LPV HJT

LEASCEND PHOTOVOTAIC TECHNOLOGY CO., LTD

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OFFICIAL ACCOUNT

琏升光伏
LPV HJT

LEASCEND PHOTOVOLTAIC TECHNOLOGY CO., LTD

To become a world leading digital and
intelligent manufacturer of high-efficiency HJT solar cells

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www.leascend.com

ABOUT Leascend

Leascend Photovoltaic Technology Co., Ltd ("Leascend Photovoltaic"), founded in January 2023, is located in the Economic Development Zone of Danling County, Sichuan Province and occupies a key spot in China's Green Silicon Valley (in Leshan and Meishan). As an innovative high-tech company, Leascend Photovoltaic focuses on the development, application, and mass production of high-efficiency heterojunction (HJT) solar cells. The Project, as one of Sichuan's key construction projects in 2023, is jointly invested by multiple listed companies and covers an area of 387 mu, with a plant floor area of 102,085.36 m2 and a total investment of RMB 4 billion; as the first phase of the Project, a high-efficiency HJT solar cell production line with an annual production capacity of 8GW will be built and officially put into operation in August 2023.

Once completed, the Project will be an HJT solar cell producer that boasts the largest floor area, the longest single production line and the largest individual capacity in China. The Project may achieve an annual operating revenue of RMB 10 billion, resulting in an annual tax payment of more than RMB 400 million, and create more than 1,500 job opportunities.

With the corporate vision to become a world leading digital and intelligent manufacturer of high-efficiency HJT solar cells and staying committed to the values of Win-Win Development, Sharing of Responsibility in Harmony, and Focus on Efficiency, Leascend Photovoltaic focuses on the development of high-efficiency HJT solar technology and applies mass production technology for low-cost and high-efficiency HJT solar cells in a bid to shape itself into a model in the Leshan-Meishan New Energy Base and a benchmark producer of HJT solar cells in China. Leascend Photovoltaic aims to provide more high-performance, high-efficiency and high-quality photovoltaic products for global customers, ushering in a new era of solar energy and a better future for the mankind.

Corporate Vision

To become a world leading digital and intelligent manufacturer of high-efficiency HJT solar cells

Corporate Mission

Always keep HJT solar cell production capacity in the first echelon of the industry
Always keep cell efficiency and cost at an excellent level
Always keep long-term and stable cooperation with customers and suppliers

Corporate Value

Honesty and Trustworthiness
Objectiveness and Impartiality
Pursuit of Excellence
Win-win Development
Sharing of Responsibility in Harmony
Focus on Efficiency

Controlling Shareholder of Leascend Photovoltaic

Xiamen 35.com Technology Co., Ltd. ("35.com")

*35.com (300051) is a well-known internet application company listed on the ChiNext Market in China
*Rated as a key software enterprise in China's national planning strategy
*Awarded the title of the Most Competitive Listed Company on the ChiNext Market of China

Investors of Leascend Photovoltaic

Sichuan New Hosun Group

New Hosun is a conglomerate that engages in diverse industries with a focus on capital management, new energy, new materials and health and tourism real estate and makes investment in technologies. New Hosun has more than 30 investment projects and branches across the Chengdu-Chongqing Economic Circle, Pearl River Delta and Yangtze River Delta Economic Zone and manages equity funds for over ten leading companies.

With the corporate mission to be a creator of a better life, New Hosun has pioneered in building the Panxi 4.0 Sunshine Forest City and the Huili International Tourism Resort with an area of 2,500 mu; with the empowerment of city-industry planning and comprehensive health industry, New Hosun has initiated a smart tourism real estate model in the post-real estate era.

Sichuan Giastar Group Co., Ltd.

