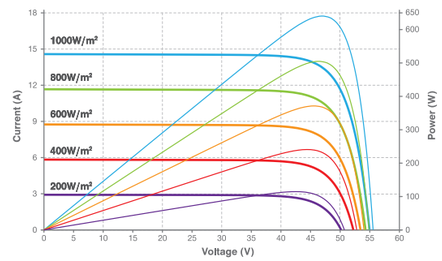
Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	156pcs(6x26)
Module Dimension	2465×1134×30mm
Weight	33.5kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy / Polyurethane Composite Frame
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	576pcs

Electrical Performance Parameters

Model Type		625C(HBD)78(182)		630C(HBD)78(182)		635C(HBD)78(182)		640C(HBD)78(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	625	470	630	474	635	478	640	482
Max. Power Voltage	V_{MP} (V)	46.24	43.43	46.37	43.57	46.50	43.71	46.63	43.85
Max. Power Current	I_{MP} (A)	13.52	10.83	13.59	10.88	13.66	10.94	13.73	11.00
Open Circuit Voltage	V_{OC} (V)	56.31	52.35	56.46	52.49	56.61	52.63	56.76	52.77
Short Circuit Current	I_{SC} (A)	14.34	11.57	14.42	11.63	14.50	11.70	14.58	11.76
Module Efficiency	(%)	22.36		22.54		22.72		22.90	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (640C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	656	662	667	672
	Module Efficiency	(%)	23.48	23.66	23.85	24.04
10%	Maximum Power	P_{MAX} (W)	688	693	699	704
	Module Efficiency	(%)	24.59	24.79	24.99	25.19
25%	Maximum Power	P_{MAX} (W)	781	788	794	800
	Module Efficiency	(%)	27.95	28.17	28.40	28.62

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

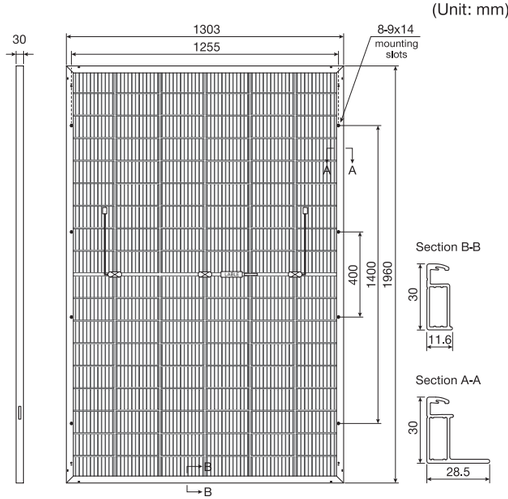
210 N-type Bifacial Module (54)

Power Range	Power Output Tolerance	Maximum Efficiency
560W ~ 580W	0W ~ +5W	22.71%

(Unit: mm)

Structure Performance

Solar Cell Type	210mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1960×1303×30mm
Weight	31.7kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	648pcs

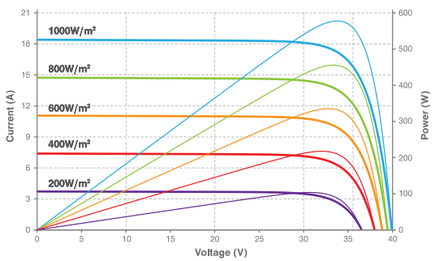


Electrical Performance Parameters

Model Type		560C(HBD)54(210)		565C(HBD)54(210)		570C(HBD)54(210)		575C(HBD)54(210)		580C(HBD)54(210)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	560	430	565	434	570	438	575	442	580	446
Max. Power Voltage	V_{MP} (V)	32.36	30.55	32.55	30.74	32.75	30.94	32.94	31.13	33.14	31.33
Max. Power Current	I_{MP} (A)	17.31	14.08	17.36	14.12	17.41	14.16	17.46	14.20	17.51	14.24
Open Circuit Voltage	V_{OC} (V)	41.02	35.38	41.22	35.56	41.41	35.75	41.61	35.93	41.81	36.12
Short Circuit Current	I_{SC} (A)	18.11	11.78	18.15	11.81	18.19	11.84	18.23	11.87	18.27	11.91
Module Efficiency	(%)	21.93		22.12		22.32		22.51		22.71	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (580C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	588	593	599	604	609
	Module Efficiency	(%)	23.02	23.23	23.43	23.64	23.85
10%	Maximum Power	P_{MAX} (W)	616	622	627	633	638
	Module Efficiency	(%)	24.12	24.34	24.55	24.77	24.98
25%	Maximum Power	P_{MAX} (W)	700	706	713	719	725
	Module Efficiency	(%)	27.41	27.65	27.90	28.14	28.39

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	35A

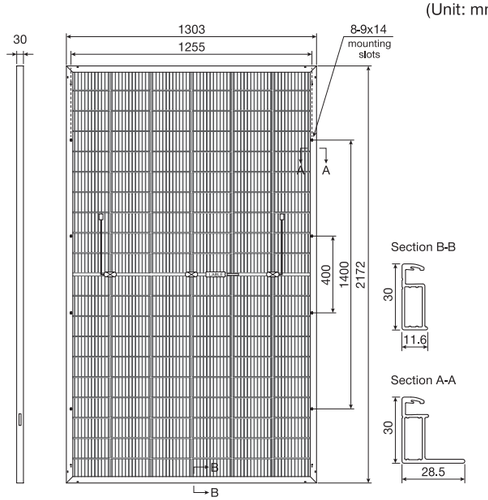
210 N-type Bifacial Module (60)

Power Range	Power Output Tolerance	Maximum Efficiency
620W ~ 640W	0W ~ +5W	22.61%

(Unit: mm)

Structure Performance

Solar Cell Type	210mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	2172×1303×30mm
Weight	34.5kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	648pcs

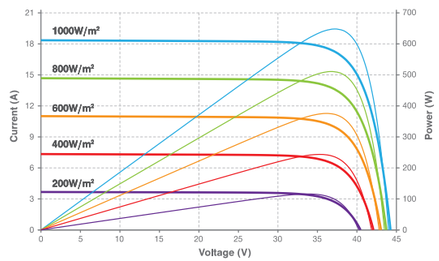


Electrical Performance Parameters

Model Type		620C(HBD)60(210)		625C(HBD)60(210)		630C(HBD)60(210)		635C(HBD)60(210)		640C(HBD)60(210)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	620	474	625	486	630	482	635	486	640	490
Max. Power Voltage	V_{MP} (V)	35.70	33.62	35.91	33.83	36.11	34.04	36.33	34.25	36.54	34.46
Max. Power Current	I_{MP} (A)	17.37	14.10	17.41	14.13	17.45	14.16	17.48	14.19	17.52	14.22
Open Circuit Voltage	V_{OC} (V)	45.15	41.15	45.36	41.36	45.58	41.58	45.80	41.79	46.02	42.01
Short Circuit Current	I_{SC} (A)	18.18	14.65	18.22	14.69	18.26	14.73	18.30	14.77	18.34	14.81
Module Efficiency	(%)	21.91		22.08		22.26		22.44		22.61	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (640C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	651	656	662	667	672
	Module Efficiency	(%)	23.00	23.19	23.37	23.56	23.74
10%	Maximum Power	P_{MAX} (W)	682	688	693	699	704
	Module Efficiency	(%)	24.10	24.29	24.49	24.68	24.88
25%	Maximum Power	P_{MAX} (W)	775	781	788	794	800
	Module Efficiency	(%)	27.38	27.60	27.83	28.05	28.27

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

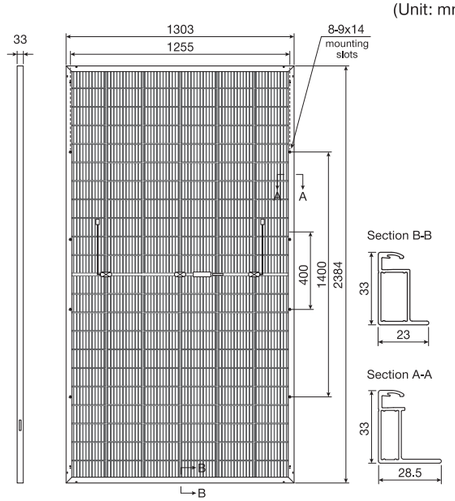
Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	35A

210 N-type Bifacial Module (66)

Power Range	Power Output Tolerance	Maximum Efficiency
700W ~ 720W	0W ~ +5W	23.18%

(Unit: mm)



Structure Performance

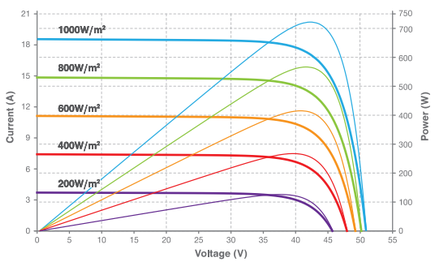
Solar Cell Type	210mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	132pcs(6x22)
Module Dimension	2384×1303×33mm
Weight	37.8kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	33pcs
Per Container(40'HQ)	594pcs

Electrical Performance Parameters

Model Type		700C(HBD)66(210)		705C(HBD)66(210)		710C(HBD)66(210)		715C(HBD)66(210)		720C(HBD)66(210)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	700	535	705	539	710	543	715	547	720	551
Max. Power Voltage	V_{MP} (V)	40.07	37.66	40.29	37.86	40.51	38.06	40.72	38.26	40.94	38.46
Max. Power Current	I_{MP} (A)	17.47	14.21	17.50	14.24	17.53	14.27	17.56	14.30	17.59	14.33
Open Circuit Voltage	V_{OC} (V)	50.34	46.07	50.55	46.28	50.76	46.50	50.97	46.71	51.18	46.92
Short Circuit Current	I_{SC} (A)	18.37	14.81	18.41	14.85	18.45	14.89	18.49	14.93	18.53	14.97
Module Efficiency	(%)	22.53		22.70		22.86		23.02		23.18	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (720C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	735	740	746	751	756
	Module Efficiency	(%)	23.66	23.83	24.00	24.17	24.34
10%	Maximum Power	P_{MAX} (W)	770	776	781	787	792
	Module Efficiency	(%)	24.79	24.96	25.14	25.32	25.50
25%	Maximum Power	P_{MAX} (W)	875	881	888	894	900
	Module Efficiency	(%)	28.17	28.37	28.57	28.77	28.97

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

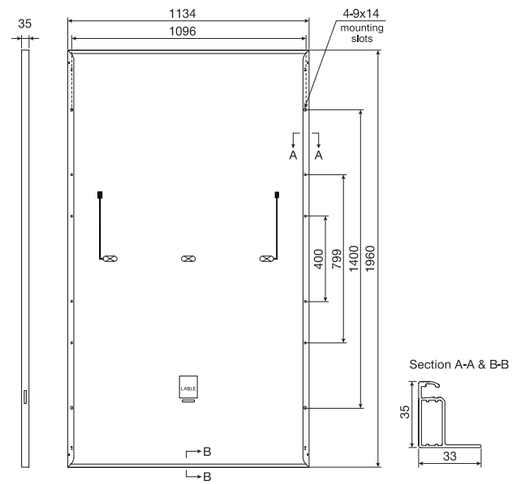
Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	35A

210R N-type Monofacial Module (54)

Power Range	Power Output Tolerance	Maximum Efficiency
490W ~ 510W	0W ~ +5W	22.95%

(Unit: mm)



Structure Performance

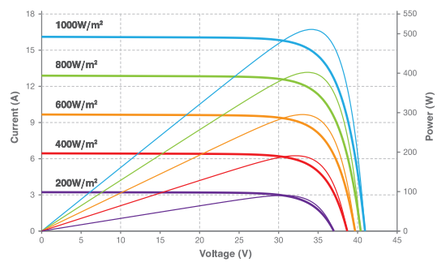
Solar Cell Type	210R N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	108pcs(6x18)
Module Dimension	1960×1134×35mm
Weight	27.1kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	31pcs
Per Container(40'HQ)	744pcs

Electrical Performance Parameters

Model Type		490C(HPM)54(210R)		495C(HPM)54(210R)		500C(HPM)54(210R)		505C(HPM)54(210R)		510C(HPM)54(210R)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	490	370	495	374	500	378	505	382	510	386
Max. Power Voltage	V_{MP} (V)	32.95	30.91	33.08	31.03	33.21	31.15	33.34	31.27	33.47	31.39
Max. Power Current	I_{MP} (A)	14.88	11.98	14.97	12.06	15.06	12.14	15.15	12.22	15.24	12.30
Open Circuit Voltage	V_{OC} (V)	40.29	38.23	40.40	38.34	40.51	38.44	40.62	38.55	40.73	38.65
Short Circuit Current	I_{SC} (A)	15.84	12.78	15.93	12.85	16.02	12.92	16.10	12.99	16.19	13.06
Module Efficiency	(%)	22.05		22.27		22.50		22.72		22.95	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (510C)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.043%
Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	35A

210R N-type Monofacial Module (60)

