TCL TZE

210R
N-type TOPCon

G12R-68P

N-type Bifacial Double Glass Module

HSM-GRA-NM610~635



635W
Maximum Power Output

23.2%
Maximum Efficiency

High Energy Yield

- High-density cell package, increasing 2% cells
- Lower temperature coefficient (Pmax): -0.29%/°C
- Up to 80% power bifaciality

Industry-leading G12 Wafer

- <1% degradation in the first year
- Smaller wafer chamfer, larger light receiving area
- Wafer: 210R, Thickness: ≤130μm

Superior Customer Value

- Integrated technology: TOPCon + Shingling
- Optimized dimension design for all scenarios
- More artistic beauty with no-gap design

Long-term Reliability

- 1/3 cell technology, lower current loss and hot spot risk
- Harsh environment resistance
- Damage-free laser cutting, lower micro-crack risk
- Mechanical load: Front 5400 Pa, Back 2400 Pa

Comprehensive Products and System Certificates

IEC 61215 / IEC 61730 ISO 9001:2015 ISO 45001:2018 ISO 14001:2015

Linear Performance Warranty



* Please refer to product warranty for details

Version No.:4.0-N-HSM2024-0601-EN

G12R-68P N-type Bifacial Double Glass Module

HSM-GRA-NM610~635

635W Maximum Power | **23.2%** Maximum Efficiency | **0~+5W** Power Tolerance

Electrical Parameters (STC*)

* STC: Irradiance 1000W/m², Cell Temperature 25°C, AM1.5, Measuring Tolerance: ±2%

Maximum Power	Pmax (W)	610	615	620	625	630	635
Open Circuit Voltage	Voc (V)	49.00	49.20	49.40	49.60	49.85	50.10
Short Circuit Current	Isc (A)	15.57	15.60	15.63	15.66	15.68	15.70
Maximum Power Voltage	Vmp (V)	41.60	41.80	42.00	42.20	42.45	42.70
Maximum Power Current	Imp (A)	14.67	14.72	14.77	14.82	14.85	14.88
Module Efficiency	(%)	22.3	22.5	22.7	22.8	23.0	23.2

Electrical Characteristics with 10% Bifacial Gain*

* The additional gain from the back side depends on mounting (structure, height, tilt angle etc.) and albedo of the ground.

Maximum Power	Pmax (W)	671	677	682	688	693	699
Open Circuit Voltage	Voc (V)	49.00	49.20	49.40	49.60	49.85	50.10
Short Circuit Current	Isc (A)	17.13	17.16	17.19	17.23	17.25	17.27
Maximum Power Voltage	Vmp (V)	41.60	41.80	42.00	42.20	42.45	42.70
Maximum Power Current	Imp (A)	16.14	16.19	16.25	16.30	16.34	16.37

Mechanical Data

* Please refer to installation manual for details

No.of Cells	204pcs (6×34)
Dimension	2413×1134×30mm
Weight	33.5kg
Front Glass	2.0mm High Transmission, Heat Strengthened Glass
Back Glass	2.0mm Heat Strengthened Glass
Frame	Anodized Aluminium Alloy
J-Box	IP68
Cables	4.0mm², +350mm, -280mm/±1400mm (can be customized)
Diodes	3
Maximum Static Load	Front: 5400Pa/Back: 2400Pa*

Temperature Coefficient

* NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s

Nominal Module Operating Temperature*	43±2°C	Temperature Coefficient of Voc	-0.25%/°C
Temperature Coefficient of Isc	+0.045%/°C	Temperature Coefficient of Pmax	-0.29%/°C

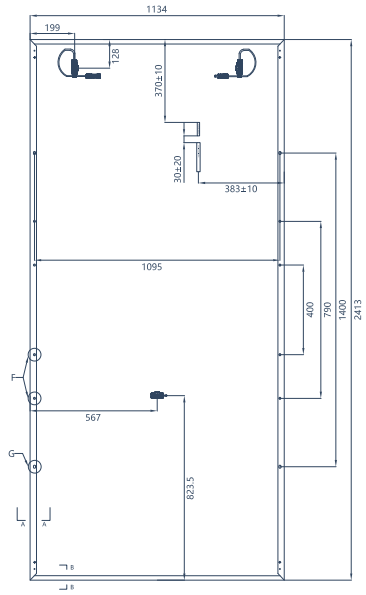
Operating Parameters

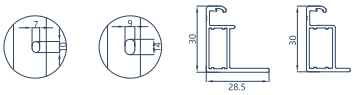
Operating Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30A
Power Bifaciality	80±5%

Packaging Configuration

Modules per Pallet	36pcs
Modules per 40'HQ Container	576pcs
Pallets per 40'HQ Container	16plt

Engineering Drawing [Unit: mm]

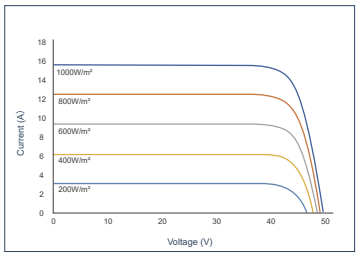




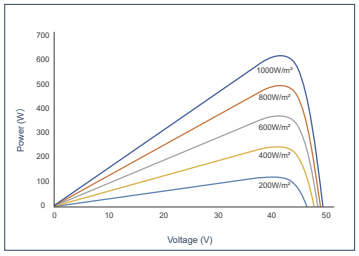
F-Installation Hole | G-Installation Hole | A-A | B-B

Curve Graph

I-V Curves (620W)



P-V Curves (620W)



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Datasheets

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