

# LESSO

SOLAR PV MODULES

**Lesso New Energy Global Trading Private Limited**

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

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**SOLAR SOLUTIONS  
MANUFACTURER**



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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

🏢

38 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



**Wusha Factory**  
Foshan, China

**6.4GW** in Solar Modules



**Heshan Factory**  
Jiangmen, China

**6GW** in Solar Modules **6GW** in Solar Cells



**Indonesia Factory**  
Demak, Indonesia

**2.4GW** in Solar Modules



**Jiulong Factory**  
Foshan, China

**5GW** (Planned) in Solar Modules **10GW** (Planned) in Solar Cells



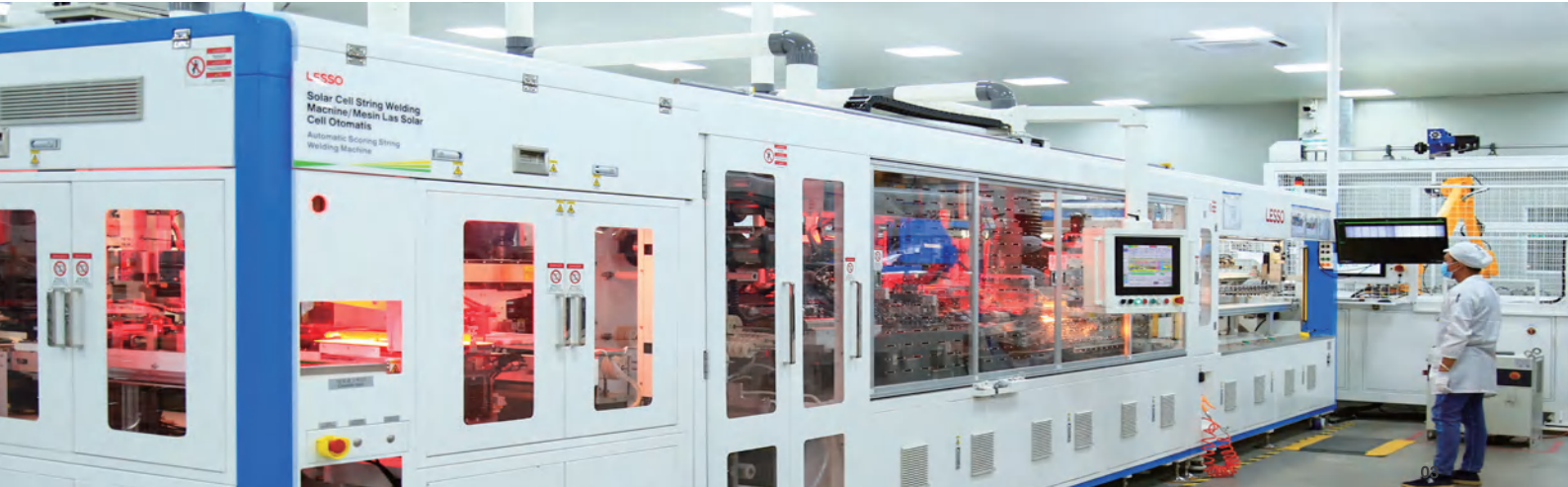
**Chongkou Factory**  
Foshan, China

**500MW** in Solar Modules



**Daba Factory**  
Foshan, China

**3GWh+** in Solar Energy Storages **100,000pcs** in EV Charger



Using only the best raw materials and the most advanced technology, we ensure each step of the process is well controlled to deliver the best products our customers.



## Our Certificates

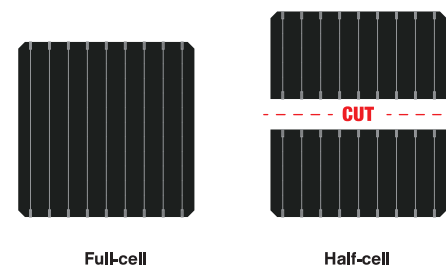
- IEC61215, IEC61730
- ISO 9001:2015 Quality Management System
- ISO 14001:2015 Environment Management System
- ISO 45001:2018 Occupational Health and Safety Management System





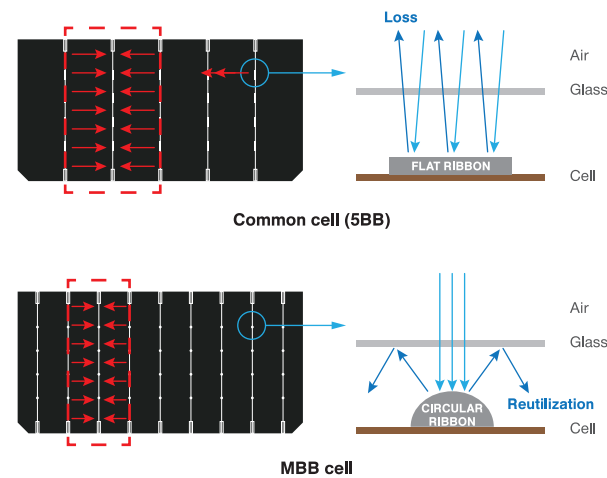
## HALF-CELL TECHNOLOGY

Using half-cells technology, the electrical current density is reduced by 50%. Therefore, the amount of internal power loss in a half-cut module reduced by 25%, and rated output power is increased.



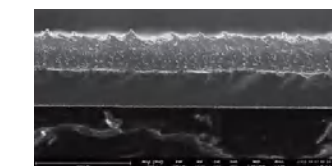
## MBB TECHNOLOGY

MBB technology can shorten the battery current collection path by more than 50%, reduce the loss of lateral resistance, and effectively improve the power output of components. LESSO modules use circular ribbon reduces the shading area and repeatedly reflects the incident light to enhance the power generation.



## NON-DESTRUCTIVE CUTTING TECHNOLOGY

Non-destructive cutting technology, smooth cross-section, lower micro-cracks risk, achieving batter cell strength, and ensures the best mechanical performance of solar cells.



Cross-section from conventional cutting



Cross-section from non-destructive cutting

## HIGH-DENSITY PACKAGING TECHNOLOGY

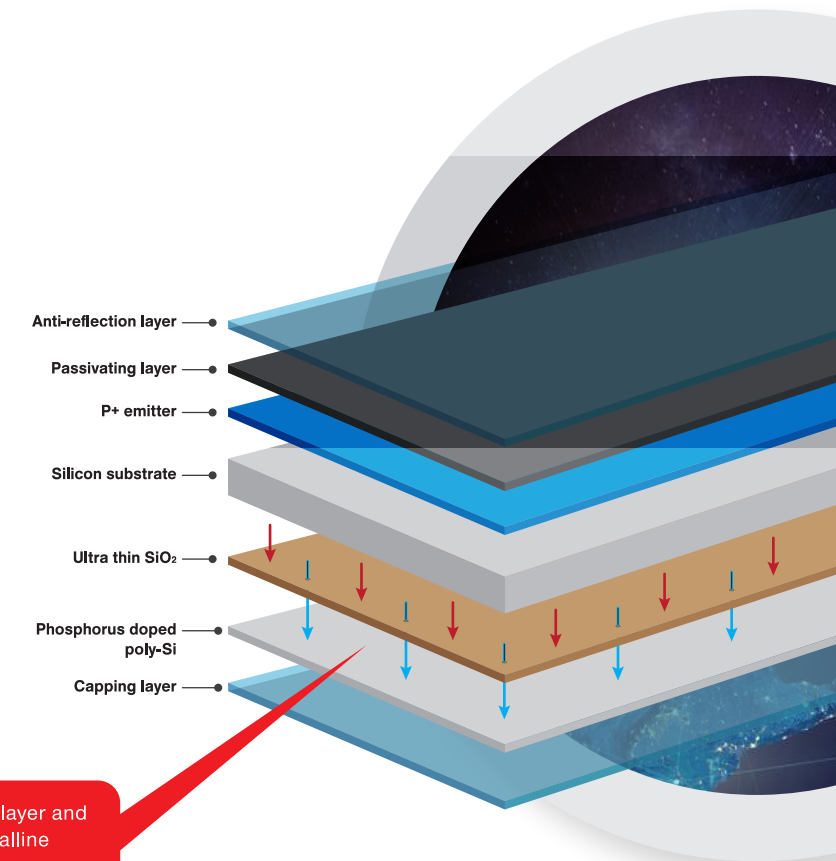
Under the same component area, High-density packaging technology can increase the effective power generation area of modules, improve efficiency, and ensure product reliability.



## TOPCON TECHNOLOGY

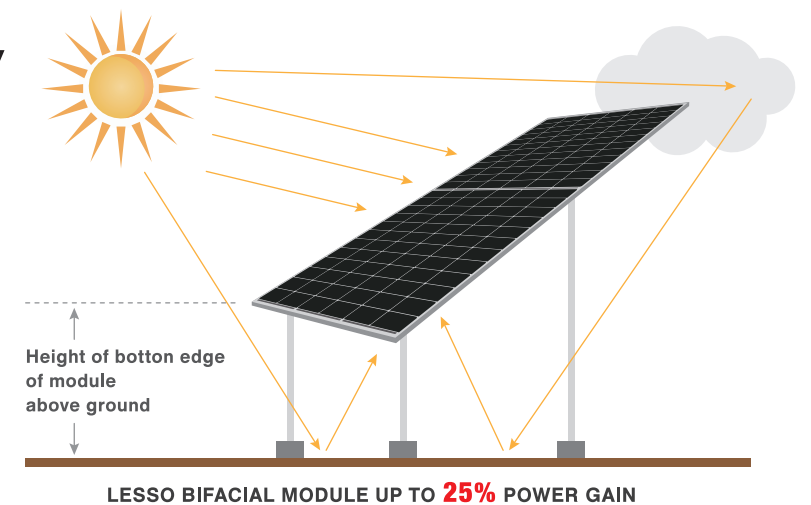
TOPCon cell adopts a new surface passivation technology, which effectively reduces surface compound and metal contact compound.

Compared with conventional modules, N-type modules have only 1% first-year attenuation and 0.4% lower annual attenuation than the conventional modules, resulting in higher power generation and higher revenue for customers.



## BIFACIAL TECHNOLOGY

The bifacial module fully utilizes the reflection and scattering of light and is suitable for various high reflection scenarios, demonstrating excellent long-term reliability and higher quality.



Power generation gain in different scenarios (%)



Water  
3~5%



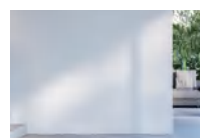
Grass  
5~10%



Cement  
5~10%



Sand  
5~10%

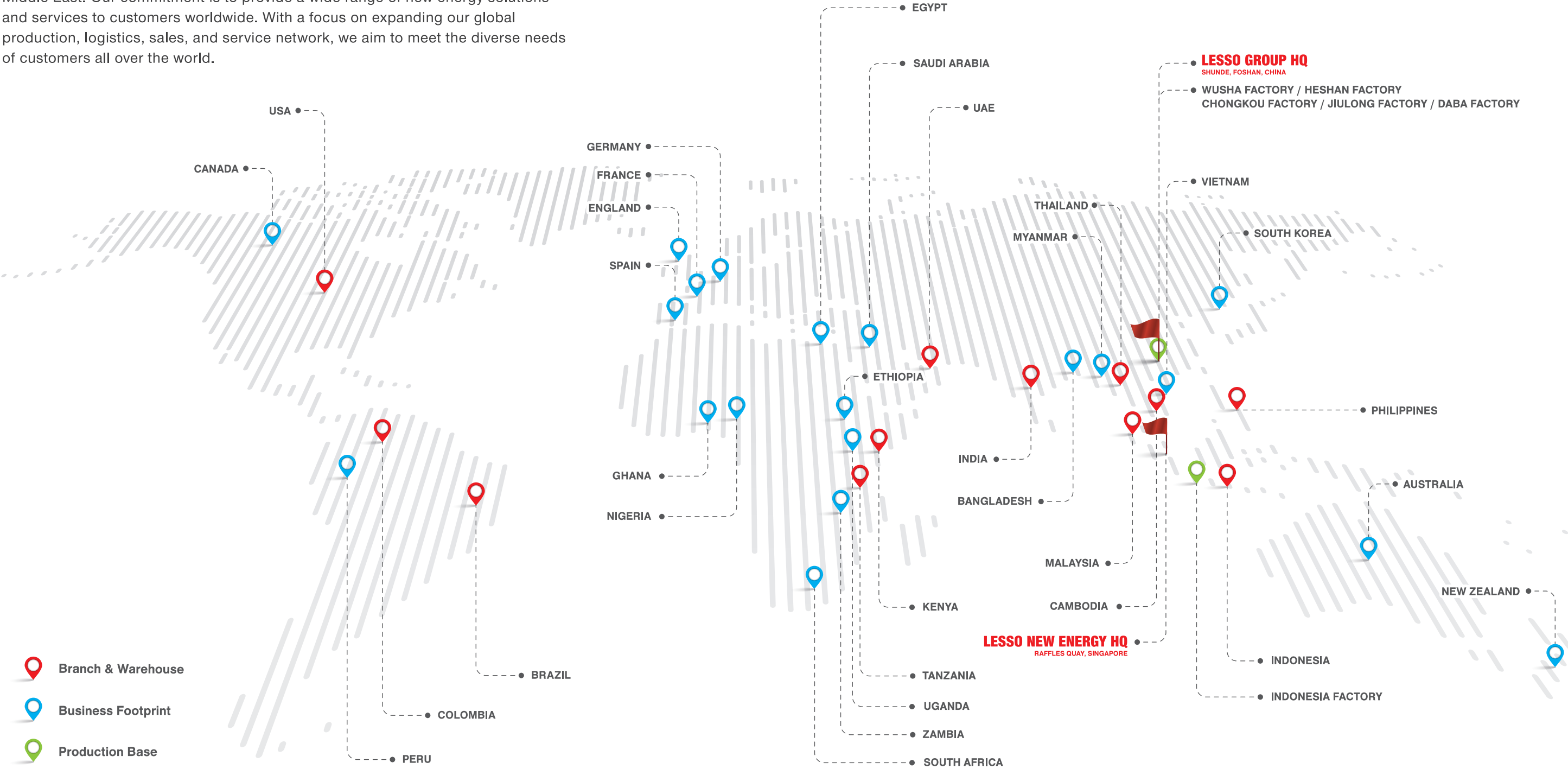


White paint  
15~25%



# 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

## Release Unlimited Power, Leading Innovation

The LESSO Solar N Series relies on TOPCon technology, maximum efficiency reaches 23.25%.

