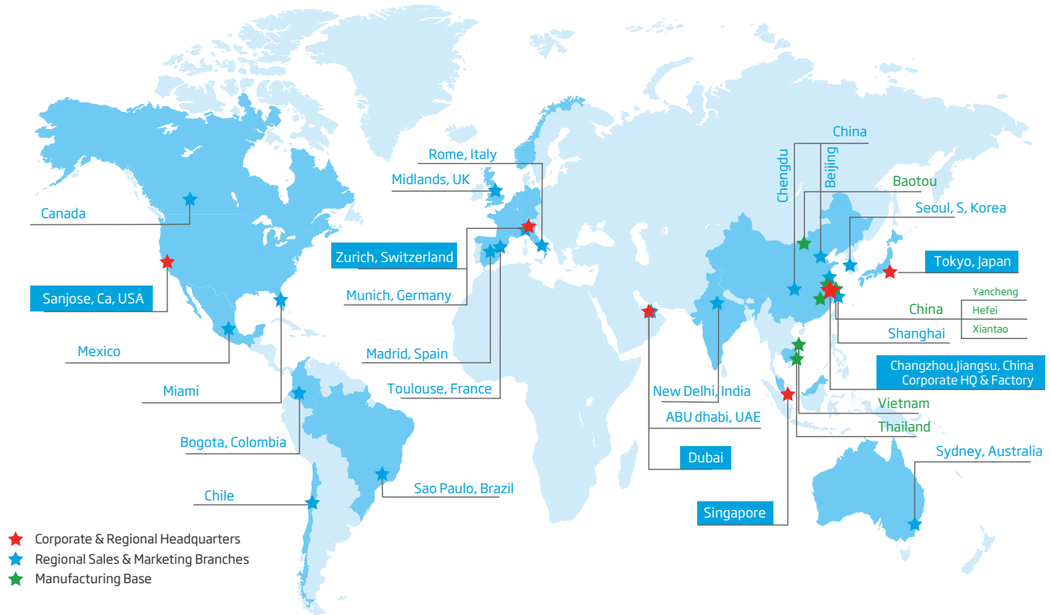
PRODUCT CATALOGUE

WORLD'S LEADING SOLAR COMPANY

Founded in 1997, Trina Solar has established a global 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 2020, the cumulative total module shipments of the company has reached 50GW, 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 2017, 2018 and 2019. 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.

FULLY BANKABLE

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 fourth time in a row that the company has been recognized by BNEF.

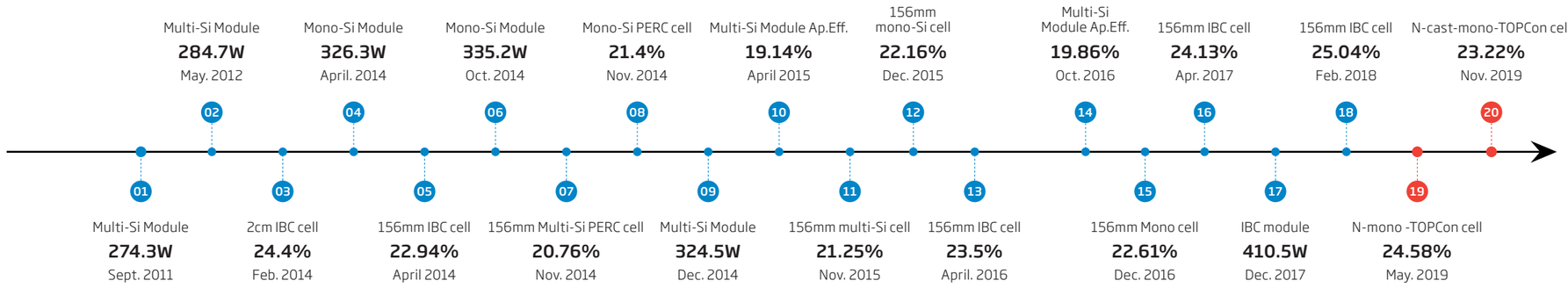
GROUND-BREAKING INNOVATIONS

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.

1720
patents applied

813
patents granted

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

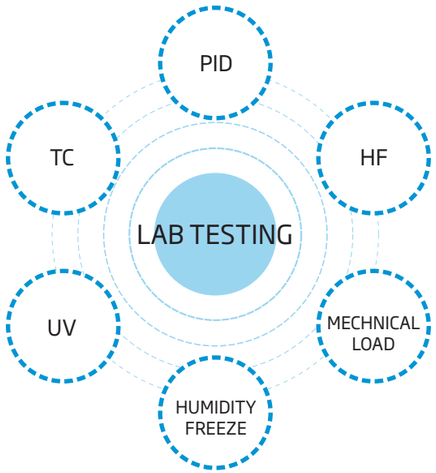


60
Over 60 government funded projects

PRODUCTS YOU CAN RELY ON

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 the DNV.GL scorecard for 5 consecutive years. Winners of the award are selected on the basis of the annual PV Module Reliability Scorecard report released by PVEL and DNV GL.



