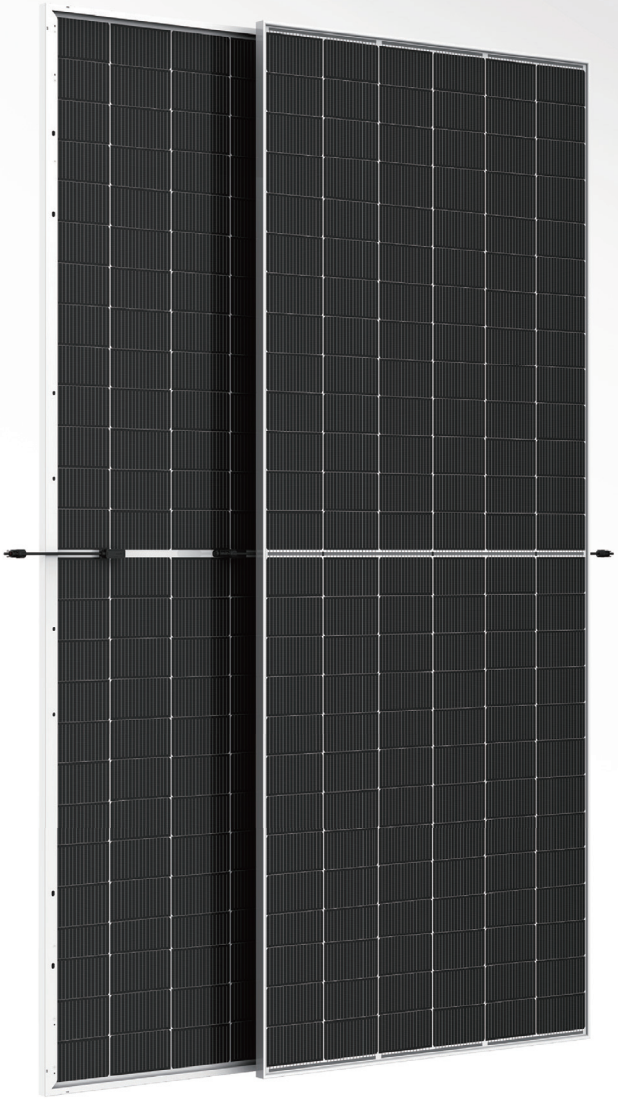
CHG EnSOL



N-TOPCon Technology

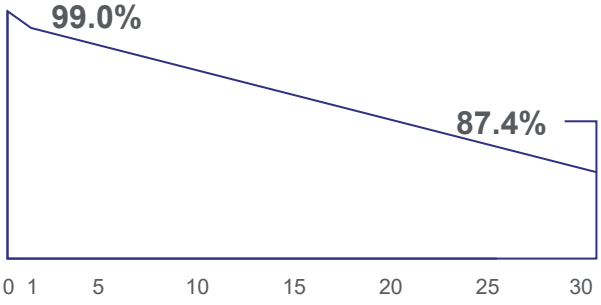
CHGMN78D1

N-type Mono High Efficiency
Double Glass Bifacial PV Module

625-650W

650W	23.3%	0~+5W
Maximum Power Output	Maximum Module Efficiency	Positive power tolerance

CHGMN78D1 Linear performance warranty



Excellent Power Output
Adopting large-sized, highly efficient cell technology and leading manufacturing processes to effectively enhanced product power

Excellent Temperature Coefficient
The product has excellent temperature coefficient, outstanding outdoor power generation performance and longer lifespan

Ultra-multi-busbar Technology
Better light utilization and current collection capability, effectively improving product power output and reliability

No LeTID/LID
While achieving efficiency gains in N-type photovoltaic cells, virtually no LID loss

Excellent Irradiance Response
Superior weak-light power generation performance in environments such as early morning, evening, and cloudy conditions.