Power Range
545W ~ 565W

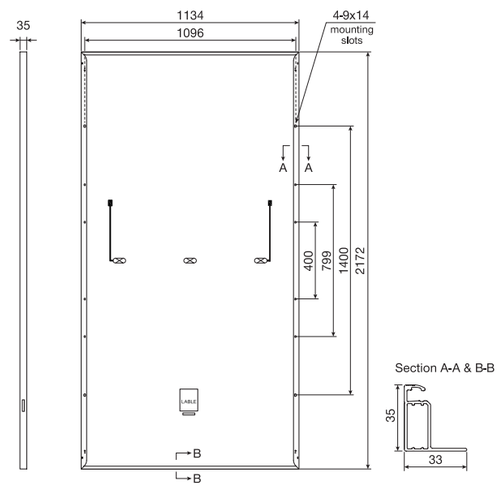
Power Output Tolerance
0W ~ +5W

Maximum Efficiency
22.94%

(Unit: mm)

Structure Performance

Solar Cell Type	210R N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	2172×1134×35mm
Weight	29.7kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	31pcs
Per Container(40'HQ)	620pcs

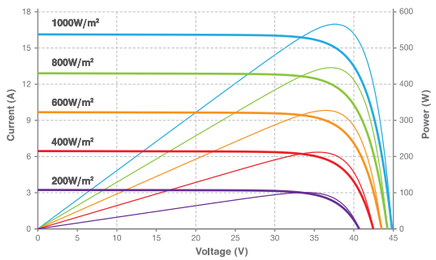


Electrical Performance Parameters

Model Type		545C(HPM)60(210R)		550C(HPM)60(210R)		555C(HPM)60(210R)		560C(HPM)60(210R)		565C(HPM)60(210R)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	545	411	550	415	555	419	560	423	565	427
Max. Power Voltage	V_{MP} (V)	36.44	34.17	36.58	34.30	36.72	34.43	36.86	34.56	37.00	34.69
Max. Power Current	I_{MP} (A)	14.96	12.03	15.04	12.10	15.12	12.17	15.20	12.24	15.28	12.31
Open Circuit Voltage	V_{OC} (V)	44.11	41.86	44.24	41.98	44.36	42.10	44.48	42.22	44.60	42.34
Short Circuit Current	I_{SC} (A)	15.86	12.79	15.95	12.86	16.04	12.93	16.12	13.00	16.21	13.07
Module Efficiency	(%)	22.13		22.33		22.53		22.74		22.94	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (565C)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.043%
Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	35A

210R N-type Monofacial Module (66)

Power Range
595W ~ 615W

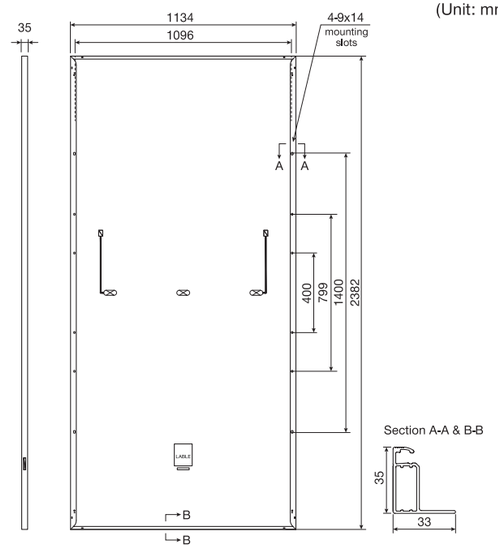
Power Output Tolerance
0W ~ +5W

Maximum Efficiency
22.77%

(Unit: mm)

Structure Performance

Solar Cell Type	210R N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2382×1134×35mm
Weight	32.8kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	31pcs
Per Container(40'HQ)	496pcs (horizontal packing) / 620pcs (vertical packing)

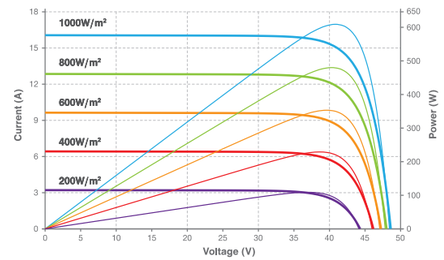


Electrical Performance Parameters

Model Type		595C(HPM)66(210R)		600C(HPM)66(210R)		605C(HPM)66(210R)		610C(HPM)66(210R)		615C(HPM)66(210R)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	595	448	600	452	605	456	610	460	615	464
Max. Power Voltage	V_{MP} (V)	40.05	37.43	40.17	37.58	40.30	37.75	40.43	37.90	40.55	38.07
Max. Power Current	I_{MP} (A)	14.86	11.97	14.94	12.03	15.02	12.08	15.09	12.14	15.17	12.19
Open Circuit Voltage	V_{OC} (V)	48.04	45.58	48.17	45.71	48.30	45.83	48.44	45.96	48.57	46.09
Short Circuit Current	I_{SC} (A)	15.71	12.67	15.79	12.75	15.88	12.82	15.97	12.89	16.06	12.96
Module Efficiency	(%)	22.03		22.21		22.40		22.58		22.77	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (615C)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.043%
Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	35A

210R N-type Bifacial Module (54)

Power Range
490W ~ 510W

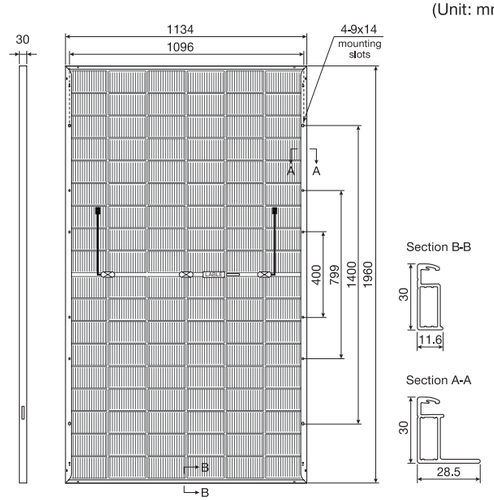
Power Output Tolerance
0W ~ +5W

Maximum Efficiency
22.95%

(Unit: mm)

Structure Performance

Solar Cell Type	210R N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1960×1134×30mm
Weight	27.4kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	864pcs

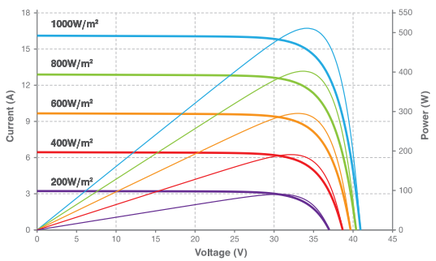


Electrical Performance Parameters

Model Type		490C(HBD)54(210R)		495C(HBD)54(210R)		500C(HBD)54(210R)		505C(HBD)54(210R)		510C(HBD)54(210R)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	490	370	495	374	500	378	505	382	510	386
Max. Power Voltage	V_{MP} (V)	33.14	31.02	33.27	31.17	33.41	31.32	33.55	31.47	33.68	31.62
Max. Power Current	I_{MP} (A)	14.79	11.93	14.88	12.00	14.97	12.07	15.06	12.14	15.15	12.21
Open Circuit Voltage	V_{OC} (V)	40.50	38.43	40.61	38.54	40.72	38.64	40.83	38.75	40.94	38.85
Short Circuit Current	I_{SC} (A)	15.76	12.71	15.85	12.79	15.94	12.86	16.02	12.93	16.11	13.00
Module Efficiency	(%)	22.05		22.27		22.50		22.72		22.95	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (510C)



Bifacial Output-rearside Power Gain

5%	**Maximum Power**	P_{MAX} (W)	515	520	525	530	536
	Module Efficiency	(%)	23.15	23.38	23.62	23.86	24.09
10%	**Maximum Power**	P_{MAX} (W)	539	545	550	556	561
	Module Efficiency	(%)	24.25	24.50	24.75	24.99	25.24
25%	**Maximum Power**	P_{MAX} (W)	613	619	625	631	638
	Module Efficiency	(%)	27.56	27.84	28.12	28.40	28.68

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	**Temperature Coefficient (V_{OC})**	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	**Temperature Coefficient (P_{MAX})**	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	35A

210R N-type Bifacial Module (60)

Power Range
545W ~ 565W

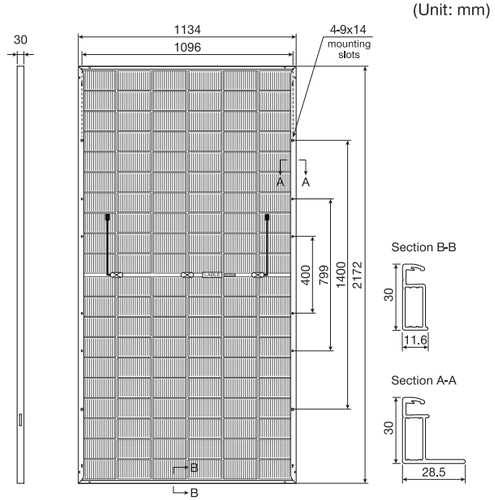
Power Output Tolerance
0W ~ +5W

Maximum Efficiency
22.94%

(Unit: mm)

Structure Performance

Solar Cell Type	210R N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	2172×1134×30mm
Weight	30.0kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	720pcs

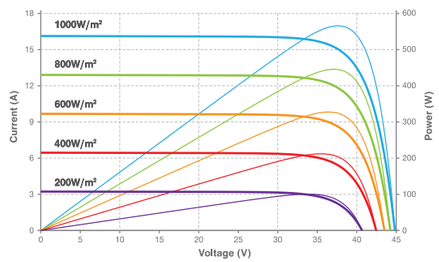


Electrical Performance Parameters

Model Type		545C(HBD)60(210R)		550C(HBD)60(210R)		555C(HBD)60(210R)		560C(HBD)60(210R)		565C(HBD)60(210R)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	545	411	550	415	555	419	560	423	565	427
Max. Power Voltage	V_{MP} (V)	36.63	34.36	36.77	34.49	36.91	34.62	37.05	34.75	37.19	34.88
Max. Power Current	I_{MP} (A)	14.88	11.97	14.96	12.04	15.04	12.11	15.12	12.18	15.20	12.25
Open Circuit Voltage	V_{OC} (V)	44.34	42.08	44.47	42.20	44.59	42.31	44.71	42.43	44.83	42.54
Short Circuit Current	I_{SC} (A)	15.78	12.73	15.87	12.80	15.96	12.87	16.04	12.94	16.13	13.01
Module Efficiency	(%)	22.13		22.33		22.53		22.74		22.94	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (565C)



Bifacial Output-rearside Power Gain

5%	**Maximum Power**	P_{MAX} (W)	572	578	583	588	593
	Module Efficiency	(%)	23.23	23.45	23.66	23.87	24.09
10%	**Maximum Power**	P_{MAX} (W)	600	605	611	616	622
	Module Efficiency	(%)	24.34	24.56	24.79	25.01	25.23
25%	**Maximum Power**	P_{MAX} (W)	681	688	694	700	706
	Module Efficiency	(%)	27.66	27.91	28.17	28.42	28.67

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	**Temperature Coefficient (V_{OC})**	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	**Temperature Coefficient (P_{MAX})**	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	35A

210R N-type Bifacial Module (66)

Power Range
595W ~ 615W

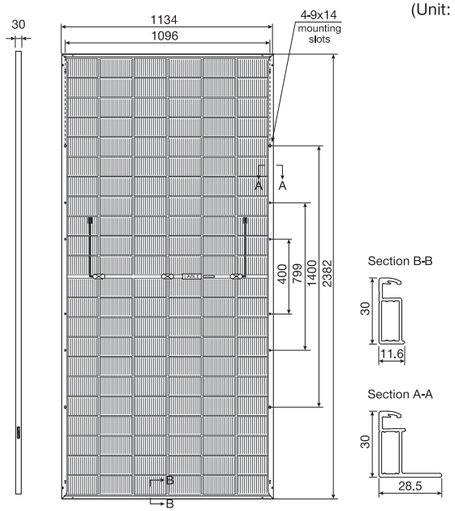
Power Output Tolerance
0W ~ +5W

Maximum Efficiency
22.77%

Structure Performance

Solar Cell Type	210R N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	132pcs(6x22)
Module Dimension	2382×1134×30mm
Weight	32.5kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	576pcs (horizontal packing) / 720pcs (vertical packing)

(Unit: mm)

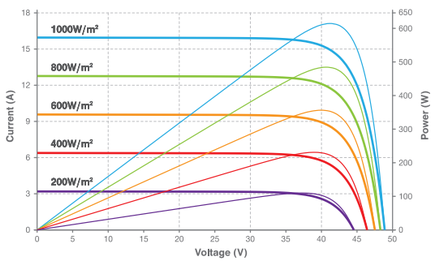


Electrical Performance Parameters

Model Type		595C(HBD)66(210R)		600C(HBD)66(210R)		605C(HBD)66(210R)		610C(HBD)66(210R)		615C(HBD)66(210R)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	595	448	600	452	605	456	610	460	615	464
Max. Power Voltage	V_{MP} (V)	40.26	37.62	40.38	37.77	40.51	37.94	40.64	38.10	40.76	38.26
Max. Power Current	I_{MP} (A)	14.78	11.91	14.86	11.97	14.94	12.02	15.01	12.08	15.09	12.13
Open Circuit Voltage	V_{OC} (V)	48.29	45.82	48.42	45.95	48.55	46.07	48.69	46.20	48.82	46.33
Short Circuit Current	I_{SC} (A)	15.63	12.60	15.71	12.68	15.80	12.75	15.89	12.82	15.98	12.89
Module Efficiency	(%)	22.03		22.21		22.40		22.58		22.77	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (615C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	625	630	635	641	646
	Module Efficiency	(%)	23.13	23.32	23.52	23.71	23.91
10%	Maximum Power	P_{MAX} (W)	655	660	666	671	677
	Module Efficiency	(%)	24.23	24.43	24.64	24.84	25.04
25%	Maximum Power	P_{MAX} (W)	744	750	756	763	769
	Module Efficiency	(%)	27.53	27.77	28.00	28.23	28.46