* As a national-level key leading enterprise in agricultural industrialization, it is founded by Mr. Tang Guangyue, a famous Sichuan entrepreneur

* After 30 years of development, it has become a large-scale high-tech company engaging in industrialized breeding, new materials and new energy

* As a major shareholder of Giastar Farming&Husbandry (SH603477) and Shenghe Resources (SH600392), it has a participating stake in many listed enterprises

Sichuan Xinghui Group

Xinghui Group is a holding group company specializing in biomedical technology, medical and health industry and scientific and technological investment and operation. The Group has established strategic cooperation for long-term win-win development with domestic and foreign scientific research institutions and financial units. Yuanhong Biological, an international technology company affiliated to the Group, focuses on biomedicine, contract research organization (CRO) and health management. Pooling leading talents, technologies, capital and other innovation elements in the biotechnology field, the Group will, based on future market and technology leadership, build an international biomedical innovation hub. The Group takes the corporate culture of "Self-improvement, respect for the talents, and carrying forward virtues" as the code of conduct, and joins hands with partners to prepare for the future and build a century-old enterprise with an everlasting foundation.

Overview of Phase I

8GW
ANNUAL CAPACITY

104
RMB 10.4 billion
ANNUAL OUTPUT VALUE

40亿
RMB 4 billion
TOTAL INVESTMENT

1500⁺
CREATION JOBS

4.1亿
ANNUAL TAX PAYMENT
RMB 0.41 MILLION

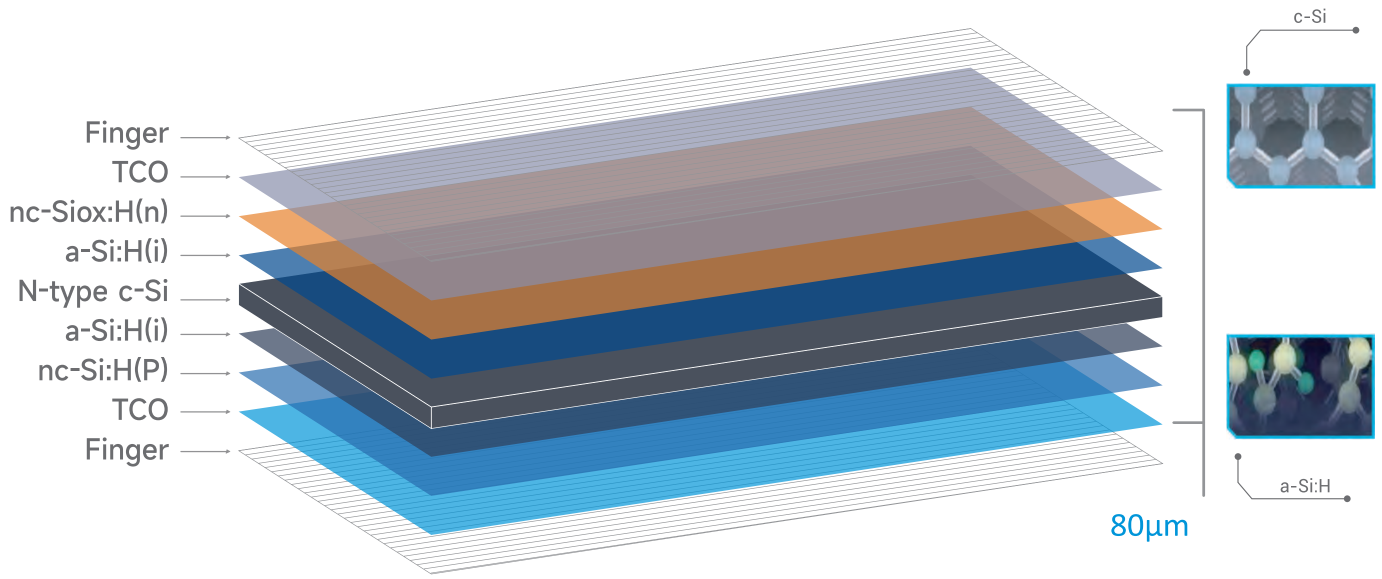
258000m²
FLOOR AREA OF ABOUT

The mainstream of the next-generation High-efficiency HJT solar cell technology

Ultra-high power output

Combining the advantages of crystalline silicon and film silicon technology, HJT solar cells have excellent light absorption and passivation effects, and are superior to PERC technology in efficiency and performance. HJT solar cell technology is one of the current battery technologies in the solar energy industry to improve conversion rate and power output to the highest level, and also leads the development direction of the new generation of battery technology.

