

# ESPHSC

## Monocrystalline Half-Cut Solar Module

### KEY FEATURES



**MBB Half-Cut Solar Cell:**  
144 cells (6X24); 9 busbar solar cell.



**Higher Module Conversion Efficiency:**  
Higher module output up to 455W with module efficiency up to 20.9%.



**Low-light Performance:**  
Advanced glass and surface texturing allow for excellent performance in low-light environments.



**Light-weight design**  
Light-weight design using transparent backsheet for easy installation and low BOS cost.



**Higher Power Output**  
Module power increases 5-25% generally, bringing significantly lower LCOE and higher IRR.



WATTS  
POSITIVE  
TOLERANCE



YEARS  
PRODUCT  
WARRANTY



YEARS LINEAR  
POWER WARRANTY

166

### 166mm SERIES, 72-CELL HALF-CUT SERIES

#### ELECTRICAL PERFORMANCE

|                                                   |                        |
|---------------------------------------------------|------------------------|
| Module type: ESPHSC                               | 450M                   |
| Maximum Power(Wp)                                 | 450W                   |
| Open circuit Voltage(Voc)                         | 49.30V                 |
| Short circuit Current(Isc)                        | 11.60A                 |
| Maximum Power Voltage(Vm)                         | 41.50V                 |
| Maximum Power Current(Im)                         | 10.85A                 |
| Module efficiency                                 | 20.70%                 |
| Maximum Series Fuse                               | 20A                    |
| Watts positive tolerance                          | 0~+3%                  |
| Number of Diode                                   | 3                      |
| Standard Test Conditions                          | 1000W/M²,25°C,AM1.5    |
| Maximum System Voltage                            | 1000/1500V/DC          |
| Temperature-Coefficient Isc                       | +0.049%/°C             |
| Temperature-Coefficient Voc                       | -0.271%/°C             |
| Temperature-Coefficient Pmpp                      | -0.352%/°C             |
| Normal Operating Cell Temperature                 | -40°C...+85°C          |
| Load Capacity for the cover of the module (glass) | 5400Pa(IEC61215)(snow) |
| Load Capacity for the front & back of the module  | 2400Pa(IEC61215)(wind) |

#### ELECTRICAL PERFORMANCE (NOCT)

|                            |        |   |        |   |        |   |        |   |        |   |        |
|----------------------------|--------|---|--------|---|--------|---|--------|---|--------|---|--------|
| Module type: ESPHSC        | 430M   | / | 435M   | / | 440M   | / | 445M   | / | 450M   | / | 455M   |
| Maximum Power(Wp)          | 325W   |   | 329W   |   | 332.5W |   | 336.5W |   | 340W   |   | 344W   |
| Open circuit Voltage(Voc)  | 45.55V |   | 44.75V |   | 45.95V |   | 46.15V |   | 46.35V |   | 46.55V |
| Short circuit Current(Isc) | 8.99A  |   | 9.06A  |   | 9.11A  |   | 9.17A  |   | 9.22A  |   | 9.27A  |
| Maximum Power Voltage(Vm)  | 38.40V |   | 38.60V |   | 38.80V |   | 39.00V |   | 39.20V |   | 39.40V |
| Maximum Power Current(Im)  | 8.46A  |   | 8.51A  |   | 8.57A  |   | 8.62A  |   | 8.68A  |   | 8.74A  |

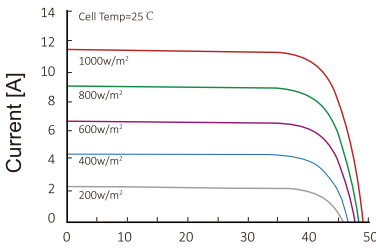
#### MECHANICAL CHARACTERISTICS

|                                         |                                                                                |
|-----------------------------------------|--------------------------------------------------------------------------------|
| Front cover (material / thickness)      | low-iron tempered glass / 3.2mm                                                |
| Backsheet (color)                       | TPT in white                                                                   |
| Cell (quantity / material / dimensions) | 144(6x24) / monocrystalline silicon                                            |
| Frame (material / color)                | aluminum hollow-chamber frame on each side<br>anodized aluminum alloy / silver |
| Junction box (protection degree)        | ≥ IP68                                                                         |
| Cables & Plug connectors                | 4mm², 300mm in length,length can be customized                                 |
| Module Dimensions (L / W / H)           | 2094x1038x35mm                                                                 |
| Module Weight                           | 24kg                                                                           |
| Application class                       | Class A                                                                        |
| Electrical protection class             | Class II                                                                       |
| Fire safety class                       | Class C                                                                        |

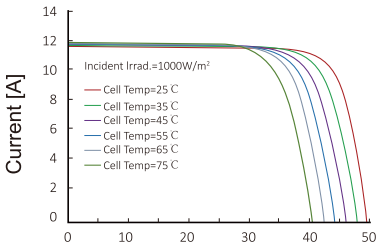
#### PACKING

| Container Size | Units/Pallet (PCS) | Weight/Pallet (KG) | Pallet Measurment (mm) | Units/Container (PCS) |
|----------------|--------------------|--------------------|------------------------|-----------------------|
| 20GP           | 58(31+27)          | 1422               | 2150x1130x2220         | 290                   |
| 40HQ           | 31                 | 735                | 2150x1130x1170         | 726                   |
|                | 35                 | 855                | 2150x1130x1345         |                       |

#### CURRENT-VOLTAGE CURVES:



Module characteristics at constant module temperatures of 25°C and variable levels of irradiance



Module characteristics at variable module temperatures and constant module irradiance of 1.000 W/m²

#### MODULE DIAGRAM:

