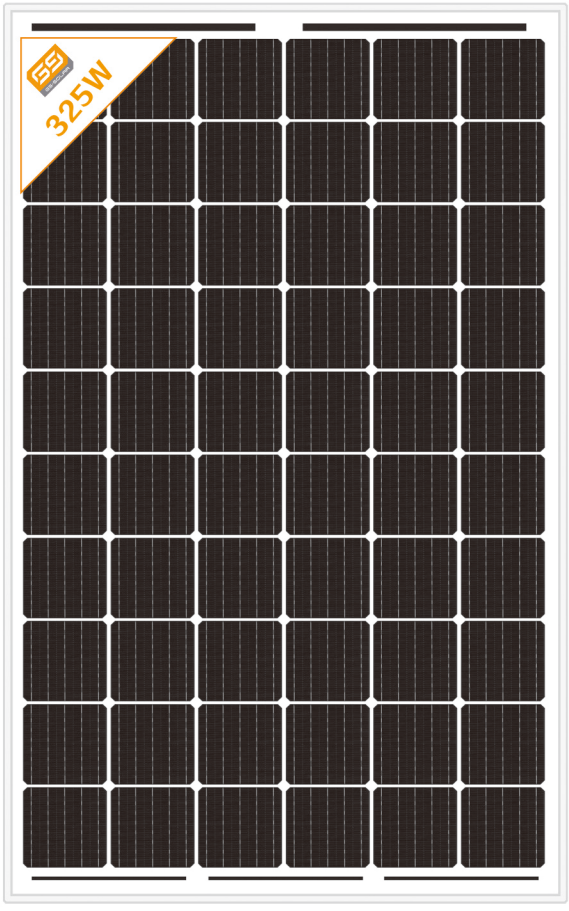
HDT Single- Glass Solar Module

HDT single-glass solar modules utilize the high efficiency mono-crystalline hetero-junction solar cell technology; it has excellent characteristics of high conversional efficiency, high stability, and excellent temperature performance. Its structure is deposit the P-type thin film silicon and N- type thin film silicon at the N type mono-crystalline silicon, then add a layer of un-doped (intrinsic) hydrogenated silicon thin film between the N-type mono-crystalline silicon substrate.

This process improves the performance of PN junction, enabling HDT single-glass solar module with the higher power generation compared to solar modules with the same size, reaching the leading level in the world, it is the most cost-effective and efficient commercialized high efficiency solar cell.



Characteristics

High efficiency

HDT solar module's conversional efficiency is 10%-20% higher than those of traditional crystalline solar module, therefore, greatly reducing the cost of land, fames, cable, transportation, installation and maintenance.

Excellent temperature performance

Power-temperature coefficient(-0.28%/℃) is **40%** lower than traditional crystalline silicon solar modules, therefore, have much higher power output than traditional solar module in high temperature environment.

High stability

Compared to traditional crystalline silicon solar modules, HDT solar module's LID is 50% lower.

High ROI

Compared to solar farm with traditional crystalline silicon solar module, HDT solar modules have lower LCOE for solar farm, therefore, producing higher return on investment.

GS-SOLAR(CHINA) COMPANY LTD.

Website：http://www.gs-solar.com

E-mail：sales@gs-solar.com

HDT Single-Glass Solar Module Performance Data

Electrical Data at STC

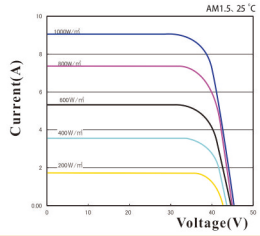
Name	N-type mono-crystalline silicon hetero-junction single-glass solar module		
Module	**HDT-60-310**	**HDT-60-315**	**HDT-60-320**
Maximum Power/W	310	315	320
Open Circuit Voltage/V	43.6	43.8	44.0
Max Power Voltage/V	35.8	36.1	36.4
Short Circuit Current/A	9.30	9.34	9.38
Max Power Current/A	8.66	8.73	8.80
Module Efficiency /%	19.05	19.36	19.67
Output Power Tolerance (W)	0/+5 W		
Temperature Coefficient of Isc α (%/℃)	0.059		
Temperature Coefficient of Voc β (%/℃)	−0.277		
Temperature Coefficient of Pmax γ (%/℃)	−0.28		
Testing Conditions	Air Mass 1.5, Irradiance 1000W/㎡, Cell Temperature 25℃		

Electrical Data at NOCT

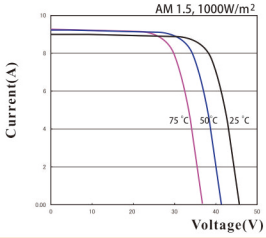
Module	HDT-60-310	HDT-60-315	HDT-60-320
Nominal Operating Cell Temperature (NOCT)	45℃ ± 2℃		
Maximum Power (Pamx/W)	222	225	229
Open Circuit Voltage (Voc/V)	41.85	41.95	42.04
Max Power Voltage (Vmp/V)	32.38	32.48	32.58
Short Circuit Current (Isc/A)	7.365	7.413	7.416
Maximum Power current (Imp/A)	6.87	6.93	7. 03

Testing conditions:NOCT, Air Mass 1.5, Irradiance 800w/M^2, Cell temperature 20°C, Wind Speed 1m/s

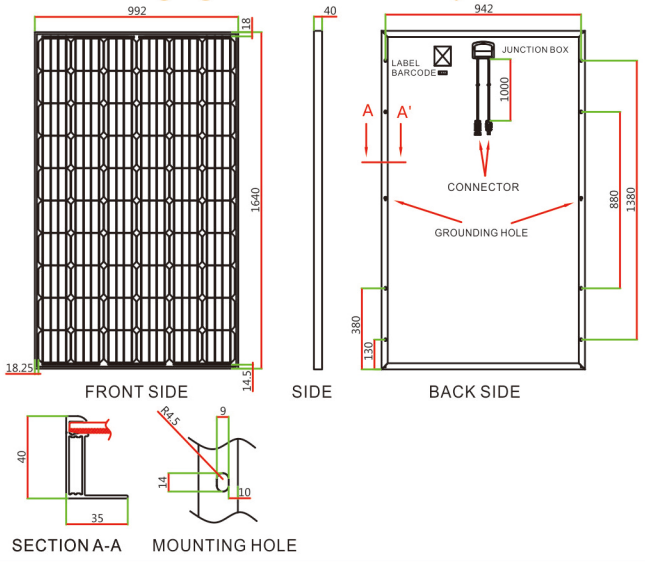
I-V curves at different irradiance



I-V curves at different temperatures



HDT Single-glass Solar Module Physical Dimensions



Operating Conditions

Maximum System Voltage	1000VDC(IEC)
Operating Temperature	– 40℃ ~ 85℃
Maximum Fuse Rating	15A
Front Static Load Test (Snow)	5400Pa
Rear Static Load Test (Wind)	2400Pa
Hail Stone Impact Test	Distance 1m, Hail stone Diameter 25mm, Speed 23m/s
Nominal Operating Cell Temperature	45℃ ± 2℃
Applications Class	Class A

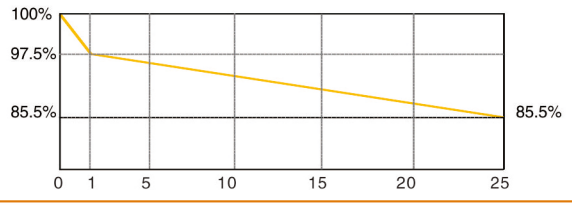
Mechanical Data

Solar Cells	60 pieces/156.75*156.75mm/5 busbar
Dimensions(mm)	1640*992*40mm
Weight(kg)	19 kg
Glass (material/thickness)	Plating tempered glass/3.2mm
Encapsulation	EVA/0.5mm
Aluminum Frame	AL/White/Grey White /Black (optional)
Junction Box	Ⅱ/3
Output Cables	0.3m+0.3/4mm^2
Connector (Model / protection grade)	Compatibility MC4/IP67

Packaging Data

Modules per Pallet	26 pieces
Packaging Dimensions	1685*1120*1108mm
Weight per Pallet	525kg
Pallets per 40' HQ Container	28 pallets
Pallets per Shipping Flat Car (17.5m)	40 pallets

Linear Performance Warranty



Certifications

Fire Safety Class	Class C
Certification	TUV NORD/IEC61215, IEC61730

Warranty

Product	10 years product warranty
Power Output	10 years [93% of Pmin] 25 years [85.5% of Pmin]

Warning:

Please read installation manuals carefully before handing, installing and using HDT single-glass solar module.

• Note:

Due to ongoing research and development, innovation and product upgrading, the content in the product specification can be changed without prior notice. These data are not for a single HDT solar module, they are used to differentiate various types of solar modules.