Reliability endorsed by third parties

Obtained UL's Client Test Data Program certification

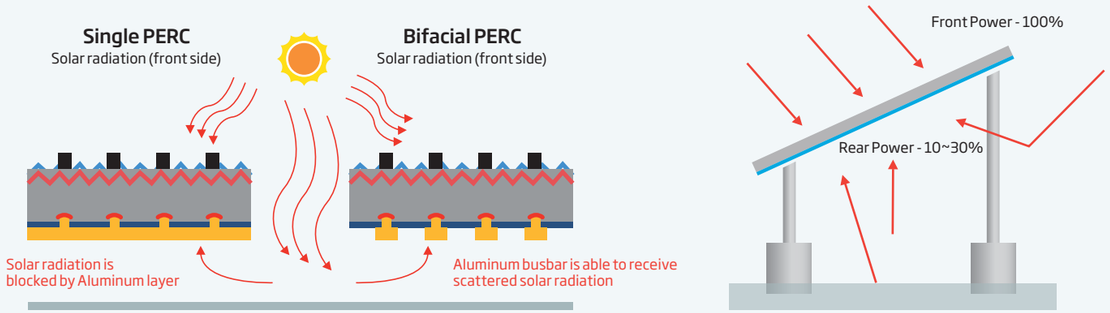
Received the first CQC's witnessed Manufacturer's Testing certification

Obtained the first UL's Witness Testing Data Program Certification

BIFACIAL PERC TECHNOLOGY

A typical PERC structure employs 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-faciality 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.



High power generation

High reliability

Low LCOE

Wide application

DUAL-GLASS TECHNOLOGY

Dual-glass technology replaces 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 dual-glass technology in 2012 and dual-glass modules were put into mass production in 2013. Thus, Trina Solar became one of the first companies manufacturing efficient dual-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.

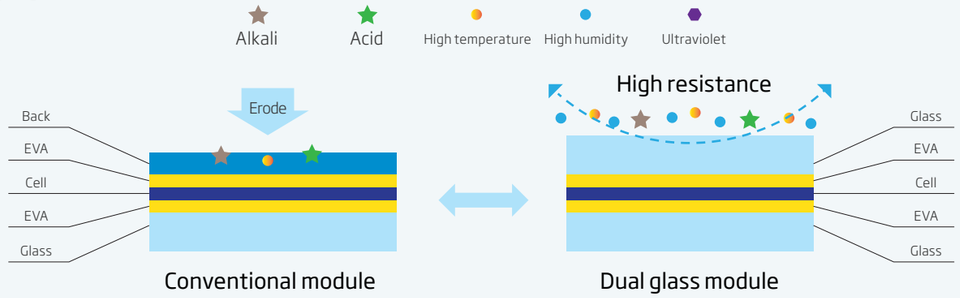
Trina Solar's next generation dual-glass modules incorporate half-cut cells and multi-busbar technology to enhance system reliability and power generation efficiency, while further reducing LCoE.

MULTI-BUSBAR TECHNOLOGY

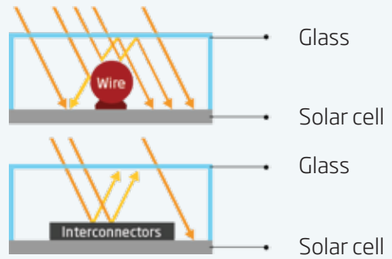
Compared to the conventional five busbar soldering process, the multi-busbar (MBB) technology can increase output power of PV modules by 2% with finer and narrower busbars. As the pioneer of MBB technology, Trina Solar has always been taking the lead in R&D and mass production of MBB in the industry.

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.

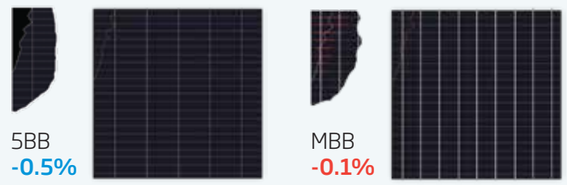
Highly reliable



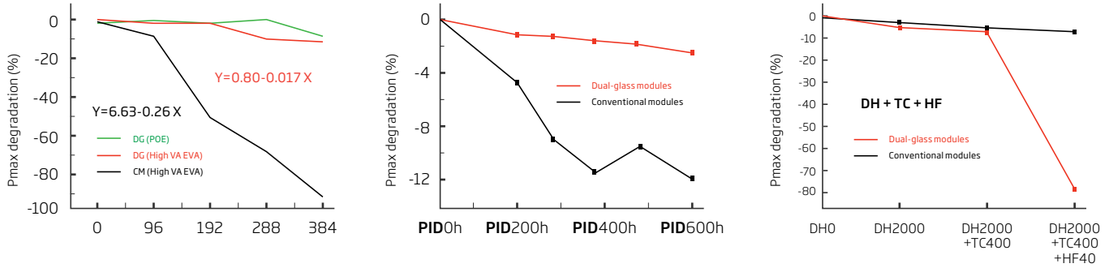
Increased light absorption



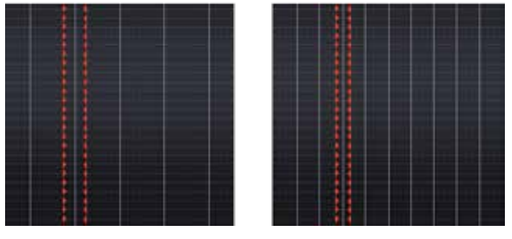
Rare chance of power loss due to micro-cracking



Lower degradation



Reduced resistance losses with over 50% shortened current conduction distance



Shortened current conduction distance

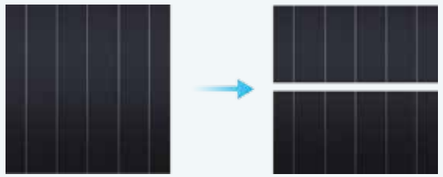
Up to 15% reduced series resistance

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.

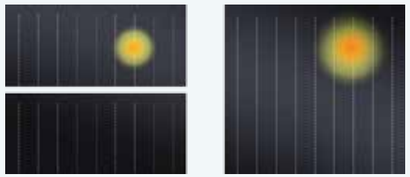
Trina Solar has integrated half-cut technology into its new generation module product series, which significantly improves the actual power generation, especially when combined with other outstanding technologies like multi-busbar and bifacial cell design.

Better power generation with reduced internal resistance losses



Full cell Half cell

High reliability with strong resistance against hotspots



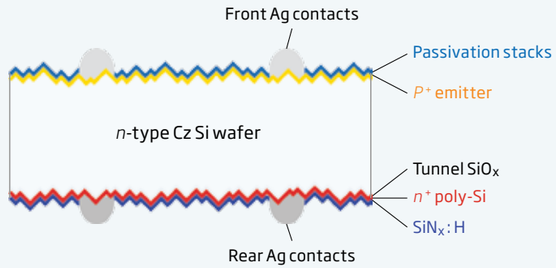
N TYPE I-TOPCON TECHNOLOGY

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-TOP- Con cell.

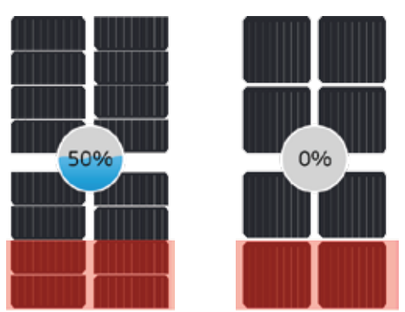
The i-TOPCon cell has a front boron emitter and a rear full-area passivating contact. In 2019, Trina Solar achieved a front side median efficiency over 23% on i-TOPCon cells. Empowered with i-TOPCon technology, Trina Solar Duomax N modules achieve an industry-leading output power of up to 430W.

24.58% world-record lab cell efficiency
for monocrystalline n-type (c-Si) i-TOPCon solar cell
23.22% world-record lab cell efficiency
for cast-monocrystalline n-type (c-Si) i-TOPCon solar cell

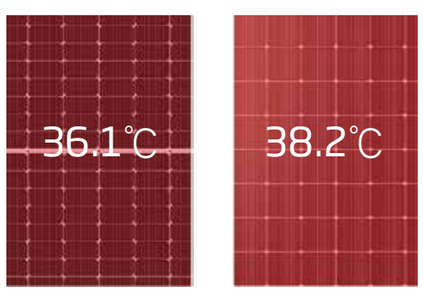
Unique i-TOPCon cell design



High power output with better shading tolerance



Lower operating temperature



Less than 1%
LID degradation

Low temperature
coefficient

Lower micro-crack risk
without internal stress
from the symmetrical N-Bifacial cell scheme

1/3-CUT TECHNOLOGY

Trina Solar 500W Vertex modules employ cells based on 210-mm silicon wafers. Half-cutting has been commonly applied to all cell sizes from 156mm to 166 mm since 2017. And when it comes to size 210mm, which features an unusual area, an even more sophisticated technological level is required.

After multidimensional simulations and analyses, Trina Solar R&D team discovered that 1/3-cut plus multi-busbar will outperform all other module designs for 210mm modules. The 1/3-cut cells plus multi-busbar design will help Vertex modules to achieve higher power while minimizing manufacturing and hotspot issues, maximizing junction box safety, and eliminating power loss associated with inverter current limitation.

Parameter	Pmax	Mono-facial I_{ac}	V_{oc}	Process risk
1/3 Cell	500W	12.1A	51.5V	Normal
Half Cell	495W	18.2A	34.3 V	Low
Full Cell	473W	18.2A	34.3 V	Low

HIGH-DENSITY ENCAPSULATION TECHNOLOGY

The cell spacing of the traditional module is 2mm with the restriction of ribbon strength.

