

# HIT<sup>®</sup> photovoltaic module



NEC

HIT-N235SE10  
HIT-N230SE10  
HIT-N225SE10

**R&D technology adaptation**

**Reducing carrier recombination loss**

- Preserving as much of the generated electricity as possible
- Realizing even higher voltage

**Reduction of optical loss**

- Enabling as much incoming sunlight as possible to reach the electrical generating layer (crystalline silicon)
- Realizing even higher current

**Anti-reflection glass**

**New tab design**

**Reducing resistance loss**

- Extracting as much of the generated electricity as possible
- Realizing even higher fill factor

18.6%



## HIT cell technology

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.

## Environmentally-Friendly Solar Cell

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

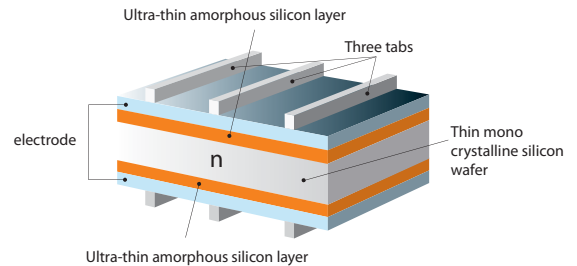
## Special Features

SANYO HIT solar modules are 100% emission free, have no moving parts and produce no noise. The dimensions of the HIT modules allow space-saving installation and achievement of maximum output power possible on given roof area.

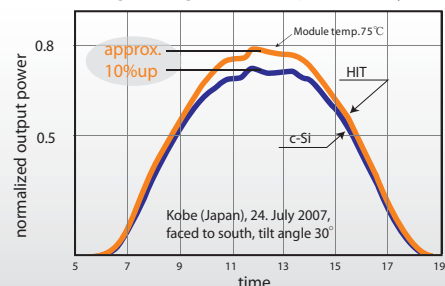
## High performance at high temperatures

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

## HIT<sup>®</sup> Solar Cell Structure



## Changes in generated power daytime



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

Model	Cell Efficiency	Module Efficiency
HIT-N235SE10	21.1%	18.6%
HIT-N230SE10	20.7%	18.2%
HIT-N225SE10	20.2%	17.8%

**HIT<sup>®</sup>**  
Photovoltaic Module

HIT is a registered trademark of SANYO Electric Co., Ltd. The name "HIT" comes from "Heterojunction with intrinsic Thin-layer" which is an original technology of SANYO Electric Co., Ltd.

### Electrical data (at STC)

Models HIT-NxxxSE10

	235	230	225
Maximum power (Pmax) [W]	235	230	225
Max. power voltage (Vmp) [V]	43.0	42.3	41.6
Max. power current (Imp) [A]	5.48	5.45	5.42
Open circuit voltage (Voc) [V]	51.8	51.2	50.6
Short circuit current (Isc) [A]	5.84	5.83	5.83
Maximum over current rating [A]	15		
Output power tolerance [%]	+10/-5		
Maximum system voltage [V]	1000		

Note: Standard Test Conditions: Air mass 1.5, Irradiance = 1000W/m<sup>2</sup>, cell temperature = 25°C

### Temperature characteristics

	235	230	225
Temperature (NOCT) [°C]	44.0	44.0	44.0
Temperature coefficient of Pmax [%/°C]	-0.30	-0.30	-0.30
Temperature coefficient of Voc [V/°C]	-0.130	-0.128	-0.127
Temperature coefficient of Isc [mA/°C]	1.75	1.75	1.75

### At NOCT

	235	230	225
Maximum power (Pmax) [W]	178	174.3	170.1
Max. power voltage (Vmp) [V]	40.5	39.9	39.2
Max. power current (Imp) [A]	4.41	4.38	4.34
Open circuit voltage (Voc) [V]	48.9	48.3	47.7
Short circuit current (Isc) [A]	4.70	4.70	4.70

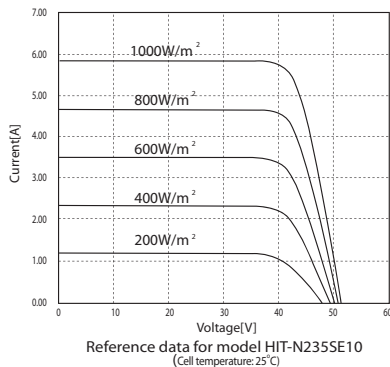
Note: Nominal Operating Cell Temperature: Air mass 1.5 spectrum, Irradiance = 800W/m<sup>2</sup>, Air temperature = 20°C, wind speed 1 m/s

### At low irradiance

	235	230	225
Maximum power (Pmax) [W]	44.9	43.8	42.9
Max. power voltage (Vmp) [V]	41.0	40.6	40.1
Max. power current (Imp) [A]	1.09	1.08	1.07
Open circuit voltage (Voc) [V]	48.4	47.8	47.2
Short circuit current (Isc) [A]	1.17	1.17	1.17

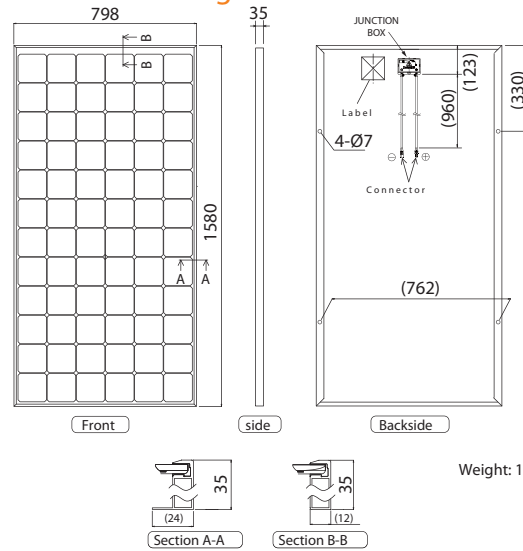
Note: Low irradiance: Air mass 1.5 spectrum, Irradiance = 200W/m<sup>2</sup>, cell temperature = 25°C

### Dependence on irradiance



### Dimensions and weight

unit: mm



### Warranty

Power output: 10 years (90% of Pmin) 20 years (80% of Pmin)  
Product workmanship: 5 years  
(Based on contract terms)

### Materials

Cell material: 5 inches HIT cells  
Glass material: AR coated tempered glass  
Frame materials: Black anodized aluminium

### Certificates



Safety tested.  
IEC 61730  
Periodic Inspection

IEC 61730

IEC 61215



Electrical Protection  
Class II



### Member of



Please consult your local dealer for more information.

**CAUTION!** Please read the installation manual carefully before using the products.

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