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

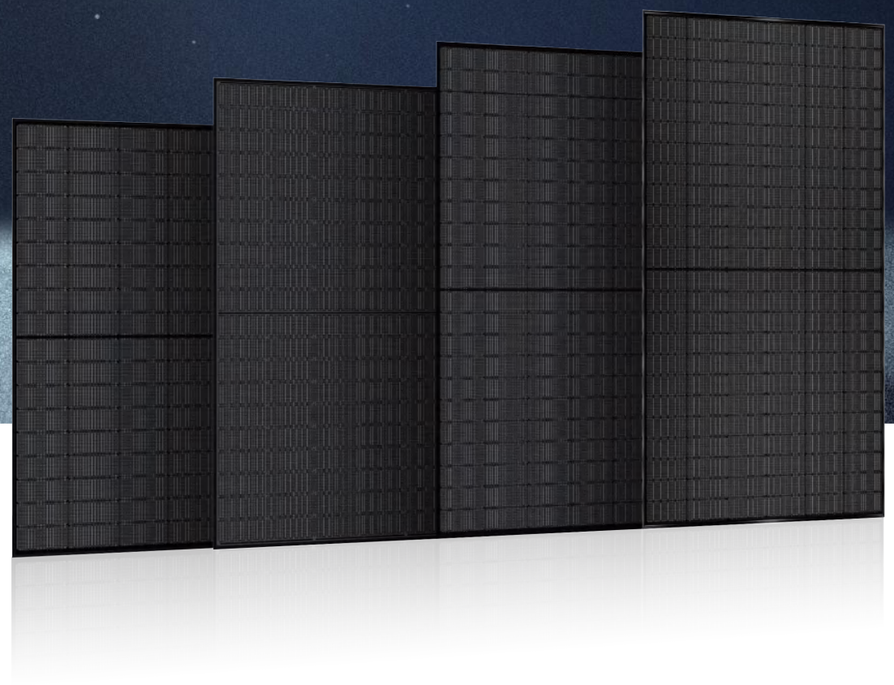
Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	35A

Pure Black series

Elegant Aesthetics, Sleek Integration

The LESSO Solar Pure Black Series combines cutting-edge technology with minimalist design to seamlessly blend into modern architectural environments. Crafted for premium visual appeal, this series adopts 182mm wafers and TOPCon technology, ensuring high efficiency while maintaining a uniform, deep-black appearance. Its refined aesthetics and seamless integration empower buildings with both sophistication and sustainable energy performance.



- TOPCon Technology
  Higher Power Generation
- MBB Technology
  Reducing String & Busbar Loss
- Highly-resistant Black Crystal Material
  Modernity to Buildings
- Even Cloudy or Foggy Days
  Better Weak Illumination Response
- Zero LID
  Increase Power Generation
- Better Temperature Coefficient
  More Power Generation
- Higher Power Output
  Lower BOS Cost
- Multiple Weather Resistance Tests
  Wider Applicability
- Double-sided Generation
  Powerfully Energy Boost

Power Range
400W ~ 635W

Maximum Efficiency
22.72%

- 12 years product workmanship warranty
- 25/30 years linear power output warranty
- 1% 1st-year degradation 0.40% annual degradation

Pure Black Series Mainstream Products

Product	Power (W)	Maximum Efficiency	Size (mm)
182 N-type (54) Pure Black single glass 182 N-type (54) Pure Black double glass	415 - 435 420 - 435	22.28%	1722x1134x30
182 N-type (60) Pure Black single glass 182 N-type (60) Pure Black double glass	465 - 485 470 - 485	22.40%	1909x1134x30
182 N-type (66) Pure Black single glass 182 N-type (66) Pure Black double glass	515 - 535 520 - 535	22.53%	2094x1134x30
182 N-type (72) Pure Black single glass 182 N-type (72) Pure Black double glass	565 - 585 570 - 585	22.65%	2278x1134x30
182 N-type (78) Pure Black double glass	620 - 635	22.72%	2465x1134x30
182 N-type (54) Pure Black bifacial single glass	415 - 435	22.28%	1722x1134x30
182 P-type (54) Pure Black single glass	400 - 410	21.00%	1722x1134x30
182 P-type (60) Pure Black single glass	445 - 455	21.02%	1909×1134×30
182 P-type (66) Pure Black single glass	490 - 500	21.06%	2094×1134×30
182 P-type (72) Pure Black single glass	535 - 545	21.10%	2278×1134×30

Note: see datasheet for details

182 Pure Black N-type Monofacial Module (54)

Power Range
415W ~ 435W

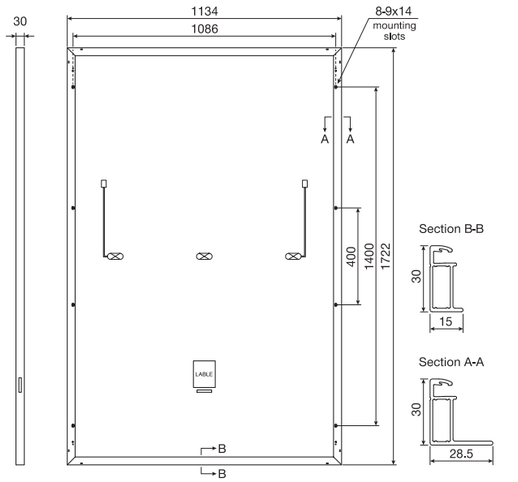
Power Output Tolerance
0W ~ +5W

Maximum Efficiency
22.28%

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1722×1134×30mm
Weight	20.7kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	Black
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	936pcs

(Unit: mm)

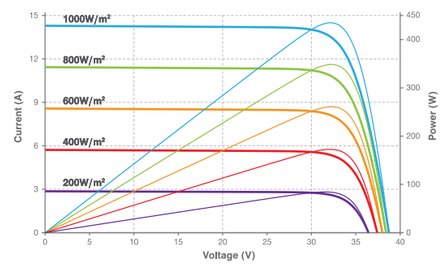


Electrical Performance Parameters

Model Type		415C(BPM)54(182)		420C(BPM)54(182)		425C(BPM)54(182)		430C(BPM)54(182)		435C(BPM)54(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	415	312	420	316	425	320	430	323	435	327
Max. Power Voltage	V_{MP} (V)	31.64	29.52	31.82	29.68	32.01	29.86	32.20	29.91	32.38	30.09
Max. Power Current	I_{MP} (A)	13.12	10.57	13.20	10.65	13.28	10.72	13.36	10.80	13.44	10.87
Open Circuit Voltage	V_{OC} (V)	38.20	36.29	38.39	36.47	38.58	36.68	38.77	36.79	38.96	37.01
Short Circuit Current	I_{SC} (A)	13.89	11.21	13.97	11.28	14.05	11.35	14.13	11.42	14.21	11.49
Module Efficiency	(%)	21.25		21.51		21.76		22.02		22.28	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (435C)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.043%
Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

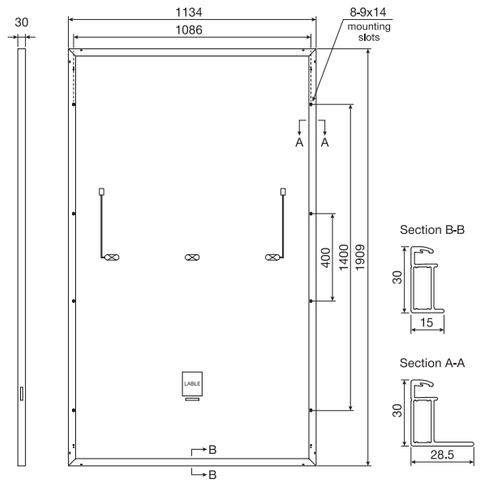
182 Pure Black N-type Monofacial Module (60)

Power Range	Power Output Tolerance	Maximum Efficiency
465W ~ 485W	0W ~ +5W	22.40%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	1909×1134×30mm
Weight	22.1kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	Black
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	864pcs

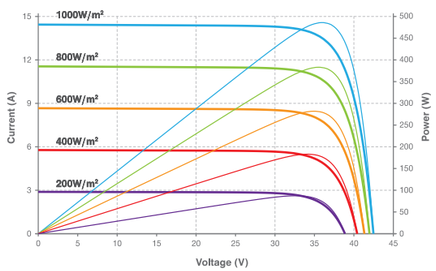


Electrical Performance Parameters

Model Type		465C(BPM)60(182)		470C(BPM)60(182)		475C(BPM)60(182)		480C(BPM)60(182)		485C(BPM)60(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	465	350	470	354	475	358	480	362	485	366
Max. Power Voltage	V_{MP} (V)	34.81	32.78	34.98	32.97	35.14	33.15	35.30	33.34	35.46	33.51
Max. Power Current	I_{MP} (A)	13.36	10.68	13.44	10.74	13.52	10.80	13.60	10.86	13.68	10.93
Open Circuit Voltage	V_{OC} (V)	41.93	39.89	42.09	40.05	42.25	40.21	42.42	40.37	42.48	40.53
Short Circuit Current	I_{SC} (A)	14.11	11.42	14.19	11.49	14.28	11.56	14.36	11.63	14.44	11.70
Module Efficiency	(%)	21.48		21.71		21.94		22.17		22.40	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (485C)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.043%
Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

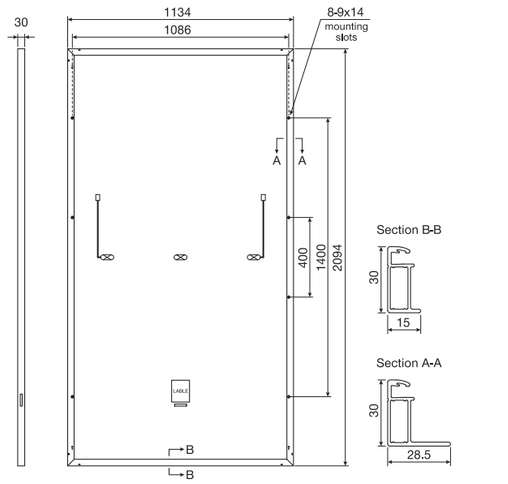
182 Pure Black N-type Monofacial Module (66)

Power Range	Power Output Tolerance	Maximum Efficiency
515W ~ 535W	0W ~ +5W	22.53%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2094×1134×30mm
Weight	24.0kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	Black
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	792pcs

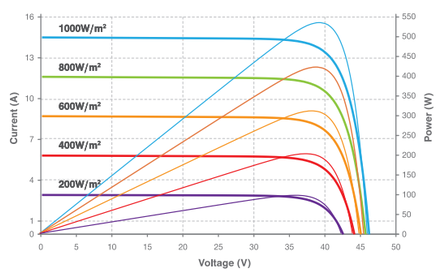


Electrical Performance Parameters

Model Type		515C(BPM)66(182)		520C(BPM)66(182)		525C(BPM)66(182)		530C(BPM)66(182)		535C(BPM)66(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	515	387	520	391	525	395	530	399	535	403
Max. Power Voltage	V_{MP} (V)	38.32	36.21	38.47	36.38	38.61	36.55	38.75	36.71	38.89	36.88
Max. Power Current	I_{MP} (A)	13.44	10.69	13.52	10.75	13.60	10.81	13.68	10.87	13.76	10.93
Open Circuit Voltage	V_{OC} (V)	45.93	43.61	45.98	43.75	46.03	43.89	46.08	44.03	46.13	44.17
Short Circuit Current	I_{SC} (A)	14.17	11.49	14.26	11.56	14.34	11.63	14.42	11.70	14.50	11.77
Module Efficiency	(%)	21.69		21.90		22.11		22.32		22.53	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (535C)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.043%
Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

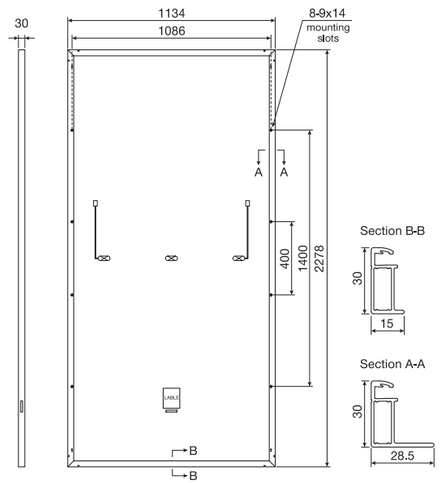
182 Pure Black N-type Monofacial Module (72)

Power Range	Power Output Tolerance	Maximum Efficiency
565W ~ 585W	0W ~ +5W	22.65%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×30mm
Weight	26.9kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	Black
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	720pcs