The bifacial structure of HJT solar cells can effectively improve the backside power output of module products and increase the power generation income; the extremely low temperature coefficient enables the module to maintain stable power output performance even in high-temperature environment; the excellent power output capacity under weak light conditions prolongs the time of power generation of the module and further improves the power generation income.



25.5%+ 710W+

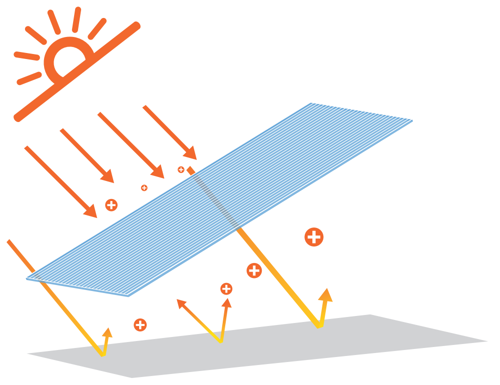
Ultra-high Conversion Efficiency

HJT solar cells use intrinsic amorphous silicon thin films as passivation materials to reduce the loss of minority carriers lifetime in contact area, which could increase the open circuit voltage to 750mV and guarantee the power conversion efficiency up to 25% at the beginning. With double-sided microcrystalline, the cells can further improve the doping efficiency and transmittance of the thin films, improve current density, and thereby improve cells conversion efficiency by more than 25.2%and thereby improve cells conversion efficiency by more than 25.2%, and the power of HJT solar cell modules reaches 710W+.

80μm

Thinner Wafers

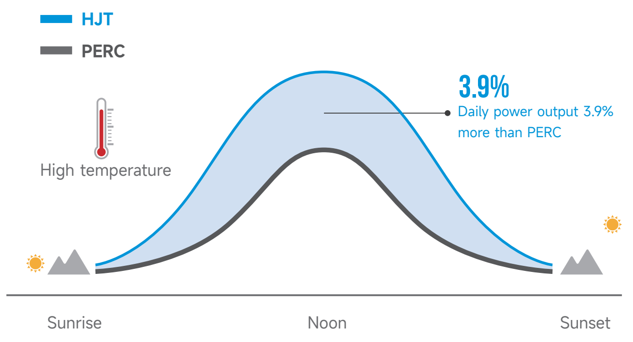
The manufacturing process of HJT solar cells is simplified and at a lower temperature compared with that of conventional solar cells. Its natural bifacial symmetrical structure reduces the mechanical stress in cell production, which enables the production of thinner wafers (≤120μm). Combining with SMBB technology and 0 Busbar technology, the conversion efficiency can be further improved and costs reduced. With mass production of N-type silicon wafers, the cost advantage of thin wafers will be more prominent.



95%+

Higher Bifaciality

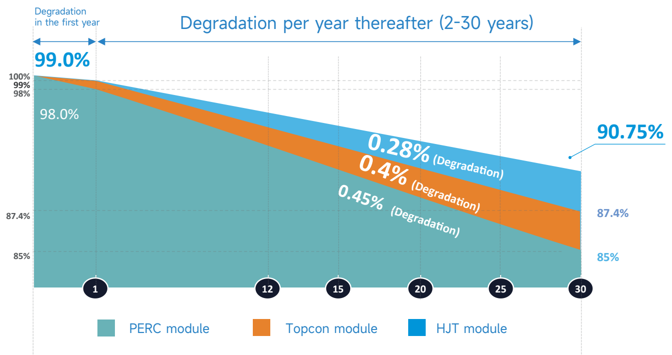
With a natural bifacial symmetrical structure and a bifaciality of more than 95%, HJT cells can better adapt to different application scenarios and gain more power output.



