

**FULL BLACK 96**  
**HEX7**  
BIFACIAL MODULE

**BSM450M10-54HNH**  
**440~460W**

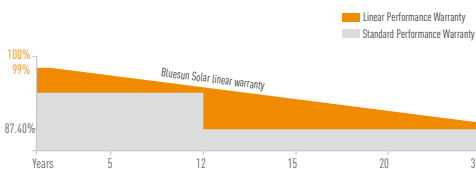
**HALF CELL TOPCON**  
**BIFACIAL**

**BLUESUN SOLAR CO.,LTD**

Bluesun, founded in 2004, as a superior photovoltaic manufacturer, is devoted to the R&D and the production of crystalline silicon solar cells and modules for 17 years. The company has its sales areas spread all over more than 100 countries and regions in the world, and the cumulative historical shipments exceeded 12 GW.

**PERFORMANCE WARRANTY**

-  Enhanced Product Warranty on Materials and Workmanship.
-  Linear Power Performance Warranty\*
-  Annual Degradation Over 30 years no more than 0.4%



\*According to the applicable Bluesun Solar Limited Warranty Statement.

**MANAGEMENT SYSTEM CERTIFICATES**

- ISO 9001:2015 / Quality management system
- ISO 14001:2015 / Standards for environmental
- ISO 45001: 2018 / International standards for occupational health & safety

**PRODUCT CERTIFICATES**

IEC 61215 / IEC 61730 / CE / TUV



**THE IDEAL SOLUTION FOR:**

-  Rooftop arrays on residential buildings
-  Ground-mounted solar power plants



**High module conversion efficiency**

MBB Half Cell Technology, Module efficiency up to 23.02%



**Withstanding harsh environment**

Reliable quality leads to a better sustainability even in harsh environment like desert, farm and coastline



**PID Resistance**

Excellent Anti-PID performance guarantee via optimized mass-production process and materials control



**Excellent weak light performance**

More power output in weak light condition, such as cloudy, morning and sunset



**Extended wind and snow load tests**

Module certified to withstand extreme wind (2400 Pa) and snow loads (5400 Pa)

## SPECIFICATIONS

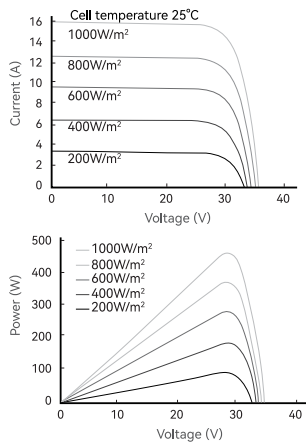
Module Type	BSM440M10-54HNNH		BSM445M10-54HNNH		BSM450M10-54HNNH		BSM455M10-54HNNH		BSM460M10-54HNNH	
	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Maximum Power (P <sub>max</sub> /W)	440	331	445	335	450	339	455	343	460	347
Operating Voltage (V <sub>mp</sub> /V)	29.72	27.68	29.90	27.85	30.08	28.02	30.26	28.18	30.44	28.35
Operating Current (I <sub>mp</sub> /A)	14.81	11.96	14.89	12.03	14.97	12.10	15.05	12.17	15.13	12.24
Open-Circuit Voltage (V <sub>oc</sub> /V)	34.67	32.94	34.85	33.11	35.03	33.28	35.21	33.45	35.39	33.62
Short-Circuit Current (I <sub>sc</sub> /A)	15.95	12.88	16.00	12.92	16.05	12.96	16.10	13.00	16.15	13.04
Module Efficiency η(%)	22.02		22.27		22.52		22.77		23.02	

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5 NMOT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Air Mass AM1.5, Wind Speed 1m/s

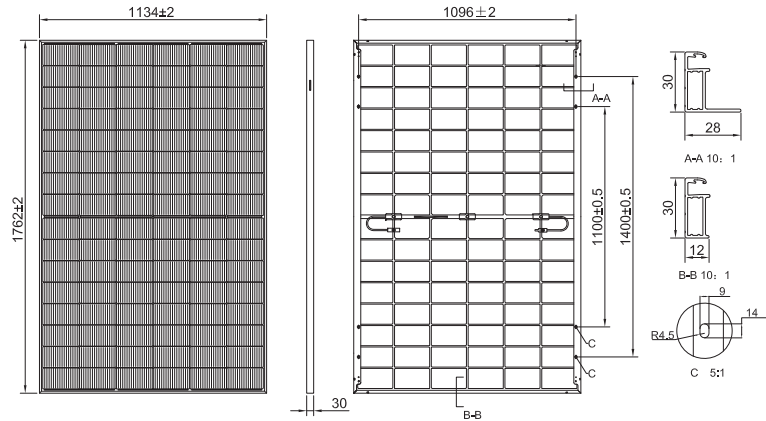
## Electrical characteristics with different rear side power gain

Rear Side Power Gain	Parameter	BSM440M10-54HNNH	BSM445M10-54HNNH	BSM450M10-54HNNH	BSM455M10-54HNNH	BSM460M10-54HNNH
		5%	Maximum Power (P <sub>max</sub> /W)	462	467	473
	Module Efficiency (η/%)	23.12	23.38	23.65	23.91	24.17
15%	Maximum Power (P <sub>max</sub> /W)	506	512	518	523	529
	Module Efficiency (η/%)	25.32	25.61	25.90	26.19	26.48
25%	Maximum Power (P <sub>max</sub> /W)	550	556	563	569	575
	Module Efficiency (η/%)	27.53	27.84	28.15	28.46	28.78

## I-V CURVE



## ENGINEERING DRAWINGS



## MECHANICAL SPECIFICATION

Cell Type	N-type Topcon
Cell Arrangement	96 (6*16)
Weight	20.9kg
Module Dimensions	1762±2*1134±2*30mm
Cable Length	+400mm, -200mm or ± 1200mm, length can be customized
Cable Cross Section Size	TUV: 4mm <sup>2</sup> (0.006inches <sup>2</sup> )/UL: 12AWG
Front Glass	1.6mm high transmittance, AR coated tempered Glass
Rear Glass	1.6mm high transmittance, coated tempered Glass
No. of Bypass Diodes	3
Packing Configuration	36pcs/carton, 936pcs/40hq
Frame	Anodized aluminum alloy black frame
Junction Box	IP68

## OPERATING CONDITIONS

Maximum System Voltage	1500V DC
Operating Temperature	-40°C~ +85°C
Maximum Series Fuse	30A
Static Loading	Snow Loading: 5400Pa/ Wind Loading: 2400Pa
Conductivity at Ground	≤0.1Ω
Safety Class	II
Resistance	≥100MΩ
Connector	T01/LJQ-3-CSY/MC4/MC4-EVO2
Backside Output Ratio*	80%±10%
*Under STC: Backside Output Ratio = P <sub>max</sub> (rear) / P <sub>max</sub> (front)	

## TEMPERATURE COEFFICIENT

Temperature Coefficient P <sub>max</sub>	-0.28%/°C
Temperature Coefficient V <sub>oc</sub>	-0.24%/°C
Temperature Coefficient I <sub>sc</sub>	+0.046%/°C
NMOT	45±2°C

\*Data contained in these specifications is subject to change without notice. Bluesun Solar reserves the right to final interpretation of content.