Module Master

Second to none module masterpiece designed from competency accumulated through surpassing 40GW shipped shipment all over the world for most comprehensive environment for over past two decades

Subject to change. ©TrinaSolar Product catalogue 2019_10_Rev01_EN
Founded in 1997, Trina Solar has established a globalized network covering production, sales and service. The company processes upstream and downstream businesses across more than 100 countries and regions worldwide with 40 branches, and has overseas employees from over 30 countries and regions.

As of Q1 2019, the cumulative total module shipments of the company has reached 40GW, leading the industry. Based on the annual report of IHS, Trina Solar has been ranked among Top 3 in terms of global module shipment for the year of 2016, 2017 and 2018. Further, Trina Solar has been rated as a Tier 1 firm by Bloomberg, IHS and others for consecutive years. With its strong financials, Trina Solar is in leading the industry. In 2018, its asset-liability ratio was approximately 58%, and its sales revenue crossed 25 billion yuan.

A commitment to excellence in all aspects of the organization, a strong corporation with a solid balance sheet, and proven product quality and reliability are some of the key attributes of a bankable brand.

In 2019, Trina solar has been rated as fully bankable by 100% of the experts participating in the BNEF's bankability research. This is the 4th time that the company has been recognized by BNEF.
INNOVATION

For the past two decades, Trina Solar has been at the forefront in solar innovation. Trina Solar owns two national-level innovation platforms, the State Key Laboratory of PV Science and Technology (SKL) and National Enterprise Technology Center, which gathers international top scientists from over ten countries. Till November 2019, Trina Solar’s R&D team has broken 20 world records in the field of cell efficiency and module output power.

A TOTAL OF 20 WORLD RECORDS IN PV CELL EFFICIENCY & MODULE OUTPUT

- Multi-Si Module: 284.7W (May 2012)
- Mono-Si Module: 326.3W (April 2014)
- Multi-Si Module: 335.2W (Oct. 2014)
- Mono-Si PERC cell: 21.4% (Nov. 2014)
- Multi-Si PERC cell: 19.14% (April 2015)
- 156mm mono-Si cell: 21.4% (Nov. 2014)
- 156mm IBC cell: 25.04% (Feb. 2018)
- 156mm IBC cell: 23.22% (Nov. 2019)
- Multi-Si Module: 274.3W (Sept. 2011)
- 2cm IBC cell: 24.4% (Feb. 2014)
- 156mm IBC cell: 22.94% (April 2014)
- 156mm Multi-Si PERC cell: 20.76% (Nov. 2014)
- Multi-Si Module: 324.5W (Dec. 2014)
- 156mm multi-Si cell: 21.25% (Nov. 2015)
- 156mm IBC cell: 23.5% (April 2016)
- 156mm IBC cell: 22.61% (Dec. 2016)
- N-mono-TOPCon cell: 24.58% (May 2019)

Over 50 government funded projects
(2 national 973 projects / 5 national 863 projects)
Trina Solar’s products have always maintained high reliability and solid performance based on our commitment to our quality first policy.

With over 200 in-house tests and a state of the art research and development lab, Trina Solar goes beyond requirements to deliver the highest quality products to customers. The company has been ranked as “Top performer” in DNVGL scorecard for 5 consecutive years. Winners of the award are selected on the basis of annual PV Module Reliability Scorecard report released by PVEL and DNV GL.

A typical PERC structure is employing Al-BSF. Bifacial PERC is different from the typical PERC, with BSF replaced by Al grid, which can receive scattered solar radiation and thus achieve a bi-facility of over 80%.

Trina Solar Duomax Twin modules adopt bifacial PERC as the core technology, in which Trina Solar has the most sophisticated R&D and industrialization capabilities. With the integration of dual-glass, multi-busbar and half-cut cell technologies, Duomax Twin can achieve higher energy generation performance.

Reliability endorsed by third parties

- 2012: Obtained UL's Client Test Data Program certification
- 2017: Received the first CQC's witnessed Manufacturer's Testing certification
- 2019: Obtained the first UL's Witness Testing Data Program Certification
**DUAL-GLASS TECHNOLOGY**

Dual-glass is to replace the conventional glass-and-backsheet structure with a heat strengthened dual-glass structure. Trina Solar’s technical team carried out in-depth R&D in double-glass technology in 2012 and double-glass modules were put into mass production in 2013. Thus, Trina Solar became one of the first companies possessing efficient double-glass modules and bringing them to market. Until now, Trina Solar has shipped dual-glass modules with a total output of more than 3GW, more than any other manufacturer.

Trina Solar’s next generation dual-glass modules incorporate half-cut cells and multi-busbar technology to enhance system reliability and power generation efficiency, while further reducing LCoE.

**MULTI-BUSBAR TECHNOLOGY**

Compared to the conventional 5 busbar soldering process, the multi-busbar (MBB) technology can increase output power of PV modules by 2% with finer and narrower busbars.