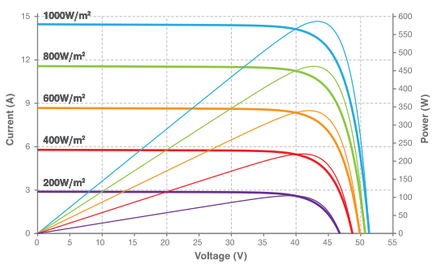


Electrical Performance Parameters

Model Type		565C(BPM)72(182)		570C(BPM)72(182)		575C(BPM)72(182)		580C(BPM)72(182)		585C(BPM)72(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	565	425	570	429	575	433	580	437	585	441
Max. Power Voltage	V_{MP} (V)	42.33	39.80	42.48	39.95	42.63	40.10	42.78	40.24	42.94	40.40
Max. Power Current	I_{MP} (A)	13.35	10.68	13.42	10.74	13.49	10.80	13.56	10.86	13.63	10.92
Open Circuit Voltage	V_{OC} (V)	50.86	48.31	51.00	48.45	51.15	48.58	51.29	48.71	51.40	48.85
Short Circuit Current	I_{SC} (A)	14.11	11.38	14.18	11.44	14.26	11.51	14.34	11.57	14.42	11.63
Module Efficiency	(%)	21.87		22.07		22.26		22.45		22.65	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (585C)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.043%
Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

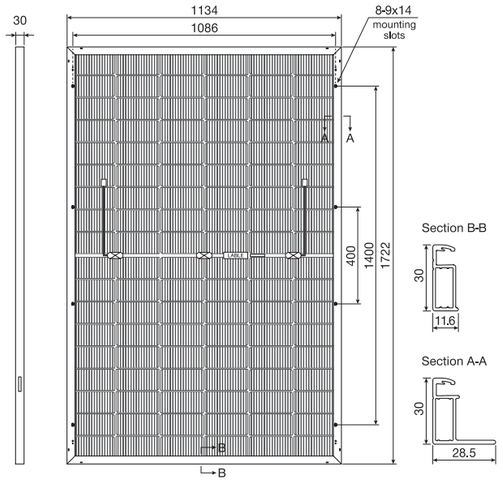
182 Pure Black N-type Bifacial Module (54)

Power Range	Power Output Tolerance	Maximum Efficiency
420W ~ 435W	0W ~ +5W	22.28%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1722×1134×30mm
Weight	23.1kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	936pcs

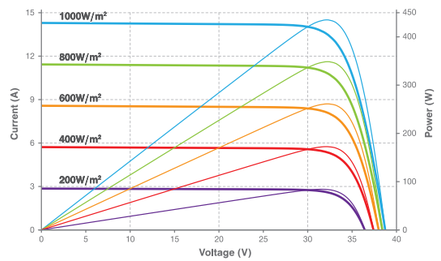


Electrical Performance Parameters

Model Type		420C(BBD)54(182)		425C(BBD)54(182)		430C(BBD)54(182)		435C(BBD)54(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	420	315	425	319	430	323	435	327
Max. Power Voltage	V_{MP} (V)	31.23	29.44	31.46	29.65	31.69	29.86	31.92	30.07
Max. Power Current	I_{MP} (A)	13.45	10.70	13.51	10.76	13.57	10.82	13.63	10.88
Open Circuit Voltage	V_{OC} (V)	36.75	34.28	36.95	34.47	37.15	34.66	37.35	34.85
Short Circuit Current	I_{SC} (A)	14.70	11.92	14.76	11.97	14.82	12.02	14.88	12.07
Module Efficiency	(%)	21.51		21.76		22.02		22.28	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (435C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	441	446	452	457
	Module Efficiency	(%)	22.58	22.85	23.12	23.39
10%	Maximum Power	P_{MAX} (W)	462	468	473	479
	Module Efficiency	(%)	23.66	23.94	24.22	24.50
25%	Maximum Power	P_{MAX} (W)	525	531	538	544
	Module Efficiency	(%)	26.89	27.21	27.53	27.85

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

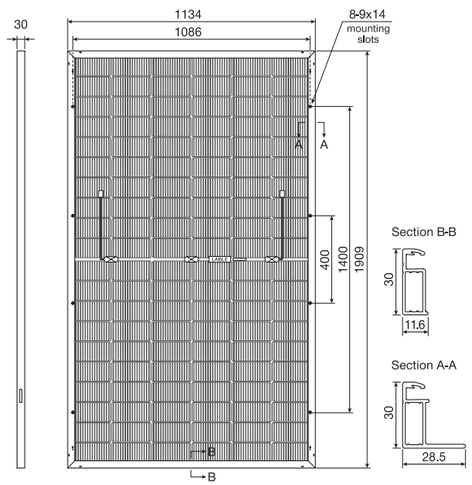
182 Pure Black N-type Bifacial Module (60)

Power Range	Power Output Tolerance	Maximum Efficiency
470W ~ 485W	0W ~ +5W	22.40%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	1909×1134×30mm
Weight	25.7kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	864pcs

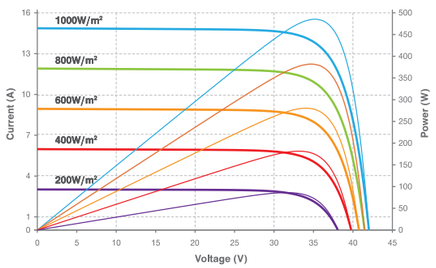


Electrical Performance Parameters

Model Type		470C(BBD)60(182)		475C(BBD)60(182)		480C(BBD)60(182)		485C(BBD)60(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	470	353	475	357	480	361	485	365
Max. Power Voltage	V_{MP} (V)	34.85	32.87	35.06	33.06	35.27	33.25	35.49	33.44
Max. Power Current	I_{MP} (A)	13.49	10.74	13.55	10.80	13.61	10.86	13.67	10.92
Open Circuit Voltage	V_{OC} (V)	41.42	38.92	41.62	39.11	41.82	39.29	42.02	39.48
Short Circuit Current	I_{SC} (A)	14.58	11.86	14.64	11.91	14.70	11.96	14.76	12.01
Module Efficiency	(%)	21.71		21.94		22.17		22.40	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (485C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	494	499	504	509
	Module Efficiency	(%)	22.80	23.04	23.28	23.52
10%	Maximum Power	P_{MAX} (W)	517	523	528	534
	Module Efficiency	(%)	23.88	24.14	24.39	24.64
25%	Maximum Power	P_{MAX} (W)	588	594	600	606
	Module Efficiency	(%)	27.14	27.43	27.72	28.00

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

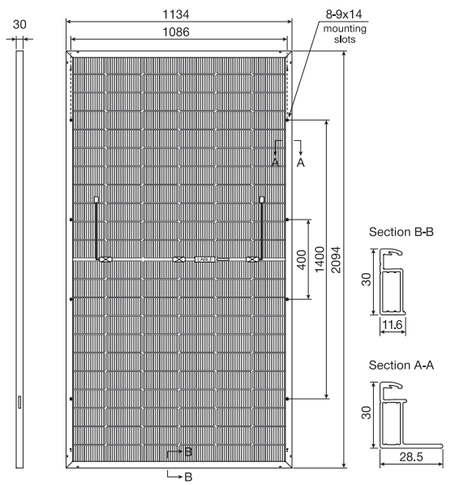
182 Pure Black N-type Bifacial Module (66)

Power Range	Power Output Tolerance	Maximum Efficiency
520W ~ 535W	0W ~ +5W	22.53%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	132pcs(6x22)
Module Dimension	2094×1134×30mm
Weight	28.4kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	792pcs

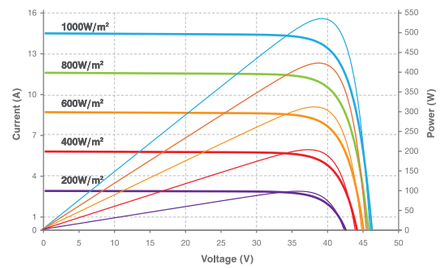


Electrical Performance Parameters

Model Type		520C(BBD)66(182)		525C(BBD)66(182)		530C(BBD)66(182)		535C(BBD)66(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	520	390	525	394	530	398	535	402
Max. Power Voltage	V_{MP} (V)	38.46	36.18	38.66	36.35	38.86	36.52	39.05	36.69
Max. Power Current	I_{MP} (A)	13.53	10.78	13.59	10.84	13.65	10.90	13.71	10.96
Open Circuit Voltage	V_{OC} (V)	46.09	43.55	46.29	43.74	46.49	43.93	46.69	44.12
Short Circuit Current	I_{SC} (A)	14.46	11.70	14.52	11.75	14.58	11.80	14.64	11.85
Module Efficiency	(%)	21.90		22.11		22.32		22.53	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (535C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	546	551	557	562
	Module Efficiency	(%)	22.99	23.21	23.44	23.66
10%	Maximum Power	P_{MAX} (W)	572	578	583	589
	Module Efficiency	(%)	24.09	24.32	24.55	24.78
25%	Maximum Power	P_{MAX} (W)	650	656	663	669
	Module Efficiency	(%)	27.37	27.64	27.90	28.16

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

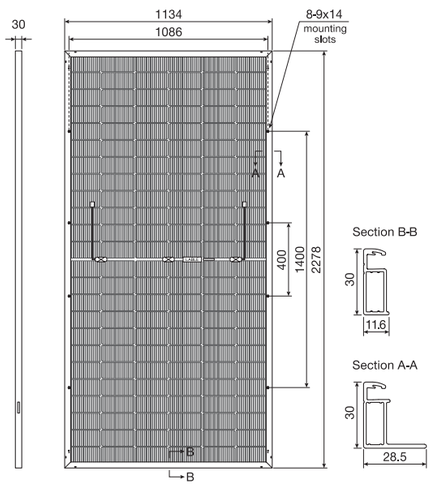
182 Pure Black N-type Bifacial Module (72)

Power Range	Power Output Tolerance	Maximum Efficiency
570W ~ 585W	0W ~ +5W	22.65%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×30mm
Weight	31.2kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	720pcs

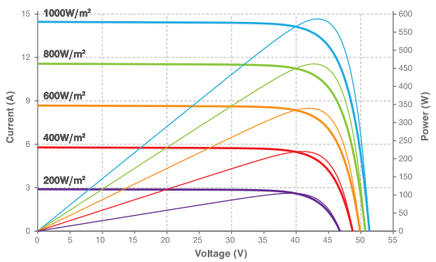


Electrical Performance Parameters

Model Type		570C(BBD)72(182)		575C(BBD)72(182)		580C(BBD)72(182)		585C(BBD)72(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	570	429	575	433	580	437	585	441
Max. Power Voltage	V_{MP} (V)	42.20	39.69	42.35	39.80	42.50	39.91	42.65	40.02
Max. Power Current	I_{MP} (A)	13.51	10.81	13.58	10.88	13.65	10.95	13.72	11.02
Open Circuit Voltage	V_{OC} (V)	50.73	48.18	50.92	48.37	51.12	48.56	51.32	48.75
Short Circuit Current	I_{SC} (A)	14.30	11.53	14.36	11.58	14.42	11.63	14.48	11.68
Module Efficiency	(%)	22.07		22.26		22.45		22.65	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (585C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	599	604	609	614
	Module Efficiency	(%)	23.17	23.37	23.57	23.78
10%	Maximum Power	P_{MAX} (W)	627	633	638	644
	Module Efficiency	(%)	24.27	24.48	24.70	24.91
25%	Maximum Power	P_{MAX} (W)	713	719	725	731
	Module Efficiency	(%)	27.58	27.82	28.07	28.31

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

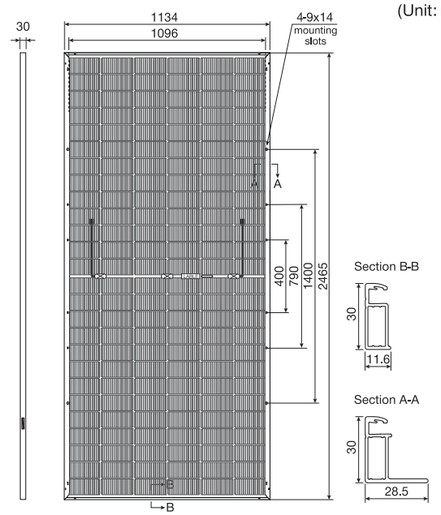
182 Pure Black N-type Bifacial Module (78)

Power Range	Power Output Tolerance	Maximum Efficiency
620W ~ 635W	0W ~ +5W	22.72%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	156pcs(6×26)
Module Dimension	2465×1134×30mm
Weight	33.5kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	576pcs

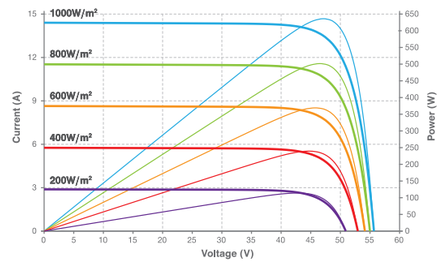


Electrical Performance Parameters

Model Type		620C(BBD)78(182)		625C(BBD)78(182)		630C(BBD)78(182)		635C(BBD)78(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	620	466	625	470	630	474	635	478
Max. Power Voltage	V_{MP} (V)	45.86	43.11	45.99	43.23	46.12	43.35	46.25	43.48
Max. Power Current	I_{MP} (A)	13.52	10.81	13.59	10.87	13.66	10.93	13.73	10.99
Open Circuit Voltage	V_{OC} (V)	55.12	52.36	55.27	52.50	55.42	52.64	55.56	52.77
Short Circuit Current	I_{SC} (A)	14.35	11.57	14.43	11.64	14.51	11.70	14.59	11.76
Module Efficiency	(%)	22.18		22.36		22.54		22.72	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (635C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	651	656	662	667
	Module Efficiency	(%)	23.29	23.48	23.66	23.85
10%	Maximum Power	P_{MAX} (W)	682	688	693	699
	Module Efficiency	(%)	24.40	24.59	24.79	24.99
25%	Maximum Power	P_{MAX} (W)	775	781	788	794
	Module Efficiency	(%)	27.73	27.95	28.17	28.40