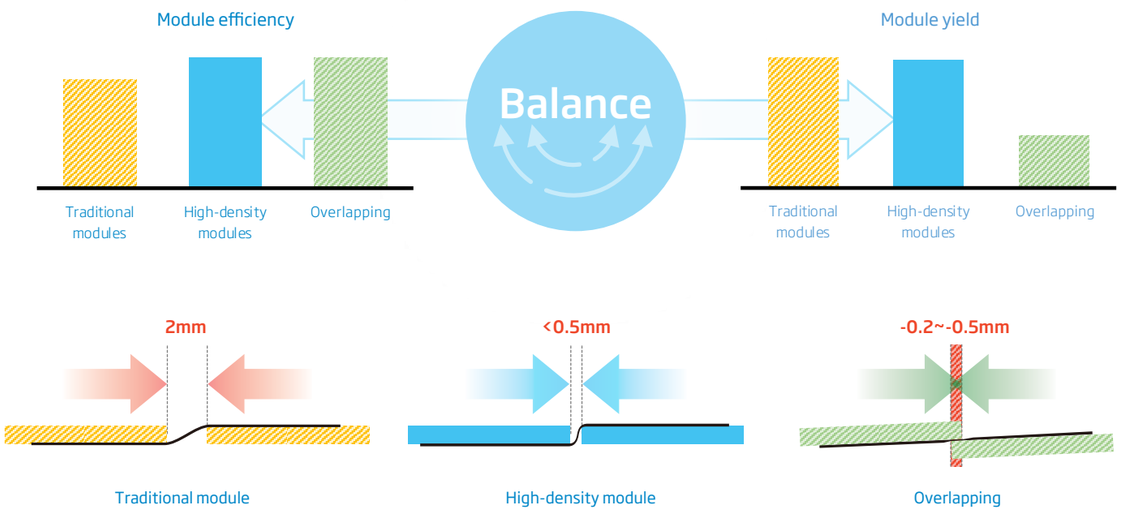
High-density encapsulation technology is developed to further reduce the cell spacing to the minimum to optimize power output and efficiency.

Currently there are two different processes of cell encapsulation:

High-density encapsulation:
By flattening cell connection areas of welding tape, the cell spacing is reduced to 0.5mm to achieve higher efficiency, which will leave a certain gap to reduce yield risk, micro-cracks and damage to the module.

Overlapping:
Cells are overlapped with overlapping area 0.2-0.5mm through connections of welding tapes, which could achieve an even higher efficiency than the first process. However, the cell breakage rate will increase during production and module deformation will appear, which will result in micro-cracks.

Trina Solar 500W+ Vertex modules employ the high-density encapsulation to achieve 21% ultra-high efficiency.



PRODUCT PORTFOLIO

510 W
495 W
480 W
465 W
450 W
435 W
420 W
405 W
390 W
375 W
360 W
345 W
330 W
315 W
300 W
285 W

Vertex
480~505W
DE18M(II) / DEG18MC.20(II)

Tallmax M
430~450W
DE17M(II)

Duomax M
430~450W
DEG17M.20(II)

Duomax Twin
430~445W
DEG17MC.20(II)

Duomax N
420~445W
NEG15XC.20(II)

Tallmax M
380~415W
DE15H(II)/DE15M(II)

Duomax M
380~415W
DEG15H.20(II)/ DEG15M.20(II)

Duomax Twin
380~410W
DEG15MC.20(II)

Honey M
355~375W
DE08M(II)

Tallmax
340~360W
PE15H/PE15M

Duomax
340~355W
PEG15H.20

Duomax Twin
350~370W
DEG8MC.20(II)

Duomax M
320~345W
DEG6H.20(II)/DEG6M.20(II)

Honey M
320~340W
DE06H(II)/DE06M(II)

HoneyBlack M
310~335W
DD06M.05(II)

Duomax Twin
315~340W
DEG6MC.20(II)

Honey
285~300W
PE06H

Duomax
285~300W
PEG6H.20

Product Series

Honey
Designed for residential and commercial installation

HoneyBlack
Designed for high-end residential installation

TALLMAX
Designed for commercial buildings and utility-scale projects

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

DUOMAX twin
Designed for utility projects, especially for highly reflective environments

DUOMAX N
Designed for utility-scale projects

Vertex
Designed for utility and C&I projects

THE VERTEX SERIES

Designed for utility and C&I projects

The 500W+ Vertex series modules, with a module conversion efficiency reaching 21%, boast a power output over 500W. Incorporating 210mm cells, the 500W+ Vertex series modules come in two versions - the bifacial double-glass modules and back sheet modules, they can be seamlessly connected to existing mainstream photovoltaic system designs, including tracking solutions.

Based on Trina Solar's superior multi-busbar technology, the modules incorporate an innovative design that integrates advanced three-piece, non-destructive cutting and high-density encapsulation technologies, eliminating the potential risks associated with ultra-high power modules: voltage, current and thermal overload as well as micro cracks.

Vertex

		Maximum Power	# of cells	Size/Weight
Vertex (bifacial)	DEG18MC.20(II)	480-505 W	150 cells (3 x 50)	2176 x 1098 x 35 mm / 27 kg
Vertex (back sheet)	DE18M(II)	480-505 W	150 cells (3 x 50)	2176 x 1098 x 35 mm / 27 kg

500W

500W+ ultra-high power with 21% high efficiency

Best system compatibility from 1/3-cut cells and innovative 5*30 string cell layout

12-year product warranty, 30-year power warranty

Monofacial and bifacial options

Better temperature coefficient (-0.35%), lower working temperature result in more generated power

+30%

Up to 30% additional power gain from rear side in different installation environments

IA

Excellent IAM (Incident Angle Modifier) and low light performance, validated by 3rd party certifications

BOS

BOS cost is reduced by 6%-8% compared with 410 W power module

TÜV

IEC 61215 and IEC 61730 certified by TUV Rheinland

THE DUOMAX SERIES

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

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 3GW 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.