As the pioneer of MBB technology, Trina Solar has always been taking the lead in R&D and mass production of MBB in the industry. As early as 2015, Trina Solar started its research on MBB and joined hands with other players to develop the first-generation round welding strip and first-generation MBB cell series welding equipment in China. Moreover, Trina Solar was also among the first to solve technical difficulties in the process.
HALF-CUT TECHNOLOGY

In this technology, the full cell is cut into two parts, which results in a reduction of electrical ribbon resistance and finally improves the overall module efficiency by more than 2%. Also, half-cut design allows the module to work at low operating temperatures, which can improve energy generation per watt.

Trina Solar has integrated half-cut technology into its new generation module product series, which significantly improves the actual power generation, especially when combined with other outstanding technologies like multi-busbar and bifacial cell design.

N TYPE I-TOPCON TECHNOLOGY

In 2015, the State Key Laboratory of Photovoltaic Science and Technology (SKL PVST) of Trina Solar began the research on a large-area bifacial TOPCon cell that is aimed for industrial mass production, naming it i-TOPCon cell. The i-TOPCon cell has a front boron emitter and a rear full-area passivating contact. In 2019, Trina Solar achieved a front side median efficiency over 23% on i-TOPCon cells.

Empowered with i-TOPCon technology, Trina Solar Duomax N modules achieve an industry-leading output power of up to 430W.
PRODUCT PORTFOLIO

- **Honey**
  - 300W
  - honey(II)/honeyM
  - DE06H(II)/DE06M(II)

- **Honey Black**
  - 340W
  - honeyblack(II)
  - DE15H(II)/DE15M(II)

- **Duomax**
  - 300W
  - duomax(II)/duomaxM
  - DEG6H.20(II)/DEG6M.20(II)

- **Tallmax**
  - 360W
  - tallmaxM
  - DE08M(II)

- **Duomax N**
  - 340W
  - duomaxN
  - DE17M(II)

- **Duomax Twin**
  - 360W
  - duomaxTwin
  - DEG17MC.20(II)

- **Tallmax M**
  - 360W
  - tallmaxM
  - DE17MC.20(II)

Designed for utility projects, especially for highly reflective environments.

Designed for harsh environments, such as deserts, saline-alkali and tropical beaches.

Designed for commercial buildings and utility-scale projects.

Designed for utility-scale projects.

Designed for residential and commercial installation.
Trina Solar dual-glass series features high reliability in extreme conditions, an extended 30-year warranty and more power generation with the integration of half-cut, dual glass and multi-busbar technologies.

We have gathered rich practical experiences from over 3 GW Duomax module installations. Duomax is the most reliable module with the special feature of zero water penetration. The glass-glass structure isolates most of the natural ageing factors and water vapor from the rear side to eliminate EVA hydrolysis. Moreover, the new generation dual glass module adopts lighter 2+2 mm glasses and outer frames to achieve easier and safer transportation and installation.

<table>
<thead>
<tr>
<th>Maximum Power</th>
<th># of cells</th>
<th>Size/Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duomax 120</td>
<td>PEG6H.20</td>
<td>285-300 W</td>
</tr>
<tr>
<td>Duomax 144</td>
<td>PEG15H.20</td>
<td>340-355 W</td>
</tr>
<tr>
<td>Duomax M120</td>
<td>DEG6H.20(II)</td>
<td>320-345 W</td>
</tr>
<tr>
<td>Duomax M144</td>
<td>DEG15H.20(II)/DEG15M.20(II)</td>
<td>380-415 W</td>
</tr>
<tr>
<td>Duomax M144</td>
<td>DEG17M.20(II)</td>
<td>430-460W</td>
</tr>
</tbody>
</table>

- Over 3GW cumulative dual glass shipments globally
- First in the industry to obtain TUV standard certification and achieve mass production
- Module power up to 415W in mass production
- 2.0+2.0mm glass-glass, lighter and easy to install
- Half-cut and 9 busbar design
- Symmetric structures minimize micro-cracks and snail trails
- Extended 30-year power warranty, -0.5% annual degradation
- Fire class A certified

Designed for harsh environments, such as deserts, saline-alkali and tropical beaches.
The Duomax Twin module combines highly efficient bifacial cells with a dual glass structure. It can convert light that strikes both the front face and the rear face of the module into electricity. It also features an extended 30-year performance warranty with lower degradation, resulting in higher guaranteed lifetime power output.

**THE DUOMAX TWIN**

Designed for utility projects, especially for highly reflective environments.

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<tr>
<td>DE06HC.20(I)</td>
<td>315-340 W</td>
<td>120 cells (6 x 10 x 2)</td>
</tr>
<tr>
<td>DE06MC.20(I)</td>
<td>350-370 W</td>
<td>120 cells (6 x 12 x 2)</td>
</tr>
<tr>
<td>DE06MC.20(II)</td>
<td>380-410 W</td>
<td>144 cells (6 x 12 x 2)</td>
</tr>
<tr>
<td>DE17MC.20(I)</td>
<td>430-445 W</td>
<td>144 cells (6 x 12 x 2)</td>
</tr>
</tbody>
</table>