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

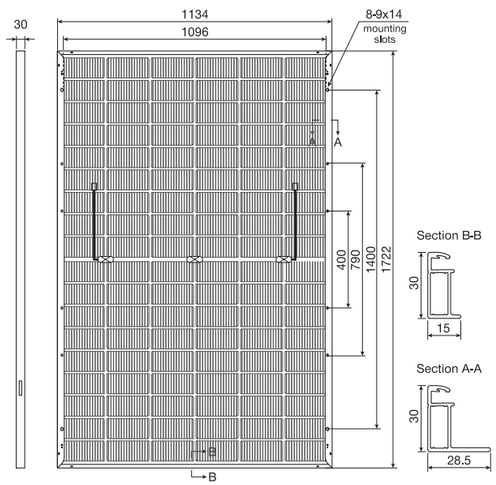
182 Pure Black N-type Bifacial Single Glass Module (54)

Power Range	Power Output Tolerance	Maximum Efficiency
415W ~ 435W	0W ~ +5W	22.28%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm N-TOPCon Mono Cell (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1722×1134×30mm
Weight	20.7kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	936pcs

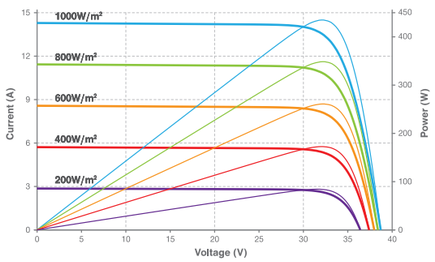


Electrical Performance Parameters

Model Type		415C(HBB)54(182)		420C(HBB)54(182)		425C(HBB)54(182)		430C(HBB)54(182)		435C(HBB)54(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	415	311	420	315	425	319	430	323	435	327
Max. Power Voltage	V_{MP} (V)	31.00	29.23	31.23	29.44	31.46	29.65	31.69	29.86	31.92	30.07
Max. Power Current	I_{MP} (A)	13.39	10.64	13.45	10.70	13.51	10.76	13.57	10.82	13.63	10.88
Open Circuit Voltage	V_{OC} (V)	39.68	34.10	39.83	34.28	39.98	34.47	40.13	34.66	40.28	34.85
Short Circuit Current	I_{SC} (A)	14.64	11.87	14.70	11.92	14.76	11.97	14.82	12.02	14.88	12.07
Module Efficiency	(%)	21.25		21.51		21.76		22.02		22.28	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (435C)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	436	441	446	452	457
	Module Efficiency	(%)	22.31	22.58	22.85	23.12	23.39
10%	Maximum Power	P_{MAX} (W)	457	462	468	473	479
	Module Efficiency	(%)	23.38	23.66	23.94	24.22	24.50
25%	Maximum Power	P_{MAX} (W)	519	525	531	538	544
	Module Efficiency	(%)	26.57	26.89	27.21	27.53	27.85

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.25%
Temperature Coefficient (I_{SC})	+0.043%	Temperature Coefficient (P_{MAX})	-0.30%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

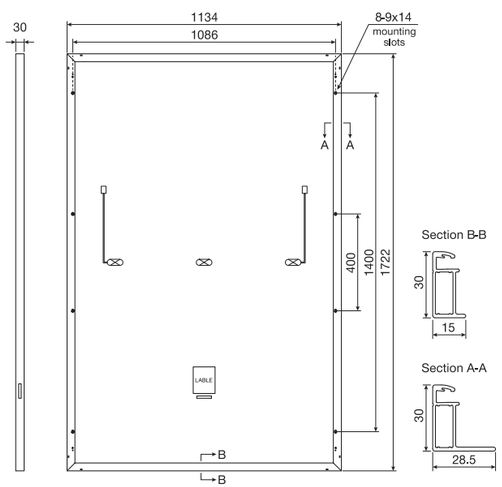
182 Pure Black P-type Monofacial Module (54)

Power Range	Power Output Tolerance	Maximum Efficiency
400W ~ 410W	0W ~ +5W	21.00%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1722×1134×30mm
Weight	20.7kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	Black
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	936pcs

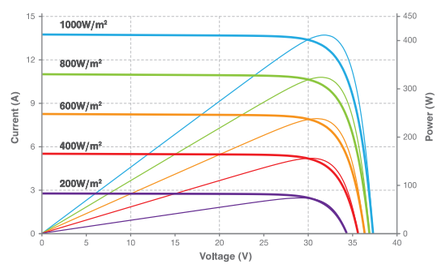


Electrical Performance Parameters

Model Type		400D(BPM)54(182)		405D(BPM)54(182)		410D(BPM)54(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	400	280	405	285	410	290
Max. Power Voltage	V_{MP} (V)	31.02	27.30	31.22	27.62	31.42	27.90
Max. Power Current	I_{MP} (A)	12.90	10.26	12.98	10.32	13.05	10.40
Open Circuit Voltage	V_{OC} (V)	36.90	34.40	37.10	34.60	37.30	34.80
Short Circuit Current	I_{SC} (A)	13.65	11.39	13.70	11.59	13.75	11.79
Module Efficiency	(%)	20.48		20.74		21.00	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (410D)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.048%
Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

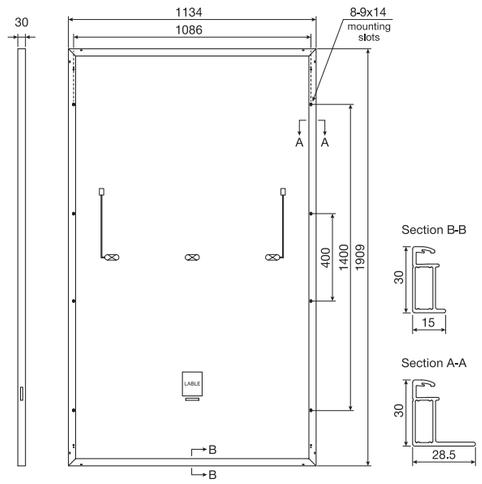
182 Pure Black P-type Monofacial Module (60)

Power Range	Power Output Tolerance	Maximum Efficiency
445W ~ 455W	0W ~ +5W	21.02%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	1909×1134×30mm
Weight	22.1kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	Black
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	864pcs

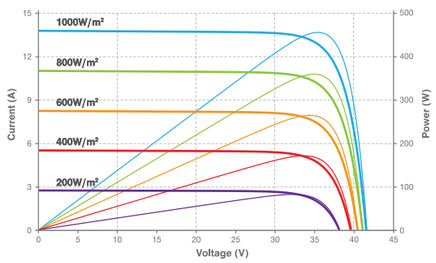


Electrical Performance Parameters

Model Type		445D(BPM)60(182)		450D(BPM)60(182)		455D(BPM)60(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	445	325	450	330	455	335
Max. Power Voltage	V_{MP} (V)	34.42	31.44	34.62	31.64	34.82	31.84
Max. Power Current	I_{MP} (A)	12.93	10.34	13.00	10.43	13.07	10.53
Open Circuit Voltage	V_{OC} (V)	41.18	38.68	41.38	38.88	41.58	39.08
Short Circuit Current	I_{SC} (A)	13.66	10.97	13.72	11.17	13.78	11.37
Module Efficiency	(%)	20.56		20.79		21.02	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (455D)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.048%
Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

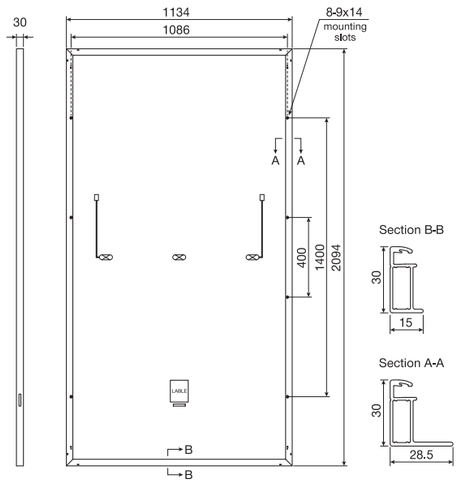
182 Pure Black P-type Monofacial Module (66)

Power Range	Power Output Tolerance	Maximum Efficiency
490W ~ 500W	0W ~ +5W	21.06%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2094×1134×30mm
Weight	24kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	Black
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	792pcs

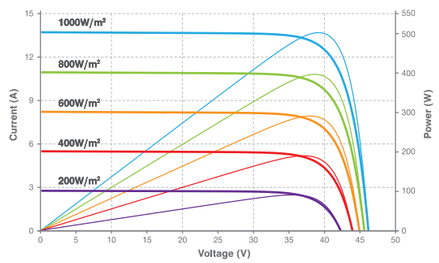


Electrical Performance Parameters

Model Type		490D(BPM)66(182)		495D(BPM)66(182)		500D(BPM)66(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	490	370	495	375	500	380
Max. Power Voltage	V_{MP} (V)	37.82	34.84	38.02	35.04	38.22	35.24
Max. Power Current	I_{MP} (A)	12.96	10.62	13.02	10.71	13.09	10.79
Open Circuit Voltage	V_{OC} (V)	45.78	42.98	45.98	43.03	46.18	43.08
Short Circuit Current	I_{SC} (A)	13.62	10.92	13.67	11.12	13.72	11.32
Module Efficiency	(%)	20.64		20.85		21.06	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (500D)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.048%
Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

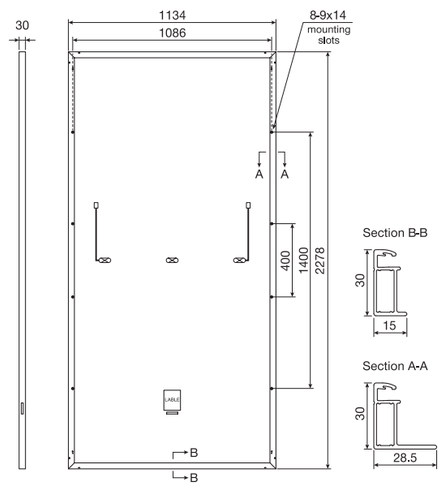
182 Pure Black P-type Monofacial Module (72)

Power Range	Power Output Tolerance	Maximum Efficiency
535W ~ 545W	0W ~ +5W	21.10%

Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×30mm
Weight	26.9kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	Black
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−) , landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	720pcs

(Unit: mm)

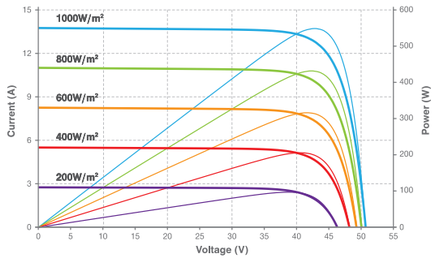


Electrical Performance Parameters

Model Type		535D(BPM)72(182)		540D(BPM)72(182)		545D(BPM)72(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	535	400	540	405	545	410
Max. Power Voltage	V_{MP} (V)	41.24	38.24	41.44	38.44	41.64	38.64
Max. Power Current	I_{MP} (A)	12.98	10.47	13.04	10.54	13.09	10.62
Open Circuit Voltage	V_{OC} (V)	50.38	47.88	50.58	48.08	50.78	48.28
Short Circuit Current	I_{SC} (A)	13.64	11.02	13.69	11.07	13.74	11.12
Module Efficiency	(%)	20.71		20.90		21.10	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (545D)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.048%
Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (P_{MAX})	-0.34%

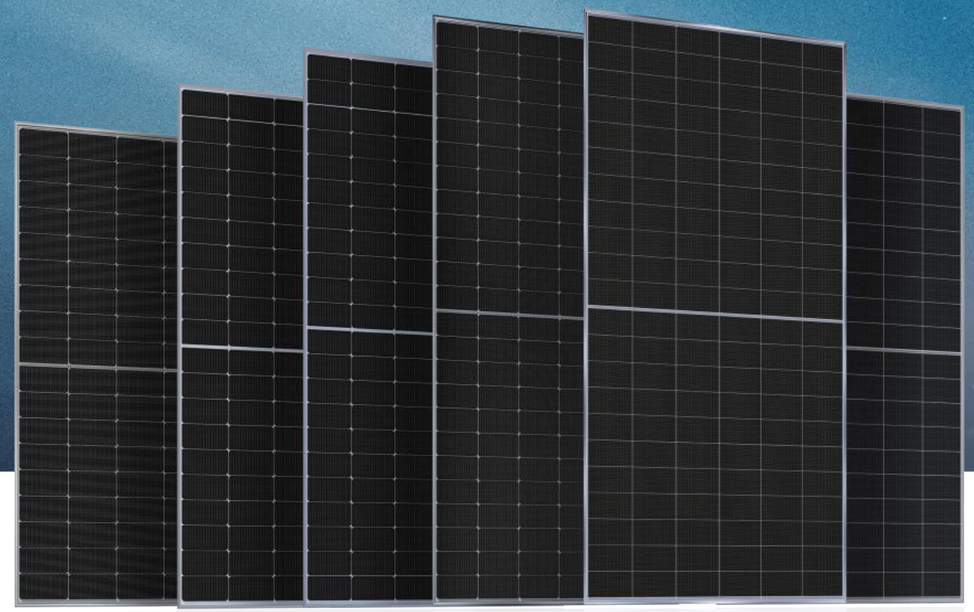
Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

P series

Robust Performance, Proven Reliability

The LESSO Solar P Series utilizes MBB (multi-busbar) and half-cell technology to achieve a maximum efficiency of 21.48%. Engineered for resilience, it offers enhanced shade resistance and minimized hot spot risks. Its optimized series-parallel circuit design reduces internal resistance (Rs), enabling higher power output and lower balance of system (BOS) costs—ideal for projects demanding reliability and cost-efficiency.