High Profitability
Effectively reducing the system's BOS costs, achieving lower cost of electricity, and increasing project return

IEC61215(2016), IEC61730(2016)
ISO14001: 2015Environment Management System
ISO9001: 2015: Quality Management System
ISO45001: 2018: Occupational health and safety management systems

1.0%	0.4%	15 Year	30 Year
1st year degradation	2-30th annual degradation	material and workmanship warranty	linear warranty

Electrical Properties | STC*

Peak Power (Pmax/W)	625	630	635	640	645	650
MPP Voltage (Vmp/V)	47.49	47.69	47.89	48.08	48.28	48.47
MPP Current (Imp/A)	13.16	13.21	13.26	13.31	13.36	13.41
Open Circuit Voltage (Voc/V)	56.93	57.13	57.33	57.53	57.73	57.93
Short Circuit Current (Isc/A)	13.79	13.84	13.89	13.94	13.99	14.04
Module Efficiency (%)	22.4	22.5	22.7	22.9	23.1	23.3

*STC (Standard Test Conditions): Irradiance 1000 W/m², cell Temperature 25°C, AM 1.5

Electrical Properties | BNPI*

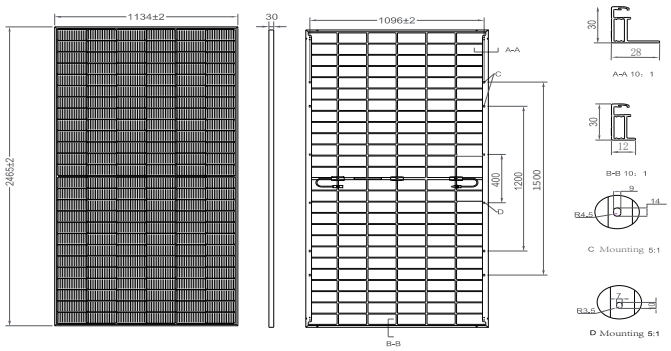
Peak Power (Pmax/W)	693	698	704	709	715	720
MPP Voltage (Vmp/V)	47.50	47.71	47.89	48.10	48.28	48.48
MPP Current (Imp/A)	14.59	14.63	14.70	14.74	14.81	14.85
Open Circuit Voltage (Voc/V)	56.95	57.15	57.35	57.55	57.75	57.95
Short Circuit Current (Isc/A)	15.28	15.33	15.39	15.45	15.50	15.56

*BNPI: Irradiance: front 1000w/m², rear 135W/m², Cell Temperature 25°C, AM=1.5

Mechanical Properties

Cell Type	n-type half cell
Number of Cells	156pcs(2*78)
Module Dimension	2465mm*1134mm*30mm
Weight	33.9kg
Front / Rear Glass	2.0mm/2.0mm
Frame	Anodized Aluminum Alloy
Junction Box	IP68
Output cables	4.0mm², +300mm/-200mm or Customized Length

Engineering Drawings（unit: mm）

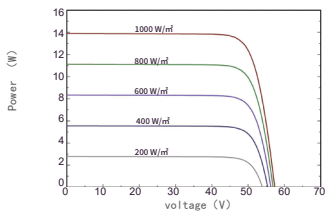


For specific dimensions and tolerance ranges, please refer to the corresponding component drawings.

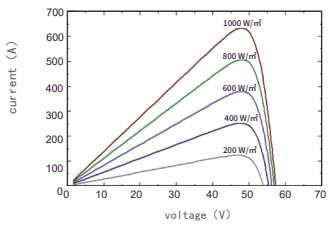
Temperature Coefficient

Temperature coefficients of Pmax	-0.29% / °C
Temperature coefficients of Voc	-0.25% / °C
Temperature coefficients of Isc	+0.045% / °C
Nominal Module Operating Temperature	42±2 °C

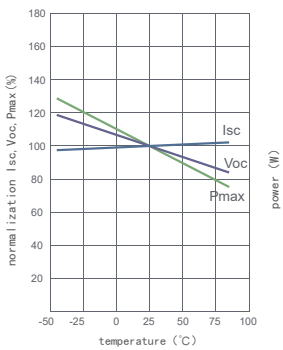
Characteristic Curves: CHGMN78D1



Current and voltage curves under different irradiations



Power and voltage curves under different irradiations



Temperature Curves of Isc, Voc, Pmax under Different Temperatures

Operating Properties

Operating Temperature (°C)	-40°C~+85°C
Maximum System Voltage (V)	1500V DC（IEC）
Maximum Series Fuse Rating (A)	30A
Power Tolerance	0~+5W
Bifaciality	80%±5%
Static load	Snow load 5400Pa, Wind load 2400Pa
Packaging Configuration	36 pcs/pallet, 576 pcs/40 HQ