

## Bifacial Photovoltaic Module

# HIT Double 190

Photovoltaic Module

Power per Square Foot up to 18.6 Watts



### High Efficiency

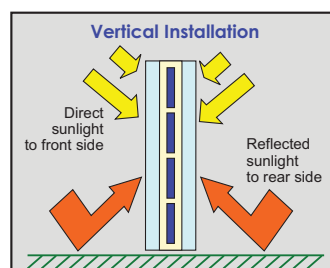
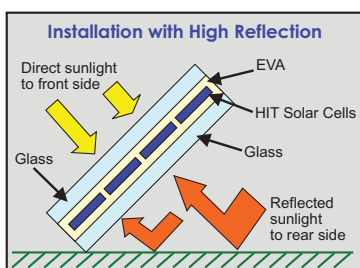
HIT® Double bifacial solar panels are the World leaders in sunlight conversion efficiency, helping customers to enjoy the maximum power per square foot from available space.

### Power Guarantee

SANYO guarantees customers will receive 100% of the panel's rated power (or more) at the time of purchase, enabling owners to generate more kWh per rated watt.

### Bifacial Effect

The back face of HIT Double solar panels generates electricity from ambient light reflected off surrounding surfaces, and combines with power from the front face of the panel. Dependant upon system design and site albedo, this results in up to 30% higher power generation (more kWh) per square foot.



### Application Possibilities

- Architectural, Awnings, Balconies, Bus Shelters, BIPV
- Deck & Porch Coverings, Canopies, Carports, Facades
- Fences, Siding, Trellises, Tracking Systems

### Proprietary Technology

HIT bifacial solar cells are hybrids of single crystalline silicon surrounded by ultra-thin amorphous silicon layers, available solely from SANYO.

### High Temperature Performance

As temperatures rise, HIT Double solar panels produce more electricity than conventional solar panels at the same temperature, for good performance in high temperature sites.

### Quality Products

SANYO silicon wafers are made in California USA, and assembled in Mexico at SANYO's certified factory. ISO 9001 (quality), 14001 (environment), 18001 (safety).

### Valuable Features

HIT Double panels operate silently and have no moving parts. A double glass structure allows some sunlight to penetrate portions of the panel, creating brilliant light and shadows for aesthetic and architectural applications. HIT Double panels are perfect for areas with performance-based incentives and tradable energy credits.

## Electrical Specifications

Model: HIP-190DA3	STC <sup>1</sup>	Specifications Including Backside Irradiation Contribution in ISC as a Percent of STC					
		5%	10%	15%	20%	25%	30%
Rated Power (Pmax) <sup>1</sup>	190 W	199 W	208 W	216 W	225 W	234 W	243 W
Maximum Power Voltage (Vpm)	55.3 V	55.30 V	55.36 V	55.42 V	55.50 V	55.52 V	55.56 V
Maximum Power Current (Ipm)	3.44 A	3.60 A	3.75 A	3.91 A	4.06 A	4.22 A	4.37 A
Open Circuit Voltage (Voc)	68.1 V	68.3 V	68.4 V	68.5 V	68.6 V	68.6 V	68.8 V
Short Circuit Current (Isc)	3.7 A	3.89 A	4.07 A	4.26 A	4.44 A	4.63 A	4.81 A
Max. System Voltage (Vsys)	600 V	—	—	—	—	—	—
Series Fuse Rating	15 A	—	—	—	—	—	—
Temperature Coefficient (Pmax)	-0.34% / °C	—	—	—	—	—	—
Temperature Coefficient (Voc)	-0.191 V / °C	—	—	—	—	—	—
Temperature Coefficient (Isc)	1.68 mA / °C	—	—	—	—	—	—
Warranted Tolerance	+10/-0%	—	—	—	—	—	—
Cell Efficiency	18.8%	—	—	—	—	—	—
Module Efficiency <sup>2</sup>	15.7%	16.4%	17.1%	17.8%	18.6%	19.3%	20.0%
Power per Square Foot	14.6 W	15.2 W	15.9 W	16.6 W	17.2 W	17.9 W	18.6 W

## Mechanical Specifications

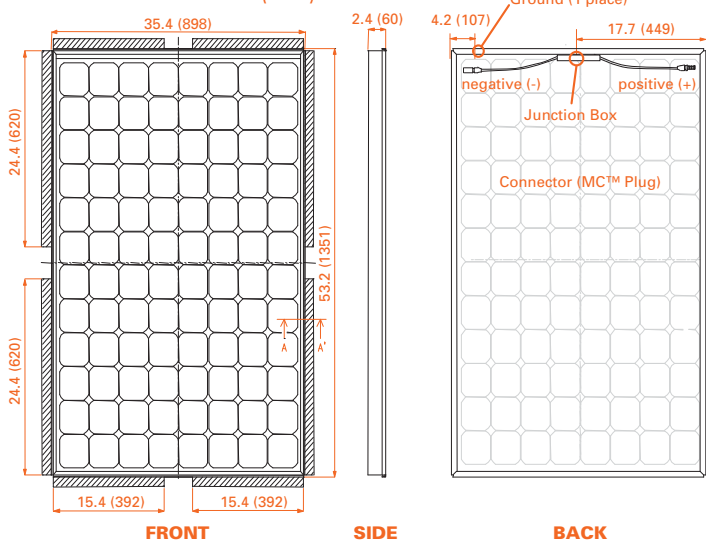
Internal Bypass Diodes	4 Bypass Diodes
Module Area	13.06 Ft <sup>2</sup> (1.21 m <sup>2</sup> )
Module Weight	50.7 Lbs. (23 kg)
Module Dimensions LxWxH	53.2 x 35.35 x 2.36 in. (1351 x 898 x 60 mm)
Cable Lengths	39.4 in. each (1000 mm)
Cable Size / Connector Type	No. 12 AWG / MC3™ Connectors
Static Load	50 PSF (2400 Pa)
Pallet Dimensions LxWxH	54.3 x 36 x 70.1 in. (1379 x 912 x 1781 mm)
Full Pallet Quantity & Weight	20 pcs. / 1014 Lbs. (460 kg)
Quantity per 20'/40'/53' Container	200 pcs., 420 pcs., 540 pcs.

## Safety Ratings & Limited Warranty

Fire Safety Classification	Class A
Hail Safety Impact Velocity	1" hailstone (25 mm) at 25 mph (23 m/s)
NOCT (°C)	113°F (45°C)
Safety & Rating Certifications	UL 1703, cUL, CEC
Limited Warranties	2 Years Workmanship / 20 Years Power Output

<sup>1</sup> Standard Test Conditions: Cell Temperature 25°C, Air Mass 1.5, 1000 W/m<sup>2</sup>  
<sup>2</sup> Equivalent module efficiency, including power from the back face.  
**Note:** Specifications and information above may change without notice.

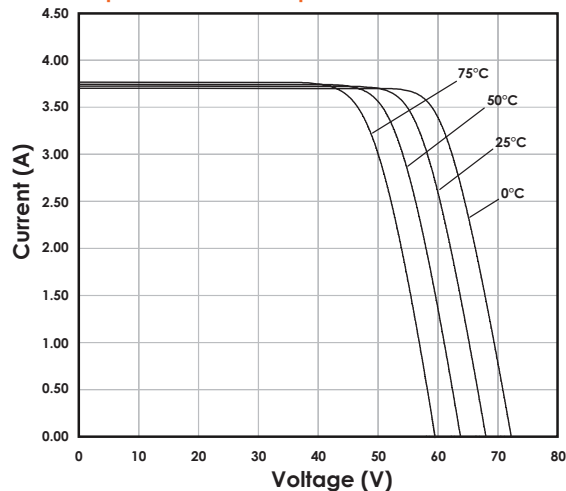
## Dimensions Unit: inches (mm)



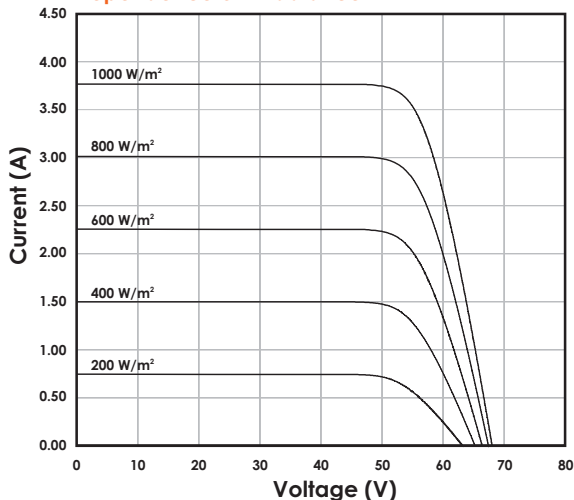
## To Maximize Power

1. Elevate panels above a surface as much as possible.
2. Place panels over light-colored surfaces.
3. Do not allow support rails to shade the panel's back face.

## Dependence on Temperature



## Dependence on Irradiance



**IMPORTANT:** The rated power of HIT® Double bifacial solar panels is measured under Standard Test Conditions (STC). STC does not account for power produced from the back face of panels. Therefore, HIT Double panels will produce more power than their STC rating, up to 30% more, depending upon the system design and site albedo. Account for the additional power when sizing, selecting system components and wiring.

**CAUTION!** Read the operating instructions carefully before use of these products

# SANYO

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Note: A module must be installed on a support structure rail using four symmetrical mounting points within Range A

▨ = Range A