



# ESPHSC

## Monocrystalline Solar Module

### KEY FEATURES

166



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



**Higher Module Conversion Efficiency:**  
Higher module output up to 450W with module efficiency up to 20.7%.



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



**Lower operating temperature:**  
Ensure the operating security; better for hot region.



**Reduced hot spot risk:**  
With optimized electrical design and lower operating current.



**Reliabile Warranty:**  
12 years' product warranty.  
Power warranty of 90% up to 12 years and 80% up to 25 years.



**WATTS POSITIVE TOLERANCE**



**12 YEARS PRODUCT WARRANTY**



**12 YEARS PERFORMANCE GUARANTEE 90%**



**25 YEARS PERFORMANCE GUARANTEE 80%**



# MONOCRYSTALLINE, 144-CELL SERIES

## ELECTRICAL PERFORMANCE

Module type: ESPHSC	425M	/ 430M	/ 435M	/ 440M	/ 445M	/ 450M
Maximum Power(Wp)	425W	430W	435W	440W	445W	450W
Open circuit Voltage(Voc)	48.3V	48.5V	48.7V	48.9V	49.1V	49.3V
Short circuit Current(Isc)	11.23A	11.31A	11.39A	11.46A	11.53A	11.60A
Maximum Power Voltage(Vm)	40.5V	40.7V	40.9V	41.1V	41.3V	41.5V
Maximum Power Current(Imp)	10.50A	10.57A	10.64A	10.71A	10.78A	10.85A
Module efficiency	19.55%	19.78%	20.01%	20.24%	20.47%	20.7%
Maximum Series Fuse	20A					
Watts positive tolerance	0~+5%					
Number of Diode	3					
Standard Test Conditions	1000W/M <sup>2</sup> ,25°C,AM1.5					
Maximum System Voltage	1000/1500 V/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)					
Product Certificate	TUV(IEC 61215,IEC 61730),CE, ROHS,PID Resistant,INMETRO					
Company Certificate	ISO9001,ISO14001,ISO18001					

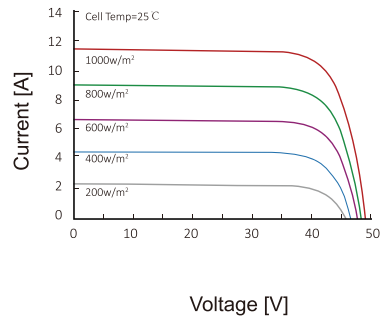
## MECHANICAL CHARACTERISTICS

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 anodized aluminum alloy / silver
Junction box (protection degree)	≥IP68
Cables & Plug connectors	4mm <sup>2</sup> , 300mm in length,length can be customized
Module Dimensions (L / W / H)	2094x1038x40mm
Module Weight	24kg
Application class	Class A
Electrical protection class	Class II
Fire safety class	Class C

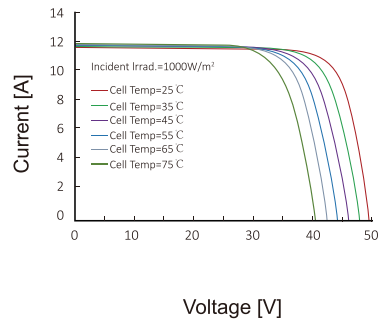
## PACKING

Container Size	Units/Pallet (PCS)	Weight/Pallet (KG)	Pallet Measurement (mm)	Units/Container (PCS)
20GP	50(26+24)	1114	2150x1120x2220	250
40HQ	26	634	2150x1120x1170	616
	30	730	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/m<sup>2</sup>

## MODULE DIAGRAM:

