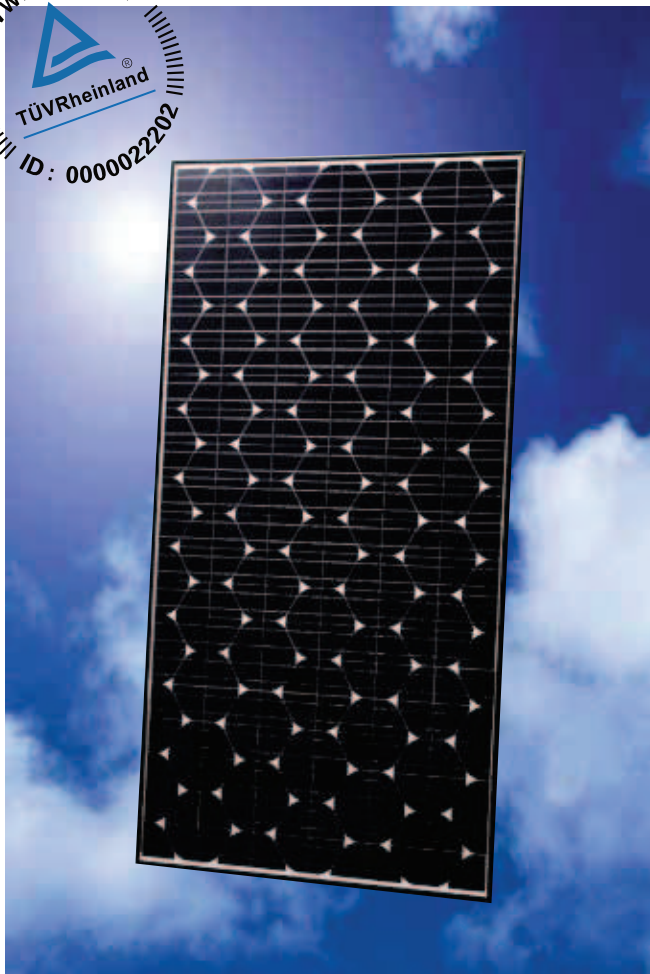


# HIT photovoltaic module

HIP-230HDE1  
HIP-225HDE1  
HIP-220HDE1

The SANYO HIT (Heterojunction with Intrinsic Thin layer) solar cell is made of a thin mono crystalline silicon wafer surrounded by ultra-thin amorphous silicon layers. This product provides the industry's leading performance and value using state-of-the-art manufacturing techniques.



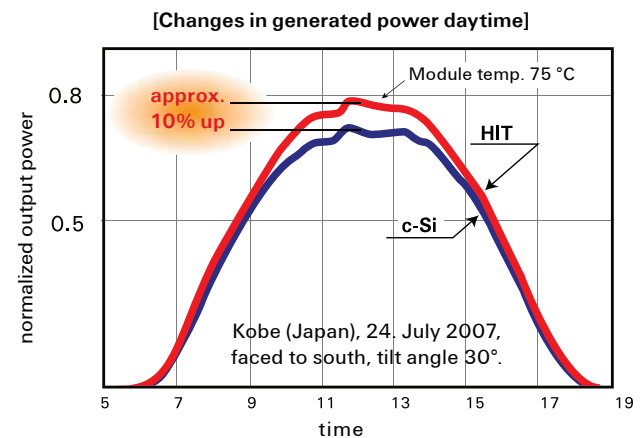
## Benefit in Terms of Performance

The HIT cell and module have very high conversion efficiency in mass production.

Model	Cell Efficiency	Module Efficiency
HIP-230HDE1	19.2%	16.6%
HIP-225HDE1	18.8%	16.2%
HIP-220HDE1	18.3%	15.9%

## High performance at high temperatures

Even at high temperatures, the HIT solar cell can maintain higher efficiency than a conventional crystalline silicon solar cell.

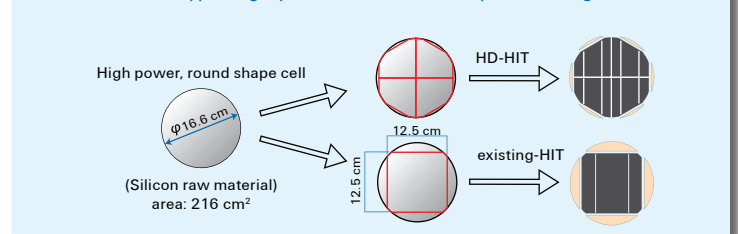


## Environmentally-Friendly Solar Cell More Clean Energy

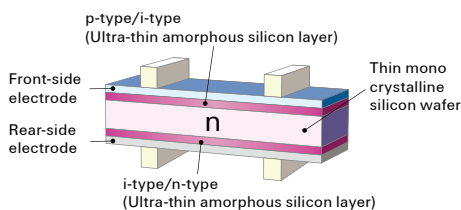
HIT can generate more clean Energy than other conventional crystalline solar cells.

## A module that uses silicon resources effectively

The newly developed "Honeycomb Design" HD cell allows the maximum number of round-type, high-power cells to be arrayed in a single module.



## HIT Solar Cell Structure



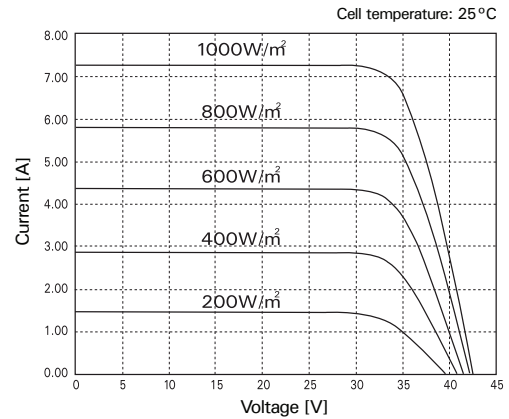
Development of HIT solar cell was supported in part by the New Energy and Industrial Technology Development Organization (NEDO).

Models HIP-xxxHDE1			
Electrical data	230	225	220
Maximum power (Pmax) [W]	230	225	220
Max. power voltage (Vpm) [V]	34.3	33.9	33.5
Max. power current (Ipm) [A]	6.71	6.64	6.57
Open circuit voltage (Voc) [V]	42.3	41.8	41.4
Short circuit current (Isc) [A]	7.22	7.14	7.07
Warranted min. power (Pmin) [W]	218.5	213.8	209.0
Maximum over current rating [A]	15		
Output power tolerance [%]	+ 10/-5		
Max. system voltage [Vdc]	1000		
Temperature coeff. of Pmax [%/°C]	-0.3		
Temperature coeff. of Voc [V/°C]	-0.106	-0.105	-0.104
Temperature coeff. of Isc [mA/°C]	2.17	2.14	2.12

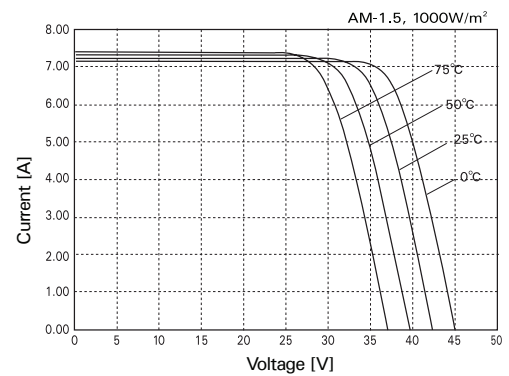
Note 1: Standard test conditions: Air mass 1.5, Irradiance = 1000 W/m<sup>2</sup>, Cell temperature = 25 °C.  
Note 2: The values in the above table are nominal.

## Reference data for model HIP-230HDE1

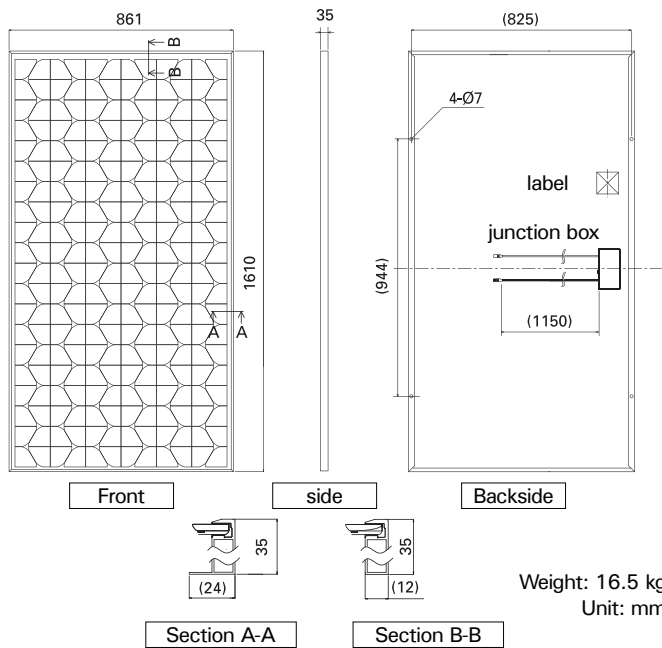
### Dependence on irradiance



### Dependence on temperature



### Dimensions and weight



### Certificates

IEC 61730 IEC 61215



- Qualified, IEC 61215
- Safety tested, IEC 61730
- Periodic Inspection



Electrical Protection Class II

Please consult your local dealer for more information.

**CAUTION!** Please read the operating instructions carefully before using the products.

Due to our policy of continual improvement the products covered by this brochure may be changed without notice.

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