

# 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



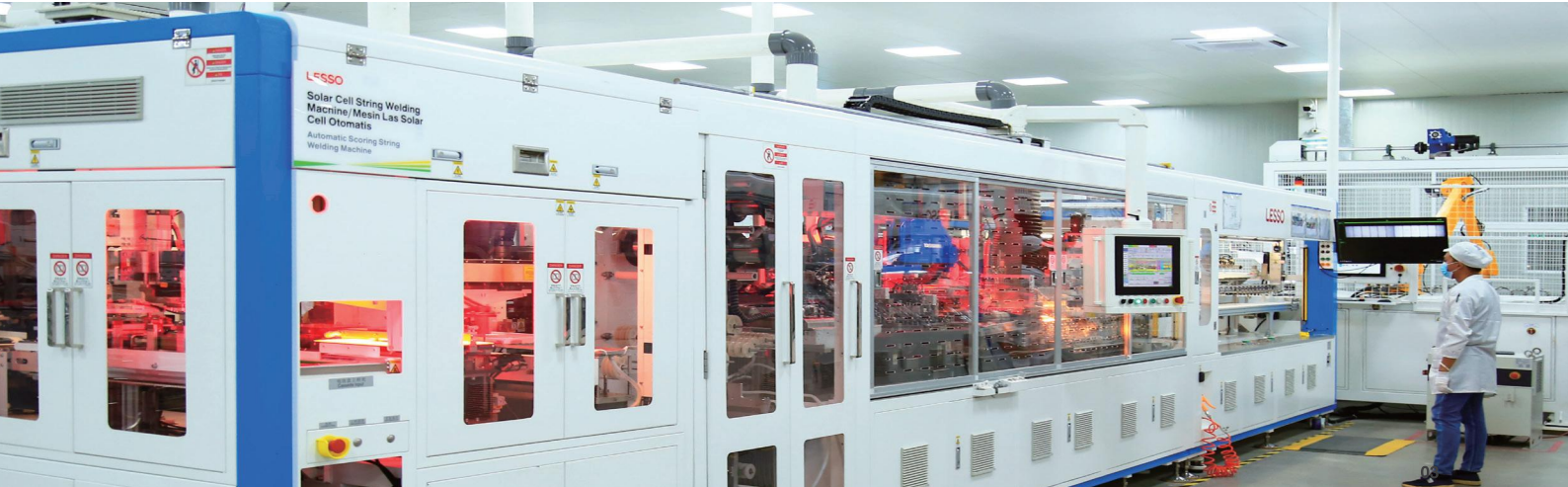
**Chongkou Factory**  
Foshan, China

**500MW** in Solar Modules



**Daba Factory**  
Foshan, China

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



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



## Our Certificates

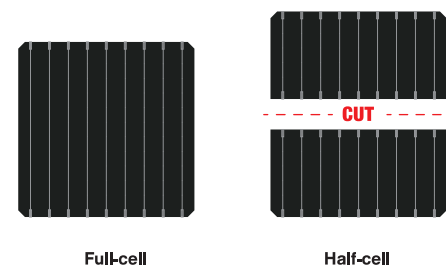
- IEC 61215, IEC 61730
- ISO 9001:2015 Quality Management System
- ISO 14001:2015 Environment Management System
- ISO 45001:2018 Occupational Health and Safety Management System





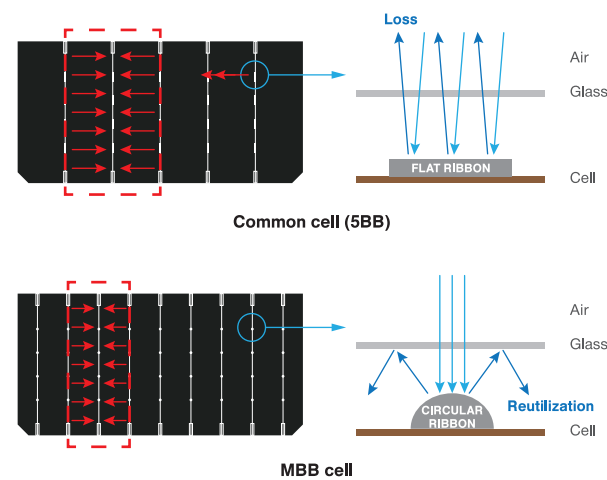
## HALF-CELL TECHNOLOGY

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



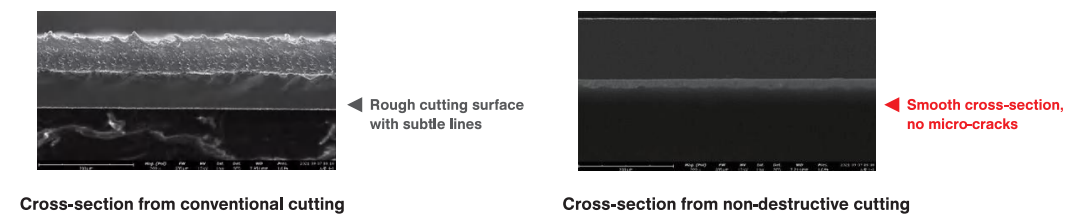
## MBB TECHNOLOGY

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



## NON-DESTRUCTIVE CUTTING TECHNOLOGY

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



## HIGH-DENSITY PACKAGING TECHNOLOGY

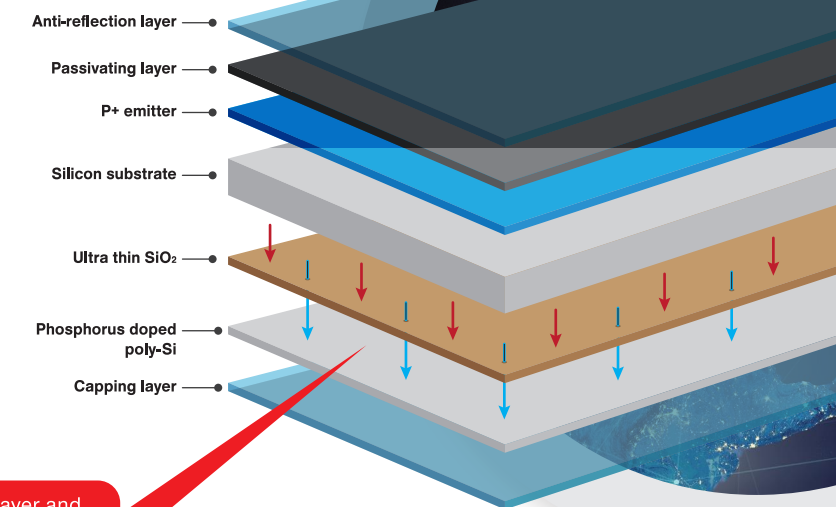
Through high-density packaging technology, the effective power-generating area of modules is maximized under the same footprint, improving efficiency without compromising reliability.



## TOPCON TECHNOLOGY

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

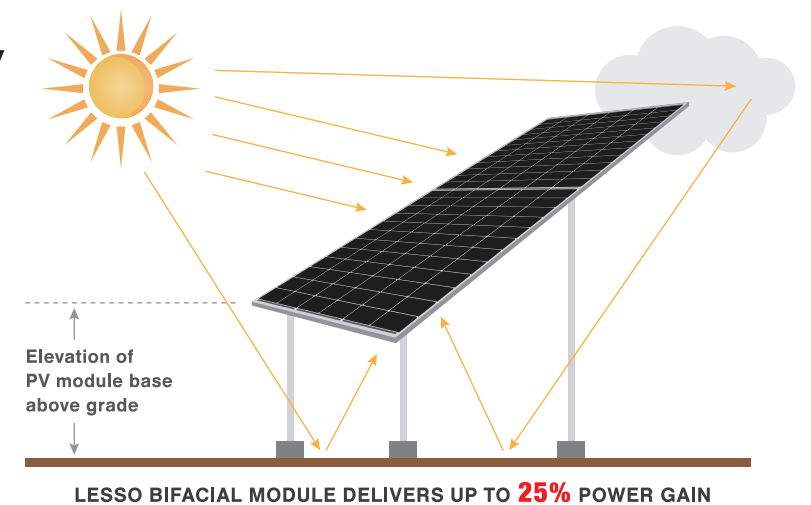
N-type modules exhibit superior degradation characteristics with only 1% first-year and 0.4% lower annual degradation rates compared to conventional counterparts, delivering 2.1% greater lifetime energy yield that directly enhances project profitability.



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

## BIFACIAL TECHNOLOGY

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



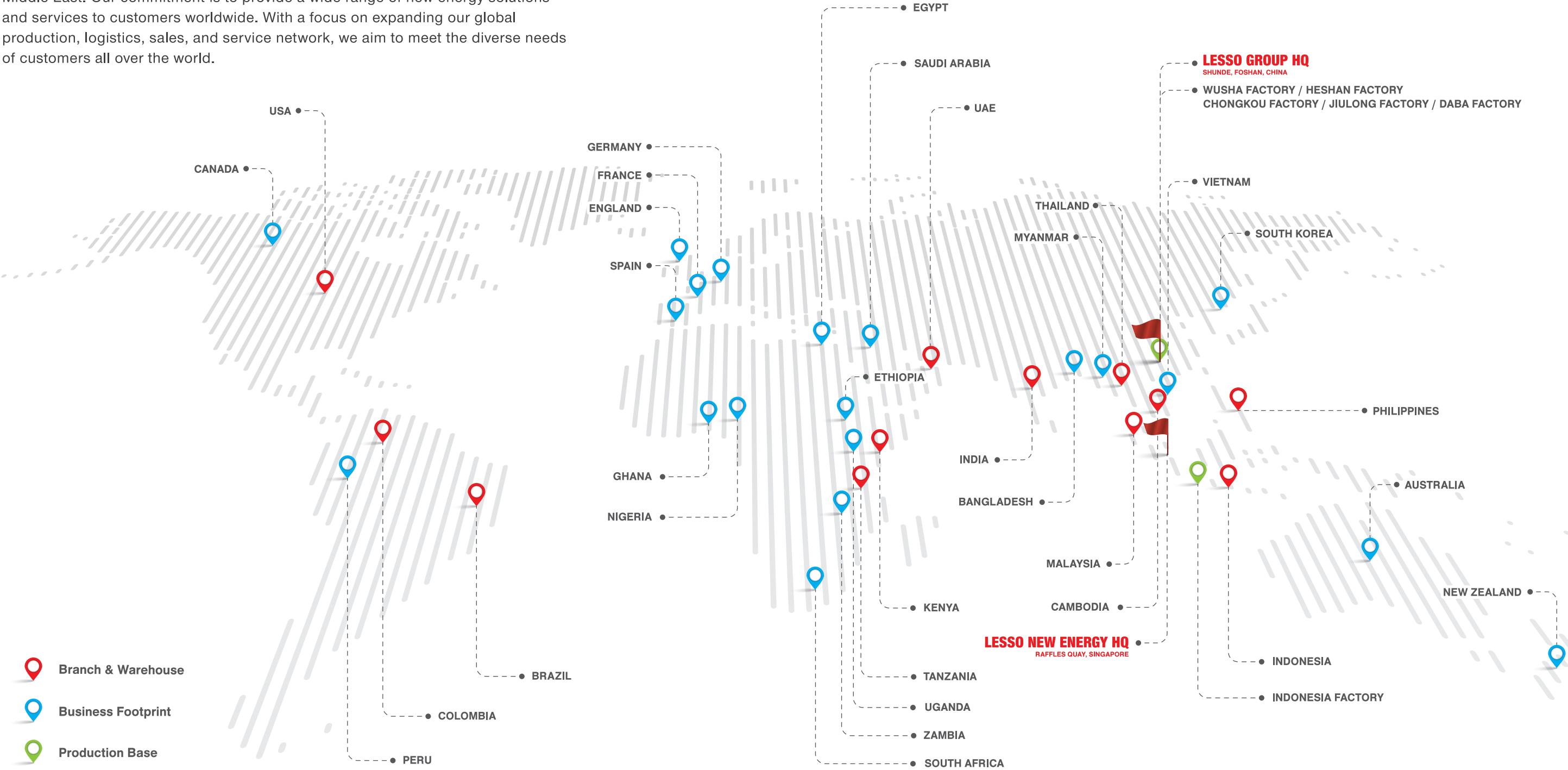
Power generation gain in different scenarios (%)

|               |                |                 |               |                       |
|---------------|----------------|-----------------|---------------|-----------------------|
|               |                |                 |               |                       |
| Water<br>3~5% | Grass<br>5~10% | Cement<br>5~10% | Sand<br>5~10% | White paint<br>15~25% |



# LESSO Solar Global Footprint

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





# N series

## Unleash Unlimited Power, Pioneering Innovation

The LESSO Solar N Series leverages advanced TOPCon technology to achieve a maximum module efficiency of 23.03%. Featuring N-type cells with zero light-induced degradation (LID), this series ensures superior energy yield. With an annual degradation rate of just 1% in the first year and 0.4% thereafter, the N Series delivers exceptional long-term power generation performance, maximizing revenue potential for customers.



