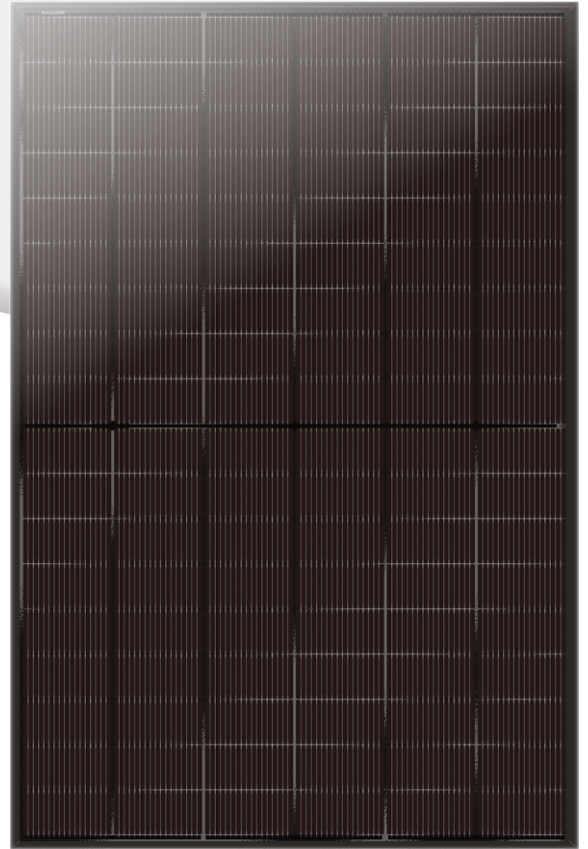
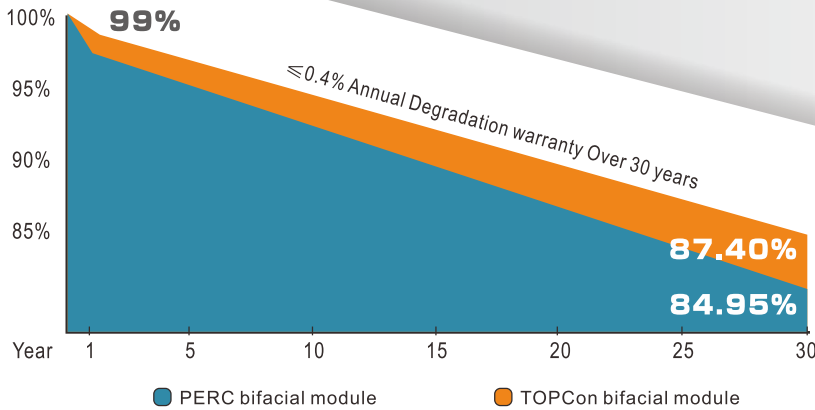


# Black Jade-Flow

DOUBLE-TRANSPARENT GLASS BIFACIAL N-TYPE MODULE

## 440~455 W



**Cutting Free Technology**  
Minimized micro-crack



**Bifacial Mono Module**  
Capable of generating power at back side, at least 80% efficiency of the front side



**Anti-PID (potential induced degradation)**  
Passed anti-PID test under 85% damp heat 85% relative humidity for 192 hours



**Higher Power Output**  
Lower shading and resistive loss



**Outstanding mechanical load resistance**  
2400 Pa wind load, 5400 Pa snow load



**15** 15-year product warranty  
**30** 30-year linear power output



CEC Listed



IEC 61215, IEC 61730

ISO 9001: 2015 (Quality management systems)

ISO 14001: 2015 (Environmental management systems)

ISO 45001: 2018 (Occupational health and safety)

UNI 9177 Ia CLASSE DI REAZIONE AL FUOCO:1

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Email: sales@ulsolar.com.cn

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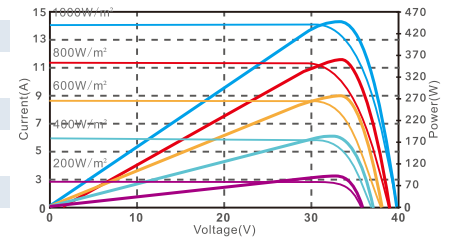
# TOPCon(N TYPE) 440~455Watt



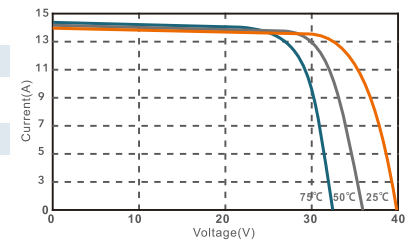
## ELECTRICAL SPECIFICATIONS I-V CURVE[450W]

Module Type	UL-440M-108BDGN		UL-445M-108BDGN		UL-450M-108BDGN		UL-455M-108BDGN	
	STC*	NOCT*	STC*	NOCT*	STC*	NOCT*	STC*	NOCT*
Maximum Power (Pmax)	W 440	333	445	337	450	341	455	345
Maximum Power Voltage (Vmp)	V 32.91	30.28	33.02	30.38	33.22	30.56	33.42	30.75
Maximum Power Current (Imp)	A 13.37	11.01	13.48	11.10	13.55	11.16	13.61	11.21
Open-circuit Voltage (Voc)	V 39.38	35.84	39.58	36.02	39.78	36.20	39.98	36.38
Short-circuit Current (Isc)	A 14.22	11.47	14.30	11.53	14.38	11.60	14.45	11.66
Module Efficiency STC	% 22.02		22.27		22.52		22.77	
Operating Temperature	-40°C~85°C							
Maximum system voltage	DC1500V(IEC)							
Maximum series fuse rating	30A							
Power tolerance	0~+5Watt							
Temperature coefficients of Pmax	-0.29%/°C							
Temperature coefficients of Voc	-0.25%/°C							
Temperature coefficients of Isc	0.046%/°C							
Nominal operating cell temperature (NOCT)	43±2°C							

I-V characteristics at different irradianations



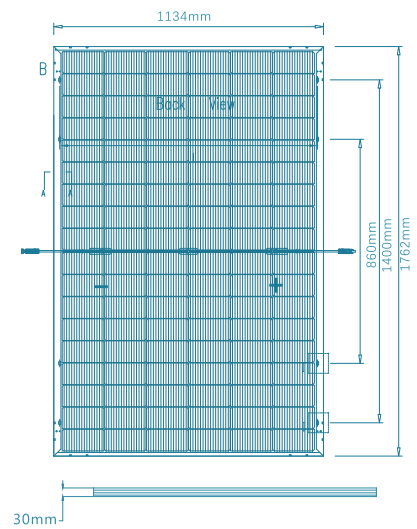
I-V characteristics at different temperature



\*STC : Cell temperature: 25°C, Irradiance: 1000 W/m², Air mass: 1.5G  
 \*NOCT : Air temperature: 20°C, Irradiance: 800 W/m², Air mass: 1.5G, Wind speed: 1 m/s

## SPECIFICATIONS

Cell Type	N type Mono-crystalline
No. of cells	108(6×9×2)
Dimensions	1762*1134*30mm
Weight	24kg
Glass	2.0mm+2.0mm, Anti-Reflection Coating, High Transmission, Low Iron, Tempered Glass
Junction Box	IP68, 3 diodes
Connector	MC4 Compatible 4mm <sup>2</sup>
Cable Length (Including Connector)	Portrait: (+)400/(-)200mm Landscape: (+)1100/(-)1100mm
Packaging Configuration	Two Box=One Pallet 36pcs/Box, 72pcs/Pallet, 936pcs/40HQ Container



## Electrical characteristics with different rear side power gain (reference to 450 W front)

Pmax/W	Voc/V	Isc/A	Vmp/V	Imp/A	Pmax gain
450	39.78	14.00	33.20	13.55	0
473	39.78	14.70	33.20	14.22	5%
495	39.78	15.40	33.20	14.90	10%
518	39.78	16.10	33.20	15.58	15%
540	39.78	16.80	33.20	16.26	20%
563	39.78	17.50	33.20	16.93	25%
585	39.78	18.20	33.20	17.61	30%

