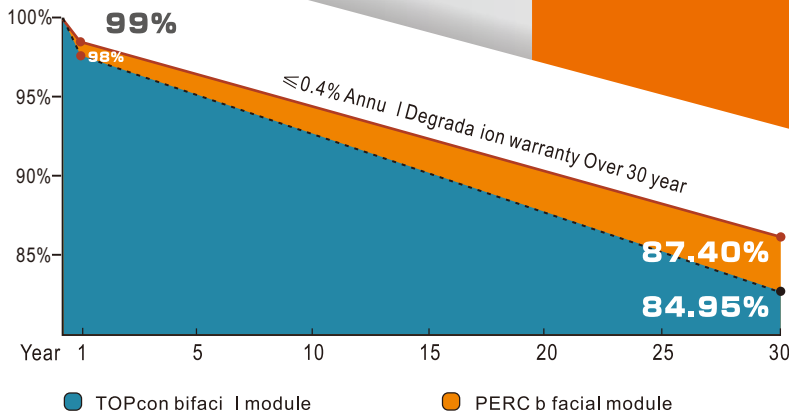


# DOUBLE-GLASS BIFACIAL N-TYPE 445~455 Watt



TOPCon



**Cutting Free Technology**  
Minimized micro-crack



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



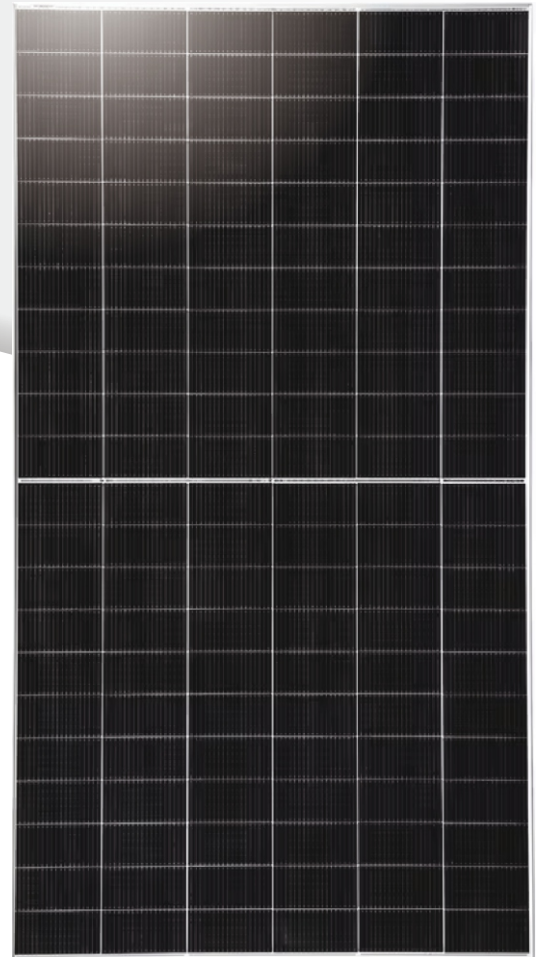
**Anti-PID (potential induced degradation)**  
Passed anti-PID test under 85°C damp heat 85% relative humidity for 192 hours



**Lower LCOE**  
Lower shading and resistive loss  
Lower temperature coefficient



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



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



ISO 9001:2016 - Quality management systems  
ISO 14001:2016 - Environmental management systems  
ISO 45001:2019 - Occupational health and safety  
ISO 5001:2019 - Energy management system  
Certificate of Origin

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# TOPCon(N TYPE)445~455Watt

## ELECTRICAL SPECIFICATIONS

Module Type		MS-445M-108BDGN		MS-450M-108BDGN		MS-455M-108BDGN	
		STC* NOCT*		STC* NOCT*		STC* NOCT*	
Maximum Power (Pmax)	W	445	337	450	341	455	345
Maximum Power Voltage (Vmp)	V	33.02	30.38	33.22	30.56	33.42	30.75
Maximum Power Current (Imp)	A	13.48	11.10	13.55	11.16	13.61	11.21
Open-circuit Voltage (Voc)	V	39.58	36.02	39.78	36.20	39.98	36.38
Short-circuit Current (Isc)	A	14.30	11.53	14.38	11.60	14.45	11.66
Module Efficiency STC	%	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			