**TOPCon Technology**  
Higher Power Generation



**MBB Technology**  
Reducing String &  
Busbar Loss



**High Density Packaging**  
Improving Energy Density



**Even Cloudy or Foggy Days**  
Better Weak Illumination  
Response



**Zero LID**  
Increase Power Generation



**Better Temperature  
Coefficient**  
More Power Generation



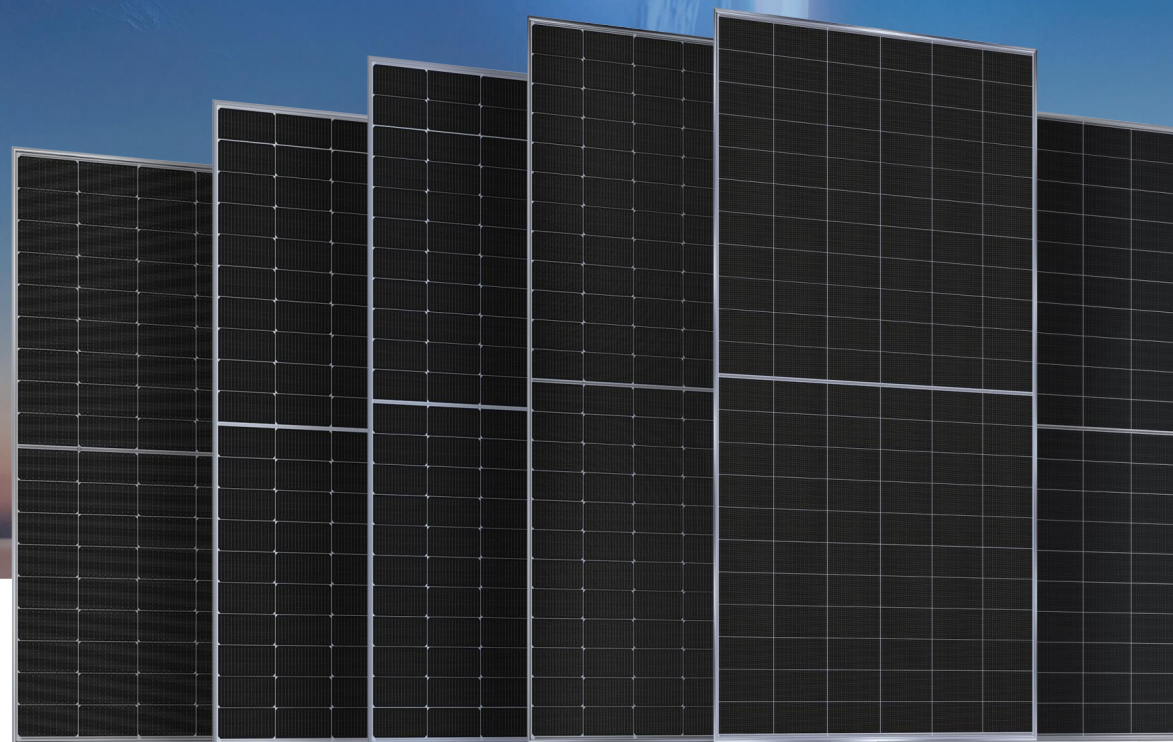
**Higher Power Output**  
Lower BOS Cost



**Multiple Weather  
Resistance Tests**  
Wider Applicability



**Double-sided Generation**  
Powerfully Energy Boost



Power Range  
**425W ~ 710W**

Maximum Efficiency  
**23.03%**

12 years product  
workmanship warranty

25/30 years linear power  
output warranty

1% 1st-year degradation  
0.40% annual degradation

N Series Mainstream Products

| Product                       | Power<br>(W) | Maximum<br>Efficiency | Size<br>(mm) |
|-------------------------------|--------------|-----------------------|--------------|
| 182 N-type (54) single glass  | 425 - 445    | 22.79%                | 1722x1134x30 |
| 182 N-type (54) double glass  |              |                       |              |
| 182 N-type (60) single glass  | 475 - 495    | 22.87%                | 1909x1134x30 |
| 182 N-type (60) double glass  |              |                       |              |
| 182 N-type (66) single glass  | 525 - 545    | 22.95%                | 2094x1134x30 |
| 182 N-type (66) double glass  |              |                       |              |
| 182 N-type (72) single glass  | 575 - 595    | 23.03%                | 2278x1134x30 |
| 182 N-type (72) double glass  |              |                       |              |
| 182 N-type (78) double glass  | 625 - 640    | 22.90%                | 2465x1134x30 |
| 210 N-type (54) double glass  | 560 - 580    | 22.71%                | 1960x1303x30 |
| 210 N-type (60) double glass  | 620 - 640    | 22.61%                | 2172x1303x30 |
| 210 N-type (66) double glass  | 690 - 710    | 22.86%                | 2384x1303x33 |
| 210R N-type (54) single glass | 490 - 510    | 22.95%                | 1960x1134x35 |
| 210R N-type (54) double glass |              |                       | 1960x1134x30 |
| 210R N-type (60) single glass | 545 - 565    | 22.94%                | 2172x1134x35 |
| 210R N-type (60) double glass |              |                       | 2172x1134x30 |
| 210R N-type (66) single glass | 595 - 615    | 22.77%                | 2382x1134x35 |
| 210R N-type (66) double glass |              |                       | 2382x1134x30 |

Note: see datasheet for details

182 N-type Bifacial Module (54)

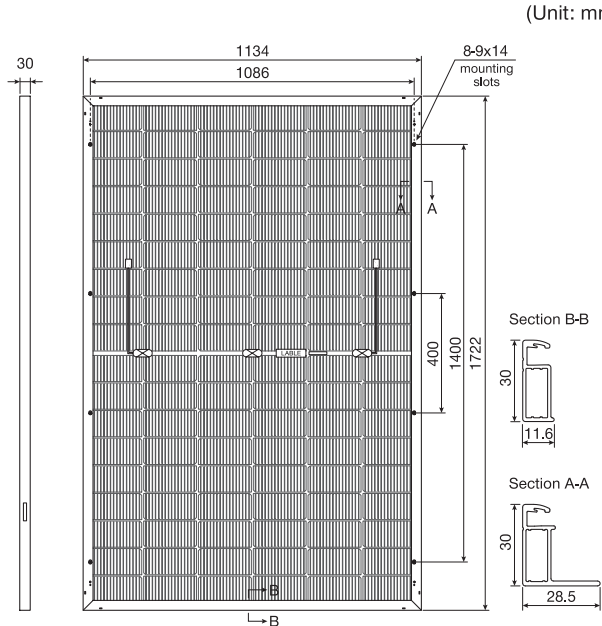
Power Range  
**425W ~ 445W**

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       | 1722×1134×30mm                                                                                                                                                |
| Weight                 | 23.1kg                                                                                                                                                        |
| Front Glass            | 2.0mm, highly transparent tempered glass<br>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             | 36pcs                                                                                                                                                         |
| Per Container(40'HQ)   | 936pcs                                                                                                                                                        |

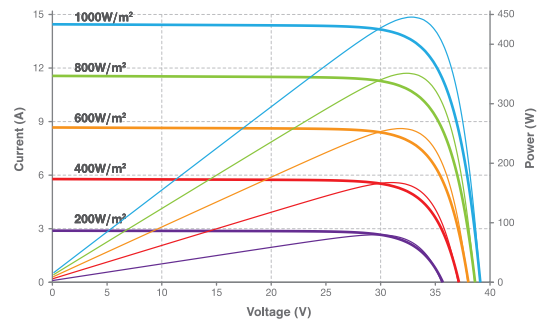


Electrical Performance Parameters

| Model Type            | 425C(HBD)54(182)     |       | 430C(HBD)54(182) |       | 435C(HBD)54(182) |       | 440C(HBD)54(182) |       | 445C(HBD)54(182) |       |
|-----------------------|----------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Testing Condition     | STC                  | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power    | P <sub>max</sub> (W) | 425   | 319              | 430   | 323              | 435   | 327              | 440   | 331              | 445   |
| Max. Power Voltage    | V <sub>MP</sub> (V)  | 31.65 | 29.82            | 31.88 | 30.02            | 32.11 | 30.23            | 32.34 | 30.43            | 32.57 |
| 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 |
| 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 |
| 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 |
| 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

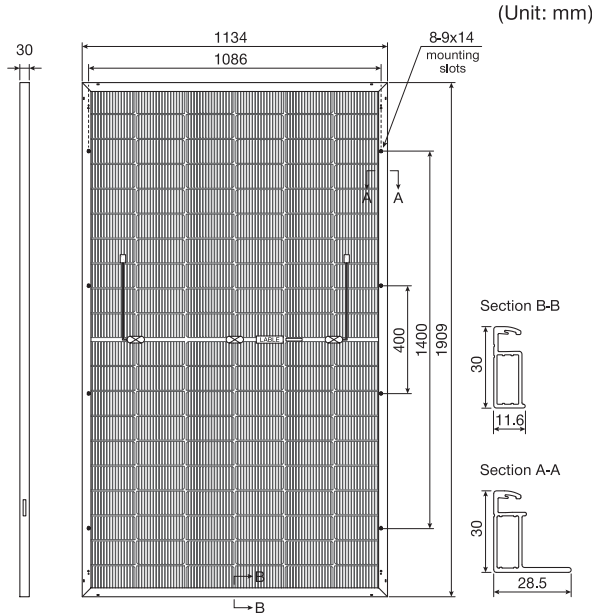


Power Output Tolerance  
0W ~ +5W



Maximum Efficiency  
22.87%

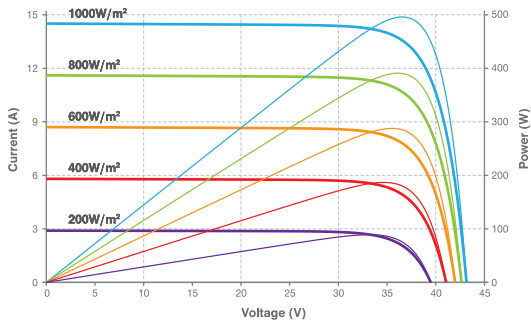
| Structure Performance  |                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                             |
| Solar Cell Arrangement | 120pcs(6×20)                                                                                     |
| Module Dimension       | 1909×1134×30mm                                                                                   |
| Weight                 | 25.7kg                                                                                           |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                            |
| Frame                  | Anodized Aluminum Alloy / Polyurethane Composite Frame                                           |
| Junction Box           | IP68 rated                                                                                       |
| Cable                  | 4mm², portrait 400mm (+) 200mm (-) , landscape 1400mm (+) 1400mm (-)<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                                                                                           |



| 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   |
| Max. Power Voltage                | V <sub>MPP</sub> (V) | 35.27 | 33.25            | 35.48 | 33.43            | 35.69 | 33.61            | 35.90 | 33.80            | 36.11 |
| Max. Power Current                | I <sub>MPP</sub> (A) | 13.47 | 10.74            | 13.53 | 10.80            | 13.59 | 10.86            | 13.65 | 10.92            | 13.71 |
| 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 |
| 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 |
| 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