DUOMAX DUOMAX M

		Maximum Power	# of cells	Size/Weight
Duomax 120	PEG6H.20	285-300 W	120 cells (6 x 10 x 2)	1700 x 1002 x 30 mm / 22 kg
Duomax 144	PEG15H.20	340-355 W	144 cells (6 x 12 x 2)	2024 x 1002 x 30 mm / 26 kg
Duomax M 120	DEG6H.20(II)/ DEG6M.20(II)	320-345 W	120 cells (6 x 10 x 2)	1700 x 1002 x 30 mm / 22 kg
Duomax M 144	DEG15H.20(II)/ DEG15M.20(II)	380-415 W	144 cells (6 x 12 x 2)	2024 x 1002 x 30 mm / 26 kg
Duomax M 144	DEG17M.20(II)	430-450W	144 cells (6 x 12 x 2)	2111 x 1046 x 30 mm / 28.6 kg

Over 3GW cumulative dual glass shipments globally

TUV

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

415W

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

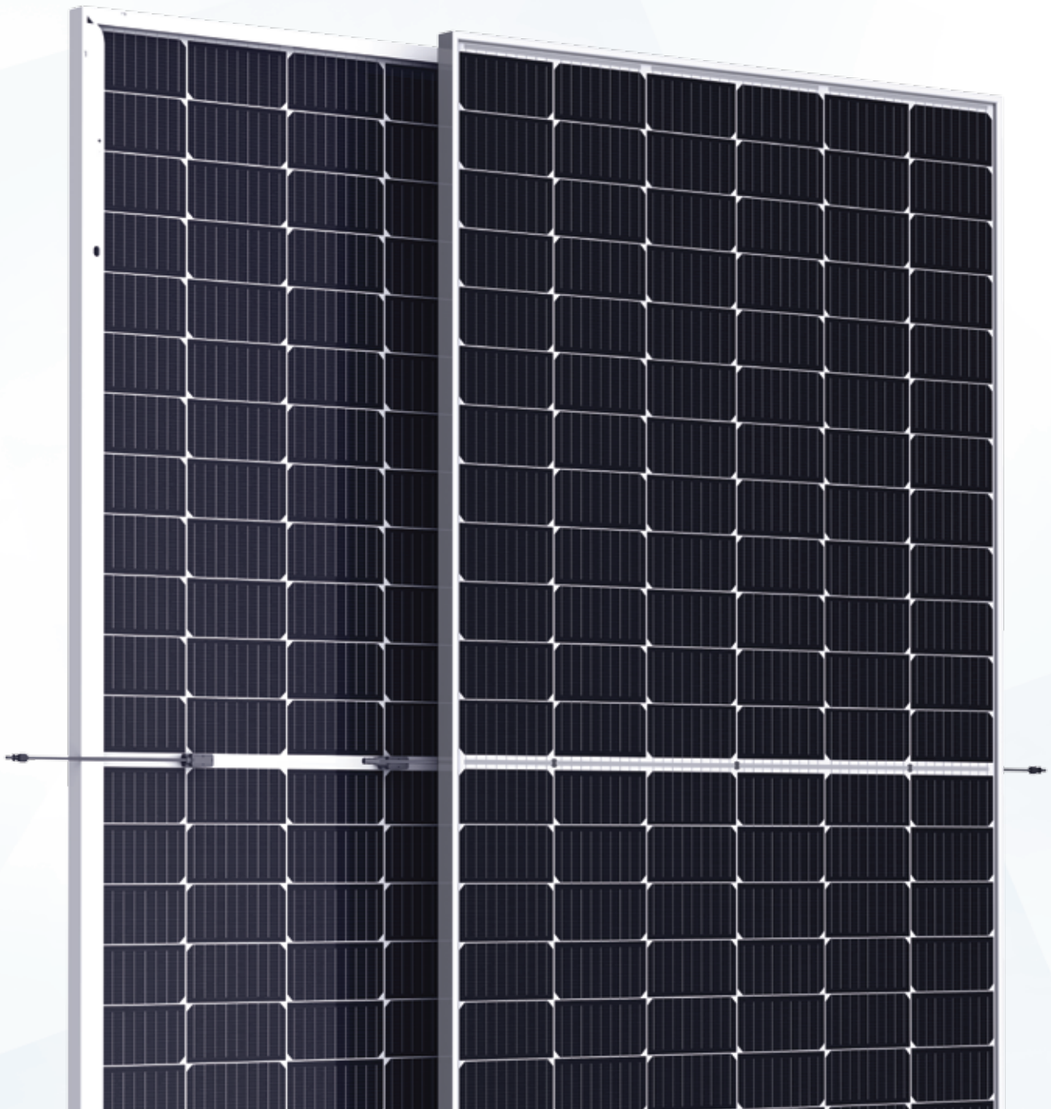
IA

Fire class A certified

THE DUOMAX TWIN

Designed for utility projects, especially for highly reflective environments

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.



DUOMAX twin

		Maximum Power	# of cells	Size/Weight
Duomax Twin	DEG6MC.20(II)	315-340 W	120 cells (6 x 10 x 2)	1700 x 1002 x 30 mm / 22 kg
	DEG8MC.20(II)	350-370 W	120 cells (6 x 12 x 2)	1773 x 1046 x 30 mm / 25.0 kg
	DEG15MC.20(II)	390-410 W	144 cells (6 x 12 x 2)	2024 x 1002 x 30 mm / 26 kg
	DEG17MC.20(II)	430-445 W	144 cells (6 x 12 x 2)	2111 x 1046 x 30 mm / 28.6 kg

Over 3GW cumulative dual glass shipments globally

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

18 dual glass patents

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

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

Best match for trackers

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

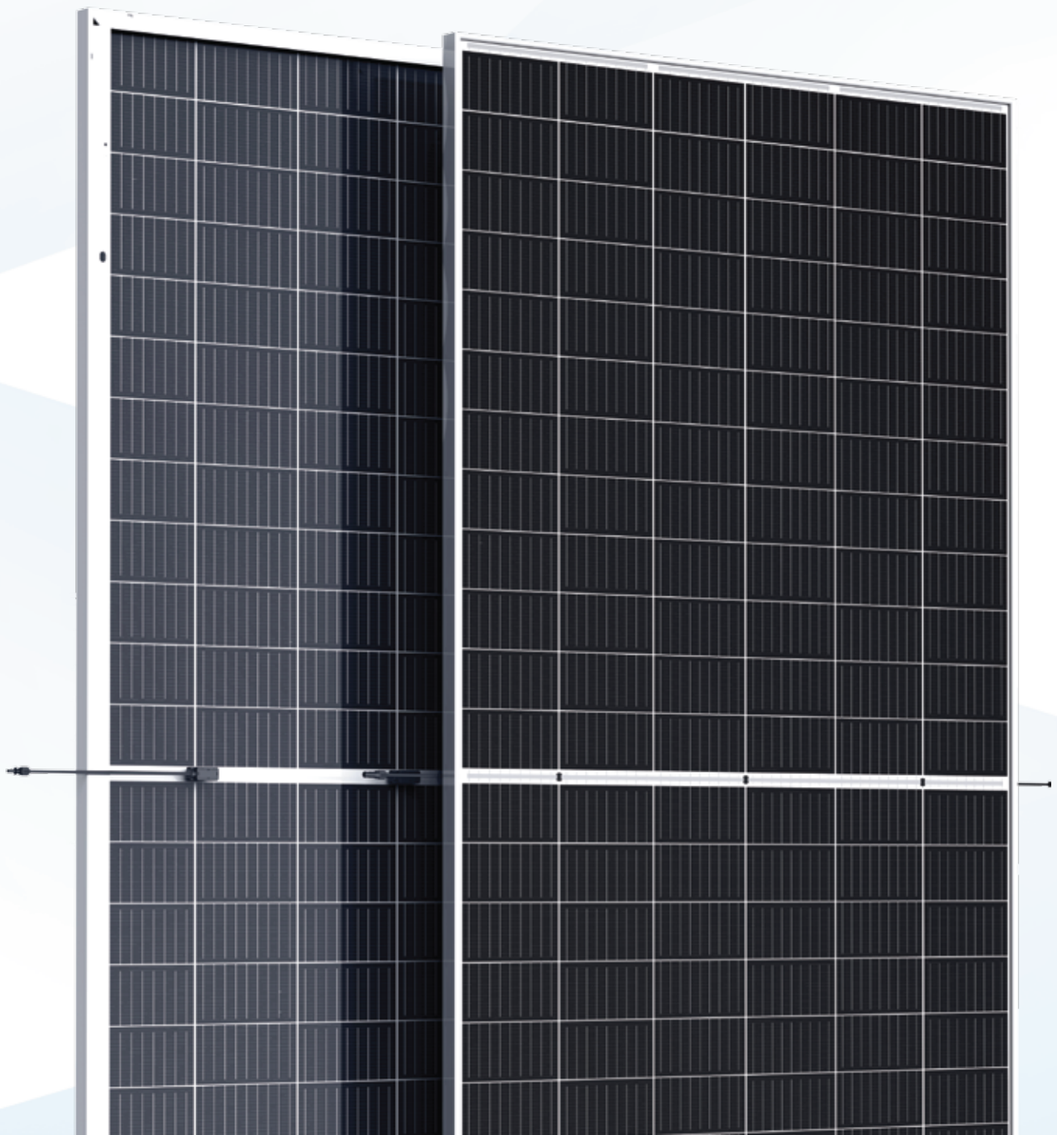
Over 80% bifaciality, 5%-30% additional power gain from back side

Extended 30-year power warranty

THE DUOMAX N

Designed for utility-scale projects

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. 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.



DUOMAX N

		Maximum Power	# of cells	Size/Weight
Duomax N	NEG15XC.20(II)	420-445 W	156 cells (12 x 13)	2148 x 1002 x 30 mm / 28.3 kg

i-TOPCon

N-type i-TOPCon cell,
Efficiency ≥23%
in mass production

TOP

20.7% Module efficiency

400 mm NA hole added,
suitable for tracking systems

Excellent IAM (Incident Angle Modifier)
and low light performance
certified by 3rd party

Suitable for tracking system
thanks to high static load

Anti-PID

Ensured PID resistance
through cell process and
module material optimization

5-30%

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

30-year power warranty,
low LID with 1.5% degradation
in the first year

Ultra slim split junction box
for unshaded back side

THE TALLMAX SERIES

Designed for C&I and utility projects

The Tallmax module 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%.

TALLMAX TALLMAX M

		Maximum Power	# of cells	Size/Weight
Tallmax	PE15H/PE15M	340-360 W	144 cells (6 x 12 x 2)	2015 x 996 x 35 mm / 22 kg
Tallmax M	DE15H(II)/DE15M(II)	380-415 W	144cells (6 x 12 x 2)	2015 x 996 x 35 mm / 22 kg
Tallmax M	DE17M(II)	430-450 W	144 cells (6 x 12 x 2)	2102x 1040 x 35 mm / 24.0 kg

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 lifetime

THE HONEY SERIES

Designed for residential and commercial installation

The Honey series with 120 half-cut cells can generate maximum energy yield 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 multi-busbar black cells, black backsheet and matte black frame making it the perfect aesthetic choice for high-end residential rooftops.

Honey Honey M HoneyBlack M

		Maximum Power	# of cells	Size/Weight
Honey	PE06H	285-300 W	120 cells (6 x 10 x 2)	1690 x 996 x 35 mm / 18 kg
Honey M	DE06H(II)/DE06M.08(II)	320-340 W	120 cells (6 x 10 x 2)	1690 x 996 x 35 mm / 18 kg
Honey M	DE08M.08(II)	355-375 W	120 cells (6 x 10 x 2)	1760 x 1040 x 35 mm / 20.0 kg
HoneyBlack M	DD06M.05(II)	315-335 W	120 cells (6 x 10 x 2)	1690 x 996 x 35 mm / 18 kg

Half-cut and
9 busbar design

High reliability with
best manufacturing techniques

1st year
degradation ≤2.5%

Black

Matte black frame

Black frame adhesive

Black label

Different BOM
for different climates to
ensure power generation throughout
its lifetime

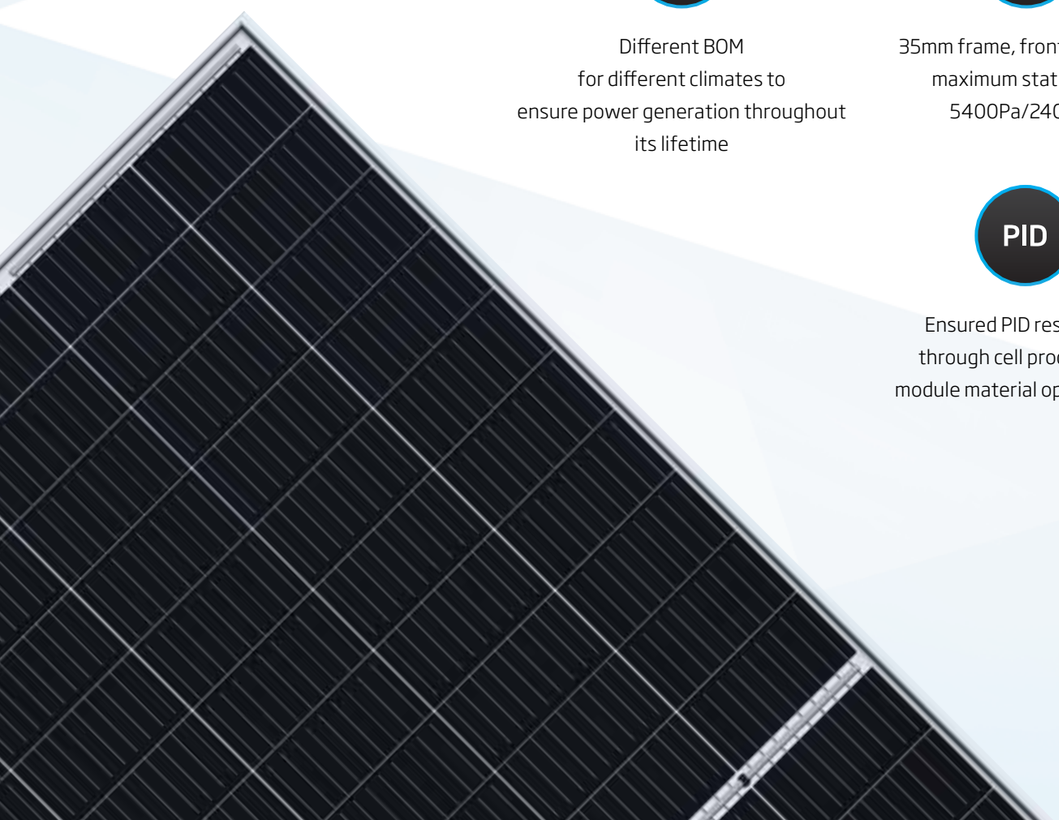
35mm frame, front/back side
maximum static load:
5400Pa/2400Pa

