Assembled with MBB bifacial PERCIUM cells and half-cell configuration, these double glass modules have the capability of converting the incident light from the rear side together with the front side into electricity, providing higher output power, lower temperature coefficient, less shading loss, as well as enhanced tolerance for mechanical loading.

**450W MBB Bifacial Mono PERC Half-cell Double Glass Module**

**JAM78D10 430-450/MB/1500V Series**

**Introduction**

- Higher output power
- More reliable, more stable power generation
- Less shading effect
- Lower temperature coefficient

**Superior Warranty**

- 12-year product warranty
- 30-year linear power output warranty

0.5% Annual Degradation Over 30 years

<table>
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<tr>
<th>Year</th>
<th>100%</th>
<th>97.5%</th>
<th>95%</th>
<th>90%</th>
<th>85%</th>
<th>80%</th>
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<tr>
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<td>100%</td>
<td>97.5%</td>
<td>95%</td>
<td>90%</td>
<td>85%</td>
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</tbody>
</table>

- Additional Value From 30-Year Warranty
- JA Standard

**Comprehensive Certificates**

- IEC 61215, IEC 61730
- ISO 9001: 2015 Quality management systems
- ISO 14001: 2015 Environmental management systems
- OHSAS 18001: 2007 Occupational health and safety management systems
**Operating Conditions**

Maximum System Voltage: 1500V DC (IEC)

Operating Temperature: -40°C ~ +85°C

Maximum Series Fuse: 20A

Maximum Static Load: Front

Maximum Static Load: Back

NOCT: 45±2°C

Bifacility*: 70%±10%

**Characteristics**

**Current-Voltage Curve**

**Power-Voltage Curve**

**Current-Voltage Curve**

**Electrical Parameters at STC**

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Rated Maximum Power (Pmax) [W]</td>
<td>430</td>
<td>435</td>
<td>440</td>
<td>445</td>
<td>450</td>
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<tr>
<td>Open Circuit Voltage (Voc) [V]</td>
<td>52.46</td>
<td>52.74</td>
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<tr>
<td>Maximum Power Voltage (Vmp) [V]</td>
<td>43.93</td>
<td>44.31</td>
<td>44.68</td>
<td>45.96</td>
<td>45.28</td>
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<tr>
<td>Short Circuit Current (Isc) [A]</td>
<td>10.28</td>
<td>10.32</td>
<td>10.37</td>
<td>10.42</td>
<td>10.46</td>
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<tr>
<td>Module Efficiency [%]</td>
<td>19.5</td>
<td>19.7</td>
<td>19.9</td>
<td>20.1</td>
<td>20.4</td>
</tr>
</tbody>
</table>

**Power Tolerance**

0~+5W

**Temperature Coefficient of Isc (α_Isc)**

+0.044%/°C

**Temperature Coefficient of Voc (β_Voc)**

-0.272%/°C

**Temperature Coefficient of Pmax (γ_Pmp)**

-0.354%/°C

**STC**

Irradiance 1000W/m², cell temperature 25°C, AM1.5G

**Measurement tolerance at STC:** Pmax ±3%, Voc ±2% and Isc ±4%

**Bifacility**

*Maximum System Voltage: 1500V DC (IEC)

Operating Temperature: -40°C ~ +85°C

Maximum Series Fuse: 20A

Maximum Static Load: Front

Maximum Static Load: Back

NOCT: 45±2°C

Bifacility*: 70%±10%

**Backside Power Gain**

5% 10% 15% 20% 25%

**Current-Voltage Curve**

**Power-Voltage Curve**

**Current-Voltage Curve**

**Premium Cells, Premium Modules**

Version No.: Global_EN_20200530A