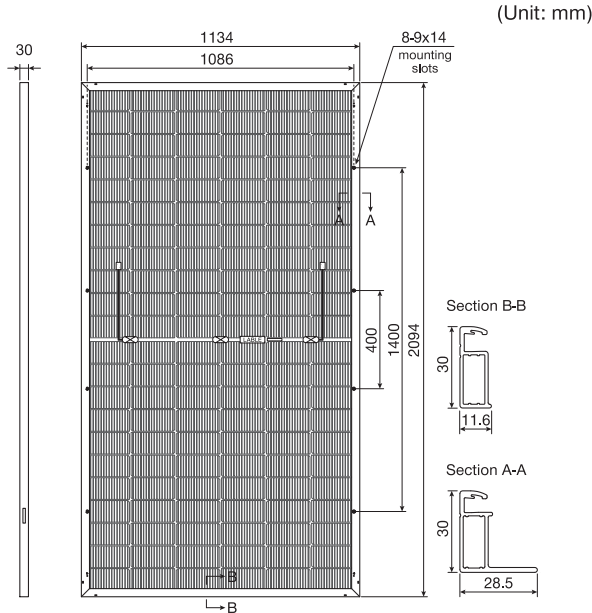


Power Output Tolerance  
0W ~ +5W



Maximum Efficiency  
22.95%

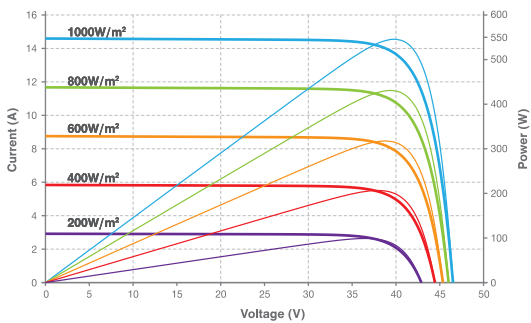
| Structure Performance  |                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                             |
| Solar Cell Arrangement | 132pcs(6x22)                                                                                     |
| Module Dimension       | 2094×1134×30mm                                                                                   |
| Weight                 | 28.4kg                                                                                           |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                            |
| Frame                  | Anodized Aluminum Alloy / Polyurethane Composite Frame                                           |
| Junction Box           | IP68 rated                                                                                       |
| Cable                  | 4mm², portrait 400mm (+) 200mm (-) , landscape 1400mm (+) 1400mm (-)<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)   | 792pcs                                                                                           |



| Electrical Performance Parameters |                      |       |                  |       |                  |       |                  |       |                  |       |
|-----------------------------------|----------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Model Type                        | 525C(HBD)66(182)     |       | 530C(HBD)66(182) |       | 535C(HBD)66(182) |       | 540C(HBD)66(182) |       | 545C(HBD)66(182) |       |
| Testing Condition                 | STC                  | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power                | P <sub>MAX</sub> (W) | 525   | 394              | 530   | 398              | 535   | 402              | 540   | 406              | 545   |
| Max. Power Voltage                | V <sub>MPP</sub> (V) | 38.89 | 36.55            | 39.09 | 36.72            | 39.29 | 36.89            | 39.49 | 37.06            | 39.69 |
| Max. Power Current                | I <sub>MPP</sub> (A) | 13.50 | 10.78            | 13.56 | 10.84            | 13.62 | 10.90            | 13.68 | 10.96            | 13.74 |
| 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 |
| 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 |
| 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**

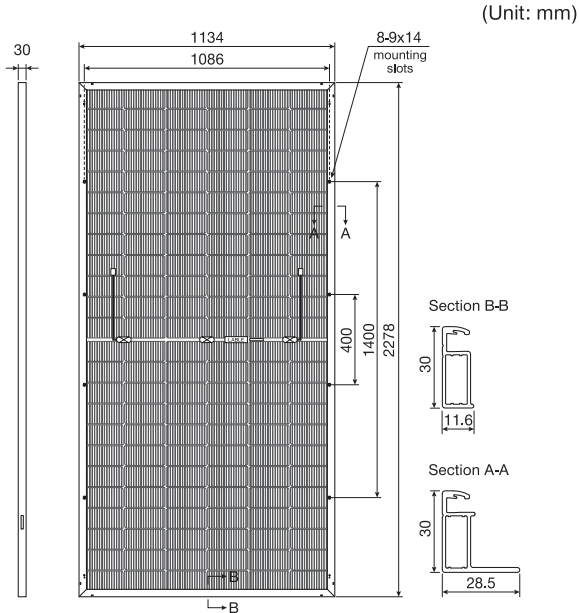


Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**23.03%**

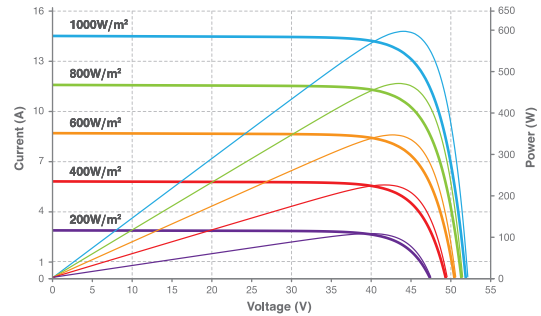
| Structure Performance  |                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                                                                             |
| Solar Cell Arrangement | 144pcs(6×24)                                                                                                                                     |
| Module Dimension       | 2278×1134×30mm                                                                                                                                   |
| Weight                 | 31.2kg                                                                                                                                           |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                            |
| Frame                  | Anodized Aluminum Alloy / Polyurethane Composite Frame                                                                                           |
| Junction Box           | IP68 rated                                                                                                                                       |
| Cable                  | 4mm², portrait <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                                                                                                                                           |



| 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>MP</sub> (V)  | 42.60 | 40.02            | 42.75 | 40.17            | 42.89 | 40.32            | 43.04 | 40.47            | 43.18 |
| Max. Power Current                | I <sub>MP</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   |
|                                     | Module Efficiency | (%)                  | 23.37 | 23.57 | 23.78 | 23.98 |
| 10%                                 | Maximum Power     | P <sub>MAX</sub> (W) | 633   | 638   | 644   | 649   |
|                                     | Module Efficiency | (%)                  | 24.48 | 24.70 | 24.91 | 25.12 |
| 25%                                 | Maximum Power     | P <sub>MAX</sub> (W) | 719   | 725   | 731   | 738   |
|                                     | Module Efficiency | (%)                  | 27.82 | 28.07 | 28.31 | 28.55 |

| 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  
**625W ~ 640W**

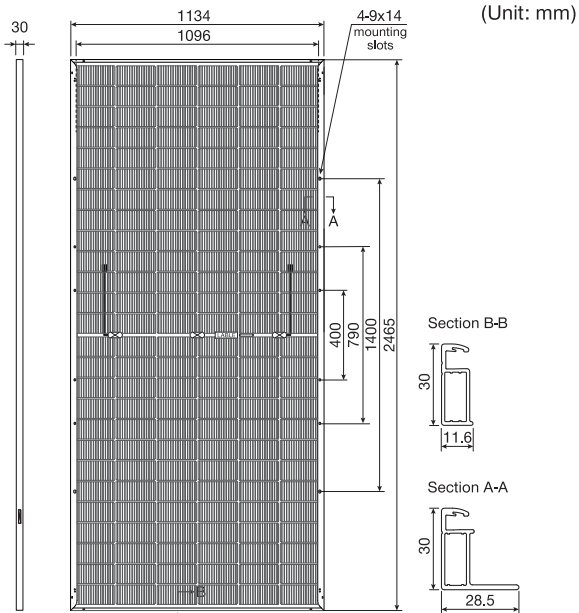


Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.90%**

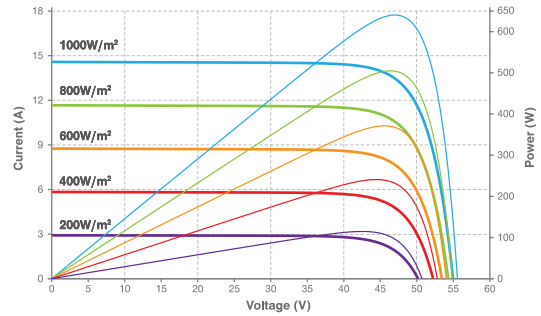
| Structure Performance  |                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|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

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

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



| Bifacial Output-rearside Power Gain |                   |                      |       |       |       |       |
|-------------------------------------|-------------------|----------------------|-------|-------|-------|-------|
| 5%                                  | Maximum Power     | P <sub>MAX</sub> (W) | 656   | 662   | 667   | 672   |
|                                     | Module Efficiency | (%)                  | 23.48 | 23.66 | 23.85 | 24.04 |
| 10%                                 | Maximum Power     | P <sub>MAX</sub> (W) | 688   | 693   | 699   | 704   |
|                                     | Module Efficiency | (%)                  | 24.59 | 24.79 | 24.99 | 25.19 |
| 25%                                 | Maximum Power     | P <sub>MAX</sub> (W) | 781   | 788   | 794   | 800   |
|                                     | Module Efficiency | (%)                  | 27.95 | 28.17 | 28.40 | 28.62 |

| 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  
560W ~ 580W

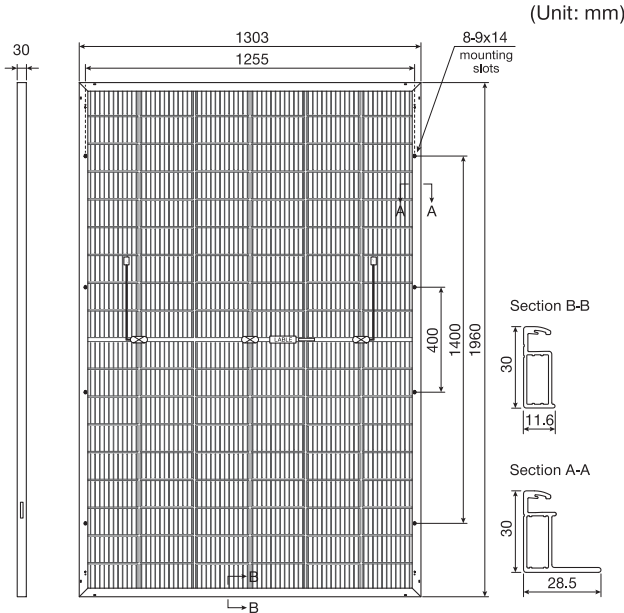


Power Output Tolerance  
0W ~ +5W



Maximum Efficiency  
22.71%

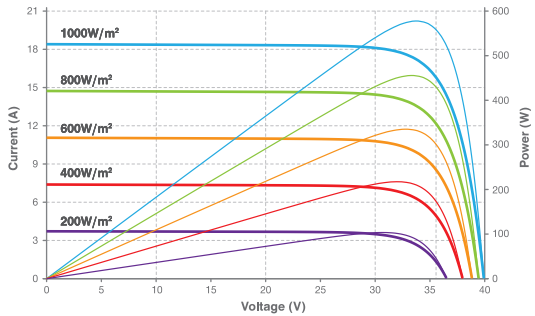
| Structure Performance  |                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 210mm N-TOPCon Mono Cell (Half Cell)                                                                                                             |
| Solar Cell Arrangement | 108pcs(6×18)                                                                                                                                     |
| Module Dimension       | 1960×1303×30mm                                                                                                                                   |
| Weight                 | 31.7kg                                                                                                                                           |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                            |
| Frame                  | Anodized Aluminum Alloy                                                                                                                          |
| Junction Box           | IP68 rated                                                                                                                                       |
| Cable                  | 4mm², portrait <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)   | 648pcs                                                                                                                                           |



| Electrical Performance Parameters |                      |       |                  |       |                  |       |                  |       |                  |       |
|-----------------------------------|----------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Model Type                        | 560C(HBD)54(210)     |       | 565C(HBD)54(210) |       | 570C(HBD)54(210) |       | 575C(HBD)54(210) |       | 580C(HBD)54(210) |       |
| Testing Condition                 | STC                  | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power                | P <sub>MAX</sub> (W) | 560   | 430              | 565   | 434              | 570   | 438              | 575   | 442              | 580   |
| Max. Power Voltage                | V <sub>MPP</sub> (V) | 32.36 | 30.55            | 32.55 | 30.74            | 32.75 | 30.94            | 32.94 | 31.13            | 33.14 |
| Max. Power Current                | I <sub>MPP</sub> (A) | 17.31 | 14.08            | 17.36 | 14.12            | 17.41 | 14.16            | 17.46 | 14.20            | 17.51 |
| Open Circuit Voltage              | V <sub>OC</sub> (V)  | 41.02 | 35.38            | 41.22 | 35.56            | 41.41 | 35.75            | 41.61 | 35.93            | 41.81 |
| Short Circuit Current             | I <sub>SC</sub> (A)  | 18.11 | 11.78            | 18.15 | 11.81            | 18.19 | 11.84            | 18.23 | 11.87            | 18.27 |
| Module Efficiency                 | (%)                  | 21.93 |                  | 22.12 |                  | 22.32 |                  | 22.51 |                  | 22.71 |

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

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



Bifacial Output-rearside Power Gain

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

| Temperature Characteristics                |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°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  
620W ~ 640W