MBB Technology
Reducing String &
Busbar Loss

High Efficiency PERC
Better Resistance
Against PID

Even Cloudy or Foggy Days
Better Weak Illumination
Response

Zero LID
Increase Power Generation

Better Temperature
Coefficient
More Power Generation

Higher Power Output
Lower BOS Cost

Multiple Weather
Resistance Tests
Wider Applicability

Double-sided Generation
Powerfully Energy Boost

Power Range
405W ~ 665W

Maximum Efficiency
21.48%

12 years product workmanship warranty

25/30 years linear power output warranty

2% 1st-year degradation
0.55% annual degradation (monofacial module)
0.45% annual degradation (bifacial module)

P Series Mainstream Products

Product	Power (W)	Maximum Efficiency	Size (mm)
182 P-type (54) single glass 182 P-type (54) double glass	405 - 415	21.25%	1722x1134x30
182 P-type (60) single glass 182 P-type (60) double glass	450 - 460	21.25%	1909x1134x30
182 P-type (66) single glass 182 P-type (66) double glass	495 - 505	21.27%	2094x1134x30
182 P-type (72) single glass 182 P-type (72) double glass	545 - 555	21.48%	2278x1134x30
210 P-type (54) single glass 210 P-type (54) double glass	535 - 545	21.34%	1960x1303x35
210 P-type (60) single glass 210 P-type (60) double glass	595 - 605	21.38%	2172x1303x35
210 P-type (66) single glass 210 P-type (66) double glass	655 - 665	21.41%	2384x1303x35

Note: see datasheet for details

182 P-type Monofacial Module (54)

Power Range
405W ~ 415W

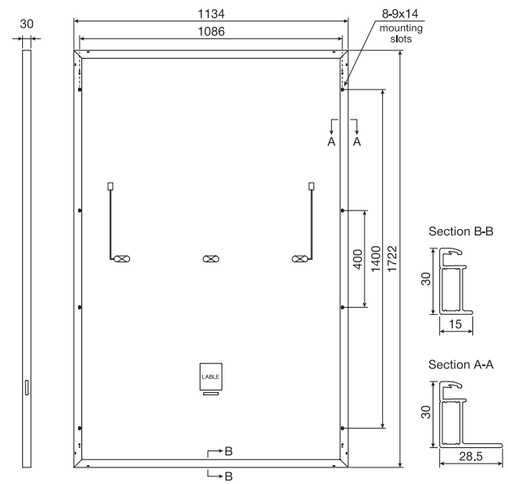
Power Output Tolerance
0W ~ +5W

Maximum Efficiency
21.25%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1722×1134×30mm
Weight	20.7kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	936pcs

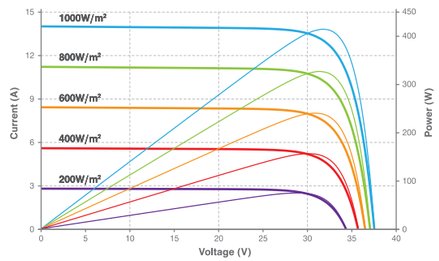


Electrical Performance Parameters

Model Type		405D(HPM)54(182)		410D(HPM)54(182)		415D(HPM)54(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	405	300	410	305	415	310
Max. Power Voltage	V_{MP} (V)	31.13	28.38	31.32	28.72	31.54	29.09
Max. Power Current	I_{MP} (A)	13.01	10.58	13.09	10.62	13.16	10.66
Open Circuit Voltage	V_{OC} (V)	37.70	34.98	37.95	35.13	38.10	35.28
Short Circuit Current	I_{SC} (A)	13.87	11.19	13.95	11.24	14.03	11.32
Module Efficiency	(%)	20.74		21.00		21.25	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (415D)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.048%
Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

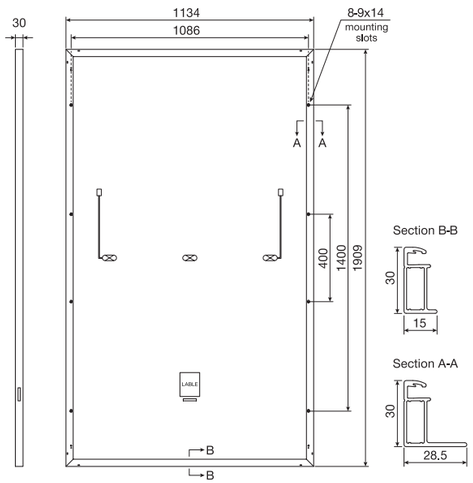
182 P-type Monofacial Module (60)

Power Range	Power Output Tolerance	Maximum Efficiency
450W ~ 460W	0W ~ +5W	21.25%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	1909×1134×30mm
Weight	22.1kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	864pcs

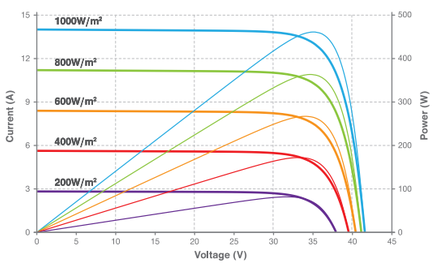


Electrical Performance Parameters

Model Type		450D(HPM)60(182)		455D(HPM)60(182)		460D(HPM)60(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	450	330	455	335	460	340
Max. Power Voltage	V_{MP} (V)	34.51	31.37	34.73	31.67	34.93	31.96
Max. Power Current	I_{MP} (A)	13.04	10.52	13.11	10.58	13.18	10.64
Open Circuit Voltage	V_{OC} (V)	41.85	38.87	42.05	39.01	42.25	39.15
Short Circuit Current	I_{SC} (A)	13.90	10.74	13.97	10.79	14.04	10.84
Module Efficiency	(%)	20.79		21.02		21.25	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (460D)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.048%
Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

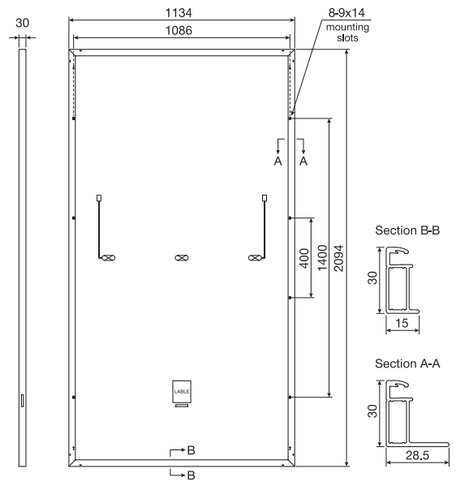
182 P-type Monofacial Module (66)

Power Range	Power Output Tolerance	Maximum Efficiency
495W ~ 505W	0W ~ +5W	21.27%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2094×1134×30mm
Weight	24kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	792pcs

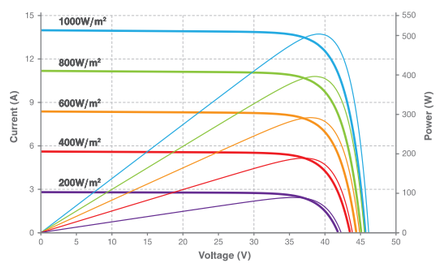


Electrical Performance Parameters

Model Type		495D(HPM)66(182)		500D(HPM)66(182)		505D(HPM)66(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	495	375	500	380	505	385
Max. Power Voltage	V_{MP} (V)	38.20	35.34	38.37	35.51	38.58	35.64
Max. Power Current	I_{MP} (A)	12.96	10.62	13.03	10.71	13.09	10.81
Open Circuit Voltage	V_{OC} (V)	45.80	42.70	46.00	42.87	46.20	43.03
Short Circuit Current	I_{SC} (A)	13.83	11.23	13.89	11.30	13.95	11.42
Module Efficiency	(%)	20.85		21.06		21.27	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (505D)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.048%
Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

182 P-type Monofacial Module (72)

Power Range
545W ~ 555W

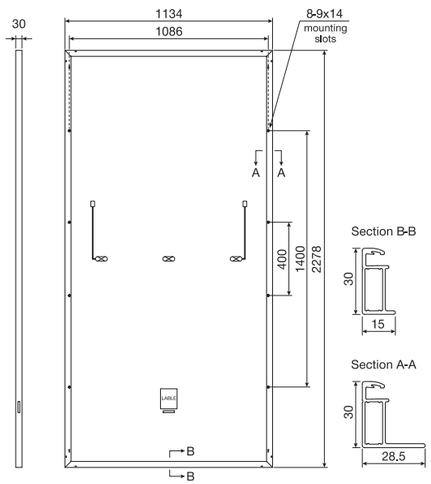
Power Output Tolerance
0W ~ +5W

Maximum Efficiency
21.48%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×30mm
Weight	26.9kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	720pcs

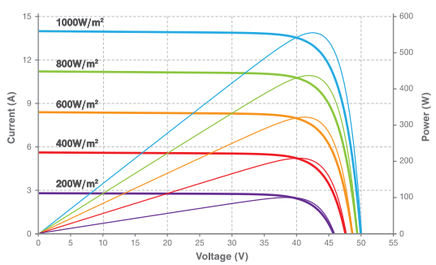


Electrical Performance Parameters

Model Type		545D(HPM)72(182)		550D(HPM)72(182)		555D(HPM)72(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	545	405	550	409	555	413
Max. Power Voltage	V_{MP} (V)	41.80	38.25	42.00	38.42	42.17	38.60
Max. Power Current	I_{MP} (A)	13.04	10.60	13.10	10.65	13.16	10.70
Open Circuit Voltage	V_{OC} (V)	50.15	46.72	50.35	46.84	50.55	46.96
Short Circuit Current	I_{SC} (A)	13.91	11.26	13.97	11.33	14.03	11.40
Module Efficiency	(%)	21.10		21.29		21.48	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (555D)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.048%
Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

182 P-type Bifacial Module (54)

Power Range
405W ~ 415W

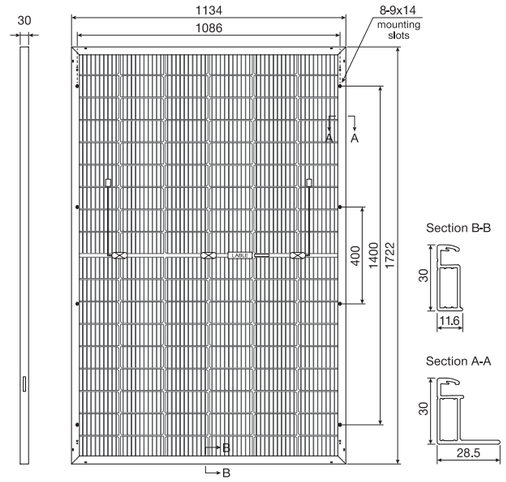
Power Output Tolerance
0W ~ +5W

Maximum Efficiency
21.25%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1722×1134×30mm
Weight	23.1kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	936pcs

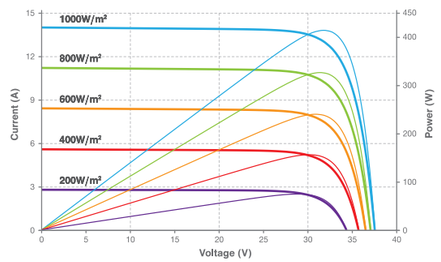


Electrical Performance Parameters

Model Type		405D(HBD)54(182)		410D(HBD)54(182)		415D(HBD)54(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	405	282	410	287	415	292
Max. Power Voltage	V_{MP} (V)	31.35	27.12	31.56	27.50	31.78	27.87
Max. Power Current	I_{MP} (A)	12.92	10.40	12.99	10.44	13.06	10.48
Open Circuit Voltage	V_{OC} (V)	37.08	34.74	37.20	34.86	37.34	35.00
Short Circuit Current	I_{SC} (A)	13.81	11.15	13.88	11.20	13.95	11.26
Module Efficiency	(%)	20.74		21.00		21.25	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (415D)



Bifacial Output-rearside Power Gain

5%	Maximum Power (P_{MAX} (W))	425	431	436
	Module Efficiency (%)	21.78	22.05	22.31
10%	Maximum Power (P_{MAX} (W))	446	451	457
	Module Efficiency (%)	22.81	23.10	23.38
25%	Maximum Power (P_{MAX} (W))	506	513	519
	Module Efficiency (%)	25.93	26.25	26.57

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (I_{SC})	+0.048%	Temperature Coefficient (P_{MAX})	-0.34%