-0.26%/℃

Extreme low temperature coefficient

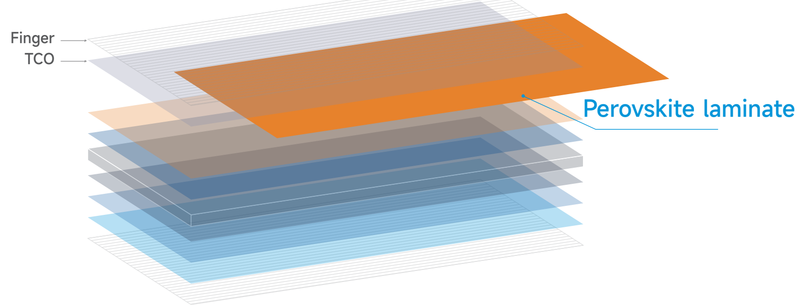
Compared with conventional cells, HJT solar cells have a lower temperature coefficient (-0.26%/°C), which ensure more stable power output at high temperature and high irradiation areas. When using modules with the same power, the daily power output of HJT solar cells is 6% more than that of PERC cells and 3% more than that of Topcon cells.



1% in the first year 0.28% for each

Lower degradation rate

HJT solar cells are made of N type silicon wafer, which does not have B-O bound so as to avoid LID effect, guaranteeing long term durability. With anti-reflection and protective layers, TCO film is conductive, so the charge won't polarize on the surface, avoiding PID from the structure.



35%+

Combination with Future Technology

Due to their structure, HJT cells are very suitable to use as substrate to stack with perovskite cells. The combination of these two technologies is considered to be the most promising. Simulations show that the conversion efficiency of the laminated cells can reach more than 35%.

LEASCEND
G12-0BB HJT SOLAR CELLS

As one of the best in the new generation of high-efficiency solar cells, HJT technology lead a new round of revolution in PV technology. With a single hybrid structure integrating the advantages of crystalline silicon and amorphous silicon thin film technology, HJT solar cell has the advantages of high efficiency and stability with a low-temperature and simplified manufacturing procedures. Extremely low temperature coefficient so as to avoid LID and PID effect. There is no color difference between the front and back side, the bifaciality is more than 95%. The backside has an obvious advantage in power generation, which ensures a stable and high efficiency power output regardless of seasonal circulation and climate change.

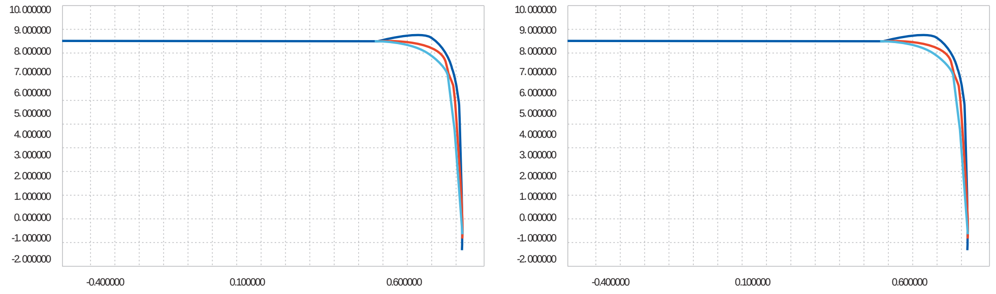
Mechanical Performance

Product	High-efficiency Monocrystalline HJT Solar Cell (Half-cut)
Specification	N-type, No busbar, 210.1 * 105.05 ± 0.15 mm
Average Thickness	110±15μm
Front Side (-)	Blue Transparent Conductive Oxide (TCO) Film, No busbar
Back Side (+)	Blue Transparent Conductive Oxide (TCO) Film, No busbar

Temperature Coefficient

Open-Circuit Voltage	Voc	-0.27%/K
Short-Circuit Current	Isc	+0.055%/K
Max. Power	Pmax	-0.26%/K

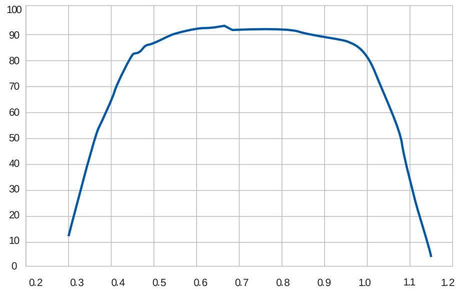
I-V curve (25.00%)



Frontside

Backside

Spectral response



Wavelength (μm)