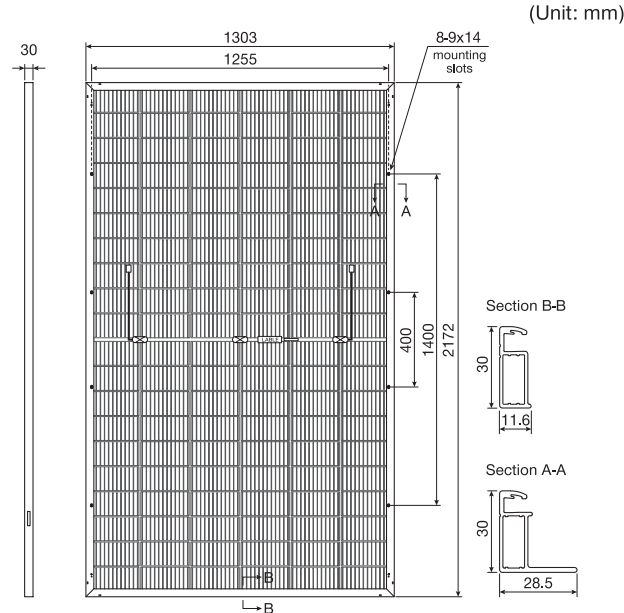


Power Output Tolerance  
0W ~ +5W



Maximum Efficiency  
22.61%

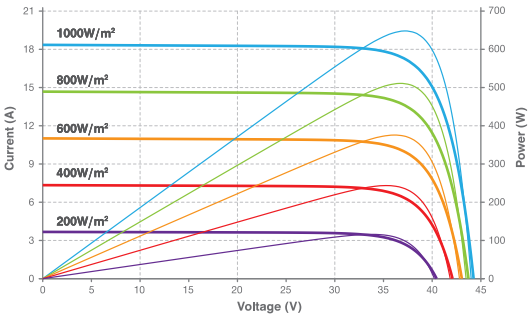
| Structure Performance  |                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 210mm N-TOPCon Mono Cell (Half Cell)                                                                                                             |
| Solar Cell Arrangement | 120pcs(6×20)                                                                                                                                     |
| Module Dimension       | 2172×1303×30mm                                                                                                                                   |
| Weight                 | 34.5kg                                                                                                                                           |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                            |
| Frame                  | Anodized Aluminum Alloy                                                                                                                          |
| Junction Box           | IP68 rated                                                                                                                                       |
| Cable                  | 4mm², portrait <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)   | 648pcs                                                                                                                                           |



| Electrical Performance Parameters |                      |       |                  |       |                  |       |                  |       |                  |       |
|-----------------------------------|----------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Model Type                        | 620C(HBD)60(210)     |       | 625C(HBD)60(210) |       | 630C(HBD)60(210) |       | 635C(HBD)60(210) |       | 640C(HBD)60(210) |       |
| Testing Condition                 | STC                  | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power                | P <sub>MAX</sub> (W) | 620   | 474              | 625   | 486              | 630   | 482              | 635   | 486              | 640   |
| Max. Power Voltage                | V <sub>MPP</sub> (V) | 35.70 | 33.62            | 35.91 | 33.83            | 36.11 | 34.04            | 36.33 | 34.25            | 36.54 |
| Max. Power Current                | I <sub>MPP</sub> (A) | 17.37 | 14.10            | 17.41 | 14.13            | 17.45 | 14.16            | 17.48 | 14.19            | 17.52 |
| Open Circuit Voltage              | V <sub>OC</sub> (V)  | 45.15 | 41.15            | 45.36 | 41.36            | 45.58 | 41.58            | 45.80 | 41.79            | 46.02 |
| Short Circuit Current             | I <sub>SC</sub> (A)  | 18.18 | 14.65            | 18.22 | 14.69            | 18.26 | 14.73            | 18.30 | 14.77            | 18.34 |
| Module Efficiency                 | (%)                  | 21.91 |                  | 22.08 |                  | 22.26 |                  | 22.44 |                  | 22.61 |

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

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



Bifacial Output-rearside Power Gain

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

| Temperature Characteristics                |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°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  
**690W ~ 710W**



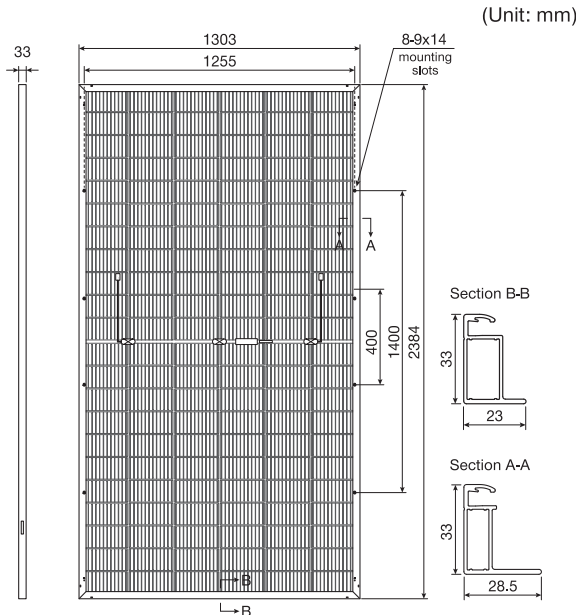
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.86%**

### Structure Performance

|                        |                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 210mm N-TOPCon Mono Cell (Half Cell)                                                                                                             |
| Solar Cell Arrangement | 132pcs(6x22)                                                                                                                                     |
| Module Dimension       | 2384×1303×33mm                                                                                                                                   |
| Weight                 | 37.8kg                                                                                                                                           |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                            |
| Frame                  | Anodized Aluminum Alloy                                                                                                                          |
| Junction Box           | IP68 rated                                                                                                                                       |
| Cable                  | 4mm², portrait <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             | 33pcs                                                                                                                                            |
| Per Container(40'HQ)   | 594pcs                                                                                                                                           |

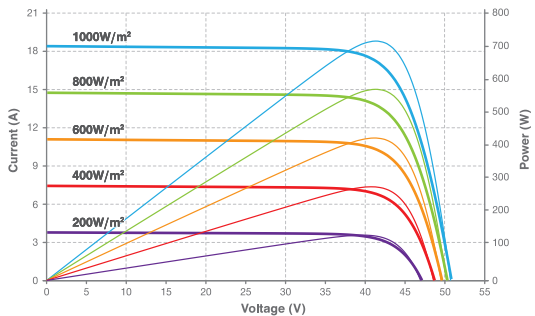


### Electrical Performance Parameters

| Model Type            | 690C(HBD)66(210)     |       | 695C(HBD)66(210) |       | 700C(HBD)66(210) |       | 705C(HBD)66(210) |       | 710C(HBD)66(210) |       |
|-----------------------|----------------------|-------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Testing Condition     | STC                  | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power    | P <sub>MAX</sub> (W) | 690   | 527              | 695   | 531              | 700   | 535              | 705   | 539              | 543   |
| Max. Power Voltage    | V <sub>MPP</sub> (V) | 39.64 | 37.25            | 39.86 | 37.45            | 40.07 | 37.66            | 40.29 | 37.86            | 40.51 |
| Max. Power Current    | I <sub>MPP</sub> (A) | 17.41 | 14.15            | 17.44 | 14.18            | 17.47 | 14.21            | 17.50 | 14.24            | 14.27 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 49.92 | 45.65            | 50.13 | 45.86            | 50.34 | 46.07            | 50.55 | 46.28            | 46.50 |
| Short Circuit Current | I <sub>SC</sub> (A)  | 18.29 | 14.73            | 18.33 | 14.77            | 18.37 | 14.81            | 18.41 | 14.85            | 14.89 |
| Module Efficiency     | (%)                  | 22.21 |                  | 22.37 |                  | 22.53 |                  | 22.70 |                  | 22.86 |

\* 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 (710C)



### Bifacial Output-rearside Power Gain

| 5%  | Maximum Power     | P <sub>MAX</sub> (W) | 725   | 730   | 735   | 740   | 746   |
|-----|-------------------|----------------------|-------|-------|-------|-------|-------|
|     | Module Efficiency | (%)                  | 23.32 | 23.49 | 23.66 | 23.83 | 24.00 |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 759   | 765   | 770   | 776   | 781   |
|     | Module Efficiency | (%)                  | 24.43 | 24.61 | 24.79 | 24.96 | 25.14 |
| 25% | Maximum Power     | P <sub>MAX</sub> (W) | 863   | 869   | 875   | 881   | 888   |
|     | Module Efficiency | (%)                  | 27.77 | 27.97 | 28.17 | 28.37 | 28.57 |

### 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**



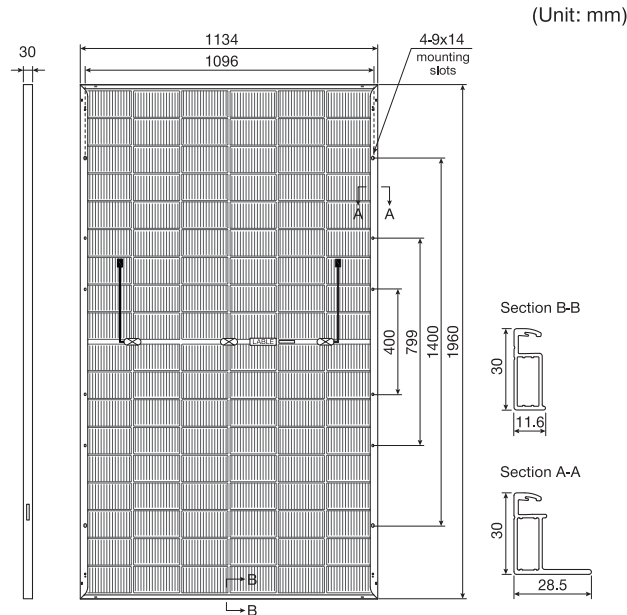
Power Output Tolerance  
**0W ~ +5W**



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)                                                                                          |

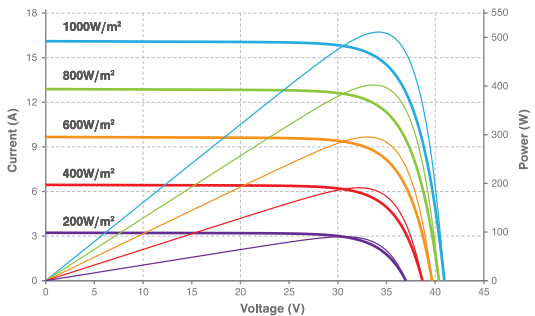


### Electrical Performance Parameters

| 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               | 386   |
| Max. Power Voltage    | V <sub>MPP</sub> (V) | 33.14 | 31.02             | 33.27 | 31.17             | 33.41 | 31.32             | 33.55 | 31.47             | 31.62 |
| Max. Power Current    | I <sub>MPP</sub> (A) | 14.79 | 11.93             | 14.88 | 12.00             | 14.97 | 12.07             | 15.06 | 12.14             | 12.21 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 40.50 | 38.43             | 40.61 | 38.54             | 40.72 | 38.64             | 40.83 | 38.75             | 38.85 |
| Short Circuit Current | I <sub>SC</sub> (A)  | 15.76 | 12.71             | 15.85 | 12.79             | 15.94 | 12.86             | 16.02 | 12.93             | 13.00 |
| Module Efficiency     | (%)                  | 22.05 |                   | 22.27 |                   | 22.50 |                   | 22.72 |                   | 22.95 |

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

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



### Bifacial Output-rearside Power Gain

| 5%  | Maximum Power     | P <sub>MAX</sub> (W) | 515   | 520   | 525   | 530   | 536   |
|-----|-------------------|----------------------|-------|-------|-------|-------|-------|
|     | Module Efficiency | (%)                  | 23.15 | 23.38 | 23.62 | 23.86 | 24.09 |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 539   | 545   | 550   | 556   | 561   |
|     | Module Efficiency | (%)                  | 24.25 | 24.50 | 24.75 | 24.99 | 25.24 |
| 25% | Maximum Power     | P <sub>MAX</sub> (W) | 613   | 619   | 625   | 631   | 638   |
|     | Module Efficiency | (%)                  | 27.56 | 27.84 | 28.12 | 28.40 | 28.68 |

### Temperature Characteristics

|                                            |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°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**

