

# ONYX

# 645-670W

High Efficiency Half-Cell Mono PERC Module



Excellent low irradiance performance.



Better light trapping and current collection to improve module power output and reliability.



Industry leading lowest thermal co-efficient of power.



Optimized electrical design and lower operating current for reduced hot spot loss and better temperature coefficient.

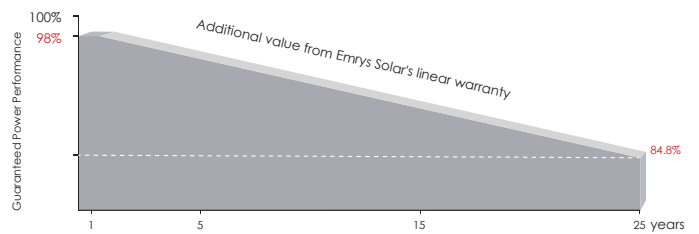


Certified to withstand: wind load (2400 Pa) and snow load (5400 Pa).



100% triple EL test enabling remarkable reduction of hidden crack rate of modules

## LINEAR PERFORMANCE WARRANTY



**25** years

Product Workmanship Warranty

**30** years

Output Power Warranty

## COMPREHENSIVE CERTIFICATES



**ELECTRICAL DATA(STC)**

Part Number	ES645M66	ES650M66	ES655M66	ES660M66	ES665M66	ES670M66
Peak Power Watts- $P_{MAX}(Wp)^*$	645	650	655	660	665	670
Power Output Tolerance	0~5W					
Open Circuit Voltage- $V_{oc}(V)$	45.10	45.30	45.50	45.70	45.90	46.10
Short Circuit Current- $I_{sc}(A)$	18.39	18.44	18.48	18.53	18.57	18.62
Maximum Power Voltage- $V_{MPP}(V)$	37.20	37.40	37.60	37.80	38.00	38.20
Maximum Power Current- $I_{MPP}(A)$	17.35	17.39	17.43	17.47	17.51	17.55
Panel Efficiency(%)	20.80	20.90	21.10	21.20	21.40	21.60

STC :Irradiance 1000w/m<sup>2</sup>,Cell Temperature 25°C Air Mass AM1.5 \*Power Binning:±/-5W

**ELECTRICAL DATA(NOCT)**

MaximumPower- $P_{MAX}(Wp)^*$	488	492	496	500	504	508
Open Circuit Voltage- $V_{oc}(V)$	42.50	42.70	42.00	43.00	43.20	43.40
Short Circuit Current- $I_{sc}(A)$	14.82	14.86	14.89	14.93	14.96	15.01
Maximum Power Voltage- $V_{MPP}(V)$	34.80	34.90	35.10	35.30	35.40	35.60
Maximum Power Current- $I_{MPP}(A)$	14.05	14.09	14.13	14.17	14.22	14.26

NOCT:Irradiance at 800W/m<sup>2</sup>,Ambient Temperature 20°C,Wind Speed 1m/s

**MECHANICAL DATA**

Solar Cells	Monocrystalline
No.of cells	132cells
Module Dimensions	2384 x 1303 x 35mm
Weight	33.9kg
Glass	3.2mm,High Transmission,AR Coated Heat Strengthened Glass
Encapsulant material	EVA
Backsheet	White
Frame	35mm Anodized Aluminium Alloy
J-Box	IP68 rated
Cable	Photovoltaic Technology Cable 4.0mm <sup>2</sup> , Portrait:350/350mm Length can be customized
Connector	MC4 EV02/TS4*

**TEMPERATURE RATINGS**

NOCT(Nominal Operating Cell Temperature)	43°C(±2°C)
Temperature Coefficient of $P_{MAX}$	-0.34%/°C
Temperature Coefficient of $V_{oc}$	-0.25%/°C
Temperature Coefficient of $I_{sc}$	-0.04%/°C

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

**WARRANTY**

25 years Product Workmanship Warranty
30 years Output Power Warranty

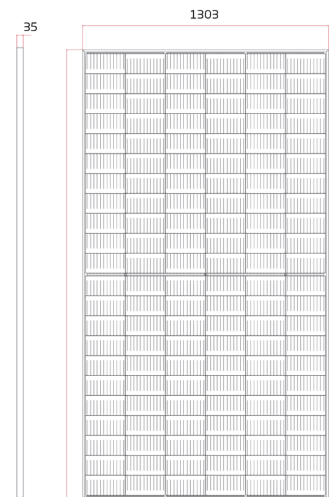
**MAXIMUM RATINGS**

Operational Temperature	-40 ~ ±85 °C
Rear Side Load	2400pa
Front Side Load	5400pa
Max Series Fuse Rating	35A
Max System Voltage	1500V (IEC)

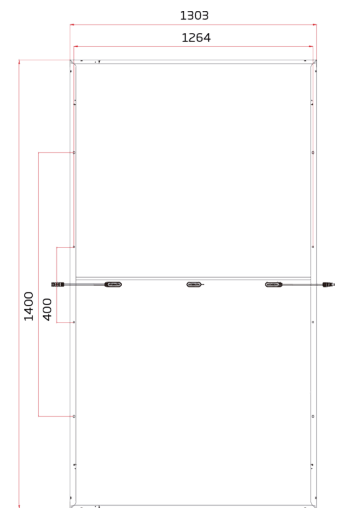
**PACKAGING CONFIGURATION**

Modules per box:31 pieces
Modules per 40'container:558 pieces

**DIMENSIONS OF PV MODULE(mm)**

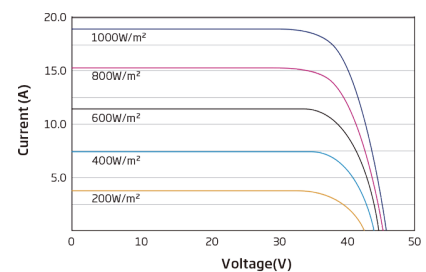


Front View



Back View

**I-V CURVES OF PV MODULE**



**P-V CURVES OF PV MODULE**