N-type cell is zero LID can increase power generation. The degradation is only 1% in the first year and 0.4% each subsequent year. Excellent power generation performance creates higher revenue 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



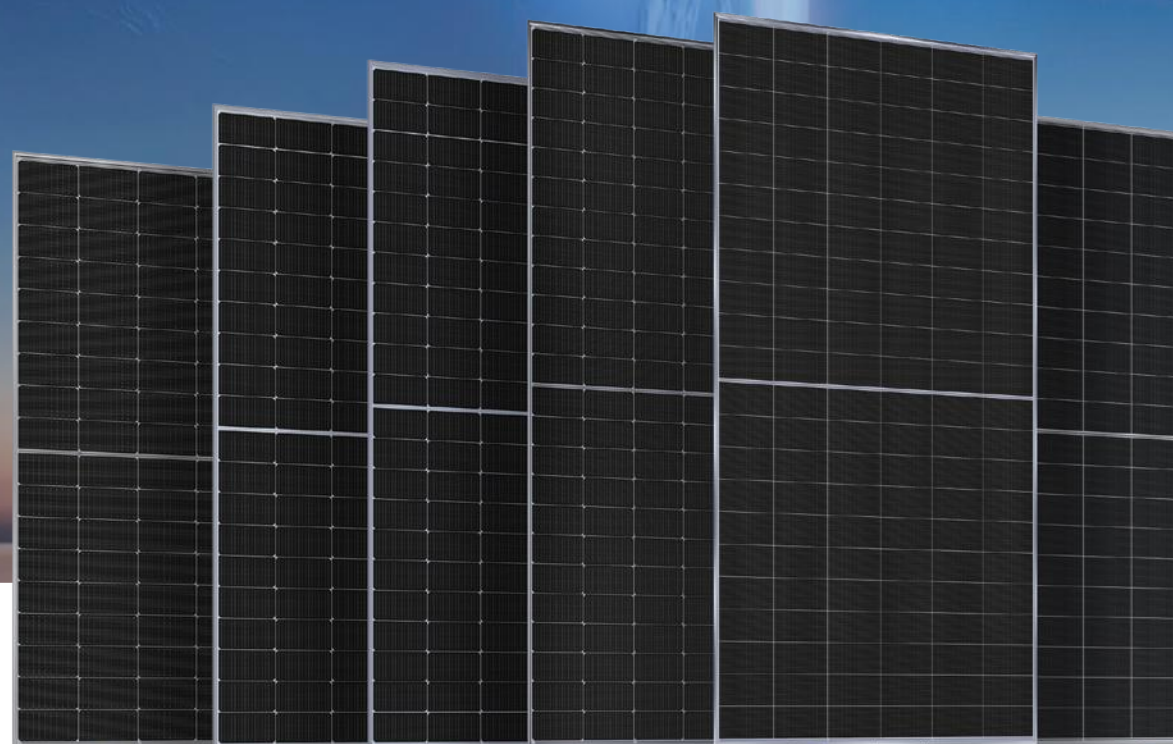
Higher Power Output  
Lower BOS Cost



Multiple Weather  
Resistance Tests  
Wider Applicability



Double-sided Generation  
Powerfully Energy Boost





Power Range  
**425W ~ 720W**

Maximum Efficiency  
**23.25%**

12 years product  
workmanship warranty

30 years linear power  
output warranty

1% 1st-year degradation  
0.40% annual degradation

N Series Mainstream Products

| Product                       | Power<br>(W) | Maximum<br>Efficiency | Size<br>(mm)    |
|-------------------------------|--------------|-----------------------|-----------------|
| 182 N-type (54) single glass  | 425 - 445    | 22.79%                | 1722x1134x35/30 |
| 182 N-type (54) double glass  |              |                       |                 |
| 182 N-type (60) single glass  | 475 - 495    | 22.87%                | 1909x1134x35/30 |
| 182 N-type (60) double glass  |              |                       |                 |
| 182 N-type (66) single glass  | 525 - 545    | 22.95%                | 2094x1134x35/30 |
| 182 N-type (66) double glass  |              |                       |                 |
| 182 N-type (72) single glass  | 575 - 595    | 23.03%                | 2278x1134x35/30 |
| 182 N-type (72) double glass  |              |                       |                 |
| 182 N-type (78) single glass  | 630 - 650    | 23.25%                | 2465x1134x35    |
| 182 N-type (78) double glass  |              |                       |                 |
| 210 N-type (54) single glass  | 570 - 590    | 23.10%                | 1960x1303x35/30 |
| 210 N-type (54) double glass  |              |                       |                 |
| 210 N-type (60) single glass  | 630 - 650    | 22.97%                | 2172x1303x35/30 |
| 210 N-type (60) double glass  |              |                       |                 |
| 210 N-type (66) single glass  | 700 - 720    | 23.18%                | 2384x1303x35/33 |
| 210 N-type (66) double glass  |              |                       |                 |
| 210R N-type (54) single glass | 490 - 510    | 22.95%                | 1960x1134x35    |
| 210R N-type (54) double glass |              |                       |                 |
| 210R N-type (60) single glass | 545 - 565    | 22.94%                | 2172x1134x35    |
| 210R N-type (60) double glass |              |                       |                 |
| 210R N-type (66) single glass | 595 - 615    | 22.77%                | 2382x1134x35    |
| 210R N-type (66) double glass |              |                       |                 |

Note: see datasheet for details

182 N-type Bifacial Module (54)

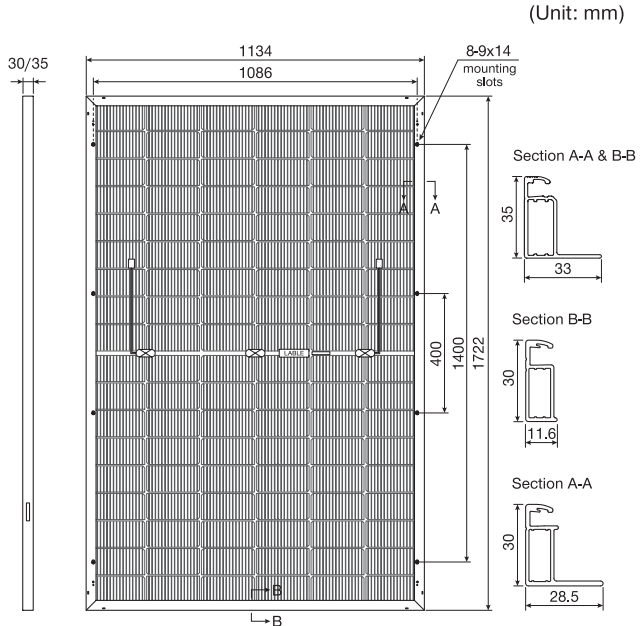
Power Range  
**425W ~ 445W**

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       | 1722×1134×35mm/30mm                                                                                                                                           |
| Weight                 | 24.1kg(35mm) / 23.1kg(30mm)                                                                                                                                   |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy / Polyurethane Composite Frame                                                                                                        |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 4mm <sup>2</sup> , portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                                         |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                               |
| Connector              | MC4 Compatible                                                                                                                                                |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                                                                     |
| Per Container(40'HQ)   | 806pcs(35mm) / 936pcs(30mm)                                                                                                                                   |

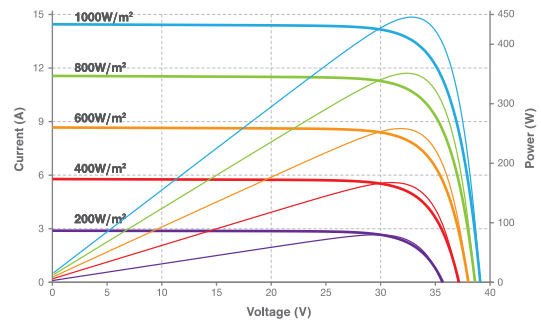


Electrical Performance Parameters

| 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 <sub>MAX</sub> (W) | 425              | 319   | 430              | 323   | 435              | 327   | 440              | 331   | 445              | 335   |
| Max. Power Voltage    | V <sub>MP</sub> (V)  | 31.65            | 29.82 | 31.88            | 30.02 | 32.11            | 30.23 | 32.34            | 30.44 | 32.57            | 30.65 |
| Max. Power Current    | I <sub>MP</sub> (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 <sub>OC</sub> (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 <sub>SC</sub> (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/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m<sup>2</sup>, 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 <sub>max</sub> (W) | 446    | 452    | 457    | 462    | 467    |
|-----|-------------------|----------------------|--------|--------|--------|--------|--------|
|     | Module Efficiency | (%)                  | 22.85% | 23.12% | 23.39% | 23.66% | 23.93% |
| 10% | Maximum Power     | P <sub>max</sub> (W) | 468    | 473    | 479    | 484    | 490    |
|     | Module Efficiency | (%)                  | 23.94% | 24.22% | 24.50% | 24.79% | 25.07% |
| 25% | Maximum Power     | P <sub>max</sub> (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°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.25% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.043% | Temperature Coefficient (P <sub>max</sub> ) | -0.30% |

Maximum Parameters

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

# 182 N-type Bifacial Module (60)



Power Range  
**475W ~ 495W**



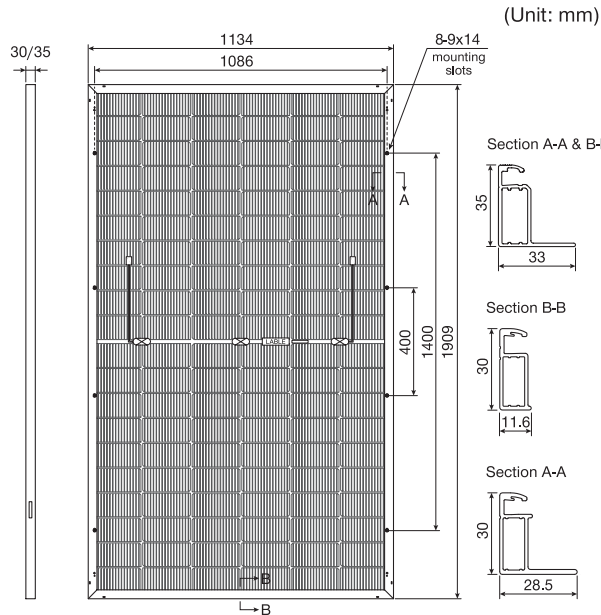
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.87%**

## Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                                                                                          |
| Solar Cell Arrangement | 120pcs(6×20)                                                                                                                                                  |
| Module Dimension       | 1909×1134×35mm/30mm                                                                                                                                           |
| Weight                 | 26.9kg(35mm) / 25.7kg(30mm)                                                                                                                                   |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy / Polyurethane Composite Frame                                                                                                        |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 4mm <sup>2</sup> , portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                                         |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                               |
| Connector              | MC4 Compatible                                                                                                                                                |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                                                                     |
| Per Container(40'HQ)   | 744pcs(35mm) / 864pcs(30mm)                                                                                                                                   |

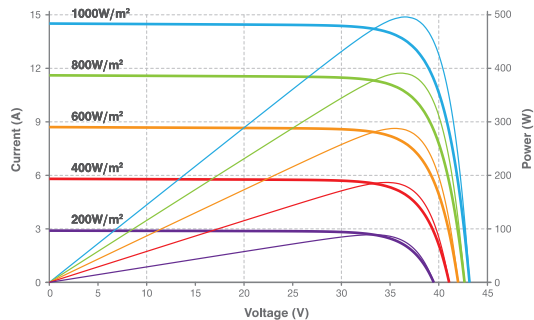


## Electrical Performance Parameters

| 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 <sub>max</sub> (W) | 475              | 357   | 480              | 361   | 485              | 365   | 490              | 369   | 495              | 373   |
| Max. Power Voltage    | V <sub>MP</sub> (V)  | 35.27            | 33.25 | 35.48            | 33.43 | 35.69            | 33.61 | 35.90            | 33.79 | 36.11            | 33.97 |
| Max. Power Current    | I <sub>MP</sub> (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 <sub>OC</sub> (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 <sub>SC</sub> (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 <sub>MAX</sub> (W) | 499    | 504    | 509    | 515    | 520    |
|-----|-------------------|----------------------|--------|--------|--------|--------|--------|
|     | Module Efficiency | (%)                  | 23.04% | 23.28% | 23.52% | 23.77% | 24.01% |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 523    | 528    | 534    | 539    | 545    |
|     | Module Efficiency | (%)                  | 24.14% | 24.39% | 24.64% | 24.90% | 25.15% |
| 25% | Maximum Power     | P <sub>MAX</sub> (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°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.25% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.043% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.30% |

## Maximum Parameters

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

# 182 N-type Bifacial Module (66)



Power Range  
**525W ~ 545W**



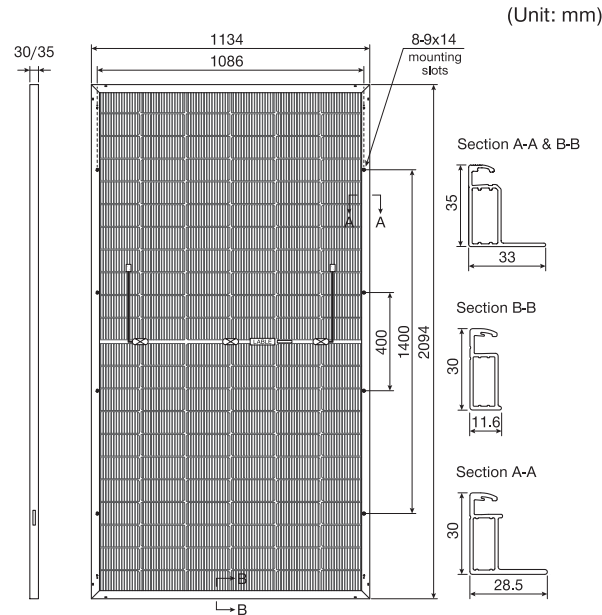
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.95%**

## Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                                                                                          |
| Solar Cell Arrangement | 132pcs(6x22)                                                                                                                                                  |
| Module Dimension       | 2094×1134×35mm/30mm                                                                                                                                           |
| Weight                 | 29.6kg(35mm) / 28.4kg(30mm)                                                                                                                                   |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy / Polyurethane Composite Frame                                                                                                        |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 4mm <sup>2</sup> , portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                                         |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                               |
| Connector              | MC4 Compatible                                                                                                                                                |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                                                                     |
| Per Container(40'HQ)   | 682pcs(35mm) / 792pcs(30mm)                                                                                                                                   |

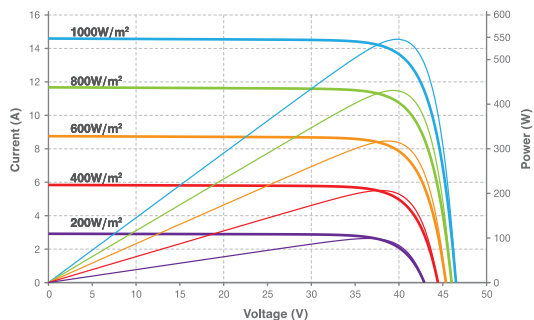


## Electrical Performance Parameters

| 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 <sub>MAX</sub> (W) | 525              | 394   | 530              | 398   | 535              | 402   | 540              | 406   | 545              | 410   |
| Max. Power Voltage    | V <sub>MP</sub> (V)  | 38.89            | 36.55 | 39.09            | 36.72 | 39.29            | 36.89 | 39.49            | 37.06 | 39.69            | 37.23 |
| Max. Power Current    | I <sub>MP</sub> (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 <sub>OC</sub> (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 <sub>SC</sub> (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 <sub>MAX</sub> (W) | 551    | 557    | 562    | 567    | 572    |
|-----|-------------------|----------------------|--------|--------|--------|--------|--------|
|     | Module Efficiency | (%)                  | 23.21% | 23.44% | 23.66% | 23.88% | 24.10% |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 578    | 583    | 589    | 594    | 600    |
|     | Module Efficiency | (%)                  | 24.32% | 24.55% | 24.78% | 25.01% | 25.25% |
| 25% | Maximum Power     | P <sub>MAX</sub> (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°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.25% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.043% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.30% |

## Maximum Parameters

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



# 182 N-type Bifacial Module (72)



Power Range  
**575W ~ 595W**

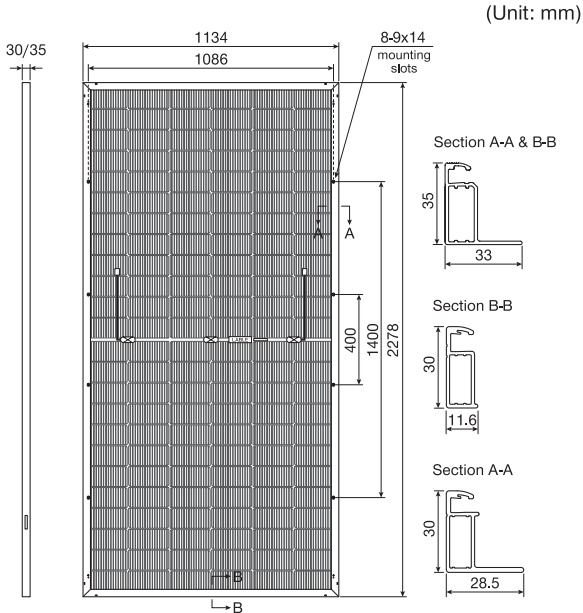


Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**23.03%**

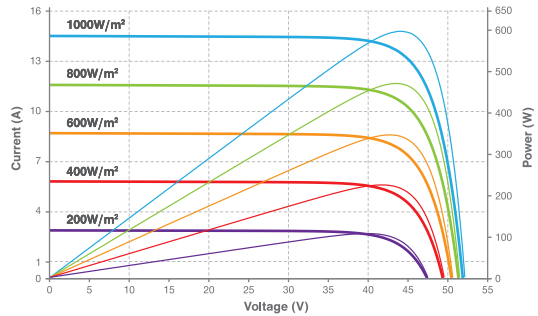
| Structure Performance  |                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                                                                             |
| Solar Cell Arrangement | 144pcs(6×24)                                                                                                                                     |
| Module Dimension       | 2278×1134×35mm/30mm                                                                                                                              |
| Weight                 | 32.3kg(35mm) / 31.2kg(30mm)                                                                                                                      |
| 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 <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                            |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                  |
| Connector              | MC4 Compatible                                                                                                                                   |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                                                        |
| Per Container(40'HQ)   | 620pcs(35mm) / 720pcs(30mm)                                                                                                                      |



| 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 <sub>MAX</sub> (W) | 575   | 433              | 580   | 437              | 585   | 441              | 590   | 445              | 595   |
| Max. Power Voltage                | V <sub>MPP</sub> (V) | 42.60 | 40.02            | 42.75 | 40.17            | 42.89 | 40.32            | 43.04 | 40.47            | 43.19 |
| Max. Power Current                | I <sub>MPP</sub> (A) | 13.50 | 10.82            | 13.57 | 10.88            | 13.64 | 10.94            | 13.71 | 11.00            | 13.78 |
| Open Circuit Voltage              | V <sub>OC</sub> (V)  | 51.23 | 48.66            | 51.43 | 48.85            | 51.63 | 49.04            | 51.83 | 49.23            | 52.03 |
| Short Circuit Current             | I <sub>SC</sub> (A)  | 14.27 | 11.51            | 14.33 | 11.56            | 14.39 | 11.61            | 14.45 | 11.66            | 14.51 |
| 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 <sub>MAX</sub> (W) | 604    | 609    | 614    | 620    | 625    |
|-----|-------------------|----------------------|--------|--------|--------|--------|--------|
|     | Module Efficiency | (%)                  | 23.37% | 23.57% | 23.78% | 23.98% | 24.18% |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 633    | 638    | 644    | 649    | 655    |
|     | Module Efficiency | (%)                  | 24.48% | 24.70% | 24.91% | 25.12% | 25.34% |
| 25% | Maximum Power     | P <sub>MAX</sub> (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°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.25% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.043% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.30% |

Maximum Parameters

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

# 182 N-type Bifacial Module (78)



Power Range  
**630W ~ 650W**

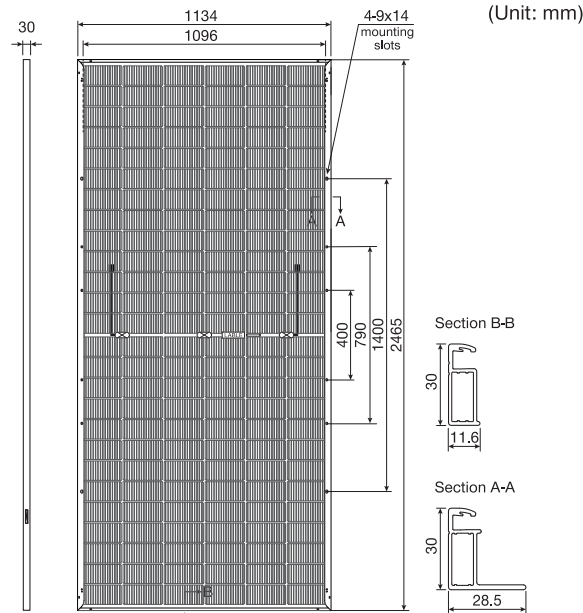


Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**23.25%**

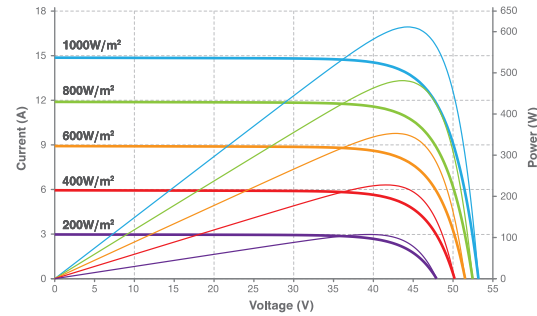
| Structure Performance  |                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>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                        | 630C(HBD)78(182)     |       | 635C(HBD)78(182) |       | 640C(HBD)78(182) |       | 645C(HBD)78(182) |       | 650C(HBD)78(182) |       |
| Testing Condition                 | STC                  | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power                | P <sub>MAX</sub> (W) | 630   | 474              | 635   | 478              | 640   | 482              | 645   | 486              | 650   |
| Max. Power Voltage                | V <sub>MPP</sub> (V) | 46.37 | 43.60            | 46.50 | 43.73            | 46.63 | 43.86            | 46.76 | 43.99            | 46.89 |
| Max. Power Current                | I <sub>MPP</sub> (A) | 13.59 | 10.88            | 13.66 | 10.94            | 13.73 | 11.00            | 13.80 | 11.05            | 13.87 |
| Open Circuit Voltage              | V <sub>OC</sub> (V)  | 55.26 | 52.49            | 55.41 | 52.63            | 55.56 | 52.77            | 55.71 | 52.92            | 55.86 |
| Short Circuit Current             | I <sub>SC</sub> (A)  | 14.42 | 11.63            | 14.50 | 11.70            | 14.58 | 11.76            | 14.66 | 11.83            | 14.74 |
| Module Efficiency                 | (%)                  | 22.54 |                  | 22.72 |                  | 22.90 |                  | 23.07 |                  | 23.25 |

\* 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 (650C)



Bifacial Output-rearside Power Gain

| 5%  | Maximum Power     | P <sub>MAX</sub> (W) | 662    | 667    | 672    | 677    | 683    |
|-----|-------------------|----------------------|--------|--------|--------|--------|--------|
|     | Module Efficiency | (%)                  | 23.66% | 23.85% | 24.04% | 24.23% | 24.42% |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 693    | 699    | 704    | 710    | 715    |
|     | Module Efficiency | (%)                  | 24.79% | 24.99% | 25.19% | 25.38% | 25.58% |
| 25% | Maximum Power     | P <sub>MAX</sub> (W) | 788    | 794    | 800    | 806    | 813    |
|     | Module Efficiency | (%)                  | 28.17% | 28.40% | 28.62% | 28.84% | 29.07% |

Temperature Characteristics

|                                            |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.25% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.043% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.30% |

Maximum Parameters

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

## 210 N-type Bifacial Module (54)



Power Range  
**570W ~ 590W**



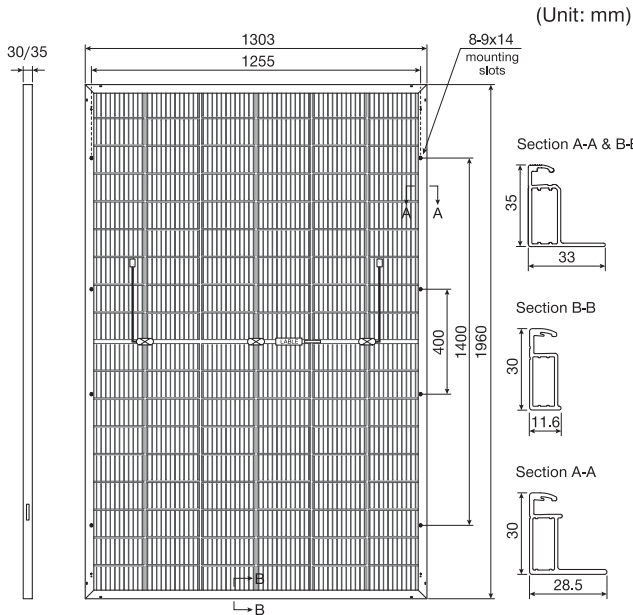
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**23.10%**

### Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 210mm N-TOPCon Mono Cell (Half Cell)                                                                                                                          |
| Solar Cell Arrangement | 108pcs(6×18)                                                                                                                                                  |
| Module Dimension       | 1960×1303×35mm/30mm                                                                                                                                           |
| Weight                 | 32.8kg(35mm) / 31.7kg(30mm)                                                                                                                                   |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 4mm <sup>2</sup> , portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                                         |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                               |
| Connector              | MC4 Compatible                                                                                                                                                |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                                                                     |
| Per Container(40'HQ)   | 558pcs(35mm) / 648pcs(30mm)                                                                                                                                   |

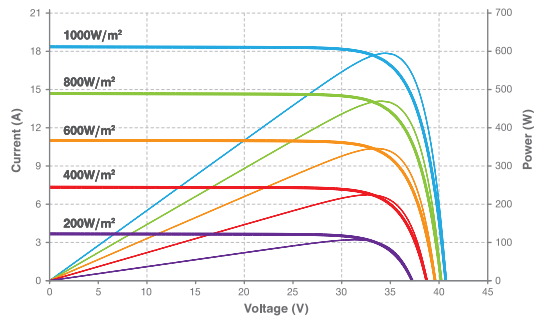


### Electrical Performance Parameters

| Model Type            | 570C(HBD)54(210)     |       | 575C(HBD)54(210) |       | 580C(HBD)54(210) |       | 585C(HBD)54(210) |       | 590C(HBD)54(210) |       |
|-----------------------|----------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Testing Condition     | STC                  | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power    | P <sub>MAX</sub> (W) | 570   | 438              | 575   | 442              | 580   | 446              | 585   | 450              | 590   |
| Max. Power Voltage    | V <sub>MPP</sub> (V) | 32.75 | 30.94            | 32.94 | 31.13            | 33.14 | 31.33            | 33.32 | 31.52            | 33.51 |
| Max. Power Current    | I <sub>MPP</sub> (A) | 17.41 | 14.16            | 17.46 | 14.20            | 17.51 | 14.24            | 17.56 | 14.28            | 17.61 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 39.93 | 35.75            | 40.12 | 35.93            | 40.31 | 36.12            | 40.50 | 36.30            | 40.69 |
| Short Circuit Current | I <sub>SC</sub> (A)  | 18.19 | 11.84            | 18.23 | 11.87            | 18.27 | 11.91            | 18.31 | 11.94            | 18.35 |
| Module Efficiency     | (%)                  | 22.32 |                  | 22.51 |                  | 22.71 |                  | 22.91 |                  | 23.10 |

\* 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 (590C)



### Bifacial Output-rearside Power Gain

| 5%  | Maximum Power     | P <sub>MAX</sub> (W) | 599    | 604    | 609    | 614    | 620    |
|-----|-------------------|----------------------|--------|--------|--------|--------|--------|
|     | Module Efficiency | (%)                  | 23.43% | 23.64% | 23.85% | 24.05% | 24.26% |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 627    | 633    | 638    | 644    | 649    |
|     | Module Efficiency | (%)                  | 24.55% | 24.77% | 24.98% | 25.20% | 25.41% |
| 25% | Maximum Power     | P <sub>MAX</sub> (W) | 713    | 719    | 725    | 731    | 738    |
|     | Module Efficiency | (%)                  | 27.90% | 28.14% | 28.39% | 28.63% | 28.88% |

### Temperature Characteristics

|                                            |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.25% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.043% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.30% |

### Maximum Parameters

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

## 210 N-type Bifacial Module (60)



Power Range  
**630W ~ 650W**



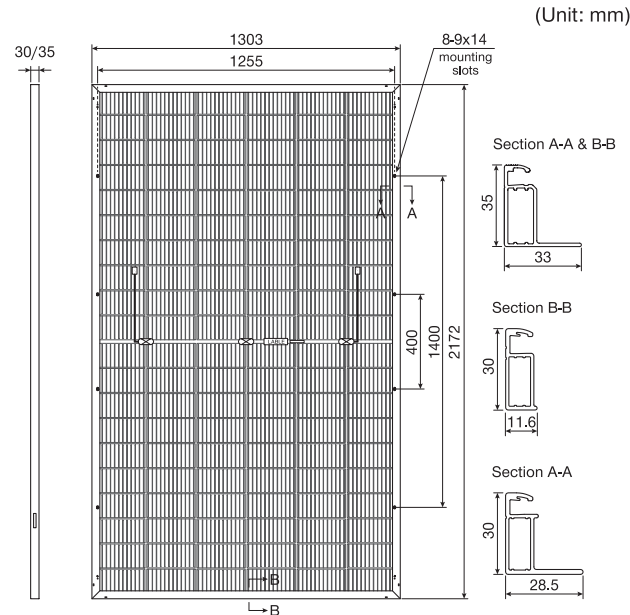
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.97%**

### Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 210mm N-TOPCon Mono Cell (Half Cell)                                                                                                                          |
| Solar Cell Arrangement | 120pcs(6×20)                                                                                                                                                  |
| Module Dimension       | 2172×1303×35mm/30mm                                                                                                                                           |
| Weight                 | 35.6kg(35mm) / 34.5kg(30mm)                                                                                                                                   |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 4mm <sup>2</sup> , portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                                         |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                               |
| Connector              | MC4 Compatible                                                                                                                                                |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                                                                     |
| Per Container(40'HQ)   | 558pcs(35mm) / 648pcs(30mm)                                                                                                                                   |

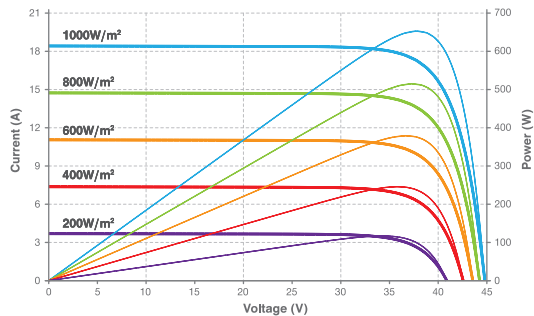


### Electrical Performance Parameters

| Model Type            | 630C(HBD)60(210)     |       | 635C(HBD)60(210) |       | 640C(HBD)60(210) |       | 645C(HBD)60(210) |       | 650C(HBD)60(210) |       |
|-----------------------|----------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Testing Condition     | STC                  | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power    | P <sub>MAX</sub> (W) | 630   | 482              | 635   | 486              | 640   | 490              | 645   | 494              | 650   |
| Max. Power Voltage    | V <sub>MPP</sub> (V) | 36.11 | 34.04            | 36.33 | 34.25            | 36.54 | 34.46            | 36.74 | 34.67            | 36.94 |
| Max. Power Current    | I <sub>MPP</sub> (A) | 17.45 | 14.16            | 17.48 | 14.19            | 17.52 | 14.22            | 17.56 | 14.25            | 17.60 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 43.95 | 41.58            | 44.16 | 41.79            | 44.37 | 42.01            | 44.58 | 42.22            | 44.79 |
| Short Circuit Current | I <sub>SC</sub> (A)  | 18.26 | 14.73            | 18.30 | 14.77            | 18.34 | 14.81            | 18.38 | 14.85            | 18.42 |
| Module Efficiency     | (%)                  | 22.26 |                  | 22.44 |                  | 22.61 |                  | 22.79 |                  | 22.97 |

\* 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 (650C)



### Bifacial Output-rearside Power Gain

| 5%  | Maximum Power     | P <sub>MAX</sub> (W) | 662    | 667    | 672    | 677    | 683    |
|-----|-------------------|----------------------|--------|--------|--------|--------|--------|
|     | Module Efficiency | (%)                  | 23.37% | 23.56% | 23.74% | 23.93% | 24.12% |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 693    | 699    | 704    | 710    | 715    |
|     | Module Efficiency | (%)                  | 24.49% | 24.68% | 24.88% | 25.07% | 25.26% |
| 25% | Maximum Power     | P <sub>MAX</sub> (W) | 788    | 794    | 800    | 806    | 813    |
|     | Module Efficiency | (%)                  | 27.83% | 28.05% | 28.27% | 28.49% | 28.71% |

### Temperature Characteristics

|                                            |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.25% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.043% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.30% |

### Maximum Parameters

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



210 N-type Bifacial Module (66)



Power Range  
**700W ~ 720W**

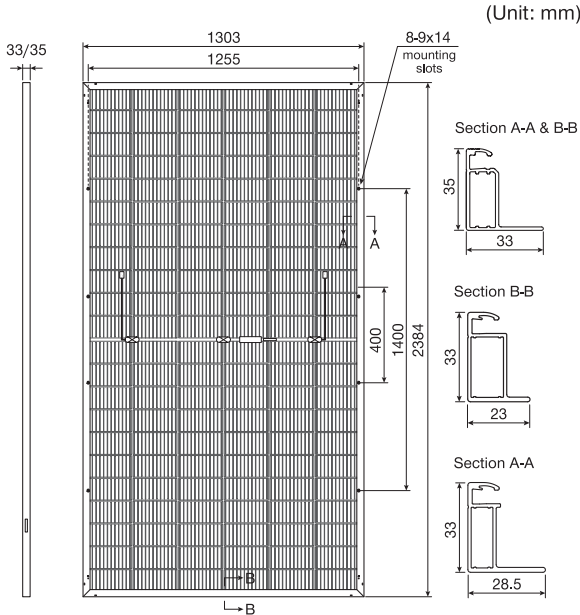


Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**23.18%**

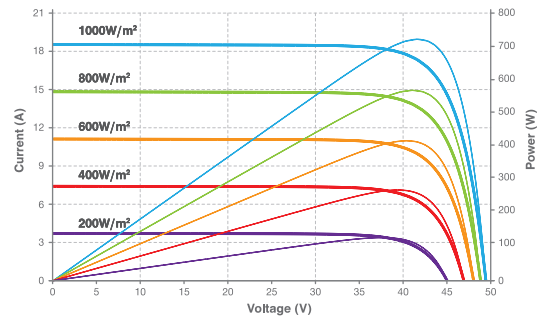
| Structure Performance  |                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 210mm N-TOPCon Mono Cell (Half Cell)                                                                                                             |
| Solar Cell Arrangement | 132pcs(6x22)                                                                                                                                     |
| Module Dimension       | 2384×1303×35mm/33mm                                                                                                                              |
| Weight                 | 38.2kg(35mm) / 37.8kg(33mm)                                                                                                                      |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                            |
| Frame                  | Anodized Aluminum Alloy                                                                                                                          |
| Junction Box           | IP68 rated                                                                                                                                       |
| Cable                  | 4mm², portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                            |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                  |
| Connector              | MC4 Compatible                                                                                                                                   |
| Per Pallet             | 31pcs(35mm) / 33pcs(33mm)                                                                                                                        |
| Per Container(40'HQ)   | 558pcs(35mm) / 594pcs(33mm)                                                                                                                      |



| 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 <sub>MAX</sub> (W) | 700   | 535              | 705   | 539              | 710   | 543              | 715   | 547              | 720   |
| Max. Power Voltage                | V <sub>MPP</sub> (V) | 40.07 | 37.66            | 40.29 | 37.86            | 40.51 | 38.06            | 40.72 | 38.26            | 40.94 |
| Max. Power Current                | I <sub>MPP</sub> (A) | 17.47 | 14.21            | 17.50 | 14.24            | 17.53 | 14.27            | 17.56 | 14.30            | 17.59 |
| Open Circuit Voltage              | V <sub>OC</sub> (V)  | 48.60 | 46.07            | 48.82 | 46.28            | 49.03 | 46.50            | 49.24 | 46.71            | 49.45 |
| Short Circuit Current             | I <sub>SC</sub> (A)  | 18.37 | 14.81            | 18.41 | 14.85            | 18.45 | 14.89            | 18.49 | 14.93            | 18.53 |
| 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 <sub>MAX</sub> (W) | 735    | 740    | 746    | 751    |
|                                     | Module Efficiency | (%)                  | 23.66% | 23.83% | 24.00% | 24.17% |
| 10%                                 | Maximum Power     | P <sub>MAX</sub> (W) | 770    | 776    | 781    | 787    |
|                                     | Module Efficiency | (%)                  | 24.79% | 24.96% | 25.14% | 25.32% |
| 25%                                 | Maximum Power     | P <sub>MAX</sub> (W) | 875    | 881    | 888    | 894    |
|                                     | Module Efficiency | (%)                  | 28.17% | 28.37% | 28.57% | 28.77% |

| Temperature Characteristics                |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.25% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.043% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.30% |

| Maximum Parameters           |           |
|------------------------------|-----------|
| Working Temperature          | -40~+85°C |
| Maximum System Voltage       | 1500V DC  |
| Nominal Maximum Fuse Current | 35A       |

210R N-type Bifacial Module (54)



Power Range  
**490W ~ 510W**

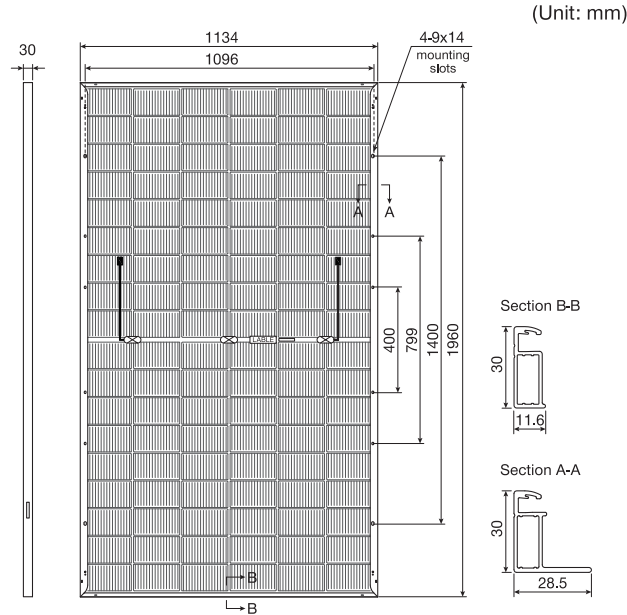


Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.95%**

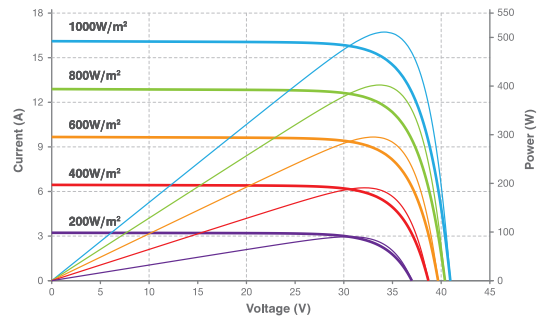
| Structure Performance  |                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>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 (horizontal packing) / 720pcs (vertical packing)                                                                                          |



| 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 <sub>MAX</sub> (W) | 490   | 370               | 495   | 374               | 500   | 378               | 505   | 382               | 510   |
| Max. Power Voltage                | V <sub>MPP</sub> (V) | 33.14 | 31.02             | 33.27 | 31.17             | 33.41 | 31.32             | 33.55 | 31.47             | 33.68 |
| Max. Power Current                | I <sub>MPP</sub> (A) | 14.79 | 11.93             | 14.88 | 12.00             | 14.97 | 12.07             | 15.06 | 12.14             | 15.15 |
| Open Circuit Voltage              | V <sub>OC</sub> (V)  | 40.50 | 38.43             | 40.61 | 38.54             | 40.72 | 38.64             | 40.83 | 38.75             | 40.94 |
| Short Circuit Current             | I <sub>SC</sub> (A)  | 15.76 | 12.71             | 15.85 | 12.79             | 15.94 | 12.86             | 16.02 | 12.93             | 16.11 |
| 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 <sub>MAX</sub> (W) | 515    | 520    | 525    | 530    |
|                                     | Module Efficiency | (%)                  | 23.15% | 23.38% | 23.62% | 23.86% |
| 10%                                 | Maximum Power     | P <sub>MAX</sub> (W) | 539    | 545    | 550    | 556    |
|                                     | Module Efficiency | (%)                  | 24.25% | 24.50% | 24.75% | 24.99% |
| 25%                                 | Maximum Power     | P <sub>MAX</sub> (W) | 613    | 619    | 625    | 631    |
|                                     | Module Efficiency | (%)                  | 27.56% | 27.84% | 28.12% | 28.40% |

| Temperature Characteristics                |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.25% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.043% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.30% |

| Maximum Parameters           |           |
|------------------------------|-----------|
| Working Temperature          | -40~+85°C |
| Maximum System Voltage       | 1500V DC  |
| Nominal Maximum Fuse Current | 35A       |

# 210R N-type Bifacial Module (60)



Power Range  
**545W ~ 565W**

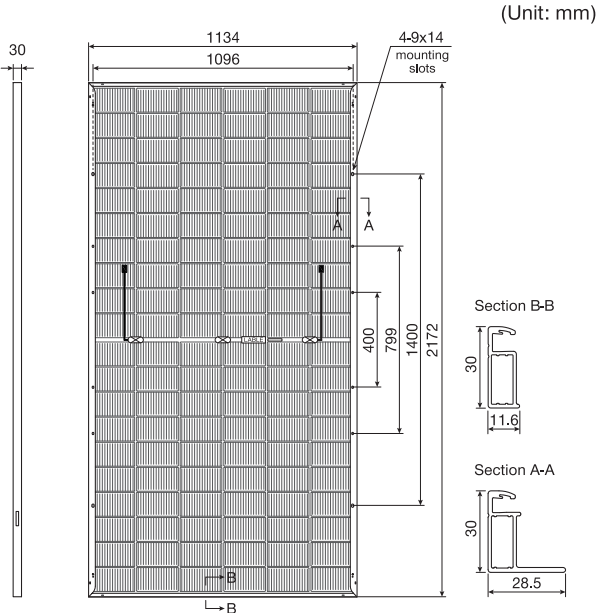


Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.94%**

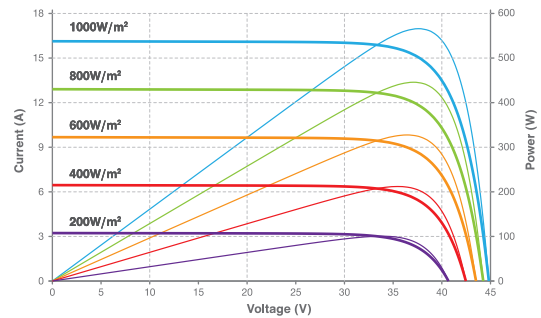
| Structure Performance  |                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>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 (horizontal packing) / 720pcs (vertical packing)                                                                                          |



| 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 <sub>MAX</sub> (W) | 545   | 411               | 550   | 415               | 555   | 419               | 560   | 423               | 565   |
| Max. Power Voltage                | V <sub>MPP</sub> (V) | 36.63 | 34.36             | 36.77 | 34.49             | 36.91 | 34.62             | 37.05 | 34.75             | 37.19 |
| Max. Power Current                | I <sub>MPP</sub> (A) | 14.88 | 11.97             | 14.96 | 12.04             | 15.04 | 12.11             | 15.12 | 12.18             | 15.20 |
| Open Circuit Voltage              | V <sub>OC</sub> (V)  | 44.34 | 42.08             | 44.47 | 42.20             | 44.59 | 42.31             | 44.71 | 42.43             | 44.83 |
| Short Circuit Current             | I <sub>SC</sub> (A)  | 15.78 | 12.73             | 15.87 | 12.80             | 15.96 | 12.87             | 16.04 | 12.94             | 16.13 |
| 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 <sub>MAX</sub> (W) | 572    | 578    | 583    | 588    |
|                                     | Module Efficiency | (%)                  | 23.23% | 23.45% | 23.66% | 23.87% |
| 10%                                 | Maximum Power     | P <sub>MAX</sub> (W) | 600    | 605    | 611    | 616    |
|                                     | Module Efficiency | (%)                  | 24.34% | 24.56% | 24.79% | 25.01% |
| 25%                                 | Maximum Power     | P <sub>MAX</sub> (W) | 681    | 688    | 694    | 700    |
|                                     | Module Efficiency | (%)                  | 27.66% | 27.91% | 28.17% | 28.42% |

| Temperature Characteristics                |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.25% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.043% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.30% |

| Maximum Parameters           |           |
|------------------------------|-----------|
| Working Temperature          | -40~+85°C |
| Maximum System Voltage       | 1500V DC  |
| Nominal Maximum Fuse Current | 35A       |

# 210R N-type Bifacial Module (66)



Power Range  
**595W ~ 615W**

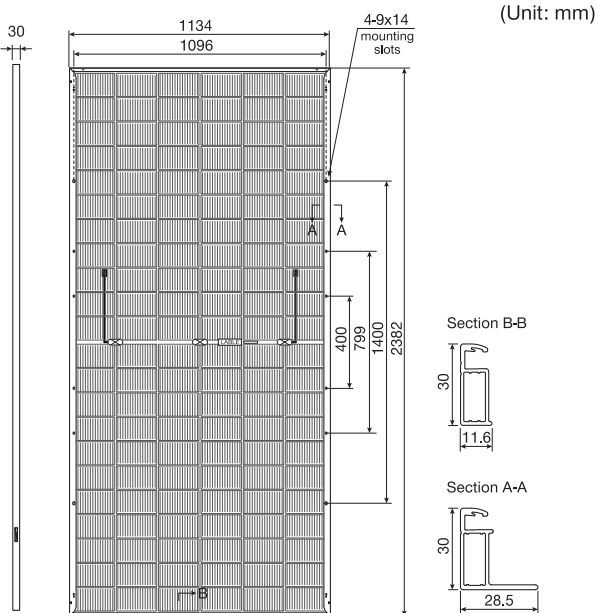


Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.77%**

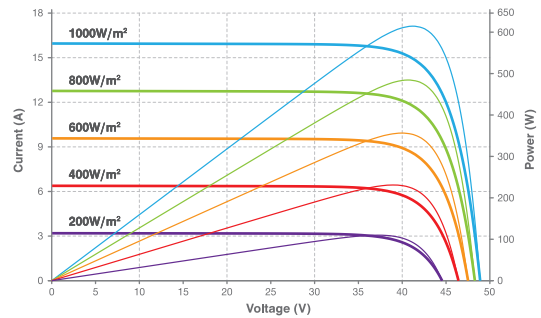
| Structure Performance  |                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>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 (horizontal packing) / 720pcs (vertical packing)                                                                                          |



| 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 <sub>MAX</sub> (W) | 595   | 448               | 600   | 452               | 605   | 456               | 610   | 460               | 615   |
| Max. Power Voltage                | V <sub>MPP</sub> (V) | 40.26 | 37.62             | 40.38 | 37.77             | 40.51 | 37.94             | 40.64 | 38.10             | 40.76 |
| Max. Power Current                | I <sub>MPP</sub> (A) | 14.78 | 11.91             | 14.86 | 11.97             | 14.94 | 12.02             | 15.01 | 12.08             | 15.09 |
| Open Circuit Voltage              | V <sub>OC</sub> (V)  | 48.29 | 45.82             | 48.42 | 45.95             | 48.55 | 46.07             | 48.69 | 46.20             | 48.82 |
| Short Circuit Current             | I <sub>SC</sub> (A)  | 15.63 | 12.60             | 15.71 | 12.68             | 15.80 | 12.75             | 15.89 | 12.82             | 15.98 |
| 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 <sub>MAX</sub> (W) | 625    | 630    | 635    | 641    |
|                                     | Module Efficiency | (%)                  | 23.13% | 23.32% | 23.52% | 23.71% |
| 10%                                 | Maximum Power     | P <sub>MAX</sub> (W) | 655    | 660    | 666    | 671    |
|                                     | Module Efficiency | (%)                  | 24.23% | 24.43% | 24.64% | 24.84% |
| 25%                                 | Maximum Power     | P <sub>MAX</sub> (W) | 744    | 750    | 756    | 763    |
|                                     | Module Efficiency | (%)                  | 27.53% | 27.77% | 28.00% | 28.23% |

| Temperature Characteristics                |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.25% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.043% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.30% |

| Maximum Parameters           |           |
|------------------------------|-----------|
| Working Temperature          | -40~+85°C |
| Maximum System Voltage       | 1500V DC  |
| Nominal Maximum Fuse Current | 35A       |