\*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

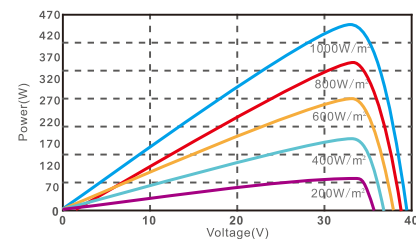
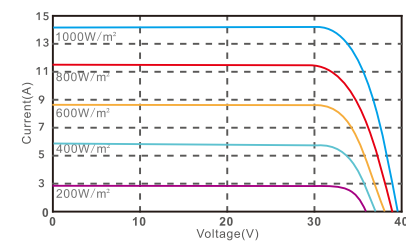
Cell Type	N type Mono-crystalline	
No. of cells	108(6×9×2)	
Dimensions	1762*1134*30mm	
Weight	24.0kg	
Glass	2.0mm+2.0mm, Anti-Reflection Coating, High Transmission, Low Iron, Tempered Glass	
Junction Box	IP68, 3 diodes	
Connector	MC4 Compatible	
Cable Length (Including Connector)	4mm² Landscape: (+)1200mm/(-)1200mm or Customized Length	
Packaging Configuration	Two Box=One Pallet 36pcs/Box, 72pcs/Pallet, 936pcs/40HQ Container	

## Electrical characteristics with different rear side power gain

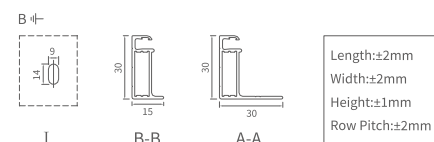
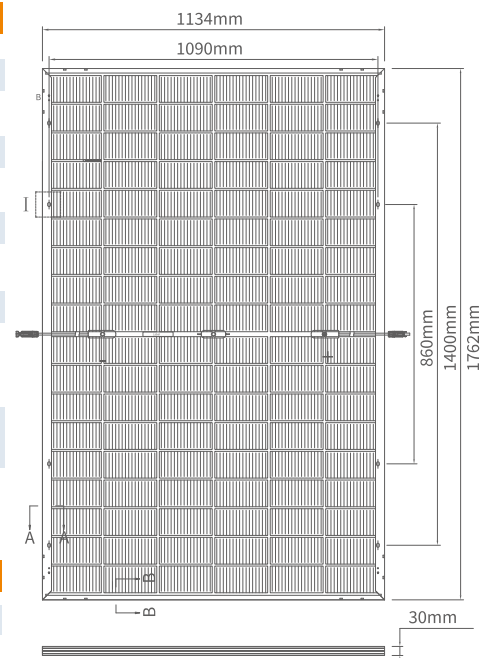
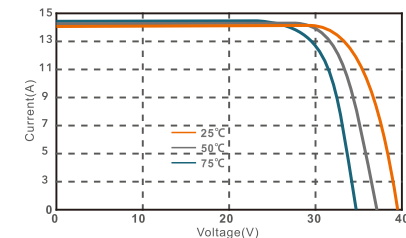
Pmax/Bт	Voc/B	Isc/A	Vmp/B	Imp/A	Pmax выработка
450	39.78	14.38	33.22	13.55	0%
473	39.78	15.10	33.22	14.22	5%
495	39.78	15.82	33.22	14.90	10%
518	39.78	16.54	33.22	15.58	15%
540	39.78	17.26	33.22	16.26	20%
563	39.78	17.98	33.22	16.93	25%
585	39.78	18.69	33.22	17.61	30%

## I-V CURVE

I-V characteristics at different irradiances (reference to 450W)



I-V characteristics at different temperature



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