Electrical Performance

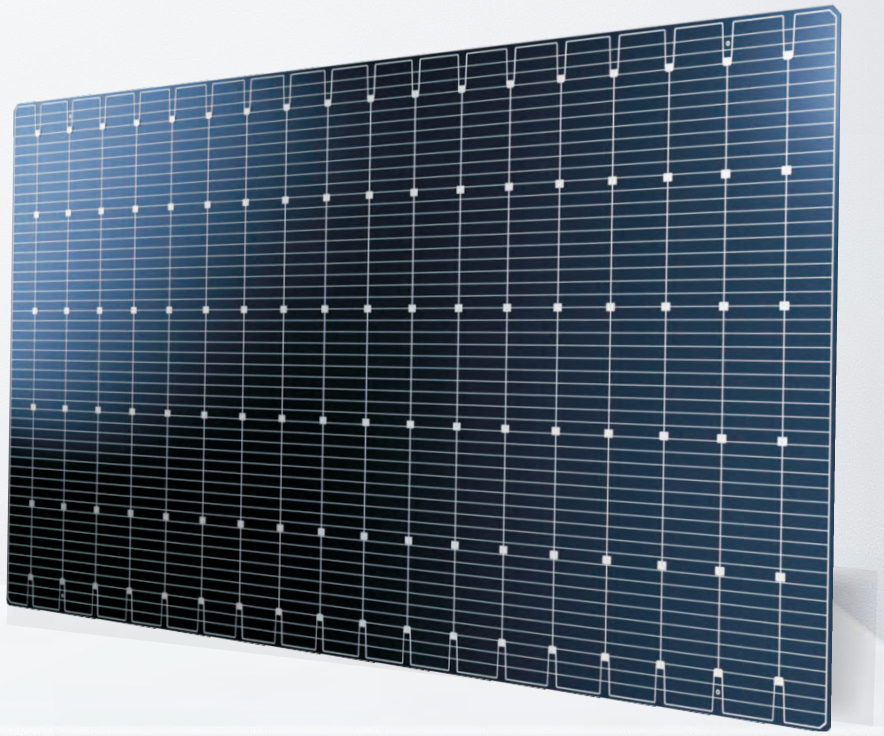
Backside Electrical Performance

Cell Type	Unit	LS-210M 255	LS-210M 254	LS-210M 253	LS-210M 252	LS-210M 251	LS-210M 250	LS-210M 249	LS-210M 248	Backside LS-210M 255	Backside LS-210M 247	Backside LS-210M 240
Max. Power	Pmpp [W]	5.62	5.60	5.58	5.56	5.53	5.51	5.49	5.47	5.34	5.18	5.03
Current at the Max. Power Point	mpp [A]	8.268	8.248	8.227	8.207	8.186	8.166	8.145	8.123	7.855	7.710	7.616
Voltage at the Max. Power Point	Vmpp [V]	0.680	0.679	0.678	0.677	0.676	0.675	0.674	0.673	0.68	0.672	0.661
Short-Circuit Current	Isc [A]	8.752	8.746	8.740	8.734	8.728	8.722	8.716	8.711	8.315	8.250	8.211
Open-Circuit Voltage	Voc [V]	0.7500	0.7498	0.7495	0.7492	0.7490	0.7487	0.7484	0.7482	0.750	0.748	0.745
Filling Factor	FF	85.65	85.39	85.15	84.90	84.64	84.40	84.15	83.89	85.64	83.86	82.16
Efficiency	η [%]	25.5	25.4	25.3	25.2	25.1	25.0	24.9	24.8	24.23	23.47	22.80

* Test conditions: 1,000 W/m2, AM1.5, 25°C; The above technical performance is subject to technical changes and tests, and Leascend Photovoltaic reserves the right of final interpretation.

LEASCEND
G12-18BB HJT SOLAR CELLS

As one of the best in the new generation of high-efficiency solar cells, HJT technology lead a new round of revolution in PV technology. With a single hybrid structure integrating the advantages of crystalline silicon and amorphous silicon thin film technology, HJT solar cell has the advantages of high efficiency and stability with a low-temperature and simplified manufacturing procedures. Extremely low temperature coefficient so as to avoid LID and PID effect. There is no color difference between the front and back side, the bifaciality is more than 95%. The backside has an obvious advantage in power generation, which ensures a stable and high efficiency power output regardless of seasonal circulation and climate change.