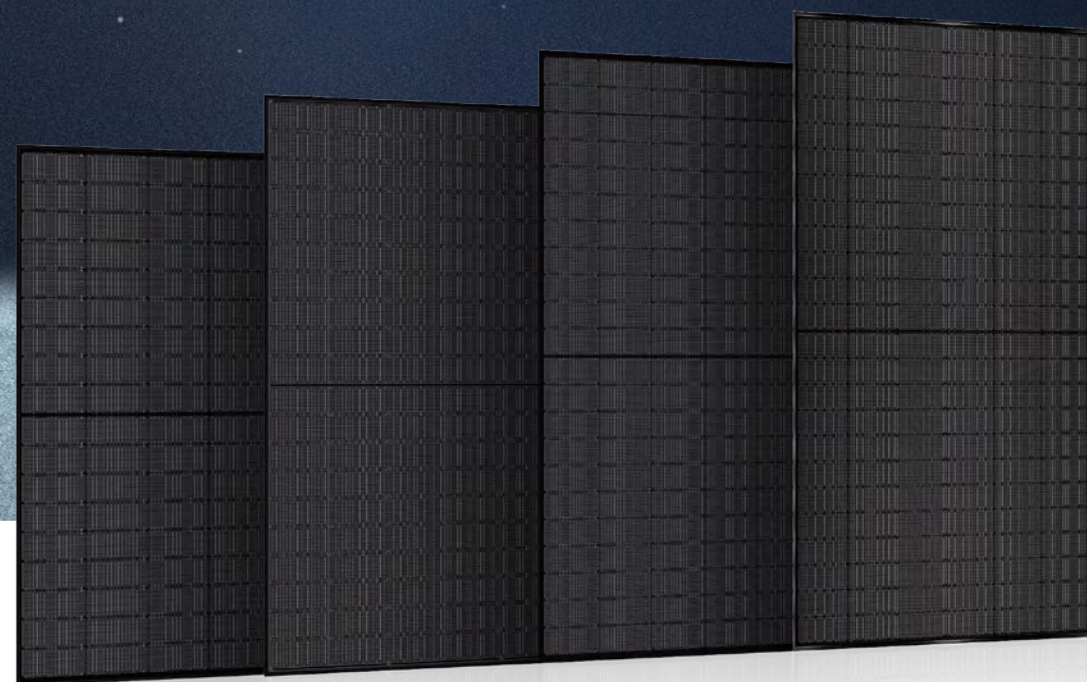


# Pure Black series

## Aesthetic Design, Darker, Pure, Seamless Integration

The LESSO Solar Pure Black series aims to perfectly integrates into environments to bring premium technology and modernity to buildings.

The Pure Black series adopts 182mm size wafers relies on TOPCon technology.



**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  
**420W ~ 650W**

Maximum Efficiency  
**23.25%**

12 years product  
workmanship warranty

30 years linear power  
output warranty

1% 1st-year degradation  
0.40% annual degradation

Pure Black Series Mainstream Products

| Product                                                                            | Power<br>(W)           | Maximum<br>Efficiency | Size<br>(mm)    |
|------------------------------------------------------------------------------------|------------------------|-----------------------|-----------------|
| 182 N-type (54) Pure Black single glass<br>182 N-type (54) Pure Black double glass | 420 - 440              | 22.53%                | 1722x1134x35/30 |
| 182 N-type (60) Pure Black single glass<br>182 N-type (60) Pure Black double glass | 470 - 490<br>465 - 485 | 22.63%<br>22.40%      | 1909x1134x35/30 |
| 182 N-type (66) Pure Black single glass<br>182 N-type (66) Pure Black double glass | 515 - 535              | 22.53%                | 2094x1134x35/30 |
| 182 N-type (72) Pure Black single glass<br>182 N-type (72) Pure Black double glass | 565 - 585              | 22.65%                | 2278x1134x35/30 |
| 182 N-type (78) Pure Black single glass                                            | 630 - 650              | 23.25%                | 2465x1134x35    |
| 182 N-type (54) Pure Black bifacial<br>single glass                                | 420 - 440              | 22.53%                | 1722x1134x35/30 |
| 182 P-type (54) Pure Black single glass                                            | 400 - 410              | 21.00%                | 1722x1134x35/30 |
| 182 P-type (60) Pure Black single glass                                            | 445 - 455              | 21.02%                | 1909×1134×35/30 |
| 182 P-type (66) Pure Black single glass                                            | 490 - 500              | 21.06%                | 2094×1134×35/30 |
| 182 P-type (72) Pure Black single glass                                            | 535 - 545              | 21.10%                | 2278×1134×35/30 |
| 210 P-type (66) Pure Black single glass                                            | 640 - 650              | 20.92%                | 2384×1303×35/33 |

Note: see datasheet for details

182 Pure Black N-type Monofacial Module (54)

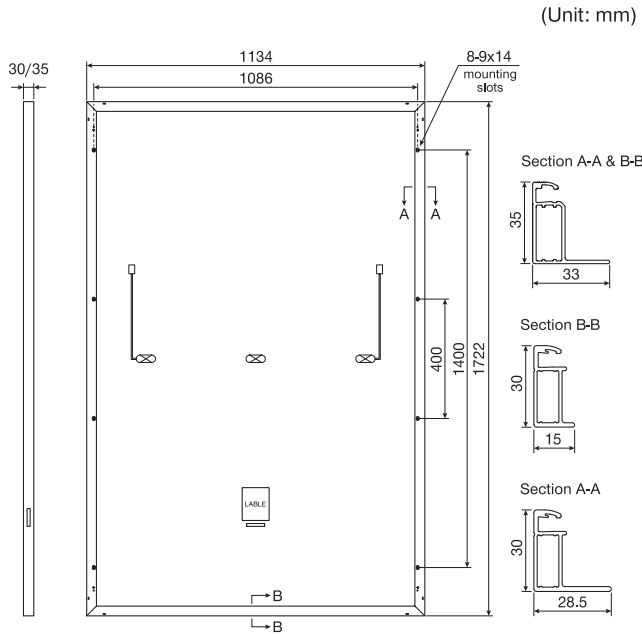
Power Range  
**420W ~ 440W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**22.53%**

Structure Performance

|                        |                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                                               |
| Solar Cell Arrangement | 108pcs(6×18)                                                                                                       |
| Module Dimension       | 1722×1134×35mm/30mm                                                                                                |
| Weight                 | 21.7kg(35mm) / 20.7kg(30mm)                                                                                        |
| Front Glass            | 3.2mm, highly transparent tempered glass<br>with anti-reflective coating                                           |
| Back Sheet             | Black                                                                                                              |
| Frame                  | Anodized Aluminum Alloy (Black)                                                                                    |
| Junction Box           | IP68 rated                                                                                                         |
| Cable                  | 4mm <sup>2</sup> , portrait 400mm (+)<br>200mm (-), landscape 1400mm (+)<br>1400mm (-)<br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                              |
| Front side / Rear side | 5400pa / 2400pa                                                                                                    |
| Connector              | MC4 Compatible                                                                                                     |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                          |
| Per Container(40'HQ)   | 806pcs(35mm) / 936pcs(30mm)                                                                                        |

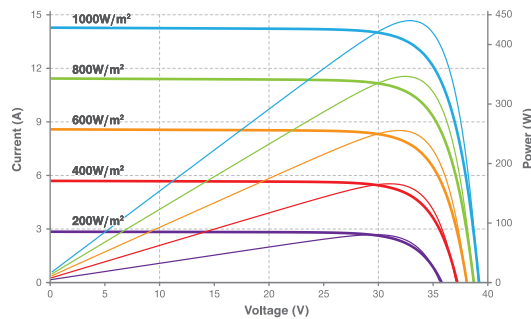


Electrical Performance Parameters

| Model Type            |                      | 420C(BPM)54(182) |       | 425C(BPM)54(182) |       | 430C(BPM)54(182) |       | 435C(BPM)54(182) |       | 440C(BPM)54(182) |       |
|-----------------------|----------------------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Testing Condition     |                      | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power    | P <sub>max</sub> (W) | 420              | 316   | 425              | 320   | 430              | 323   | 435              | 327   | 440              | 331   |
| Max. Power Voltage    | V <sub>MP</sub> (V)  | 31.82            | 29.68 | 32.01            | 29.86 | 32.20            | 29.91 | 32.38            | 30.09 | 32.57            | 30.27 |
| Max. Power Current    | I <sub>MP</sub> (A)  | 13.20            | 10.65 | 13.28            | 10.72 | 13.36            | 10.80 | 13.44            | 10.87 | 13.52            | 10.95 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 38.39            | 36.47 | 38.58            | 36.68 | 38.77            | 36.79 | 38.96            | 37.01 | 39.15            | 37.22 |
| Short Circuit Current | I <sub>SC</sub> (A)  | 13.97            | 11.28 | 14.05            | 11.35 | 14.13            | 11.42 | 14.21            | 11.49 | 14.29            | 11.56 |
| Module Efficiency     | (%)                  | 21.51            |       | 21.76            |       | 22.02            |       | 22.28            |       | 22.53            |       |

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (440C)



Temperature Characteristics

|                                             |         |
|---------------------------------------------|---------|
| Nominal Module Operating Temperature        | 44±2°C  |
| Temperature Coefficient (I <sub>sc</sub> )  | +0.043% |
| Temperature Coefficient (V <sub>oc</sub> )  | -0.25%  |
| Temperature Coefficient (P <sub>max</sub> ) | -0.30%  |

Maximum Parameters

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



# 182 Pure Black N-type Monofacial Module (60)



Power Range  
**470W ~ 490W**



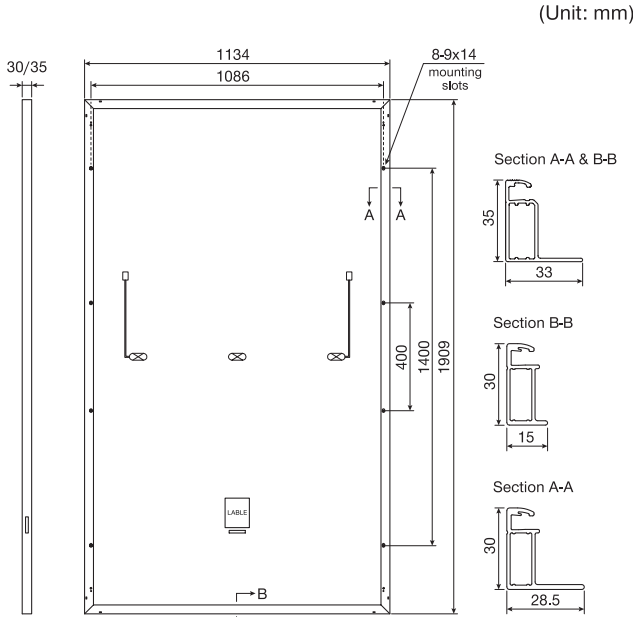
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.63%**

## Structure Performance

|                        |                                                                                                              |
|------------------------|--------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                                         |
| Solar Cell Arrangement | 120pcs(6×20)                                                                                                 |
| Module Dimension       | 1909×1134×35mm/30mm                                                                                          |
| Weight                 | 23.2kg(35mm) / 22.1kg(30mm)                                                                                  |
| 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                  | 4mm <sup>2</sup> , portrait 400mm (+) 200mm (-), landscape 1400mm (+) 1400mm (-)<br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                        |
| Front side / Rear side | 5400pa / 2400pa                                                                                              |
| Connector              | MC4 Compatible                                                                                               |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                    |
| Per Container(40'HQ)   | 744pcs(35mm) / 864pcs(30mm)                                                                                  |

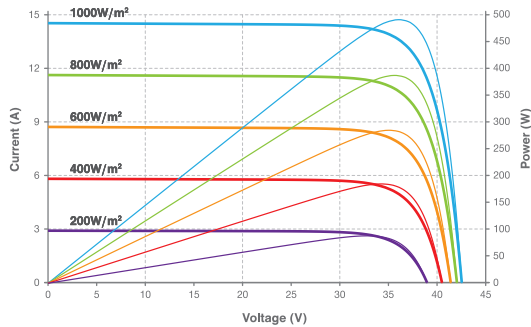


## Electrical Performance Parameters

| Model Type            | 470C(BPM)60(182)     |       | 475C(BPM)60(182) |       | 480C(BPM)60(182) |       | 485C(BPM)60(182) |       | 490C(BPM)60(182) |       |
|-----------------------|----------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Testing Condition     | STC                  | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power    | P <sub>MAX</sub> (W) | 470   | 354              | 475   | 358              | 480   | 362              | 485   | 366              | 490   |
| Max. Power Voltage    | V <sub>MPP</sub> (V) | 34.98 | 32.97            | 35.14 | 33.15            | 35.30 | 33.34            | 35.46 | 33.51            | 35.62 |
| Max. Power Current    | I <sub>MPP</sub> (A) | 13.44 | 10.74            | 13.52 | 10.80            | 13.60 | 10.86            | 13.68 | 10.93            | 13.76 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 42.09 | 40.05            | 42.25 | 40.21            | 42.42 | 40.37            | 42.48 | 40.53            | 42.54 |
| Short Circuit Current | I <sub>SC</sub> (A)  | 14.19 | 11.49            | 14.28 | 11.56            | 14.36 | 11.63            | 14.44 | 11.70            | 14.53 |
| Module Efficiency     | (%)                  | 21.71 |                  | 21.94 |                  | 22.17 |                  | 22.40 |                  | 22.63 |

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

## Current-Voltage & Power-Voltage Curve (490C)



## Temperature Characteristics

|                                             |         |
|---------------------------------------------|---------|
| Nominal Module Operating Temperature        | 44±2°C  |
| Temperature Coefficient (I <sub>sc</sub> )  | +0.043% |
| Temperature Coefficient (V <sub>oc</sub> )  | -0.25%  |
| Temperature Coefficient (P <sub>max</sub> ) | -0.30%  |

## Maximum Parameters

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

# 182 Pure Black N-type Monofacial Module (66)



Power Range  
**515W ~ 535W**



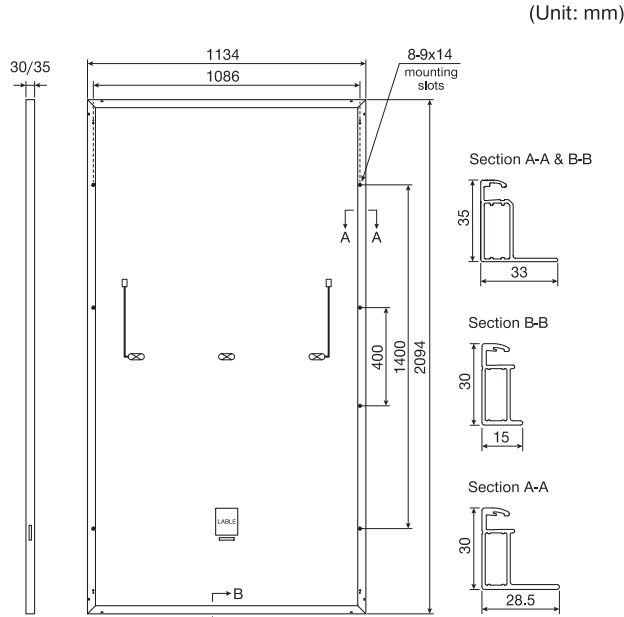
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.53%**

## Structure Performance

|                        |                                                                                                              |
|------------------------|--------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                                         |
| Solar Cell Arrangement | 132pcs(6×22)                                                                                                 |
| Module Dimension       | 2094×1134×35mm/30mm                                                                                          |
| Weight                 | 25.1kg(35mm) / 23.8kg(30mm)                                                                                  |
| 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                  | 4mm <sup>2</sup> , portrait 400mm (+) 200mm (-), landscape 1400mm (+) 1400mm (-)<br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                        |
| Front side / Rear side | 5400pa / 2400pa                                                                                              |
| Connector              | MC4 Compatible                                                                                               |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                    |
| Per Container(40'HQ)   | 682pcs(35mm) / 792pcs(30mm)                                                                                  |

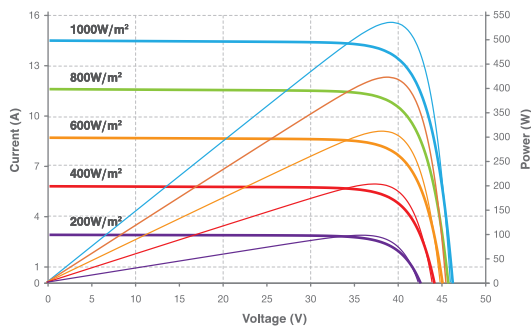


## Electrical Performance Parameters

| 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 <sub>MAX</sub> (W) | 515   | 387              | 520   | 391              | 525   | 395              | 530   | 399              | 535   |
| Max. Power Voltage    | V <sub>MPP</sub> (V) | 38.32 | 36.21            | 38.47 | 36.38            | 38.61 | 36.55            | 38.75 | 36.71            | 38.89 |
| Max. Power Current    | I <sub>MPP</sub> (A) | 13.44 | 10.69            | 13.52 | 10.75            | 13.60 | 10.81            | 13.68 | 10.87            | 13.76 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 45.93 | 43.61            | 45.98 | 43.75            | 46.03 | 43.89            | 46.08 | 44.03            | 46.13 |
| Short Circuit Current | I <sub>SC</sub> (A)  | 14.17 | 11.49            | 14.26 | 11.56            | 14.34 | 11.63            | 14.42 | 11.70            | 14.50 |
| Module Efficiency     | (%)                  | 21.69 |                  | 21.90 |                  | 22.11 |                  | 22.32 |                  | 22.53 |

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m<sup>2</sup>, 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°C  |
| Temperature Coefficient (I <sub>sc</sub> )  | +0.043% |
| Temperature Coefficient (V <sub>oc</sub> )  | -0.25%  |
| Temperature Coefficient (P <sub>max</sub> ) | -0.30%  |

## Maximum Parameters

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

# 182 Pure Black N-type Monofacial Module (72)



Power Range  
**565W ~ 585W**

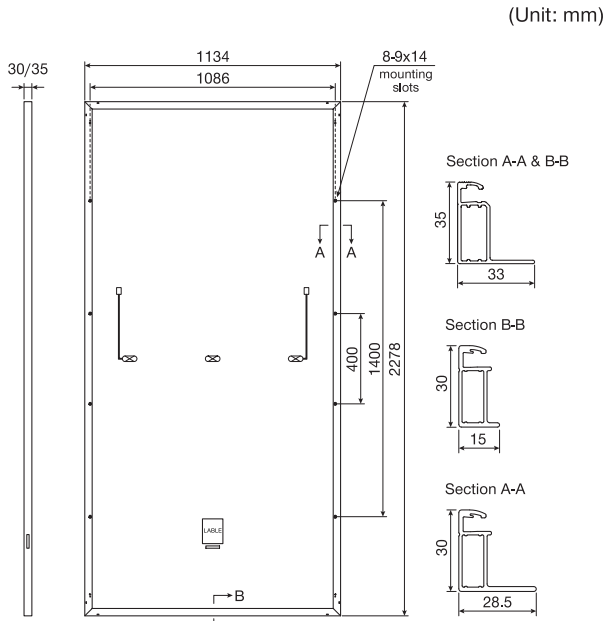


Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.65%**

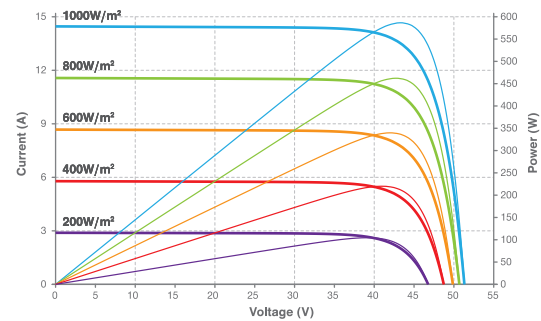
| Structure Performance  |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                                                                                          |
| Solar Cell Arrangement | 144pcs(6×24)                                                                                                                                                  |
| Module Dimension       | 2278×1134×35mm/30mm                                                                                                                                           |
| Weight                 | 28.0kg(35mm) / 26.9kg(30mm)                                                                                                                                   |
| 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                  | 4mm <sup>2</sup> , portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                                         |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                               |
| Connector              | MC4 Compatible                                                                                                                                                |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                                                                     |
| Per Container(40'HQ)   | 620pcs(35mm) / 720pcs(30mm)                                                                                                                                   |



| 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 <sub>MAX</sub> (W) | 565              | 425   | 570              | 429   | 575              | 433   | 580              | 437   | 585              | 441   |
| Max. Power Voltage                | V <sub>MP</sub> (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 <sub>MP</sub> (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 <sub>OC</sub> (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 <sub>SC</sub> (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/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m<sup>2</sup>, 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°C  |
| Temperature Coefficient (I <sub>sc</sub> )  | +0.043% |
| Temperature Coefficient (V <sub>oc</sub> )  | -0.25%  |
| Temperature Coefficient (P <sub>max</sub> ) | -0.30%  |

| Maximum Parameters           |           |
|------------------------------|-----------|
| Working Temperature          | -40~+85°C |
| Maximum System Voltage       | 1500V DC  |
| Nominal Maximum Fuse Current | 25A       |

# 182 Pure Black N-type Monofacial Module (78)



Power Range  
**630W ~ 650W**

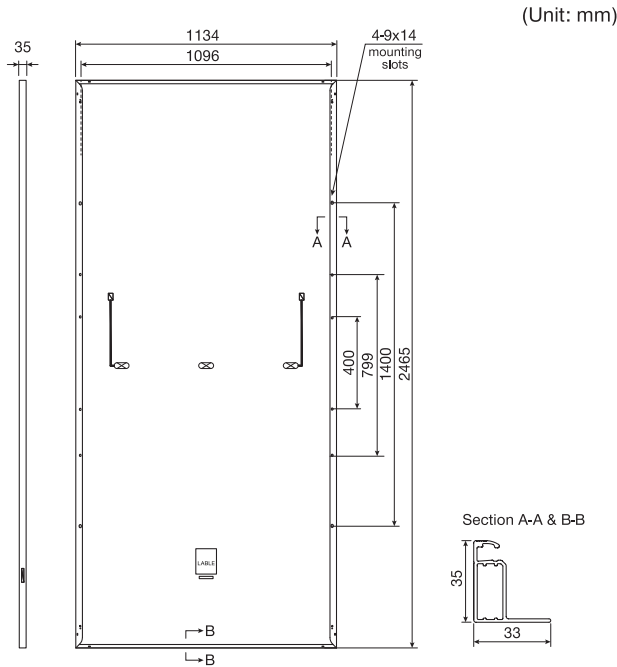


Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**23.25%**

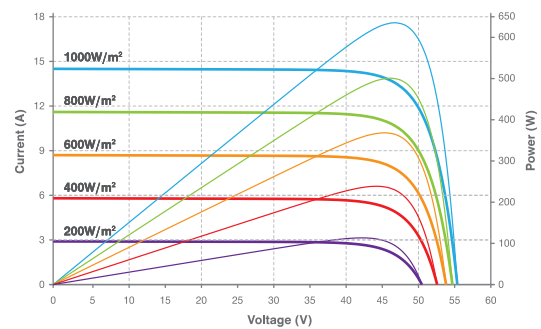
| Structure Performance  |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                                                                                          |
| Solar Cell Arrangement | 156pcs(6×26)                                                                                                                                                  |
| Module Dimension       | 2465×1134×35mm                                                                                                                                                |
| Weight                 | 30.5kg                                                                                                                                                        |
| 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                  | 4mm <sup>2</sup> , portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>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                                                                                                                                                        |



| Electrical Performance Parameters |                      |                  |       |                  |       |                  |       |                  |       |                  |       |
|-----------------------------------|----------------------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Model Type                        |                      | 630C(BPM)78(182) |       | 635C(BPM)78(182) |       | 640C(BPM)78(182) |       | 645C(BPM)78(182) |       | 650C(BPM)78(182) |       |
| Testing Condition                 |                      | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power                | P <sub>MAX</sub> (W) | 630              | 474   | 635              | 478   | 640              | 482   | 645              | 486   | 650              | 490   |
| Max. Power Voltage                | V <sub>MP</sub> (V)  | 46.40            | 43.69 | 46.53            | 43.82 | 46.66            | 43.95 | 46.79            | 44.08 | 46.91            | 44.22 |
| Max. Power Current                | I <sub>MP</sub> (A)  | 13.58            | 10.85 | 13.65            | 10.91 | 13.72            | 10.97 | 13.79            | 11.03 | 13.86            | 11.06 |
| Open Circuit Voltage              | V <sub>OC</sub> (V)  | 55.18            | 52.45 | 55.33            | 52.59 | 55.48            | 52.73 | 55.63            | 52.87 | 55.78            | 53.01 |
| Short Circuit Current             | I <sub>SC</sub> (A)  | 14.41            | 11.61 | 14.49            | 11.68 | 14.57            | 11.74 | 14.65            | 11.81 | 14.73            | 11.87 |
| Module Efficiency                 | (%)                  | 22.54            |       | 22.72            |       | 22.90            |       | 23.07            |       | 23.25            |       |

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s; Power measurement tolerance ±3%.

Current-Voltage & Power-Voltage Curve (650C)



| Temperature Characteristics                 |         |
|---------------------------------------------|---------|
| Nominal Module Operating Temperature        | 44±2°C  |
| Temperature Coefficient (I <sub>sc</sub> )  | +0.043% |
| Temperature Coefficient (V <sub>oc</sub> )  | -0.25%  |
| Temperature Coefficient (P <sub>max</sub> ) | -0.30%  |

| Maximum Parameters           |           |
|------------------------------|-----------|
| Working Temperature          | -40~+85°C |
| Maximum System Voltage       | 1500V DC  |
| Nominal Maximum Fuse Current | 25A       |

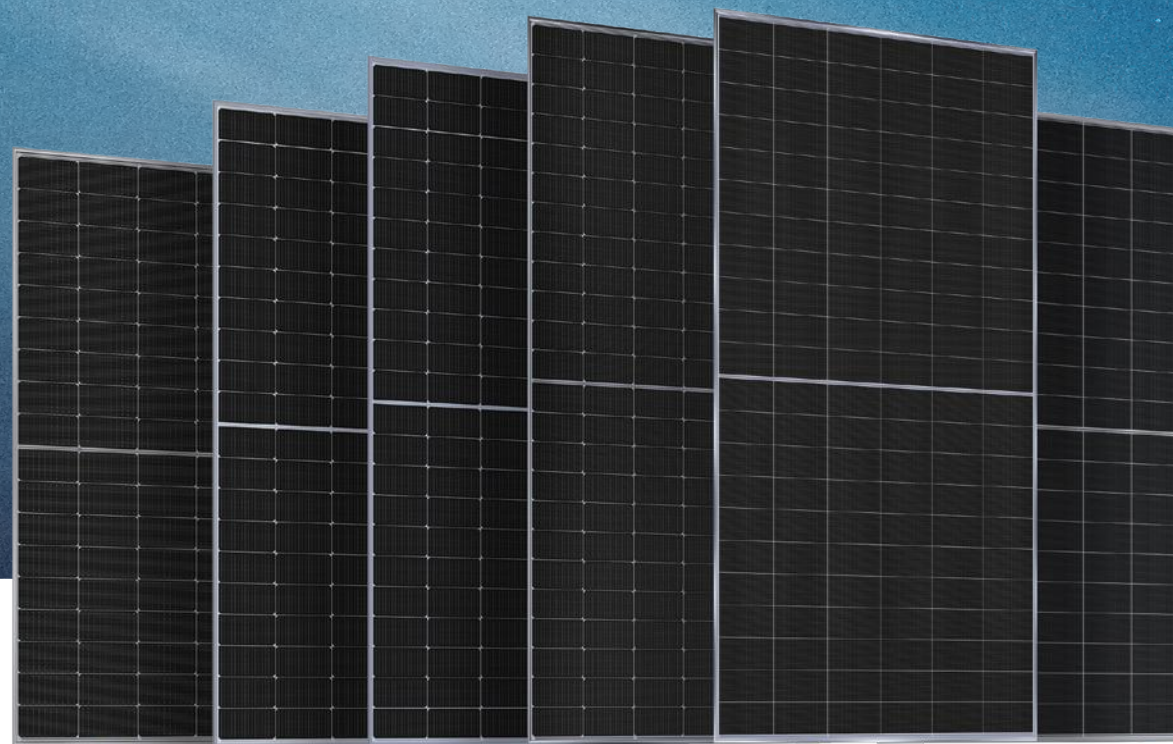


# P series

## Hardcore Energy, Reliable Technology

The LESSO Solar P series relies on MBB and half-cell technology, maximum efficiency reaches 21.48%. Stronger resistance to shade and lower risk of hot spots.

Series and parallel design, reducing the series RS and achieving higher power output and lower BOS cost.



**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 years (monofacial module)  
30 years (bifacial module)  
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 | 405 - 415 | 21.25%             | 1722x1134x35/30 |
| 182 P-type (54) double glass |           |                    |                 |
| 182 P-type (60) single glass | 450 - 460 | 21.25%             | 1909x1134x35/30 |
| 182 P-type (60) double glass |           |                    |                 |
| 182 P-type (66) single glass | 495 - 505 | 21.27%             | 2094x1134x35/30 |
| 182 P-type (66) double glass |           |                    |                 |
| 182 P-type (72) single glass | 545 - 555 | 21.48%             | 2278x1134x35/30 |
| 182 P-type (72) double glass |           |                    |                 |
| 210 P-type (54) single glass | 535 - 545 | 21.34%             | 1960x1303x35/30 |
| 210 P-type (54) double glass |           |                    |                 |
| 210 P-type (60) single glass | 595 - 605 | 21.38%             | 2172x1303x35/30 |
| 210 P-type (60) double glass |           |                    |                 |
| 210 P-type (66) single glass | 655 - 665 | 21.41%             | 2384x1303x35/33 |
| 210 P-type (66) double glass |           |                    |                 |

Note: see datasheet for details

182 P-type Bifacial Module (54)

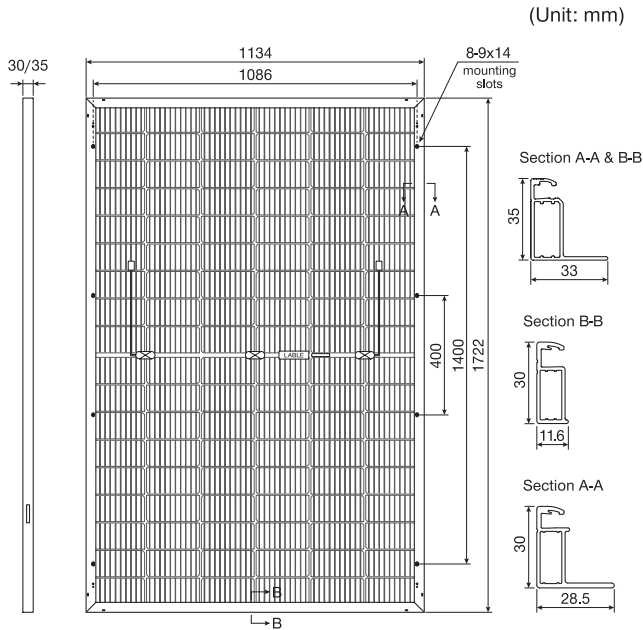
Power Range  
**405W ~ 415W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.25%**

Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm Mono-crystalline (Half Cell)                                                                                                                            |
| Solar Cell Arrangement | 108pcs(6×18)                                                                                                                                                  |
| Module Dimension       | 1722×1134×35mm/30mm                                                                                                                                           |
| Weight                 | 24.1kg(35mm) / 23.1kg(30mm)                                                                                                                                   |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 4mm <sup>2</sup> , portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                                         |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                               |
| Connector              | MC4 Compatible                                                                                                                                                |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                                                                     |
| Per Container(40'HQ)   | 806pcs(35mm) / 936pcs(30mm)                                                                                                                                   |

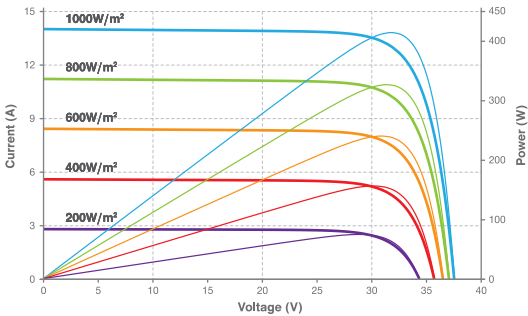


Electrical Performance Parameters

| 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 <sub>Max</sub> (W) | 405              | 282   | 410              | 287   | 415              | 292   |
| Max. Power Voltage    | V <sub>MP</sub> (V)  | 31.35            | 27.12 | 31.57            | 27.50 | 31.79            | 27.87 |
| Max. Power Current    | I <sub>MP</sub> (A)  | 12.92            | 10.40 | 12.99            | 10.44 | 13.06            | 10.48 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 37.08            | 34.74 | 37.20            | 34.86 | 37.34            | 35.00 |
| Short Circuit Current | I <sub>SC</sub> (A)  | 13.81            | 11.15 | 13.88            | 11.20 | 13.95            | 11.26 |
| Module Efficiency     | (%)                  | 20.74            |       | 21.00            |       | 21.25            |       |

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5; NMOT: Irradiance 800W/m<sup>2</sup>, 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 <sub>max</sub> (W) | 425    | 431    | 436    |
|     | Module Efficiency | (%)                  | 21.78% | 22.05% | 22.31% |
| 10% | Maximum Power     | P <sub>max</sub> (W) | 446    | 451    | 457    |
|     | Module Efficiency | (%)                  | 22.81% | 23.10% | 23.38% |
| 25% | Maximum Power     | P <sub>max</sub> (W) | 506    | 513    | 519    |
|     | Module Efficiency | (%)                  | 25.93% | 26.25% | 26.57% |

Temperature Characteristics

|                                            |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°C  | Temperature Coefficient (V <sub>oc</sub> )  | -0.26% |
| Temperature Coefficient (I <sub>sc</sub> ) | +0.048% | Temperature Coefficient (P <sub>max</sub> ) | -0.34% |

Maximum Parameters

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



# 182 P-type Bifacial Module (60)



Power Range  
**450W ~ 460W**



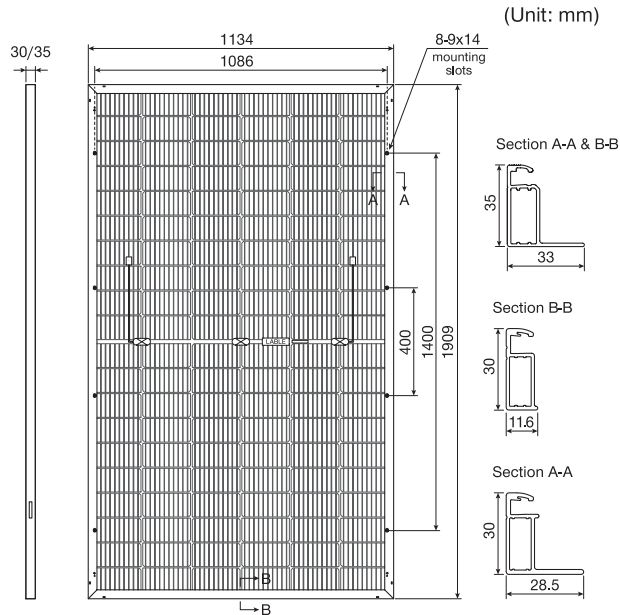
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**21.25%**

## Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm Mono-crystalline (Half Cell)                                                                                                                            |
| Solar Cell Arrangement | 120pcs(6×20)                                                                                                                                                  |
| Module Dimension       | 1909×1134×35mm/30mm                                                                                                                                           |
| Weight                 | 26.9kg(35mm) / 25.7kg(30mm)                                                                                                                                   |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 4mm <sup>2</sup> , portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                                         |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                               |
| Connector              | MC4 Compatible                                                                                                                                                |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                                                                     |
| Per Container(40'HQ)   | 744pcs(35mm) / 864pcs(30mm)                                                                                                                                   |

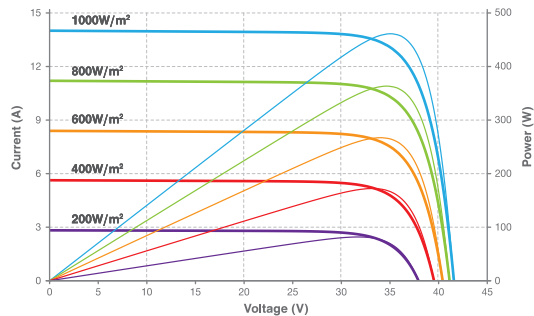


## Electrical Performance Parameters

| 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 <sub>MAX</sub> (W) | 450              | 322   | 455              | 327   | 460              | 332   |
| Max. Power Voltage    | V <sub>MPP</sub> (V) | 34.78            | 30.91 | 34.98            | 31.27 | 35.18            | 31.62 |
| Max. Power Current    | I <sub>MPP</sub> (A) | 12.94            | 10.42 | 13.01            | 10.46 | 13.08            | 10.50 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 41.20            | 38.90 | 41.32            | 39.02 | 41.46            | 39.14 |
| Short Circuit Current | I <sub>SC</sub> (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 <sub>MAX</sub> (W) | 473    | 478    | 483    |
|     | Module Efficiency | (%)                  | 21.83% | 22.07% | 22.31% |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 495    | 501    | 506    |
|     | Module Efficiency | (%)                  | 22.87% | 23.12% | 23.37% |
| 25% | Maximum Power     | P <sub>MAX</sub> (W) | 563    | 569    | 575    |
|     | Module Efficiency | (%)                  | 25.98% | 26.27% | 26.56% |

## Temperature Characteristics

|                                            |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.26% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.048% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.34% |

## Maximum Parameters

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

# 182 P-type Bifacial Module (66)



Power Range  
**495W ~ 505W**



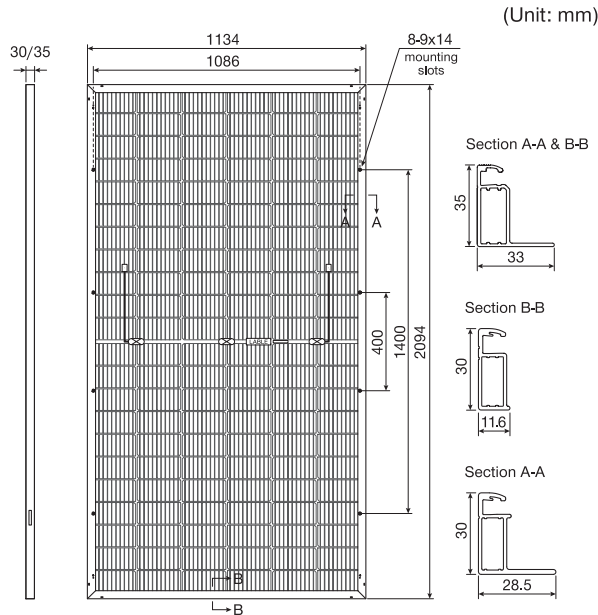
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**21.27%**

## Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm Mono-crystalline (Half Cell)                                                                                                                            |
| Solar Cell Arrangement | 132pcs(6x22)                                                                                                                                                  |
| Module Dimension       | 2094×1134×35mm/30mm                                                                                                                                           |
| Weight                 | 29.6kg(35mm) / 28.4kg(30mm)                                                                                                                                   |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 4mm <sup>2</sup> , portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                                         |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                               |
| Connector              | MC4 Compatible                                                                                                                                                |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                                                                     |
| Per Container(40'HQ)   | 682pcs(35mm) / 792pcs(30mm)                                                                                                                                   |

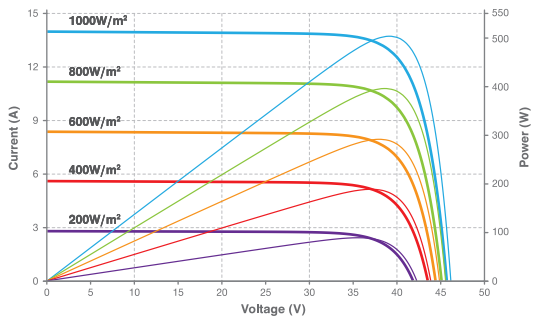


## Electrical Performance Parameters

| 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 <sub>MAX</sub> (W) | 495              | 367   | 500              | 372   | 505              | 377   |
| Max. Power Voltage    | V <sub>MPP</sub> (V) | 38.20            | 35.16 | 38.38            | 35.50 | 38.56            | 35.84 |
| Max. Power Current    | I <sub>MPP</sub> (A) | 12.96            | 10.44 | 13.03            | 10.48 | 13.10            | 10.52 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 45.36            | 43.06 | 45.48            | 43.18 | 45.62            | 43.32 |
| Short Circuit Current | I <sub>SC</sub> (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 <sub>MAX</sub> (W) | 520    | 525    | 530    |
|     | Module Efficiency | (%)                  | 21.89% | 22.11% | 22.33% |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 545    | 550    | 556    |
|     | Module Efficiency | (%)                  | 22.93% | 23.16% | 23.39% |
| 25% | Maximum Power     | P <sub>MAX</sub> (W) | 619    | 625    | 631    |
|     | Module Efficiency | (%)                  | 26.06% | 26.32% | 26.58% |

## Temperature Characteristics

|                                            |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.26% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.048% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.34% |

## Maximum Parameters

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

# 182 P-type Bifacial Module (72)



Power Range  
**545W ~ 555W**



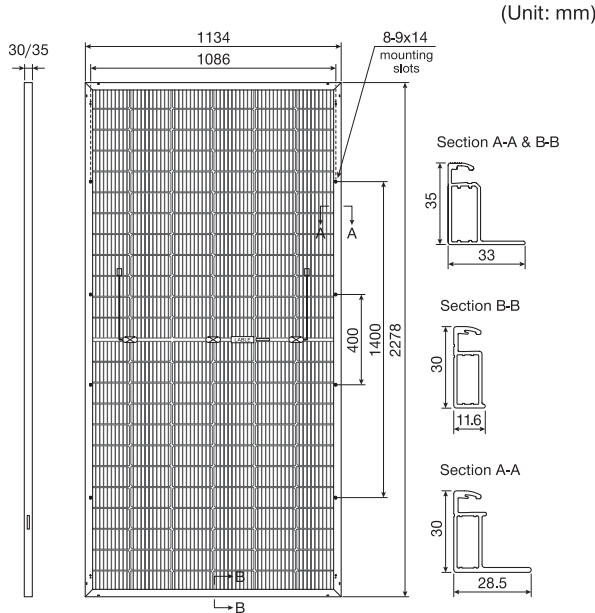
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**21.48%**

## Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm Mono-crystalline (Half Cell)                                                                                                                            |
| Solar Cell Arrangement | 144pcs(6×24)                                                                                                                                                  |
| Module Dimension       | 2278×1134×35mm/30mm                                                                                                                                           |
| Weight                 | 32.3kg(35mm) / 31.2kg(30mm)                                                                                                                                   |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 4mm <sup>2</sup> , portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                                         |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                               |
| Connector              | MC4 Compatible                                                                                                                                                |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                                                                     |
| Per Container(40'HQ)   | 620pcs(35mm) / 720pcs(30mm)                                                                                                                                   |

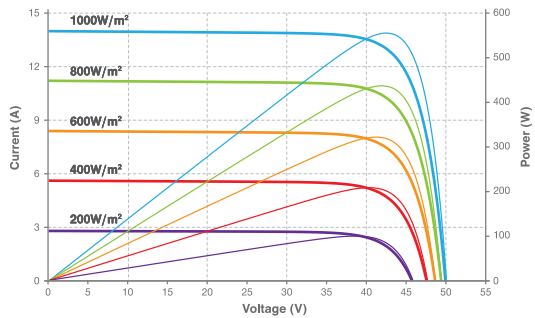


## Electrical Performance Parameters

| 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 <sub>MAX</sub> (W) | 545              | 411   | 550              | 414   | 555              | 417   |
| Max. Power Voltage    | V <sub>MPP</sub> (V) | 41.77            | 39.00 | 41.93            | 39.13 | 42.08            | 39.26 |
| Max. Power Current    | I <sub>MPP</sub> (A) | 13.05            | 10.52 | 13.12            | 10.57 | 13.19            | 10.63 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 49.64            | 47.56 | 49.78            | 47.75 | 49.93            | 47.94 |
| Short Circuit Current | I <sub>SC</sub> (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 <sub>MAX</sub> (W) | 572    | 578    | 583    |
|     | Module Efficiency | (%)                  | 22.15% | 22.36% | 22.56% |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 600    | 605    | 611    |
|     | Module Efficiency | (%)                  | 23.21% | 23.42% | 23.63% |
| 25% | Maximum Power     | P <sub>MAX</sub> (W) | 681    | 688    | 694    |
|     | Module Efficiency | (%)                  | 26.37% | 26.61% | 26.86% |

## Temperature Characteristics

|                                            |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.26% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.048% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.34% |

## Maximum Parameters

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

# 210 P-type Bifacial Module (54)



Power Range  
**530W ~ 540W**



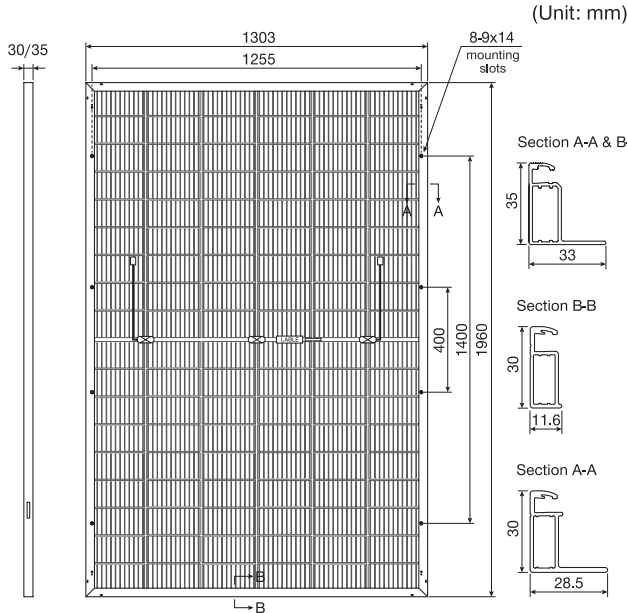
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**21.14%**

## Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 210mm Mono-crystalline (Half Cell)                                                                                                                            |
| Solar Cell Arrangement | 108pcs(6×18)                                                                                                                                                  |
| Module Dimension       | 1960×1303×35mm/30mm                                                                                                                                           |
| Weight                 | 32.8kg(35mm) / 31.7kg(30mm)                                                                                                                                   |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 4mm <sup>2</sup> , portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                                         |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                               |
| Connector              | MC4 Compatible                                                                                                                                                |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                                                                     |
| Per Container(40'HQ)   | 558pcs(35mm) / 648pcs(30mm)                                                                                                                                   |