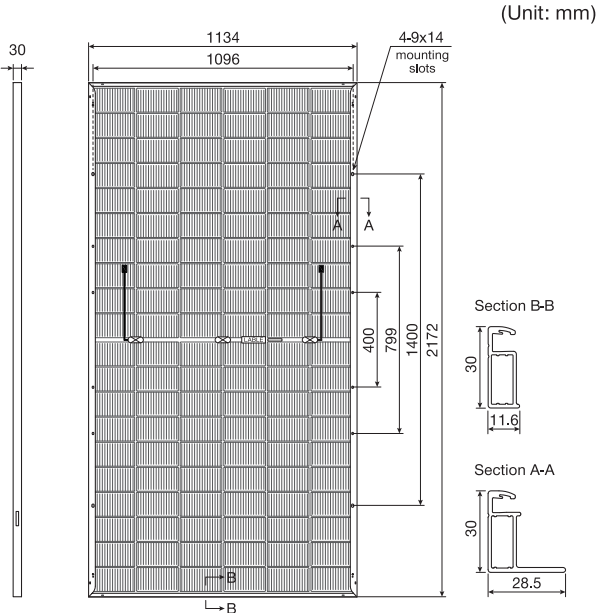


Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.94%**

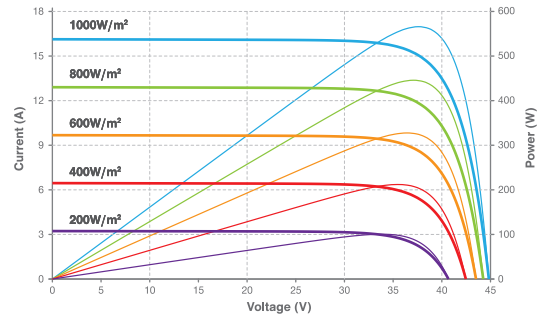
| Structure Performance  |                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 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**

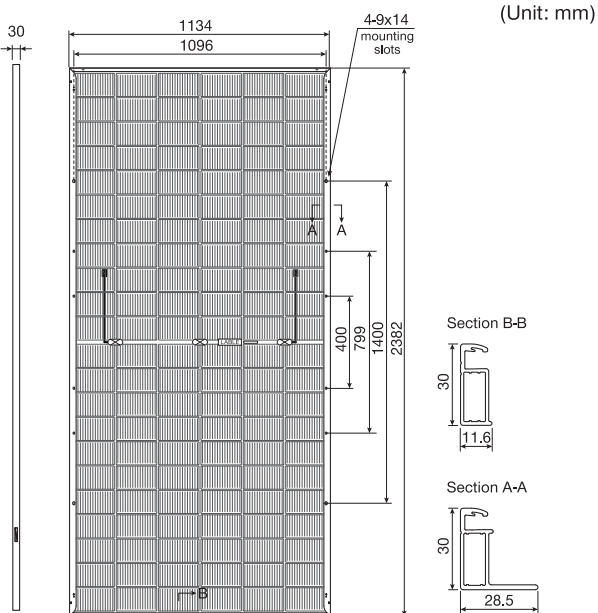


Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.77%**

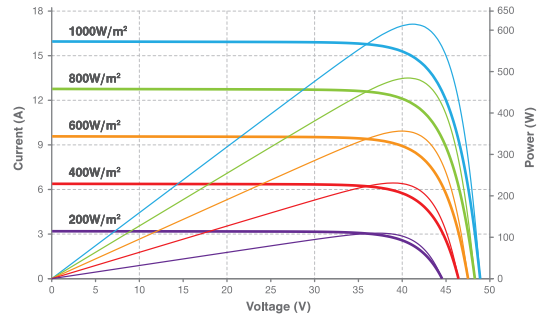
| Structure Performance  |                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 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% |

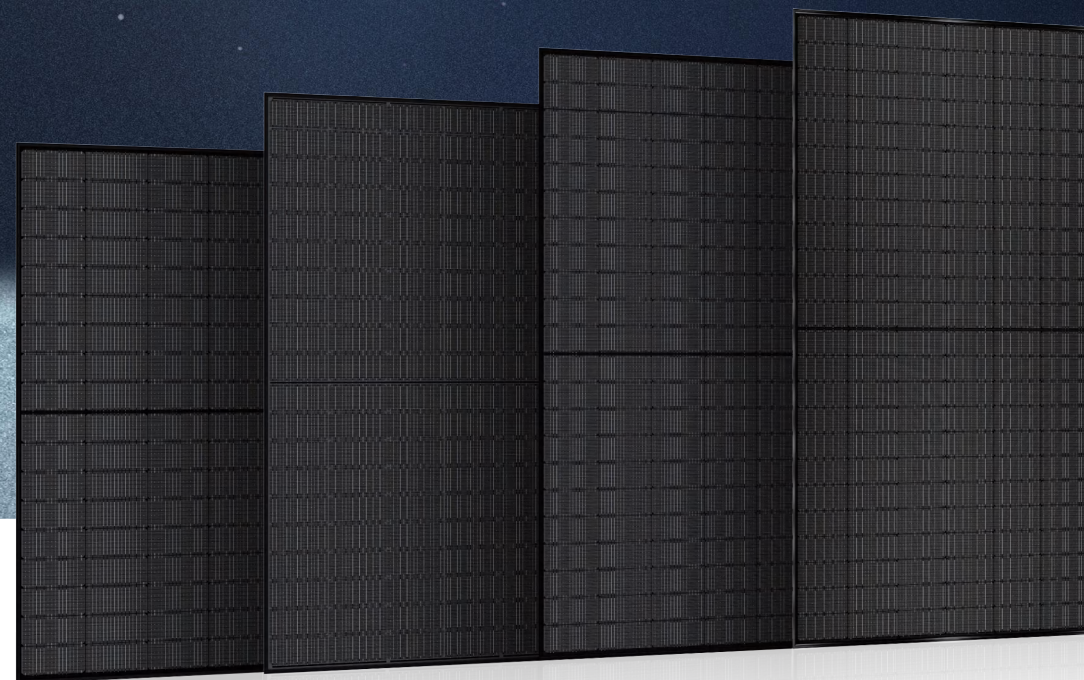
| Maximum Parameters           |           |
|------------------------------|-----------|
| Working Temperature          | -40~+85°C |
| Maximum System Voltage       | 1500V DC  |
| Nominal Maximum Fuse Current | 35A       |



# Pure Black series

## Elegant Aesthetics, Sleek Integration

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



**TOPCon Technology**  
Higher Power Generation



**MBB Technology**  
Reducing String &  
Busbar Loss



**Highly-resistant Black  
Crystal Material**  
Modernity to Buildings



**Even Cloudy or Foggy Days**  
Better Weak Illumination  
Response



**Zero LID**  
Increase Power Generation



**Better Temperature  
Coefficient**  
More Power Generation



**Higher Power Output**  
Lower BOS Cost



**Multiple Weather  
Resistance Tests**  
Wider Applicability



**Double-sided Generation**  
Powerfully Energy Boost





Power Range  
**400W ~ 635W**



Maximum Efficiency  
**22.72%**



12 years product  
workmanship warranty



25/30 years linear power  
output warranty



1% 1st-year degradation  
0.40% annual degradation

Pure Black Series Mainstream Products

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

Note: see datasheet for details

182 Pure Black N-type Monofacial Module (54)



Power Range  
**415W ~ 435W**



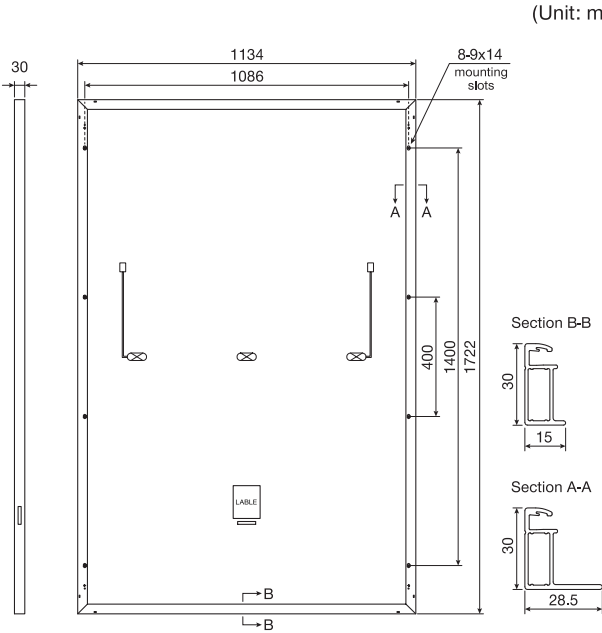
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.28%**

Structure Performance

|                        |                                                                                                              |
|------------------------|--------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                                         |
| Solar Cell Arrangement | 108pcs(6×18)                                                                                                 |
| Module Dimension       | 1722×1134×30mm                                                                                               |
| Weight                 | 20.7kg                                                                                                       |
| Front Glass            | 3.2mm, highly transparent tempered glass with anti-reflective coating                                        |
| Back Sheet             | Black                                                                                                        |
| Frame                  | Anodized Aluminum Alloy (Black)                                                                              |
| Junction Box           | IP68 rated                                                                                                   |
| Cable                  | 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             | 36pcs                                                                                                        |
| Per Container(40'HQ)   | 936pcs                                                                                                       |

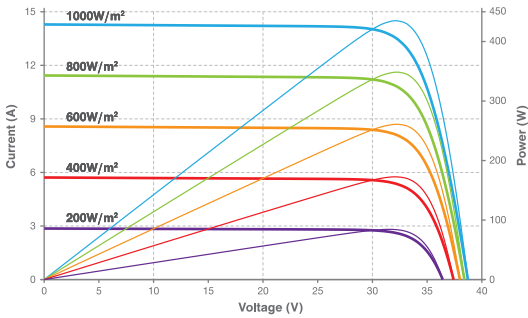


Electrical Performance Parameters

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

\* STC: Irradiance 1000W/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 (435C)



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  
**465W ~ 485W**



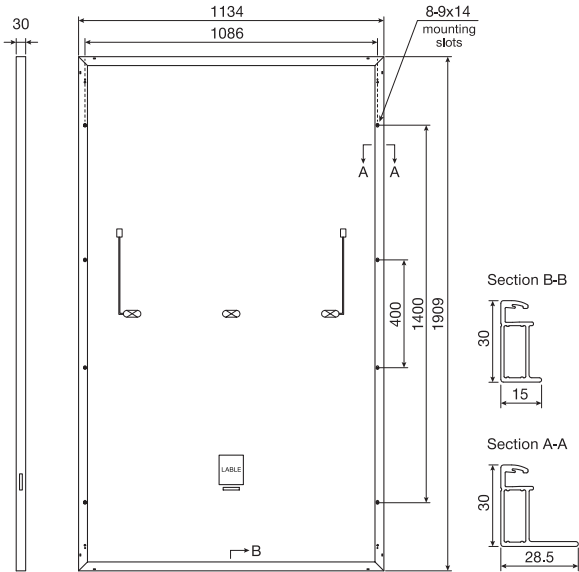
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.40%**

## Structure Performance

|                        |                                                                                                                |
|------------------------|----------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                                           |
| Solar Cell Arrangement | 120pcs(6×20)                                                                                                   |
| Module Dimension       | 1909×1134×30mm                                                                                                 |
| Weight                 | 22.1kg                                                                                                         |
| Front Glass            | 3.2mm, highly transparent tempered glass with anti-reflective coating                                          |
| Back Sheet             | Black                                                                                                          |
| Frame                  | Anodized Aluminum Alloy (Black)                                                                                |
| Junction Box           | IP68 rated                                                                                                     |
| Cable                  | 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             | 36pcs                                                                                                          |
| Per Container(40'HQ)   | 864pcs                                                                                                         |



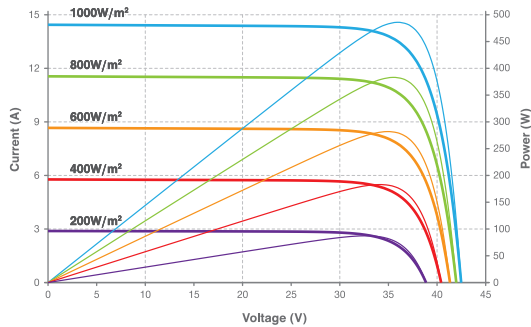
(Unit: mm)

## Electrical Performance Parameters

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

\* 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 (485C)



## 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**



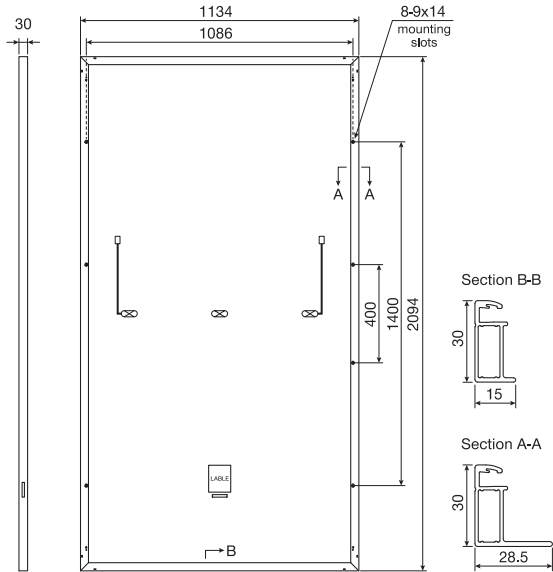
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.53%**