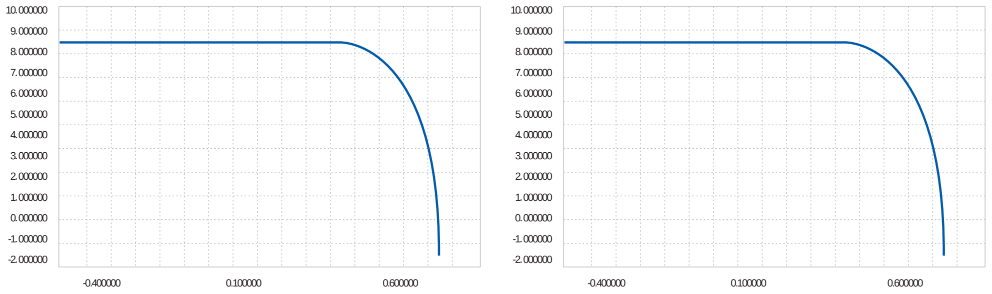
Mechanical Performance

Product	High-efficiency Monocrystalline HJT Solar Cell (Half-cut)
Specification	N-type, 18BB, 210.1 * 105.05 ± 0.15 mm
Average Thickness	110±15μm
Front Side (-)	Front busbars (silver) 18 *0.8 mm with padding point; Blue Transparent Conductive Oxide (TCO) Film
Back Side (+)	Back Busbars (silver)18 * 0.8mm with padding point; Blue Transparent Conductive Oxide (TCO) Film

Temperature Coefficient

Open-Circuit Voltage	Voc	-0.27%/K
Short-Circuit Current	Isc	+0.055%/K
Max. Power	Pmax	-0.26%/K

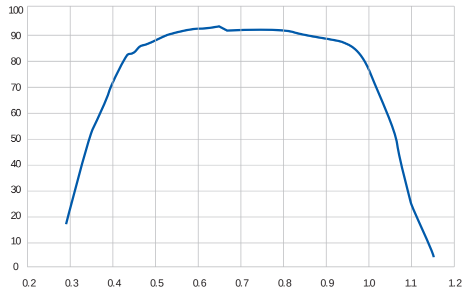
I-V curve (25.00%)



Frontside

Backside

Spectral response



Wavelength (μm)

Electrical Performance

Cell Type	Unit	LS-210M 255	LS-210M 254	LS-210M 253	LS-210M 252	LS-210M 251	LS-210M 250	LS-210M 249	LS-210M 248
Max. Power	Pmpp [W]	5.62	5.6	5.58	5.56	5.53	5.51	5.49	5.47
Current at the Max. Power Point	mpp [A]	8.307	8.286	8.266	8.245	8.223	8.216	8.193	8.176
Voltage at the Max. Power Point	Vmpp [V]	0.677	0.676	0.675	0.674	0.673	0.672	0.671	0.67
Short-Circuit Current	Isc [A]	8.695	8.688	8.68	8.673	8.66	8.654	8.653	8.642
Open-Circuit Voltage	Voc [V]	0.75	0.7495	0.7492	0.749	0.7487	0.7484	0.7482	0.7478
Filling Factor	FF	86.21	85.99	85.77	85.52	85.34	85.10	84.79	84.60
Efficiency	η [%]	25.5	25.4	25.3	25.2	25.1	25	24.9	24.8

Backside Electrical Performance

Cell Type	LS-210M 255	LS-210M 247	LS-210M 240
Max. Power	5.34	5.18	5.03
Current at the Max. Power Point	7.855	7.710	7.616
Voltage at the Max. Power Point	0.68	0.672	0.661
Short-Circuit Current	8.315	8.250	8.211
Open-Circuit Voltage	0.750	0.748	0.745
Filling Factor	85.64	83.86	82.16
Efficiency	24.23	23.47	22.80

* Test conditions: 1,000 W/m2, AM1.5, 25°C; The above technical performance is subject to technical changes and tests, and Leascend Photovoltaic reserves the right of final interpretation.