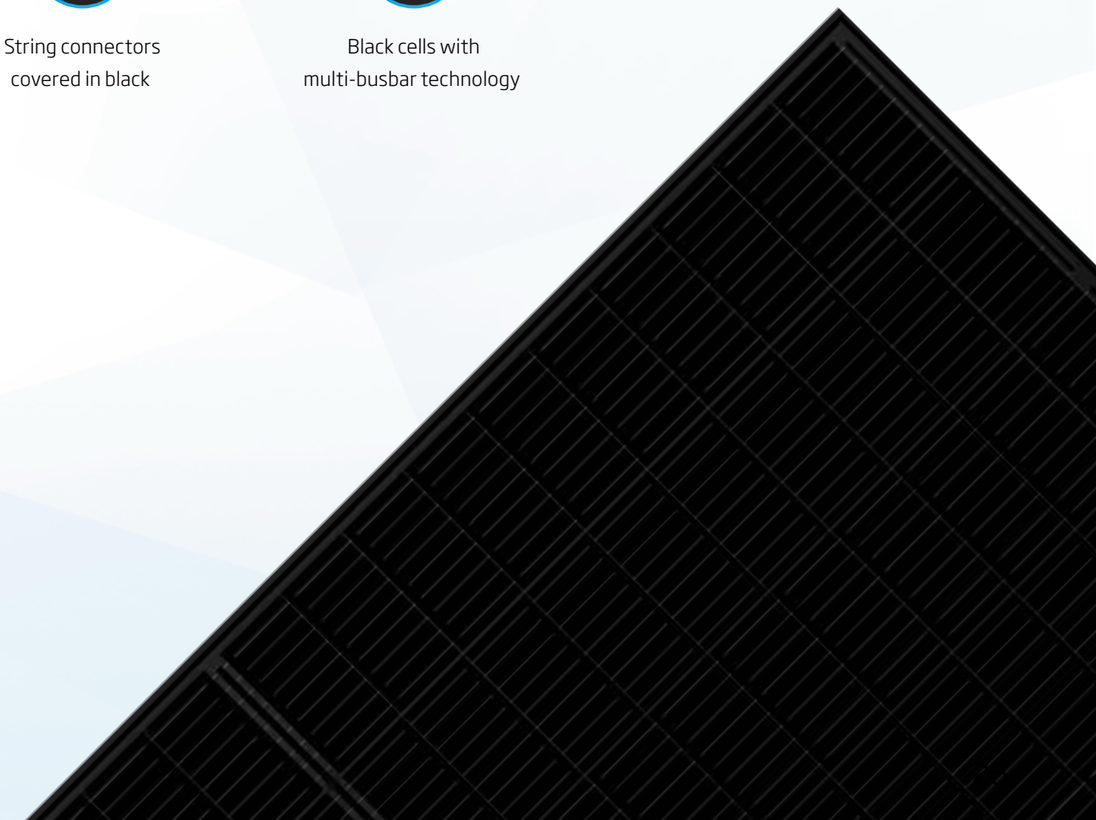
String connectors
covered in black

Black cells with
multi-busbar technology

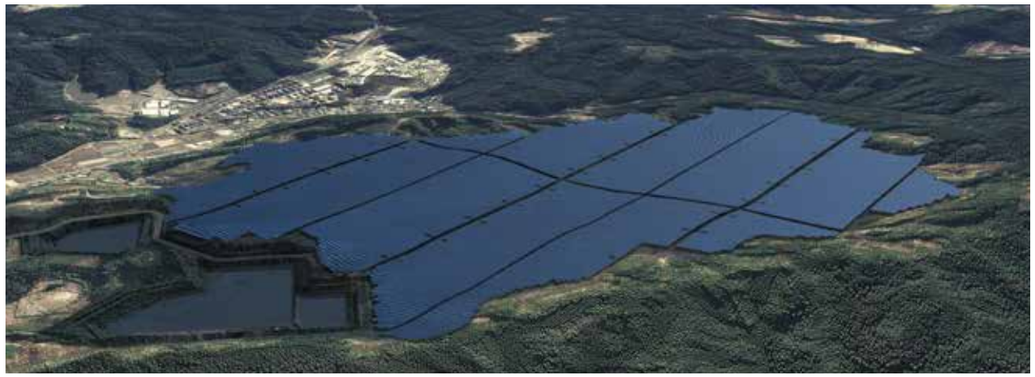
PID

Ensured PID resistance
through cell process and
module material optimization





PROJECT REFERENCES



Miyazaki City, Miyazaki Prefecture, Japan 96.2MW / Tallmax / 2018

Hidaka Gun, Hokkaido Prefecture, Japan 21MW / Honey / 2018

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

Datong Shanxi 250MW / Dongchuan Shanxi 250MW, China Duomax N / 2019

Ha Tin, Vietnam 50.067MW / Tallmax / 2019

Clare, Australia 129MW / Duomax / 2018

PROJECT REFERENCES

Kasaoka City, Okayama Prefecture, Japan
2.64MW / Duomax / 2018

Huaibei, Anhui, China
40MW / Duomax / 2018

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

Gotemba city, Shizuoka prefecture, Japan
4.4MW / Tallmax / 2018

Baise, Guangxi, China
18MW / Tallmax & Honey / 2017

Tami Nadu, India
30MW / Tallmax / 2017

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