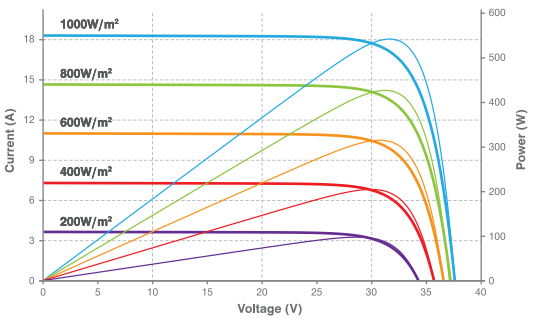


## Electrical Performance Parameters

| Model Type            |                      | 530D(HBD)54(210) |       | 535D(HBD)54(210) |       | 540D(HBD)54(210) |       |
|-----------------------|----------------------|------------------|-------|------------------|-------|------------------|-------|
| Testing Condition     |                      | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power    | P <sub>MAX</sub> (W) | 530              | 402   | 535              | 406   | 540              | 410   |
| Max. Power Voltage    | V <sub>MPP</sub> (V) | 30.63            | 28.64 | 30.83            | 28.84 | 31.03            | 29.04 |
| Max. Power Current    | I <sub>MPP</sub> (A) | 17.31            | 14.04 | 17.36            | 14.08 | 17.41            | 14.12 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 37.20            | 34.80 | 37.40            | 35.00 | 37.60            | 35.20 |
| Short Circuit Current | I <sub>SC</sub> (A)  | 18.24            | 14.72 | 18.28            | 14.76 | 18.32            | 14.80 |
| Module Efficiency     | (%)                  | 20.75            |       | 20.95            |       | 21.14            |       |

\* 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 (540D)



## Bifacial Output-rearside Power Gain

|     |                   |                      |        |        |        |
|-----|-------------------|----------------------|--------|--------|--------|
| 5%  | Maximum Power     | P <sub>MAX</sub> (W) | 557    | 562    | 567    |
|     | Module Efficiency | (%)                  | 21.79% | 22.00% | 22.20% |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 583    | 589    | 594    |
|     | Module Efficiency | (%)                  | 22.83% | 23.04% | 23.26% |
| 25% | Maximum Power     | P <sub>MAX</sub> (W) | 663    | 669    | 675    |
|     | Module Efficiency | (%)                  | 25.94% | 26.19% | 26.43% |

## Temperature Characteristics

|                                            |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.26% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.048% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.34% |

## Maximum Parameters

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



## 210 P-type Bifacial Module (60)



Power Range  
**590W ~ 600W**



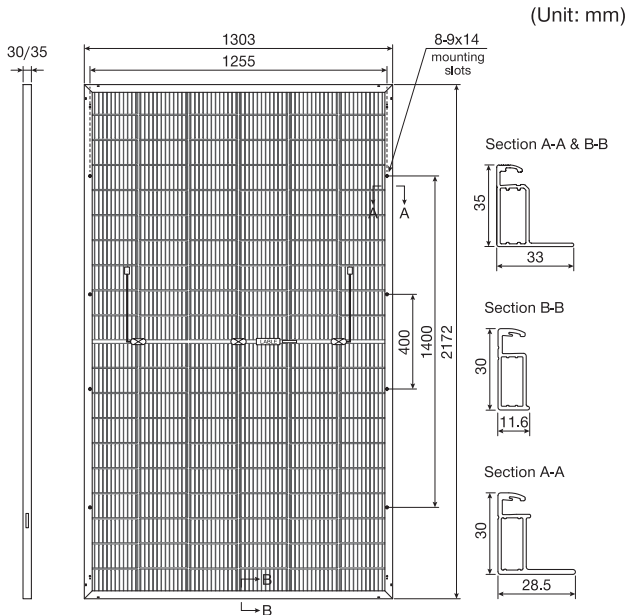
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**21.20%**

### Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 210mm Mono-crystalline (Half Cell)                                                                                                                            |
| Solar Cell Arrangement | 120pcs(6×20)                                                                                                                                                  |
| Module Dimension       | 2172×1303×35mm/30mm                                                                                                                                           |
| Weight                 | 35.6kg(35mm) / 34.5kg(30mm)                                                                                                                                   |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 4mm <sup>2</sup> , portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                                         |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                               |
| Connector              | MC4 Compatible                                                                                                                                                |
| Per Pallet             | 31pcs(35mm) / 36pcs(30mm)                                                                                                                                     |
| Per Container(40'HQ)   | 558pcs(35mm) / 648pcs(30mm)                                                                                                                                   |

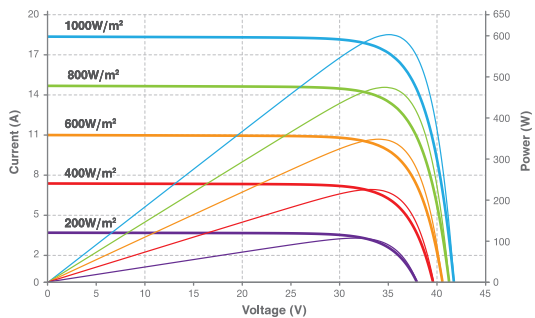


### Electrical Performance Parameters

| Model Type            |                      | 590D(HBD)60(210) |       | 595D(HBD)60(210) |       | 6000D(HBD)60(210) |       |
|-----------------------|----------------------|------------------|-------|------------------|-------|-------------------|-------|
| Testing Condition     |                      | STC              | NMOT  | STC              | NMOT  | STC               | NMOT  |
| Nominal Max. Power    | P <sub>MAX</sub> (W) | 590              | 447   | 595              | 451   | 600               | 455   |
| Max. Power Voltage    | V <sub>MP</sub> (V)  | 34.13            | 31.82 | 34.33            | 32.01 | 34.53             | 32.21 |
| Max. Power Current    | I <sub>MP</sub> (A)  | 17.29            | 14.05 | 17.34            | 14.09 | 17.38             | 14.13 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 41.40            | 39.00 | 41.60            | 39.20 | 41.80             | 39.40 |
| Short Circuit Current | I <sub>SC</sub> (A)  | 18.29            | 14.75 | 18.33            | 14.79 | 18.37             | 14.83 |
| Module Efficiency     | (%)                  | 20.85            |       | 21.02            |       | 21.20             |       |

\* 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 (600D)



### Bifacial Output-rearside Power Gain

|     |                   |                      |        |        |        |
|-----|-------------------|----------------------|--------|--------|--------|
| 5%  | Maximum Power     | P <sub>MAX</sub> (W) | 620    | 625    | 630    |
|     | Module Efficiency | (%)                  | 21.89% | 22.08% | 22.26% |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 649    | 655    | 660    |
|     | Module Efficiency | (%)                  | 22.93% | 23.13% | 23.32% |
| 25% | Maximum Power     | P <sub>MAX</sub> (W) | 738    | 744    | 750    |
|     | Module Efficiency | (%)                  | 26.06% | 26.28% | 26.50% |

### Temperature Characteristics

|                                            |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.26% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.048% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.34% |

### Maximum Parameters

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

## 210 P-type Bifacial Module (66)



Power Range  
**650W ~ 660W**



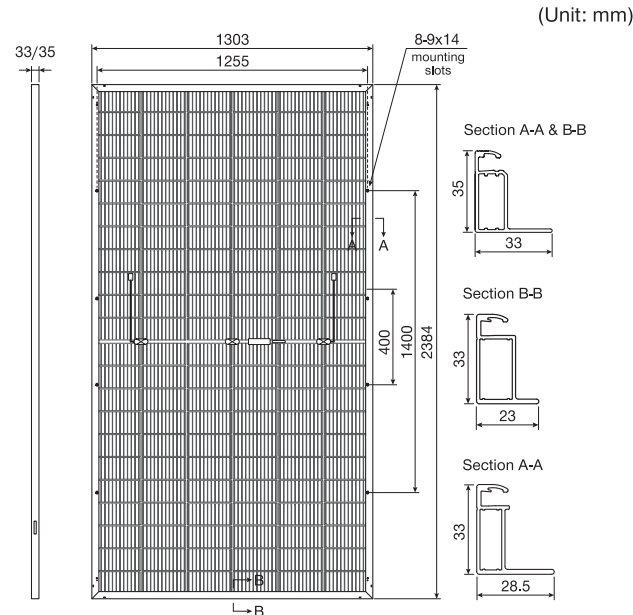
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**21.25%**

### Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 210mm Mono-crystalline (Half Cell)                                                                                                                            |
| Solar Cell Arrangement | 132pcs(6x22)                                                                                                                                                  |
| Module Dimension       | 2384×1303×35mm/33mm                                                                                                                                           |
| Weight                 | 38.2kg(35mm) / 37.8kg(33mm)                                                                                                                                   |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 4mm <sup>2</sup> , portrait <sup>400mm (+)</sup> / <sub>200mm (-)</sub> , landscape <sup>1400mm (+)</sup> / <sub>1400mm (-)</sub><br>Length can be customized |
| Diode Quantity         | 3 pcs                                                                                                                                                         |
| Front side / Rear side | 5400pa / 2400pa                                                                                                                                               |
| Connector              | MC4 Compatible                                                                                                                                                |
| Per Pallet             | 31pcs(35mm) / 33pcs(33mm)                                                                                                                                     |
| Per Container(40'HQ)   | 558pcs(35mm) / 594pcs(33mm)                                                                                                                                   |

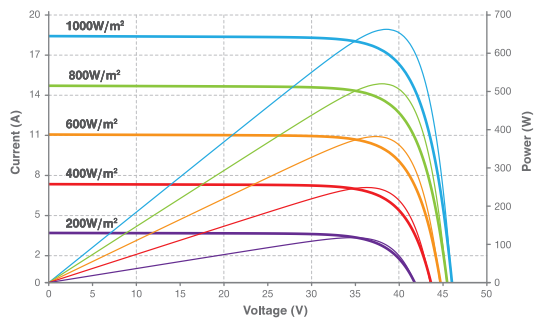


### Electrical Performance Parameters

| Model Type            |                      | 650D(HBD)66(210) |       | 655D(HBD)66(210) |       | 660D(HBD)66(210) |       |
|-----------------------|----------------------|------------------|-------|------------------|-------|------------------|-------|
| Testing Condition     |                      | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power    | P <sub>MAX</sub> (W) | 650              | 492   | 655              | 496   | 660              | 500   |
| Max. Power Voltage    | V <sub>MP</sub> (V)  | 37.63            | 35.04 | 37.83            | 35.22 | 38.03            | 35.42 |
| Max. Power Current    | I <sub>MP</sub> (A)  | 17.28            | 14.06 | 17.32            | 14.08 | 17.36            | 14.12 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 45.60            | 43.00 | 45.80            | 43.20 | 46.00            | 43.40 |
| Short Circuit Current | I <sub>SC</sub> (A)  | 18.34            | 14.78 | 18.38            | 14.82 | 18.42            | 14.86 |
| Module Efficiency     | (%)                  | 20.92            |       | 21.09            |       | 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 (660D)



### Bifacial Output-rearside Power Gain

|     |                   |                      |        |        |        |
|-----|-------------------|----------------------|--------|--------|--------|
| 5%  | Maximum Power     | P <sub>MAX</sub> (W) | 683    | 688    | 693    |
|     | Module Efficiency | (%)                  | 21.97% | 22.14% | 22.31% |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 715    | 721    | 726    |
|     | Module Efficiency | (%)                  | 23.02% | 23.19% | 23.37% |
| 25% | Maximum Power     | P <sub>MAX</sub> (W) | 813    | 819    | 825    |
|     | Module Efficiency | (%)                  | 26.16% | 26.36% | 26.56% |

### Temperature Characteristics

|                                            |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°C  | Temperature Coefficient (V <sub>OC</sub> )  | -0.26% |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.048% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.34% |

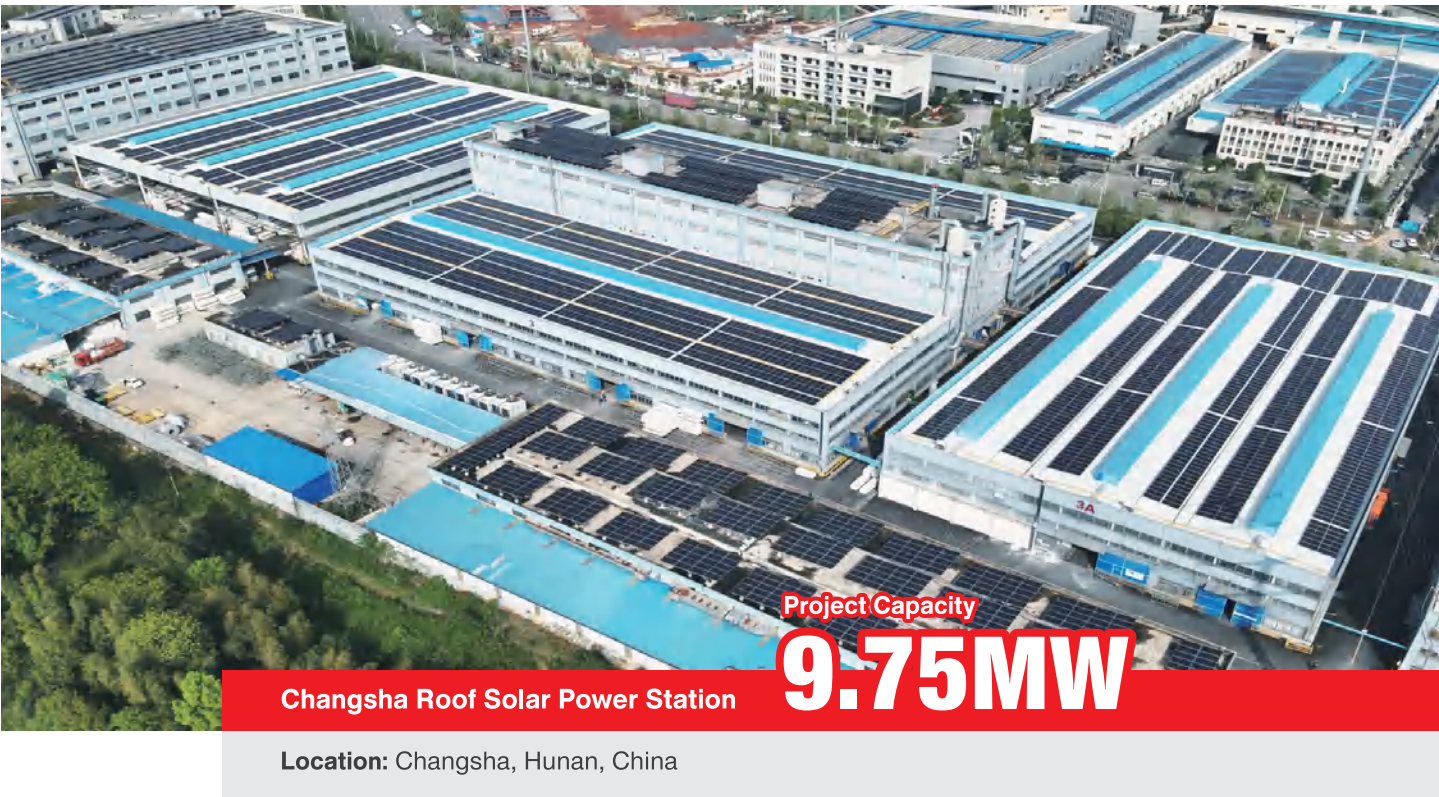
### Maximum Parameters

|                              |           |
|------------------------------|-----------|
| Working Temperature          | -40~+85°C |
| 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**  
**6.58MW**

**Maoming Logistics Roof Solar Power Station**

**Location:** Maoming, 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



**Haitian Roof Solar Power Station**

**Location:** Foshan, Guangdong, China  
**Project Capacity:** 6.14MW



**Dingan Roof Solar Power Station**

**Location:** Dingan, Hainan, China  
**Project Capacity:** 6MW



**Huanghuai market Roof Solar Power Station**

**Location:** Henan, China  
**Project Capacity:** 4.35MW



**Mulingke Kemian Factory Roof Solar Power Station**

**Location:** Heilongjiang, China  
**Project Capacity:** 0.8MW



# LESSO, BUILDING A SOLAR-POWERED WORLD