LEASCEND
G12-15BB HJT SOLAR CELLS

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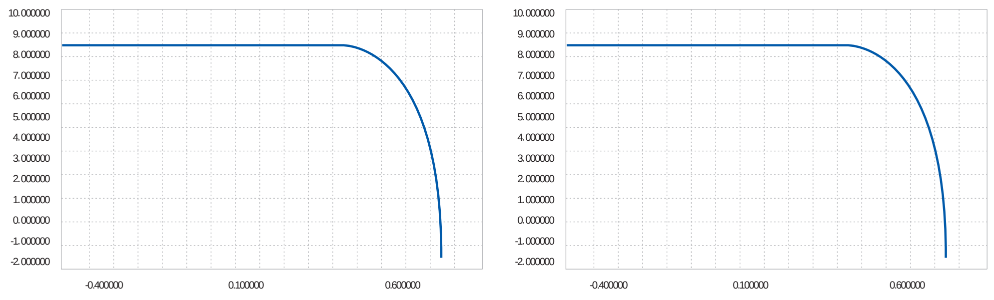
Mechanical Performance

Product	High-efficiency Monocrystalline HJT Solar Cell (Half-cut)
Specification	N-type, 15BB, 210.1 * 105.05 ± 0.15 mm
Average Thickness	110±15μm
Front Side (-)	Front busbars (silver) 15 *0.8 mm with padding point; Blue Transparent Conductive Oxide (TCO) Film
Back Side (+)	Back Busbars (silver)15 * 0.8mm with padding point; Blue Transparent Conductive Oxide (TCO) Film

Temperature Coefficient

Open-Circuit Voltage	Voc	-0.27%/K
Short-Circuit Current	Isc	+0.055%/K
Max. Power	Pmax	-0.26%/K

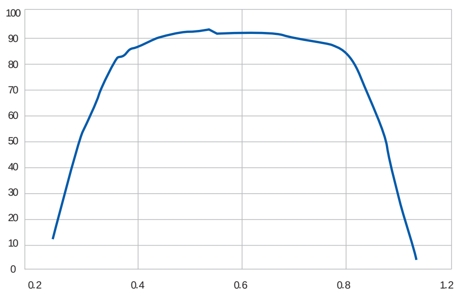
I-V curve (25.00%)



Frontside

Backside

Spectral response



Wavelength (μm)

Electrical Performance

Cell Type	Unit	LS-210M 255	LS-210M 254	LS-210M 253	LS-210M 252	LS-210M 251	LS-210M 250	LS-210M 249	LS-210M 248
Max. Power	Pmpp [W]	5.62	5.6	5.58	5.56	5.53	5.51	5.49	5.47
Current at the Max. Power Point	mpp [A]	8.307	8.286	8.266	8.245	8.223	8.216	8.193	8.176
Voltage at the Max. Power Point	Vmpp [V]	0.677	0.676	0.675	0.674	0.673	0.672	0.671	0.67
Short-Circuit Current	Isc [A]	8.7164	8.7105	8.7046	8.6987	8.6928	8.6869	8.6809	8.6750
Open-Circuit Voltage	Voc [V]	0.75	0.7495	0.7492	0.749	0.7487	0.7484	0.7482	0.7478
Filling Factor	FF	86.00	85.77	85.53	85.27	85.02	84.78	84.52	84.28
Efficiency	η [%]	25.5	25.4	25.3	25.2	25.1	25	24.9	24.8

Backside Electrical Performance

Cell Type	Unit	LS-210M 255	LS-210M 247	LS-210M 240
Max. Power	Pmpp [W]	5.34	5.18	5.03
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Overseas market development

Leascend Photovoltaic focuses on the development and application of HJT solar cells. It attaches great importance to developing and applying HJT solar cells in overseas markets and has established extensive and in-depth strategic cooperation with many countries and regions.

40GW

Five major bases planned: Sichuan, Anhui, Inner Mongolia, Guangdong and Jiangsu.

By 2025, the overall capacity of Leascend's high-efficiency HJT solar cells will reach 40GW.

LPV HJT

Leascend Photovoltaic is created for HJT solar cells
Intelligent manufacturing for a bright future