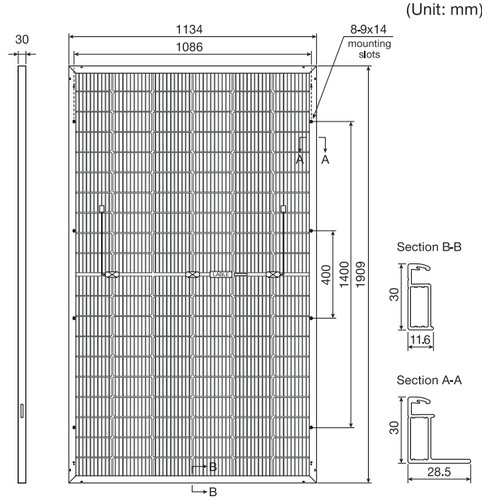
Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

182 P-type Bifacial Module (60)

Power Range	Power Output Tolerance	Maximum Efficiency
450W ~ 460W	0W ~ +5W	21.25%

(Unit: mm)



Structure Performance

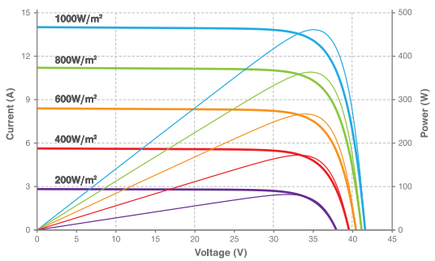
Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	1909×1134×30mm
Weight	25.7kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	864pcs

Electrical Performance Parameters

Model Type		450D(HBD)60(182)		455D(HBD)60(182)		460D(HBD)60(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	450	322	455	327	460	332
Max. Power Voltage	V_{MP} (V)	34.78	30.91	34.97	31.27	35.17	31.62
Max. Power Current	I_{MP} (A)	12.94	10.42	13.01	10.46	13.08	10.50
Open Circuit Voltage	V_{OC} (V)	41.20	38.90	41.32	39.02	41.46	39.14
Short Circuit Current	I_{SC} (A)	13.83	11.17	13.90	11.22	13.97	11.28
Module Efficiency	(%)	20.79		21.02		21.25	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (460D)



Bifacial Output-rearside Power Gain

5%	Maximum Power P_{MAX} (W)	473	478	483
	Module Efficiency (%)	21.83	22.07	22.31
10%	Maximum Power P_{MAX} (W)	495	501	506
	Module Efficiency (%)	22.87	23.12	23.37
25%	Maximum Power P_{MAX} (W)	563	569	575
	Module Efficiency (%)	25.98	26.27	26.56

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (I_{SC})	+0.048%	Temperature Coefficient (P_{MAX})	-0.34%

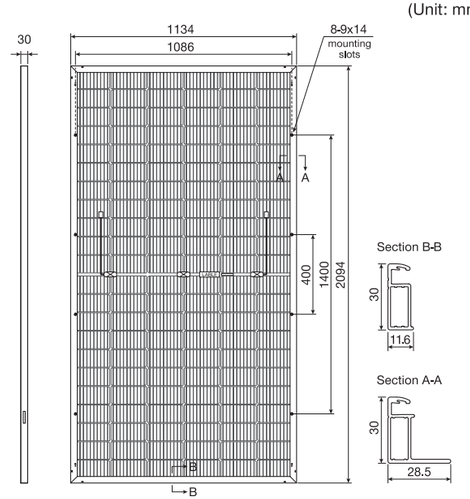
Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

182 P-type Bifacial Module (66)

Power Range	Power Output Tolerance	Maximum Efficiency
495W ~ 505W	0W ~ +5W	21.27%

(Unit: mm)



Structure Performance

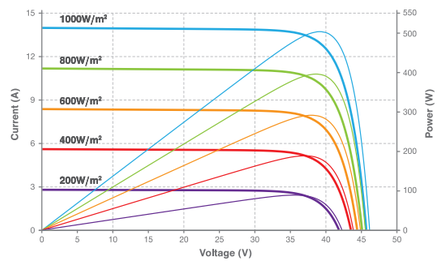
Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	132pcs(6x22)
Module Dimension	2094×1134×30mm
Weight	28.4kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	792pcs

Electrical Performance Parameters

Model Type		495D(HBD)66(182)		500D(HBD)66(182)		505D(HBD)66(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	495	367	500	372	505	377
Max. Power Voltage	V_{MP} (V)	38.20	35.16	38.37	35.50	38.55	35.84
Max. Power Current	I_{MP} (A)	12.96	10.44	13.03	10.48	13.10	10.52
Open Circuit Voltage	V_{OC} (V)	45.36	43.06	45.48	43.18	45.62	43.32
Short Circuit Current	I_{SC} (A)	13.85	11.19	13.92	11.24	13.99	11.30
Module Efficiency	(%)	20.85		21.06		21.27	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (505D)



Bifacial Output-rearside Power Gain

5%	Maximum Power P_{MAX} (W)	520	525	530
	Module Efficiency (%)	21.89	22.11	22.33
10%	Maximum Power P_{MAX} (W)	545	550	556
	Module Efficiency (%)	22.93	23.16	23.39
25%	Maximum Power P_{MAX} (W)	619	625	631
	Module Efficiency (%)	26.06	26.32	26.58

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (I_{SC})	+0.048%	Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

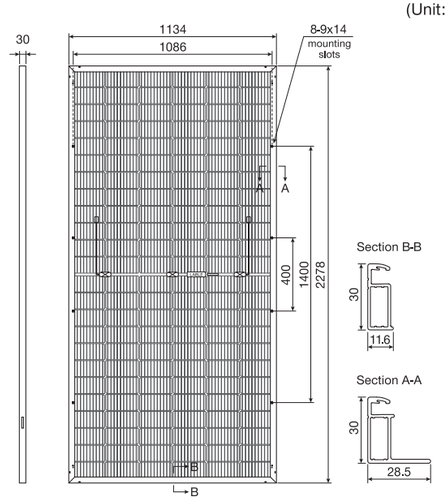
182 P-type Bifacial Module (72)

Power Range	Power Output Tolerance	Maximum Efficiency
545W ~ 555W	0W ~ +5W	21.48%

(Unit: mm)

Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×30mm
Weight	31.2kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	720pcs

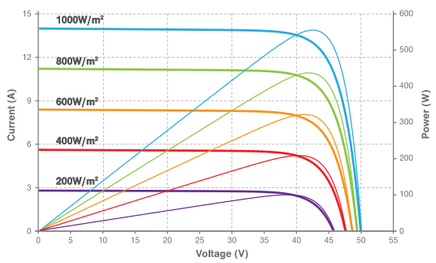


Electrical Performance Parameters

Model Type		545D(HBD)72(182)		550D(HBD)72(182)		555D(HBD)72(182)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	545	411	550	414	555	417
Max. Power Voltage	V_{MP} (V)	41.76	39.00	41.92	39.13	42.08	39.26
Max. Power Current	I_{MP} (A)	13.05	10.54	13.12	10.58	13.19	10.62
Open Circuit Voltage	V_{OC} (V)	49.89	47.56	49.99	47.75	50.09	47.94
Short Circuit Current	I_{SC} (A)	13.94	11.26	14.01	11.31	14.07	11.36
Module Efficiency	(%)	21.10		21.29		21.48	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (555D)



Bifacial Output-rearside Power Gain

5%	Maximum Power P_{MAX} (W)	572	578	583
	Module Efficiency (%)	22.15	22.36	22.56
10%	Maximum Power P_{MAX} (W)	600	605	611
	Module Efficiency (%)	23.21	23.42	23.63
25%	Maximum Power P_{MAX} (W)	681	688	694
	Module Efficiency (%)	26.37	26.61	26.86

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (I_{SC})	+0.048%	Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

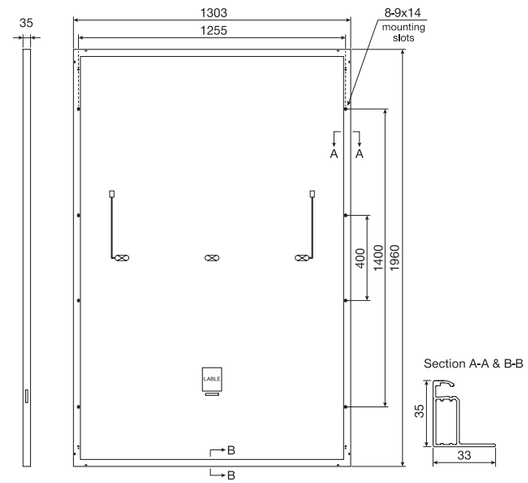
210 P-type Monofacial Module (54)

Power Range	Power Output Tolerance	Maximum Efficiency
535W ~ 545W	0W ~ +5W	21.34%

(Unit: mm)

Structure Performance

Solar Cell Type	210mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1960×1303×35mm
Weight	28.4kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	31pcs
Per Container(40'HQ)	558pcs

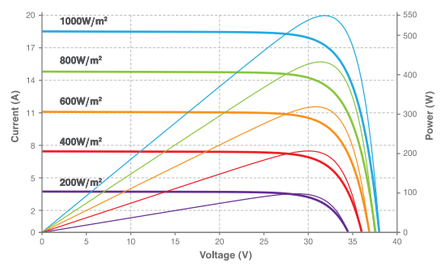


Electrical Performance Parameters

Model Type		535D(HPM)54(210)		540D(HPM)54(210)		545D(HPM)54(210)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	535	406	540	410	545	414
Max. Power Voltage	V_{MP} (V)	30.49	28.74	30.68	28.94	30.88	29.14
Max. Power Current	I_{MP} (A)	17.55	14.13	17.60	14.17	17.65	14.21
Open Circuit Voltage	V_{OC} (V)	37.54	34.80	37.74	35.00	37.94	35.20
Short Circuit Current	I_{SC} (A)	18.42	14.88	18.46	14.92	18.50	14.96
Module Efficiency	(%)	20.95		21.14		21.34	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (545D)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.048%
Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

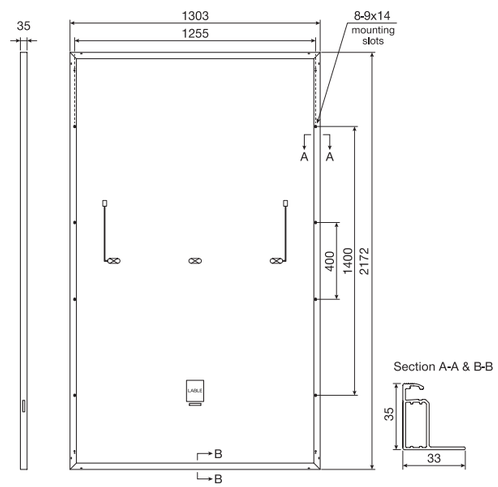
210 P-type Monofacial Module (60)

Power Range	Power Output Tolerance	Maximum Efficiency
595W ~ 605W	0W ~ +5W	21.38%

(Unit: mm)

Structure Performance

Solar Cell Type	210mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	2172×1303×35mm
Weight	31.2kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	31pcs
Per Container(40'HQ)	558pcs

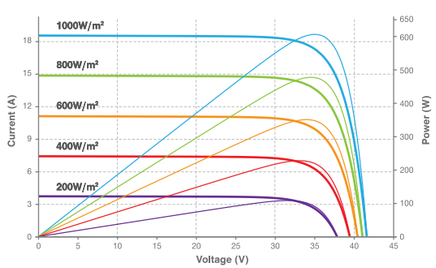


Electrical Performance Parameters

Model Type		595D(HPM)60(210)		600D(HPM)60(210)		605D(HPM)60(210)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	595	451	600	454	605	458
Max. Power Voltage	V_{MP} (V)	34.10	31.92	34.29	32.02	34.49	32.21
Max. Power Current	I_{MP} (A)	17.45	14.13	17.50	14.18	17.54	14.22
Open Circuit Voltage	V_{OC} (V)	41.14	38.90	41.34	39.10	41.54	39.30
Short Circuit Current	I_{SC} (A)	18.44	14.89	18.48	14.93	18.56	14.97
Module Efficiency	(%)	21.02		21.20		21.38	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (605D)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.048%
Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

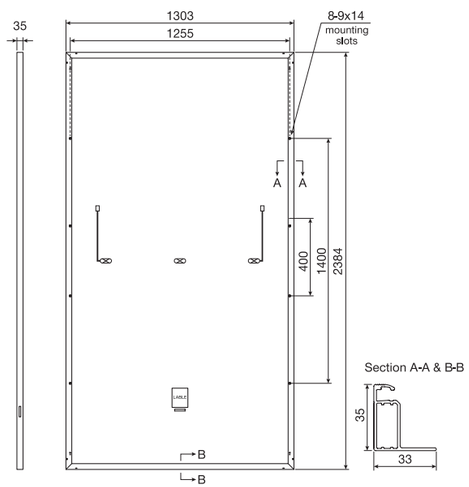
210 P-type Monofacial Module (66)

Power Range	Power Output Tolerance	Maximum Efficiency
655W ~ 665W	0W ~ +5W	21.41%

(Unit: mm)

Structure Performance

Solar Cell Type	210mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	132pcs(6x22)
Module Dimension	2384×1303×35mm
Weight	33.8kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	31pcs
Per Container(40'HQ)	558pcs