## Structure Performance

|                        |                                                                                                                |
|------------------------|----------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                                           |
| Solar Cell Arrangement | 132pcs(6×22)                                                                                                   |
| Module Dimension       | 2094×1134×30mm                                                                                                 |
| Weight                 | 24.0kg                                                                                                         |
| Front Glass            | 3.2mm, highly transparent tempered glass with anti-reflective coating                                          |
| Back Sheet             | Black                                                                                                          |
| Frame                  | Anodized Aluminum Alloy (Black)                                                                                |
| Junction Box           | IP68 rated                                                                                                     |
| Cable                  | 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             | 36pcs                                                                                                          |
| Per Container(40'HQ)   | 792pcs                                                                                                         |



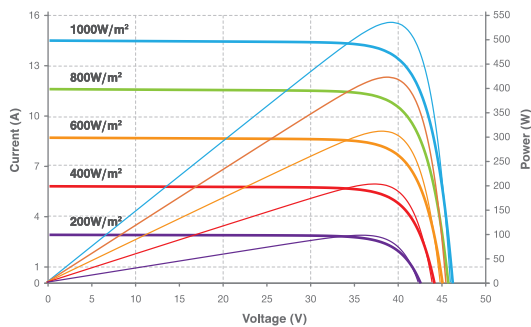
(Unit: mm)

## 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   | 535              | 403   |
| Max. Power Voltage    | V <sub>MP</sub> (V)  | 38.32 | 36.21            | 38.47 | 36.38            | 38.61 | 36.55            | 38.75 | 38.89            | 36.88 |
| Max. Power Current    | I <sub>MP</sub> (A)  | 13.44 | 10.69            | 13.52 | 10.75            | 13.60 | 10.81            | 13.68 | 13.76            | 10.93 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 45.93 | 43.61            | 45.98 | 43.75            | 46.03 | 43.89            | 46.08 | 46.13            | 44.17 |
| Short Circuit Current | I <sub>SC</sub> (A)  | 14.17 | 11.49            | 14.26 | 11.56            | 14.34 | 11.63            | 14.42 | 14.50            | 11.77 |
| 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**



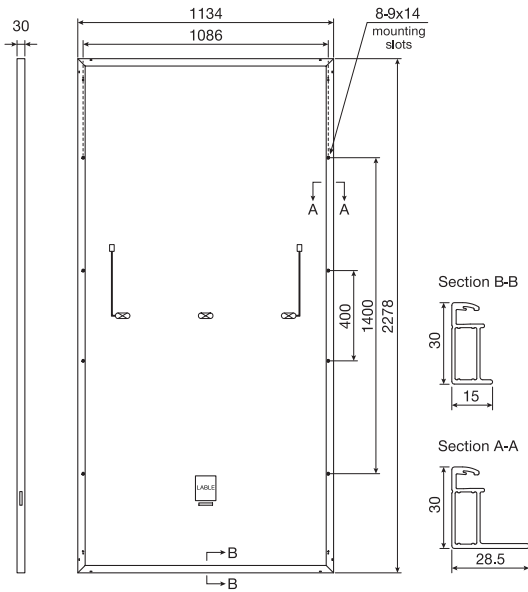
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.65%**

## Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                                                                                          |
| Solar Cell Arrangement | 144pcs(6×24)                                                                                                                                                  |
| Module Dimension       | 2278×1134×30mm                                                                                                                                                |
| Weight                 | 26.9kg                                                                                                                                                        |
| Front Glass            | 3.2mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Back Sheet             | Black                                                                                                                                                         |
| Frame                  | Anodized Aluminum Alloy (Black)                                                                                                                               |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 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             | 36pcs                                                                                                                                                         |
| Per Container(40'HQ)   | 720pcs                                                                                                                                                        |



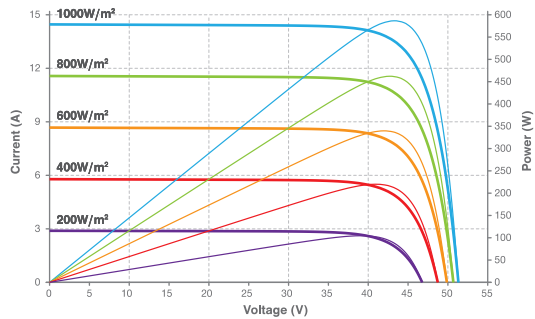
(Unit: mm)

## 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   |
| Max. Power Voltage    | V <sub>MP</sub> (V)  |      | 42.33            | 39.80 | 42.48            | 39.95 | 42.63            | 40.10 | 42.78            | 40.24 |
| Max. Power Current    | I <sub>MP</sub> (A)  |      | 13.35            | 10.68 | 13.42            | 10.74 | 13.49            | 10.80 | 13.56            | 10.86 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  |      | 50.86            | 48.31 | 51.00            | 48.45 | 51.15            | 48.58 | 51.29            | 48.71 |
| Short Circuit Current | I <sub>SC</sub> (A)  |      | 14.11            | 11.38 | 14.18            | 11.44 | 14.26            | 11.51 | 14.34            | 11.57 |
| Module Efficiency     | (%)                  |      | 21.87            |       | 22.07            |       | 22.26            |       | 22.45            |       |

\* 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 Bifacial Single Glass Module (54)



Power Range  
**415W ~ 435W**



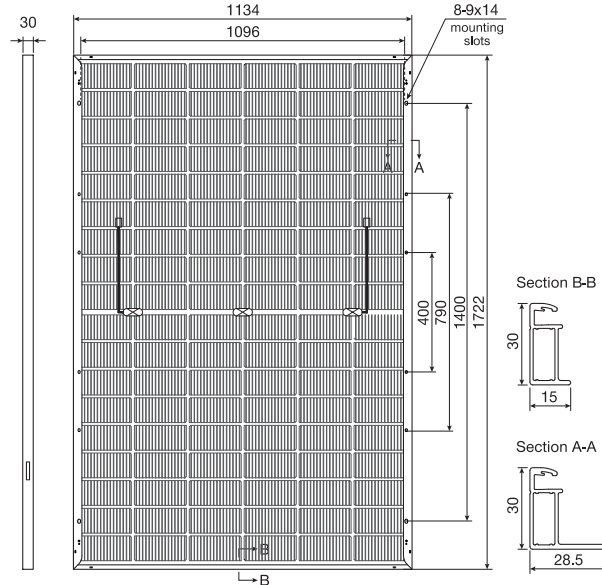
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**22.28%**

## Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm N-TOPCon Mono Cell (Half Cell)                                                                                                                          |
| Solar Cell Arrangement | 108pcs(6×18)                                                                                                                                                  |
| Module Dimension       | 1722×1134×30mm                                                                                                                                                |
| Weight                 | 20.7kg                                                                                                                                                        |
| Front Glass            | 3.2mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| 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             | 36pcs                                                                                                                                                         |
| Per Container(40'HQ)   | 936pcs                                                                                                                                                        |



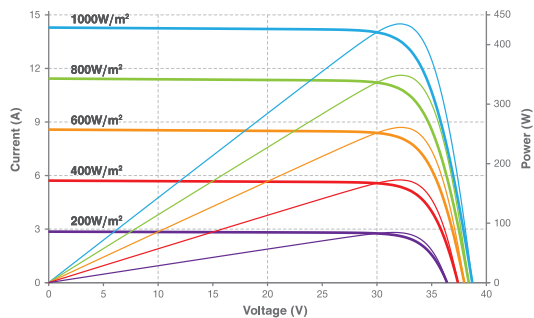
(Unit: mm)

## Electrical Performance Parameters

| Model Type            | 415C(HBB)54(182)     |      | 420C(HBB)54(182) |       | 425C(HBB)54(182) |       | 430C(HBB)54(182) |       | 435C(HBB)54(182) |       |
|-----------------------|----------------------|------|------------------|-------|------------------|-------|------------------|-------|------------------|-------|
| Testing Condition     | STC                  | NMOT | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power    | P <sub>max</sub> (W) |      | 415              | 311   | 420              | 315   | 425              | 319   | 430              | 323   |
| Max. Power Voltage    | V <sub>MP</sub> (V)  |      | 31.00            | 29.23 | 31.23            | 29.44 | 31.46            | 29.65 | 31.69            | 29.86 |
| Max. Power Current    | I <sub>MP</sub> (A)  |      | 13.39            | 10.64 | 13.45            | 10.70 | 13.51            | 10.76 | 13.57            | 10.82 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  |      | 39.68            | 34.10 | 39.83            | 34.28 | 39.98            | 34.47 | 40.13            | 34.66 |
| Short Circuit Current | I <sub>SC</sub> (A)  |      | 14.64            | 11.87 | 14.70            | 11.92 | 14.76            | 11.97 | 14.82            | 12.02 |
| Module Efficiency     | (%)                  |      | 21.25            |       | 21.51            |       | 21.76            |       | 22.02            |       |

\* 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 (435C)



## Bifacial Output-rearside Power Gain

| 5%  | Maximum Power     | P <sub>max</sub> (W) | 436   | 441   | 446   | 452   | 457   |
|-----|-------------------|----------------------|-------|-------|-------|-------|-------|
|     | Module Efficiency | (%)                  | 22.31 | 22.58 | 22.85 | 23.12 | 23.39 |
| 10% | Maximum Power     | P <sub>max</sub> (W) | 457   | 462   | 468   | 473   | 479   |
|     | Module Efficiency | (%)                  | 23.38 | 23.66 | 23.94 | 24.22 | 24.50 |
| 25% | Maximum Power     | P <sub>max</sub> (W) | 519   | 525   | 531   | 538   | 544   |
|     | Module Efficiency | (%)                  | 26.57 | 26.89 | 27.21 | 27.53 | 27.85 |

## Temperature Characteristics

|                                            |         |                                             |        |
|--------------------------------------------|---------|---------------------------------------------|--------|
| Nominal Module Operating Temperature       | 44±2°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

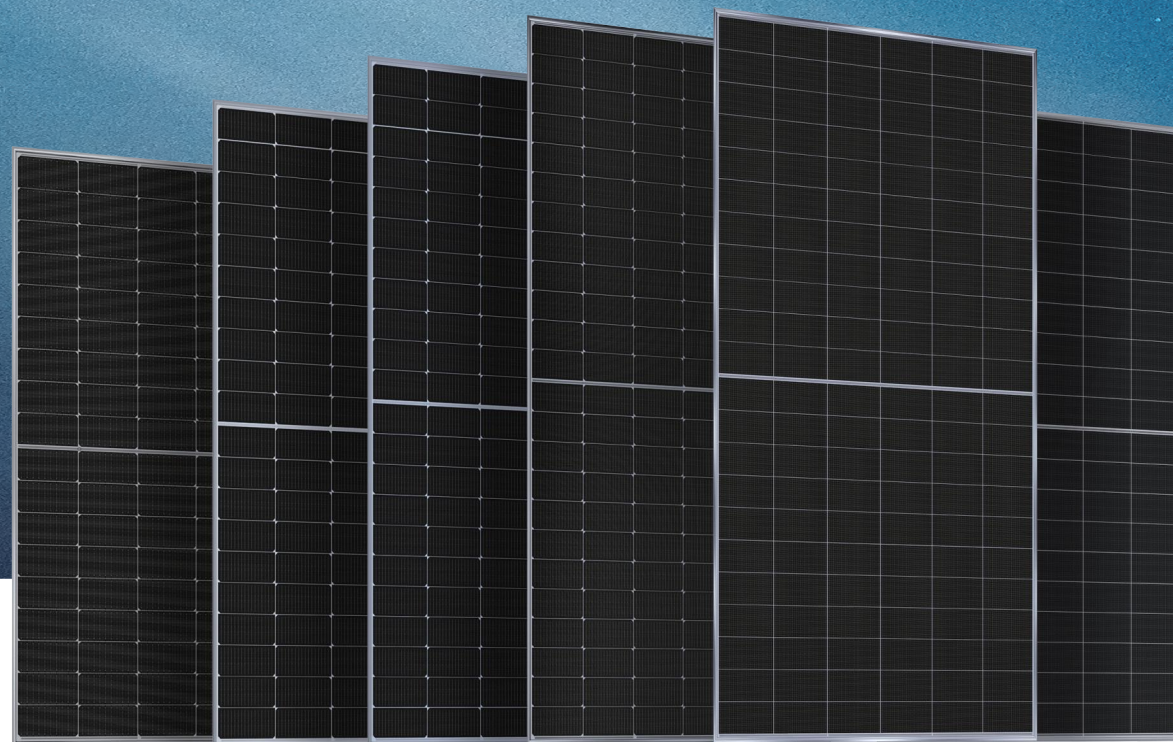
|                              |           |
|------------------------------|-----------|
| Working Temperature          | -40~+85°C |
| Maximum System Voltage       | 1500V DC  |
| Nominal Maximum Fuse Current | 30A       |