**First in the industry to obtain TUV standard certification and achieve mass production**

**Over 3GW cumulative dual glass shipments globally**

**2.0+2.0mm glass-glass, lighter and easy to install**

**Over 80% bifaciality, 5%–30% additional power gain from back side**

**Best match for trackers**

**Resistant to environmental erosion from sand, acid, salt mist and alkali**

**Less than 1% power degradation in LeTID test by TUV Rheinland**

**Extended 30-year power warranty**

**18 dual glass patents**

**TUV**
Trina Solar Duomax N bifacial modules are designed with N-type i-TOPCon bifacial cells, which feature an enhanced performance. Thanks to cutting-edge TOPCon technology, And the Duomax N modules have a lower temperature coefficient and low light induced degradation, significantly improving the actual power output. They also provide an extra 5% to 30% power generation from their back side and feature a 30-year power warranty.
Trina Solar Tallmax product is designed for commercial and utility-scale solar projects to achieve significant system savings. Tallmax modules are recognized by industry professionals for their proven performance in the field. By integrating innovative technologies like half-cut cells and multi busbars, the maximum output of the 144-cell Tallmax module can reach 415W. The increase in output from 370W to 415W will help reduce the balance of system (BOS) cost by 4.5% to 8.5%, and reduce levelized cost of electricity (LCoE) by up to 4.6%.

### Maximum Power

<table>
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<tbody>
<tr>
<td>Tallmax</td>
<td>340-360 W</td>
<td>144 cells</td>
<td>2015 x 996 x 35 mm / 22 kg</td>
</tr>
<tr>
<td>Tallmax M</td>
<td>380-415 W</td>
<td>144 cells</td>
<td>2015 x 996 x 35 mm / 22 kg</td>
</tr>
<tr>
<td>Tallmax M</td>
<td>430-450 W</td>
<td>144 cells</td>
<td>2102 x 1040 x 35 mm / 24.0 kg</td>
</tr>
</tbody>
</table>

- Half-cut and 9 busbar design
- 1500V
- Fully certified for 1500V system
- Widely used in over 100 countries
- 35mm frame, front/back side maximum static load: 5400Pa/2400Pa
- High reliability with best manufacturing techniques
- Different BOM for different climates to ensure power generation for its entire life
The Honey series with 120 half-cut cells can generate huge amount of energy even in limited space. As one of the industry’s most trusted modules, the Honey series is the most sought after option for residential and commercial customers because of its reliability, pleasing aesthetics and compatibility with all major balance of system components and module electronics.

HoneyBlack M, as the premium option of the Honey series, is equipped with a matte black frame, full black back sheet and black multi-busbar cells, making it the perfect choice for residential rooftops.

### Honey Series Features

- **Half-cut and 9 busbar design**
- **High reliability with best manufacturing techniques**
- **1st year degradation ≤2.5%**
- **Ensured PID resistance through cell process and module material optimization**
- **Different BOM for different climates to ensure power generation throughout its life**
- **35mm frame, front/back side maximum static load: 5400Pa/2400Pa**
- **Designed for residential and commercial installation**

### HoneyBlack M Features

- **Matte black frame**
- **Black frame adhesive**
- **Black label**
- **String connectors covered in black**
- **Matte black back sheet**
- **Black cells with multi-busbar technology**

### Maximum Power

<table>
<thead>
<tr>
<th>Model</th>
<th>Maximum Power</th>
<th># of cells</th>
<th>Size/Weight</th>
</tr>
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<tbody>
<tr>
<td>Honey</td>
<td>285-300 W</td>
<td>120 cells (6 x 10 x 2)</td>
<td>1690 x 996 x 35 mm / 18 kg</td>
</tr>
<tr>
<td>Honey M</td>
<td>320-340 W</td>
<td>120 cells (6 x 10 x 2)</td>
<td>1690 x 996 x 35 mm / 18 kg</td>
</tr>
<tr>
<td>Honey M</td>
<td>355-375 W</td>
<td>120 cells (6 x 10 x 2)</td>
<td>1760 x 1040 x 35 mm / 20.0 kg</td>
</tr>
<tr>
<td>HoneyBlack M</td>
<td>310-335 W</td>
<td>120 cells (6 x 10 x 2)</td>
<td>1690 x 996 x 35 mm / 18 kg</td>
</tr>
</tbody>
</table>
PROJECT REFERENCE

Miyazaki City, Miyazaki Prefecture
96.2MW / Tallmax / 2018

Hidaka Gun, Hokkaido Prefecture
21MW / Honey / 2018

Jianshui, Yunnan, China
300MW / Duomax & Tallmax / 2015

Datong Shanxi 250W/Dongchuan Shanxi 250W, China
Duomax N / 2018

Fakenham, Norfolk, UK
49.99MW / Honey / 2015

Clare, Australia
129MW / Duomax / 2018
Gotemba city, Shizuoka prefecture
4.4MW / Tallmax / 2018

Tami Nadu, India
30MW / Tallmax / 2017

Baise, Guangxi
18MW / Tallmax & Honey / 2017

Kasaoka City, Okayama Prefecture
2.64MW / Duomax / 2018

Gotemba City, Shizuoka Prefecture
4.4MW / Tallmax / 2018

Huaibei, Anhui, China
40MW / Duomax / 2018

Golmud, Qinghai, China
20MW / Duomax Twin / 2018

GLOBAL CONTACTS