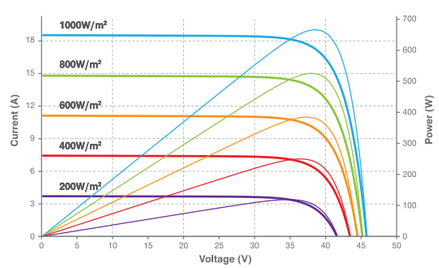


Electrical Performance Parameters

Model Type		655D(HPM)66(210)		660D(HPM)66(210)		665D(HPM)66(210)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	655	496	660	500	665	504
Max. Power Voltage	V_{MP} (V)	37.69	35.04	37.89	35.28	38.09	35.48
Max. Power Current	I_{MP} (A)	17.38	14.13	17.42	14.18	17.46	14.21
Open Circuit Voltage	V_{OC} (V)	45.74	42.90	45.94	43.10	46.14	43.20
Short Circuit Current	I_{SC} (A)	18.46	14.90	18.50	14.94	18.54	14.98
Module Efficiency	(%)	21.09		21.25		21.41	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (665D)



Temperature Characteristics

Nominal Module Operating Temperature	44±2℃
Temperature Coefficient (I_{SC})	+0.048%
Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

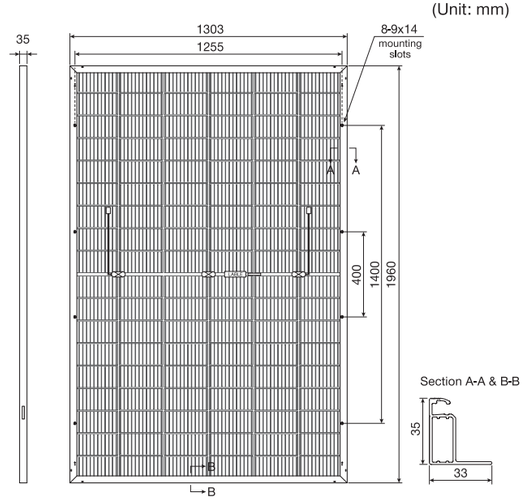
210 P-type Bifacial Module (54)

Power Range	Power Output Tolerance	Maximum Efficiency
535W ~ 545W	0W ~ +5W	21.34%

Structure Performance

Solar Cell Type	210mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1960×1303×35mm
Weight	32.8kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	31pcs
Per Container(40'HQ)	558pcs

(Unit: mm)

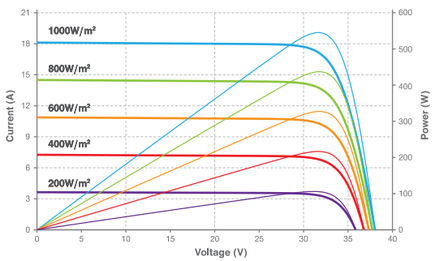


Electrical Performance Parameters

Model Type		535D(HBD)54(210)		540D(HBD)54(210)		545D(HBD)54(210)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	535	406	540	410	545	414
Max. Power Voltage	V_{MP} (V)	30.83	28.84	31.03	29.04	31.23	29.24
Max. Power Current	I_{MP} (A)	17.36	14.08	17.41	14.12	17.46	14.16
Open Circuit Voltage	V_{OC} (V)	37.40	35.00	37.60	35.20	37.80	35.40
Short Circuit Current	I_{SC} (A)	18.28	14.76	18.32	14.80	18.34	14.84
Module Efficiency	(%)	20.95		21.14		21.34	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (545D)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	562	567	572
	Module Efficiency	(%)	22.00	22.20	22.41
10%	Maximum Power	P_{MAX} (W)	589	594	600
	Module Efficiency	(%)	23.04	23.26	23.47
25%	Maximum Power	P_{MAX} (W)	669	675	681
	Module Efficiency	(%)	26.19	26.43	26.68

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (I_{SC})	+0.048%	Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

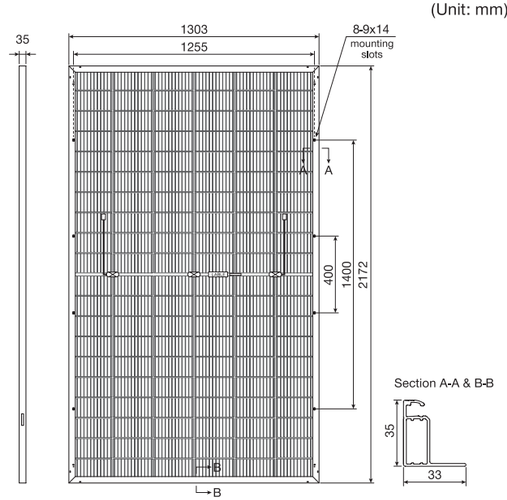
210 P-type Bifacial Module (60)

Power Range	Power Output Tolerance	Maximum Efficiency
595W ~ 605W	0W ~ +5W	21.38%

Structure Performance

Solar Cell Type	210mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	2172×1303×35mm
Weight	35.6kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (−), landscape 1400mm (+) 1400mm (−) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	31pcs
Per Container(40'HQ)	558pcs

(Unit: mm)

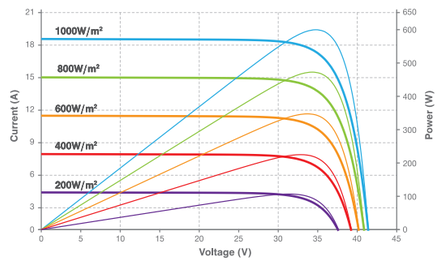


Electrical Performance Parameters

Model Type		595D(HBD)60(210)		600D(HBD)60(210)		605D(HBD)60(210)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	595	451	600	455	605	459
Max. Power Voltage	V_{MP} (V)	34.33	32.01	34.53	32.21	34.73	32.40
Max. Power Current	I_{MP} (A)	17.34	14.09	17.38	14.13	17.43	14.17
Open Circuit Voltage	V_{OC} (V)	41.60	39.20	41.80	39.40	42.00	39.60
Short Circuit Current	I_{SC} (A)	18.33	14.79	18.37	14.83	18.41	14.87
Module Efficiency	(%)	21.02		21.20		21.38	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (605D)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	625	630	635
	Module Efficiency	(%)	22.08	22.26	22.45
10%	Maximum Power	P_{MAX} (W)	655	660	666
	Module Efficiency	(%)	23.13	23.32	23.51
25%	Maximum Power	P_{MAX} (W)	744	750	756
	Module Efficiency	(%)	26.28	26.50	26.72

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (I_{SC})	+0.048%	Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

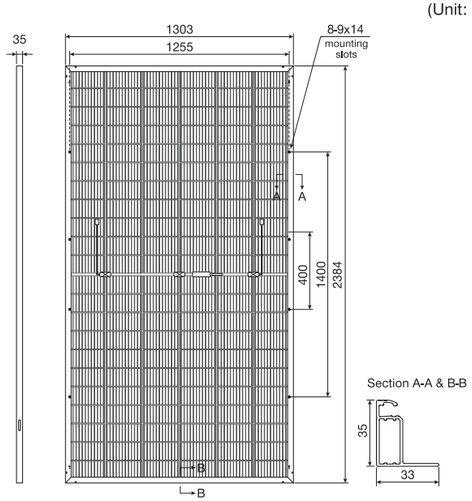
210 P-type Bifacial Module (66)

Power Range	Power Output Tolerance	Maximum Efficiency
655W ~ 665W	0W ~ +5W	21.41%

Structure Performance

Solar Cell Type	210mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	132pcs(6x22)
Module Dimension	2384×1303×35mm
Weight	38.2kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm², portrait 400mm (+) 200mm (–), landscape 1400mm (+) 1400mm (–) Length can be customized
Diode Quantity	3 pcs
Front side / Rear side	5400pa / 2400pa
Connector	MC4 Compatible
Per Pallet	31pcs
Per Container(40'HQ)	558pcs

(Unit: mm)

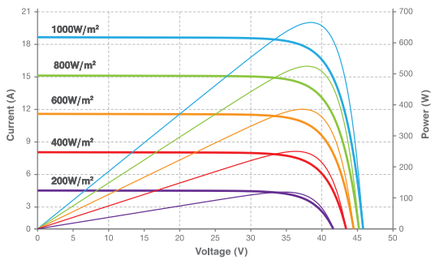


Electrical Performance Parameters

Model Type		655D(HBD)66(210)		660D(HBD)66(210)		665D(HBD)66(210)	
Testing Condition		STC	NMOT	STC	NMOT	STC	NMOT
Nominal Max. Power	P_{MAX} (W)	655	496	660	500	665	504
Max. Power Voltage	V_{MP} (V)	37.83	35.22	38.03	35.42	38.23	35.62
Max. Power Current	I_{MP} (A)	17.32	14.08	17.36	14.12	17.40	14.16
Open Circuit Voltage	V_{OC} (V)	45.80	43.20	46.00	43.40	46.20	43.60
Short Circuit Current	I_{SC} (A)	18.38	14.82	18.42	14.86	18.46	14.90
Module Efficiency	(%)	21.09		21.25		21.41	

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (665D)



Bifacial Output-rearside Power Gain

5%	Maximum Power	P_{MAX} (W)	688	693	698
	Module Efficiency	(%)	22.14	22.31	22.48
10%	Maximum Power	P_{MAX} (W)	721	726	732
	Module Efficiency	(%)	23.19	23.37	23.55
25%	Maximum Power	P_{MAX} (W)	819	825	831
	Module Efficiency	(%)	26.36	26.56	26.76

Temperature Characteristics

Nominal Module Operating Temperature	44±2℃	Temperature Coefficient (V_{OC})	-0.26%
Temperature Coefficient (I_{SC})	+0.048%	Temperature Coefficient (P_{MAX})	-0.34%

Maximum Parameters

Working Temperature	-40~+85℃
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

Project Highlights

Businesses can use the free electricity generated from Solar power stations directly, reducing consumption of electricity from the power grid, thereby enjoying immense savings on their electrical bill. If applicable, a Solar power station can even be connected to the power grid, allowing businesses to sell excess electricity to the grid to generate additional profit.

Project Capacity **600MW**

Karamay Desert Solar Power Station (Phase I)

Location: Karamay, Xinjiang, China

Project Capacity **1MW**

New Community Concentrated Solar Power Generation System

Location: Saraburi Province, Thailand

Project Capacity **1MW**

Rooftop Power Station Built in Indonesia's New Capital

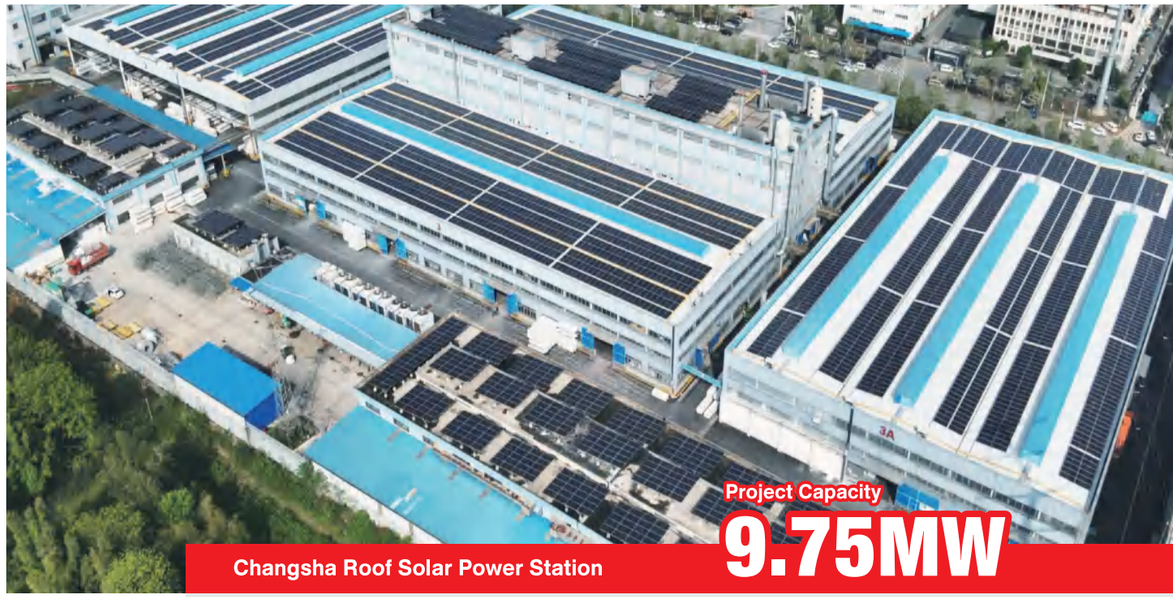
Location: Kalimantan, Indonesia

Project Capacity

500KW

Snowflake Ice Factory Solar Power Station

Location: Phnom Penh, Cambodia



Project Capacity

9.75MW

Changsha Roof Solar Power Station

Location: Changsha, Hunan, China

Project Capacity

275KW

Solar Pumping Power Station

Location: Egypt

Project Capacity

6.58MW

Maoming Logistics Roof Solar Power Station

Location: Maoming, Guangdong, China

Haitian Roof Solar Power Station

Location: Foshan, Guangdong, China

Ducheng Roof Solar Power Station

Location: Yunan, Guangdong, China

Project Capacity: 5MW

Hongyu Logistics Park Roof Solar Power Station

Location: Guangdong, China

Project Capacity: 4.5MW

Dingan Roof Solar Power Station

Location: Dingan, Hainan, China

Huanghuai market Roof Solar Power Station

Location: Henan, China

Project Capacity: 4.35MW

Qianlie Cable Factory Rooftop Solar Power Station

Location: Yunnan, China

Project Capacity: 4MW

LESSO,
BUILDING A SOLAR-POWERED WORLD