# P series

## Robust Performance, Proven Reliability

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



**MBB Technology**  
Reducing String &  
Busbar Loss



**High Efficiency PERC**  
Better Resistance  
Against PID



**Even Cloudy or Foggy Days**  
Better Weak Illumination  
Response



**Zero LID**  
Increase Power Generation



**Better Temperature  
Coefficient**  
More Power Generation



**Higher Power Output**  
Lower BOS Cost



**Multiple Weather  
Resistance Tests**  
Wider Applicability



**Double-sided Generation**  
Powerfully Energy Boost



Power Range  
**405W ~ 665W**

Maximum Efficiency  
**21.48%**

12 years product  
workmanship warranty

25 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%             | 1722x1134x30 |
| 182 P-type (54) double glass |           |                    |              |
| 182 P-type (60) single glass | 450 - 460 | 21.25%             | 1909x1134x30 |
| 182 P-type (60) double glass |           |                    |              |
| 182 P-type (66) single glass | 495 - 505 | 21.27%             | 2094x1134x30 |
| 182 P-type (66) double glass |           |                    |              |
| 182 P-type (72) single glass | 545 - 555 | 21.48%             | 2278x1134x30 |
| 182 P-type (72) double glass |           |                    |              |
| 210 P-type (54) single glass | 535 - 545 | 21.34%             | 1960x1303x35 |
| 210 P-type (54) double glass |           |                    |              |
| 210 P-type (60) single glass | 595 - 605 | 21.38%             | 2172x1303x35 |
| 210 P-type (60) double glass |           |                    |              |
| 210 P-type (66) single glass | 655 - 665 | 21.41%             | 2384x1303x35 |
| 210 P-type (66) double glass |           |                    |              |

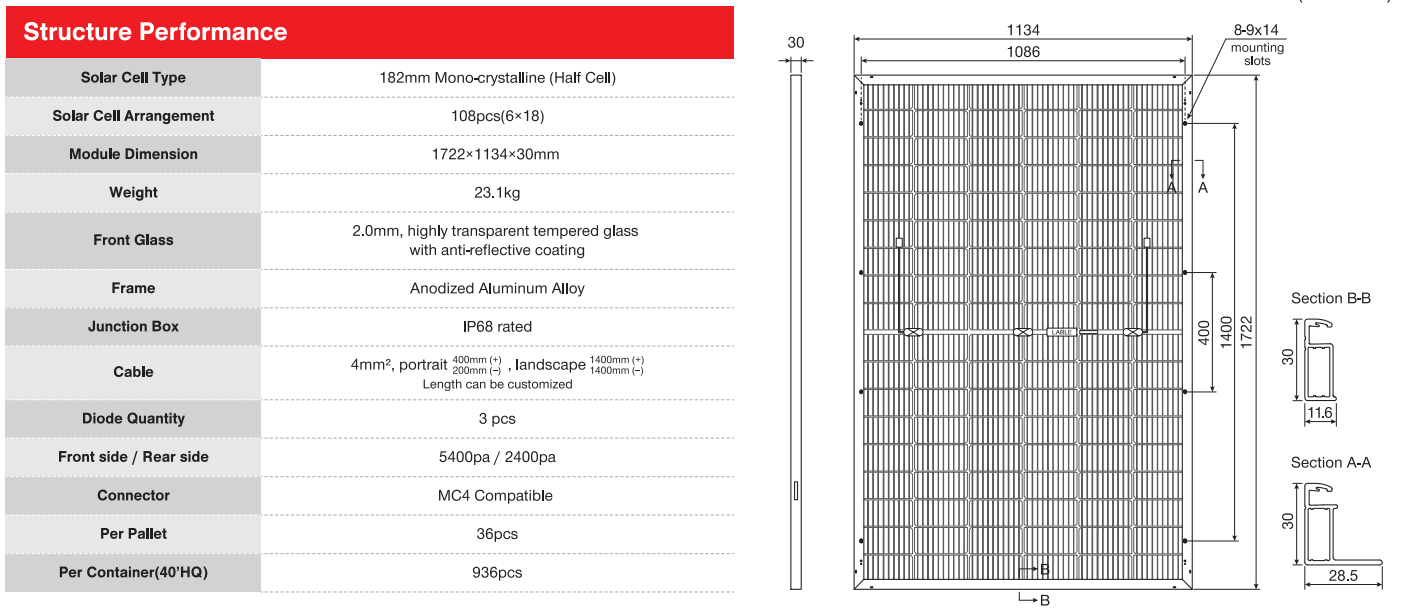
Note: see datasheet for details

182 P-type Bifacial Module (54)

Power Range  
**405W ~ 415W**

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

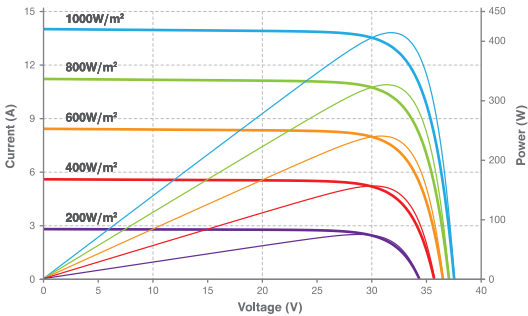
Maximum Efficiency  
**21.25%**



| 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            | 31.56 | 27.50            | 31.78 | 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                |         |                                             |        | Maximum Parameters           |          |
|--------------------------------------------|---------|---------------------------------------------|--------|------------------------------|----------|
| Nominal Module Operating Temperature       | 44±2℃   | Temperature Coefficient (V <sub>OC</sub> )  | -0.26% | Working Temperature          | -40~+85℃ |
| Temperature Coefficient (I <sub>SC</sub> ) | +0.048% | Temperature Coefficient (P <sub>MAX</sub> ) | -0.34% | Maximum System Voltage       | 1500V DC |
|                                            |         |                                             |        | Nominal Maximum Fuse Current | 25A      |

# 182 P-type Bifacial Module (60)



Power Range  
**450W ~ 460W**



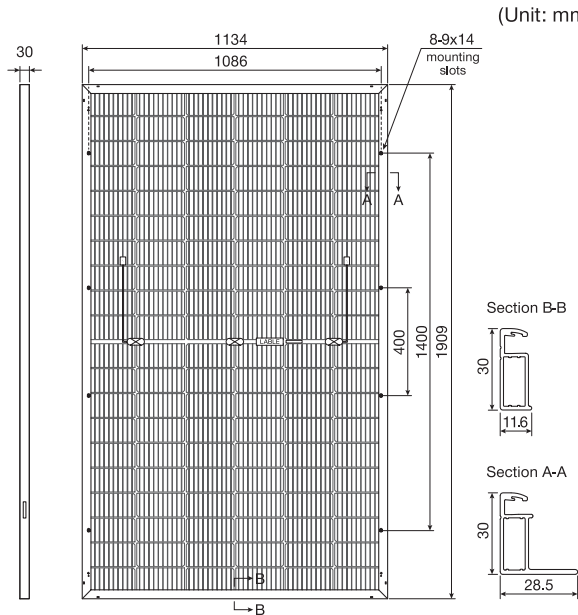
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**21.25%**

## Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm Mono-crystalline (Half Cell)                                                                                                                            |
| Solar Cell Arrangement | 120pcs(6×20)                                                                                                                                                  |
| Module Dimension       | 1909×1134×30mm                                                                                                                                                |
| Weight                 | 25.7kg                                                                                                                                                        |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 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             | 36pcs                                                                                                                                                         |
| Per Container(40'HQ)   | 864pcs                                                                                                                                                        |

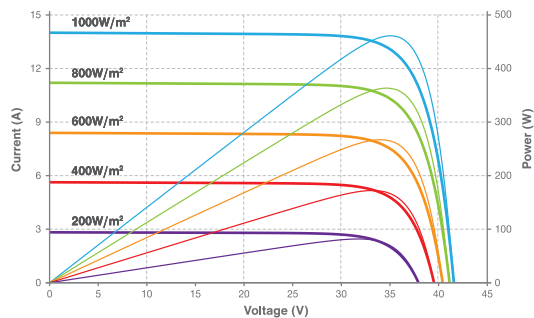


## Electrical Performance Parameters

| Model Type            |                      | 450D(HBD)60(182) |       | 455D(HBD)60(182) |       | 460D(HBD)60(182) |       |
|-----------------------|----------------------|------------------|-------|------------------|-------|------------------|-------|
| Testing Condition     |                      | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power    | P <sub>MAX</sub> (W) | 450              | 322   | 455              | 327   | 460              | 332   |
| Max. Power Voltage    | V <sub>MPP</sub> (V) | 34.78            | 30.91 | 34.97            | 31.27 | 35.17            | 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**



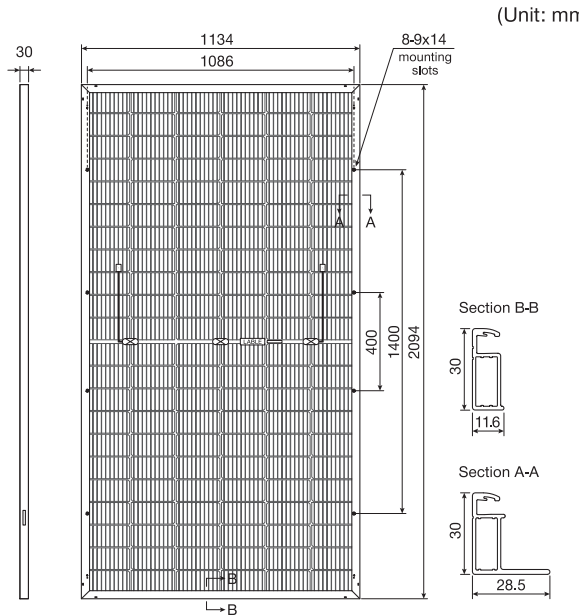
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**21.27%**

## Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm Mono-crystalline (Half Cell)                                                                                                                            |
| Solar Cell Arrangement | 132pcs(6x22)                                                                                                                                                  |
| Module Dimension       | 2094×1134×30mm                                                                                                                                                |
| Weight                 | 28.4kg                                                                                                                                                        |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 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             | 36pcs                                                                                                                                                         |
| Per Container(40'HQ)   | 792pcs                                                                                                                                                        |

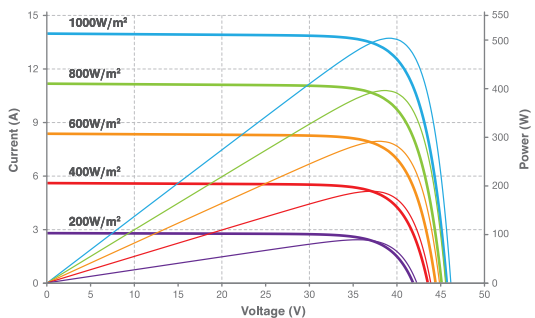


## Electrical Performance Parameters

| Model Type            |                      | 495D(HBD)66(182) |       | 500D(HBD)66(182) |       | 505D(HBD)66(182) |       |
|-----------------------|----------------------|------------------|-------|------------------|-------|------------------|-------|
| Testing Condition     |                      | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power    | P <sub>MAX</sub> (W) | 495              | 367   | 500              | 372   | 505              | 377   |
| Max. Power Voltage    | V <sub>MPP</sub> (V) | 38.20            | 35.16 | 38.37            | 35.50 | 38.55            | 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**



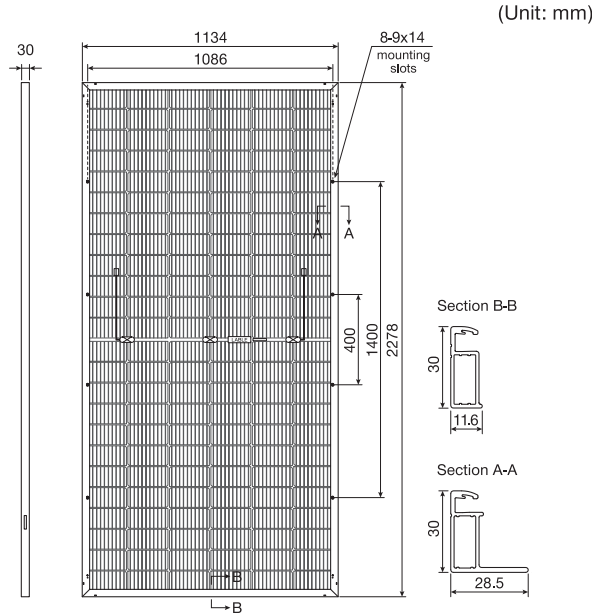
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**21.48%**

## Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 182mm Mono-crystalline (Half Cell)                                                                                                                            |
| Solar Cell Arrangement | 144pcs(6×24)                                                                                                                                                  |
| Module Dimension       | 2278×1134×30mm                                                                                                                                                |
| Weight                 | 31.2kg                                                                                                                                                        |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 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             | 36pcs                                                                                                                                                         |
| Per Container(40'HQ)   | 720pcs                                                                                                                                                        |

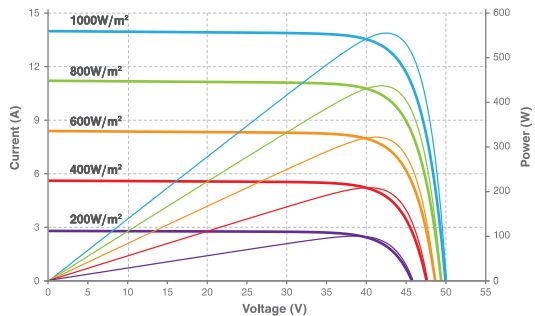


## Electrical Performance Parameters

| Model Type            |                      | 545D(HBD)72(182) |       | 550D(HBD)72(182) |       | 555D(HBD)72(182) |       |
|-----------------------|----------------------|------------------|-------|------------------|-------|------------------|-------|
| Testing Condition     |                      | STC              | NMOT  | STC              | NMOT  | STC              | NMOT  |
| Nominal Max. Power    | P <sub>MAX</sub> (W) | 545              | 411   | 550              | 414   | 555              | 417   |
| Max. Power Voltage    | V <sub>MPP</sub> (V) | 41.76            | 39.00 | 41.92            | 39.13 | 42.08            | 39.26 |
| Max. Power Current    | I <sub>MPP</sub> (A) | 13.05            | 10.54 | 13.12            | 10.58 | 13.19            | 10.62 |
| Open Circuit Voltage  | V <sub>OC</sub> (V)  | 49.89            | 47.56 | 49.99            | 47.75 | 50.09            | 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  
**535W ~ 545W**



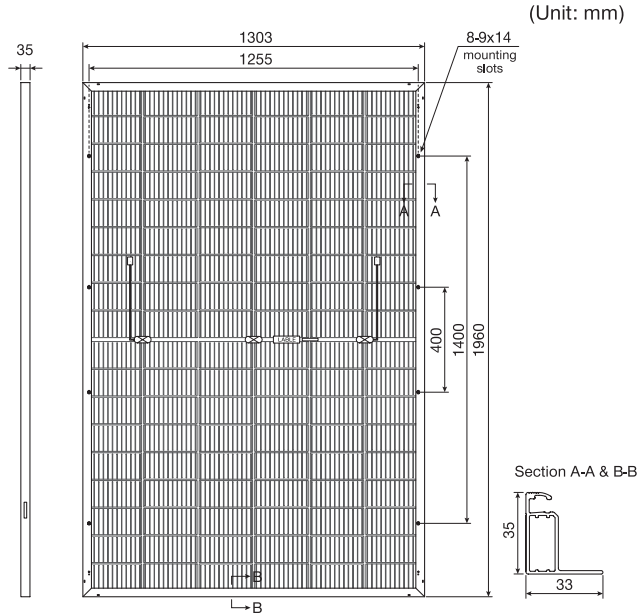
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**21.34%**

## Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 210mm Mono-crystalline (Half Cell)                                                                                                                            |
| Solar Cell Arrangement | 108pcs(6×18)                                                                                                                                                  |
| Module Dimension       | 1960×1303×35mm                                                                                                                                                |
| Weight                 | 32.8kg                                                                                                                                                        |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 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)   | 558pcs                                                                                                                                                        |

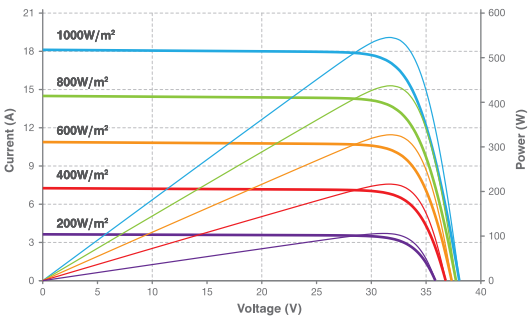


## Electrical Performance Parameters

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

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

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



## Bifacial Output-rearside Power Gain

|     |                   |                      |       |       |       |
|-----|-------------------|----------------------|-------|-------|-------|
| 5%  | Maximum Power     | P <sub>MAX</sub> (W) | 562   | 567   | 572   |
|     | Module Efficiency | (%)                  | 22.00 | 22.20 | 22.41 |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 589   | 594   | 600   |
|     | Module Efficiency | (%)                  | 23.04 | 23.26 | 23.47 |
| 25% | Maximum Power     | P <sub>MAX</sub> (W) | 669   | 675   | 681   |
|     | Module Efficiency | (%)                  | 26.19 | 26.43 | 26.68 |

## 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  
**595W ~ 605W**



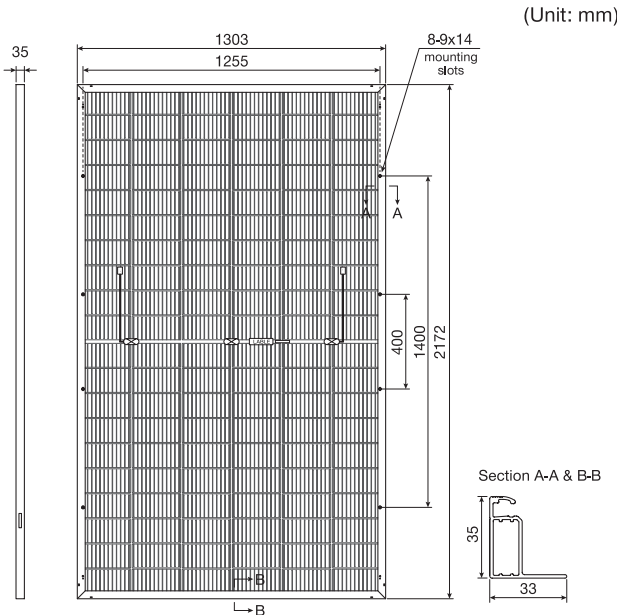
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**21.38%**

### Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 210mm Mono-crystalline (Half Cell)                                                                                                                            |
| Solar Cell Arrangement | 120pcs(6×20)                                                                                                                                                  |
| Module Dimension       | 2172×1303×35mm                                                                                                                                                |
| Weight                 | 35.6kg                                                                                                                                                        |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 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)   | 558pcs                                                                                                                                                        |

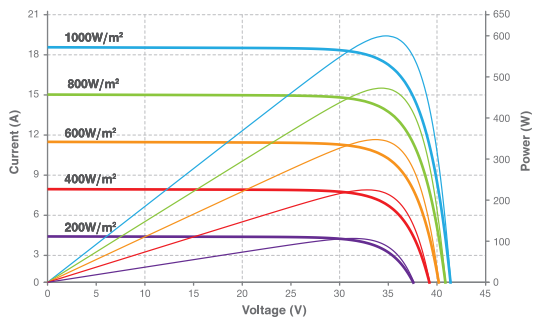


### Electrical Performance Parameters

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

\* 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 (605D)



### Bifacial Output-rearside Power Gain

|     |                   |                      |       |       |       |
|-----|-------------------|----------------------|-------|-------|-------|
| 5%  | Maximum Power     | P <sub>MAX</sub> (W) | 625   | 630   | 635   |
|     | Module Efficiency | (%)                  | 22.08 | 22.26 | 22.45 |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 655   | 660   | 666   |
|     | Module Efficiency | (%)                  | 23.13 | 23.32 | 23.51 |
| 25% | Maximum Power     | P <sub>MAX</sub> (W) | 744   | 750   | 756   |
|     | Module Efficiency | (%)                  | 26.28 | 26.50 | 26.72 |

### 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  
**655W ~ 665W**



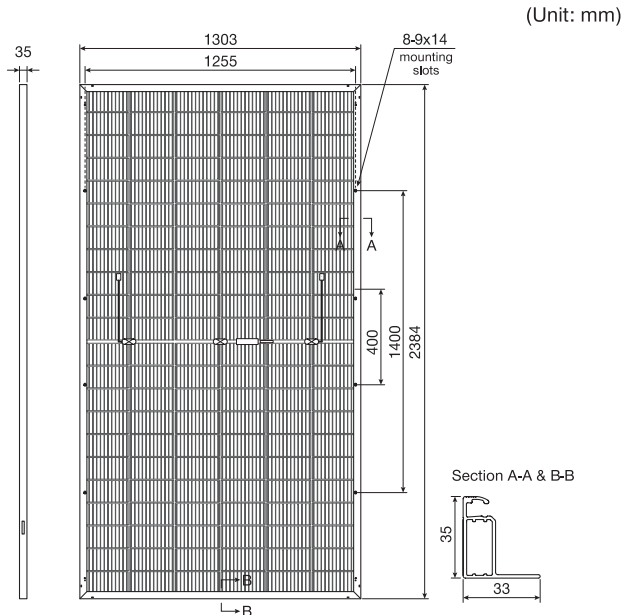
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**21.41%**

### Structure Performance

|                        |                                                                                                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Solar Cell Type        | 210mm Mono-crystalline (Half Cell)                                                                                                                            |
| Solar Cell Arrangement | 132pcs(6×22)                                                                                                                                                  |
| Module Dimension       | 2384×1303×35mm                                                                                                                                                |
| Weight                 | 38.2kg                                                                                                                                                        |
| Front Glass            | 2.0mm, highly transparent tempered glass with anti-reflective coating                                                                                         |
| Frame                  | Anodized Aluminum Alloy                                                                                                                                       |
| Junction Box           | IP68 rated                                                                                                                                                    |
| Cable                  | 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)   | 558pcs                                                                                                                                                        |

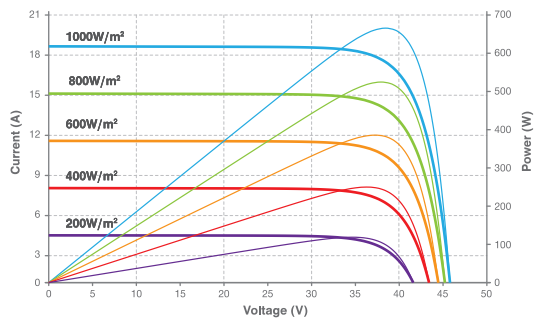


### Electrical Performance Parameters

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

\* 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 (665D)



### Bifacial Output-rearside Power Gain

|     |                   |                      |       |       |       |
|-----|-------------------|----------------------|-------|-------|-------|
| 5%  | Maximum Power     | P <sub>MAX</sub> (W) | 688   | 693   | 698   |
|     | Module Efficiency | (%)                  | 22.14 | 22.31 | 22.48 |
| 10% | Maximum Power     | P <sub>MAX</sub> (W) | 721   | 726   | 732   |
|     | Module Efficiency | (%)                  | 23.19 | 23.37 | 23.55 |
| 25% | Maximum Power     | P <sub>MAX</sub> (W) | 819   | 825   | 831   |
|     | Module Efficiency | (%)                  | 26.36 | 26.56 | 26.76 |

### 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**  
**600MW**

**Karamay Desert Solar Power Station (Phase I)**

**Location:** Karamay, Xinjiang, China



**Project Capacity**  
**1MW**

**New Community Concentrated Solar Power Generation System**

**Location:** Saraburi Province, Thailand



**Project Capacity**  
**1MW**

**Rooftop Power Station Built in Indonesia's New Capital**

**Location:** Kalimantan, Indonesia





Snowflake Ice Factory Solar Power Station

Location: Phnom Penh, Cambodia

Project Capacity  
**500KW**



Solar Pumping Power Station

Location: Egypt

Project Capacity  
**275KW**



Changsha Roof Solar Power Station

Location: Changsha, Hunan, China

Project Capacity: 9.75MW



Maoming Logistics Roof Solar Power Station

Location: Maoming, Guangdong, China

Project Capacity: 6.58MW



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



# LESSO, BUILDING A SOLAR-POWERED WORLD

