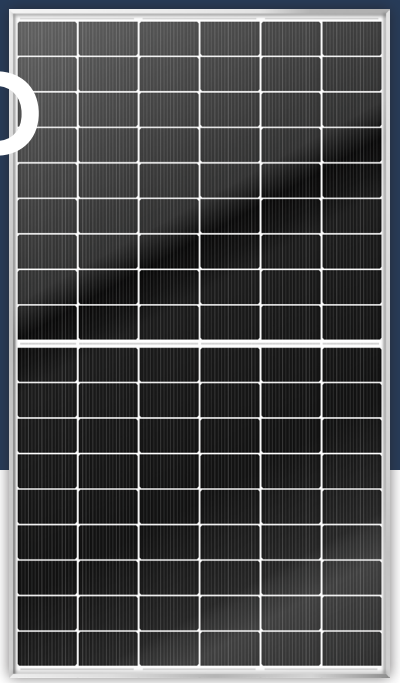
THORNOVA solar

Tangra™ M Pro HD

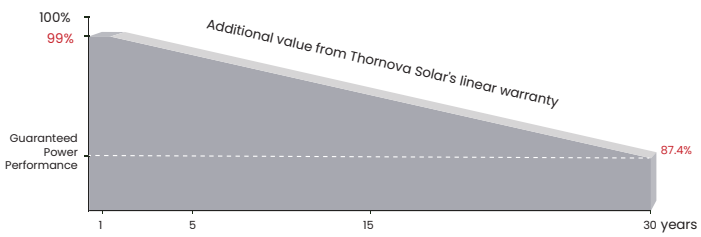
N-Type High efficiency Bifacial Dual Glass Module

TS-BGT54(485-505)-G11



- Bifacial technology allows for the harvesting of up to an additional 30% energy from the rear side of the module.
- 30 years lifespan brings 10-30% additional power generation comparing with conventional P-type module.
- LID — N-type solar cell has no LID naturally which can increase power generation.
- Excellent low irradiance performance.
- Enhanced light trapping and optimized current collection contribute to the improvement of both module power output and reliability.
- Industry leading lowest thermal coefficient of power.
- Design optimized for lower operating current, resulting in minimized hot spot loss and improved temperature coefficient.
- Certified to withstand: wind load (2400 Pa) and snow load (5400 Pa).
- 100% triple EL test enables remarkable reduction of module hidden crack rate.

LINEAR PERFORMANCE WARRANTY



15 years
Product quality & process guarantee

30 years
Linear power guarantee

0.40%
Annual degradation Over 30 years

RE INSURANCE

Warranty partner

Munich RE

Ariel Re

* Optional performance warranty insurance. Please contact our local sales staff for more information.

COMPREHENSIVE CERTIFICATES

Intertek

ISO 9001: Quality Management System
ISO 14001: Environmental Management System Standard
ISO 45001: International Occupational Health and Safety Assessment System Standard

* Different markets have different certification requirements. Also, the products are under rapid innovation. Please confirm the certification status with regional sales representatives.

ELECTRICAL CHARACTERISTICS

2×54cells

Model of modules	TS-BGT54(485)-G11		TS-BGT54(490)-G11		TS-BGT54(495)-G11		TS-BGT54(500)-G11		TS-BGT54(505)-G11	
	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Peak power - P_{mp} (W)	485	371	490	375	495	378	500	382	505	386
Open circuit voltage - V_{oc} (V)	39.20	37.10	39.50	37.40	39.80	37.70	40.10	38.00	40.40	38.30
Short circuit current - I_{sc} (A)	15.77	12.72	15.80	12.74	15.83	12.76	15.86	12.78	15.89	12.80
MPP voltage - V_{mp} (V)	32.68	30.86	32.88	31.08	33.10	31.30	33.30	31.52	33.50	31.73
MPP current - I_{mp} (A)	14.85	12.02	14.91	12.05	14.97	12.08	15.03	12.11	15.08	12.15
Module efficiency - η_m (%)	21.8		22.0		22.3		22.5		22.7	

STC (Standard Testing Conditions): Irradiance 1000W/m², Cell Temperature 25 ℃ , Spectra at AM1.5
NMOT (Nominal Module Operating Temperature): Irradiance 800W/m², Ambient Temperature 20℃ , Spectra at AM1.5, Wind at 1m/s

ELECTRICAL CHARACTERISTICS WITH DIFFERENT POWER BIN (REFERENCE TO 13.5% IRRADIANCE RATIO)

Peak power - P_{mp} (W)	538	543	549	555	560
Open circuit voltage - V_{oc} (V)	39.2	39.5	39.8	40.1	40.4
Short circuit current - I_{sc} (A)	17.47	17.51	17.54	17.57	17.61
MPP voltage - V_{mp} (V)	32.68	32.88	33.1	33.3	33.5
MPP current - I_{mp} (A)	16.45	16.52	16.59	16.65	16.71
Irradiance ratio (rear/front)	13.5 %				

STRUCTURAL CHARACTERISTICS

Module dimension (L*W*H)	77.20 x 44.65 x 1.38 inch (1961 x 1134 x 35 mm)
Weight	60.63 lbs (27.5 kg)
Number of cells	108 cells
Cell	N-type monocrystalline (7.17X8.27 inch (182X210 mm))
Glass	(F)2.0mm, Anti-Reflection Coating (B)2.0mm, Heat Strengthened Glass
Frame	Anodized aluminum alloy
Junction box	IP68, 3 bypass diodes
Output wire	4.0 mm²
Wire length (Including Connector)	(+): 400 mm, (-): 200 mm or Customized Length
Connector	MC4 Compatible
Packing specification	31 pcs/Pallet; 651 pcs/40'HQ

OPERATING PARAMETERS

Power tolerance (W)	(0,+5)
Maximum system voltage (V)	1500
Maximum rated fuse current (A)	30
Current operating temperature (℃)	-40~+185 ºF (-40~+85 ℃)
Bifaciality	80±10 %

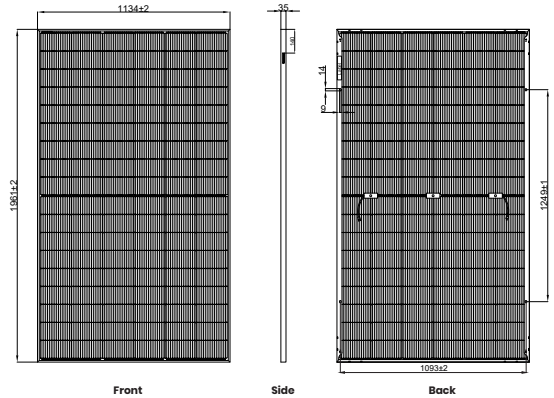
MECHANICAL LOADING

Front side maximum static loading (Pa)	5400
Rear side maximum static loading (Pa)	2400
Hailstone test (mm)	35

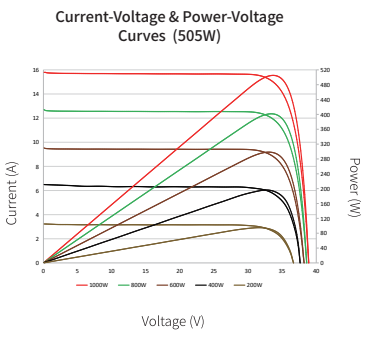
TEMPERATURE RATINGS

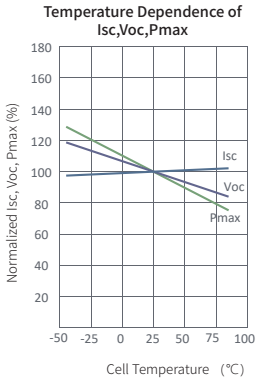
Temperature coefficient (P_{max})	-0.29 %/K
Temperature coefficient (V_{oc})	-0.28 %/K
Temperature coefficient (I_{sc})	+0.04 %/K
Nominal Module Operating Temperature	109.4±35.6 ºF (43±2 ℃)

MODULE DIMENSIONS (MM)



* The unmarked tolerance is ±1 mm
Length shown in mm





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