

# ECO DELTA High Efficiency 12BB Monocrystalline PV Module

## ECO-310-320/M-60(12BB)



### Higher Module Efficiency

Brings 0-+3W Power gain due to half-cut production system



### INNOVATIONAL 12-BUSBAR CELLS

Improves the module output, decreases the risk of micro-crack, enhances the module reliability.



### INNOVATIVE PERC CELL TECHNOLOGY

Excellent cell efficiency and output.



### REDUCE SHADOW LOSS

Effectively reduces the effect of shadow on the module surface.



### REDUCE INTERNAL MISMATCH LOSS

Reduces mismatch loss and improves output.



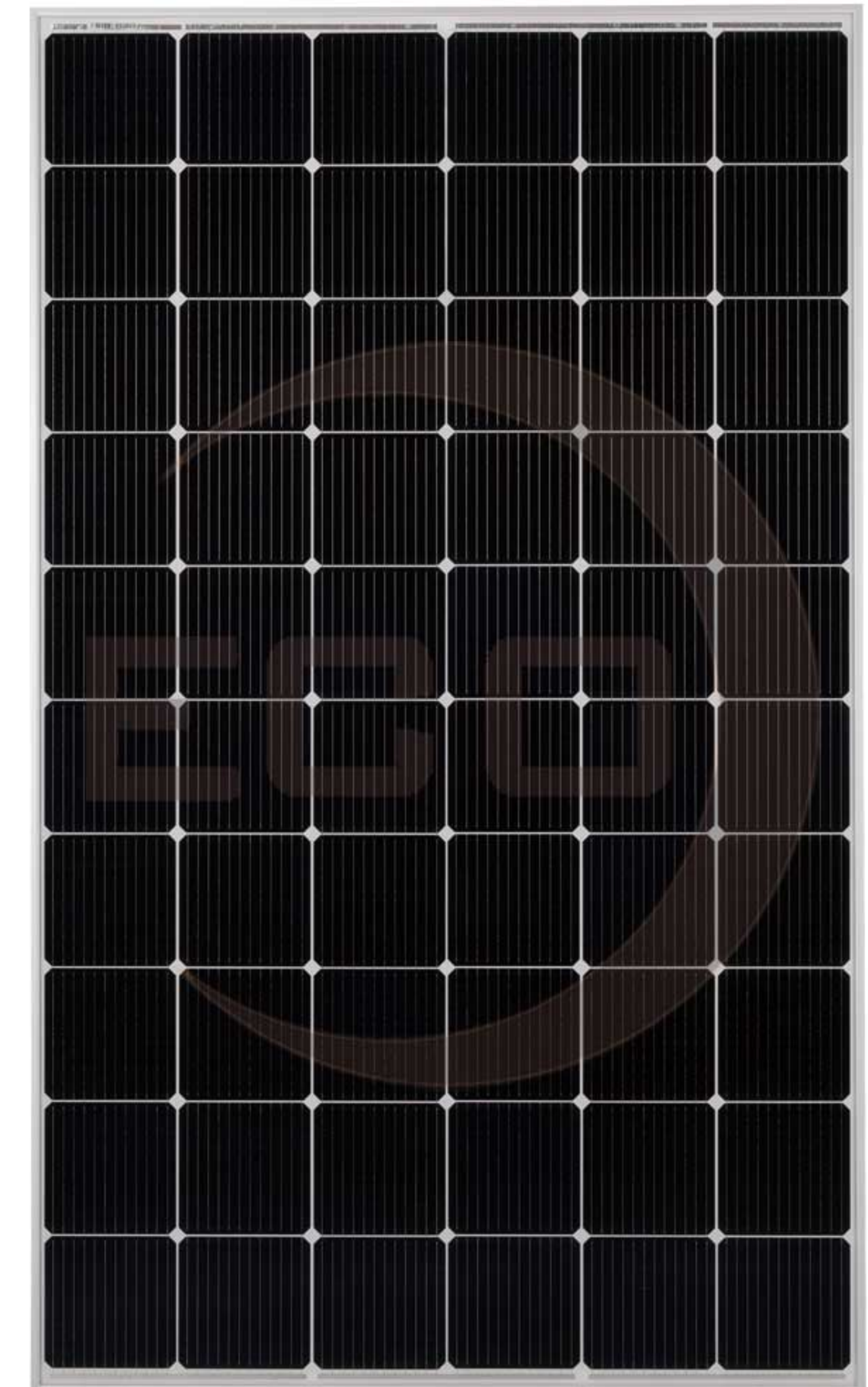
### PASSED HAIL TEST

Certified to hail resistance: ice ball size (d=45mm) and ice ball velocity (v=30.7m/s).

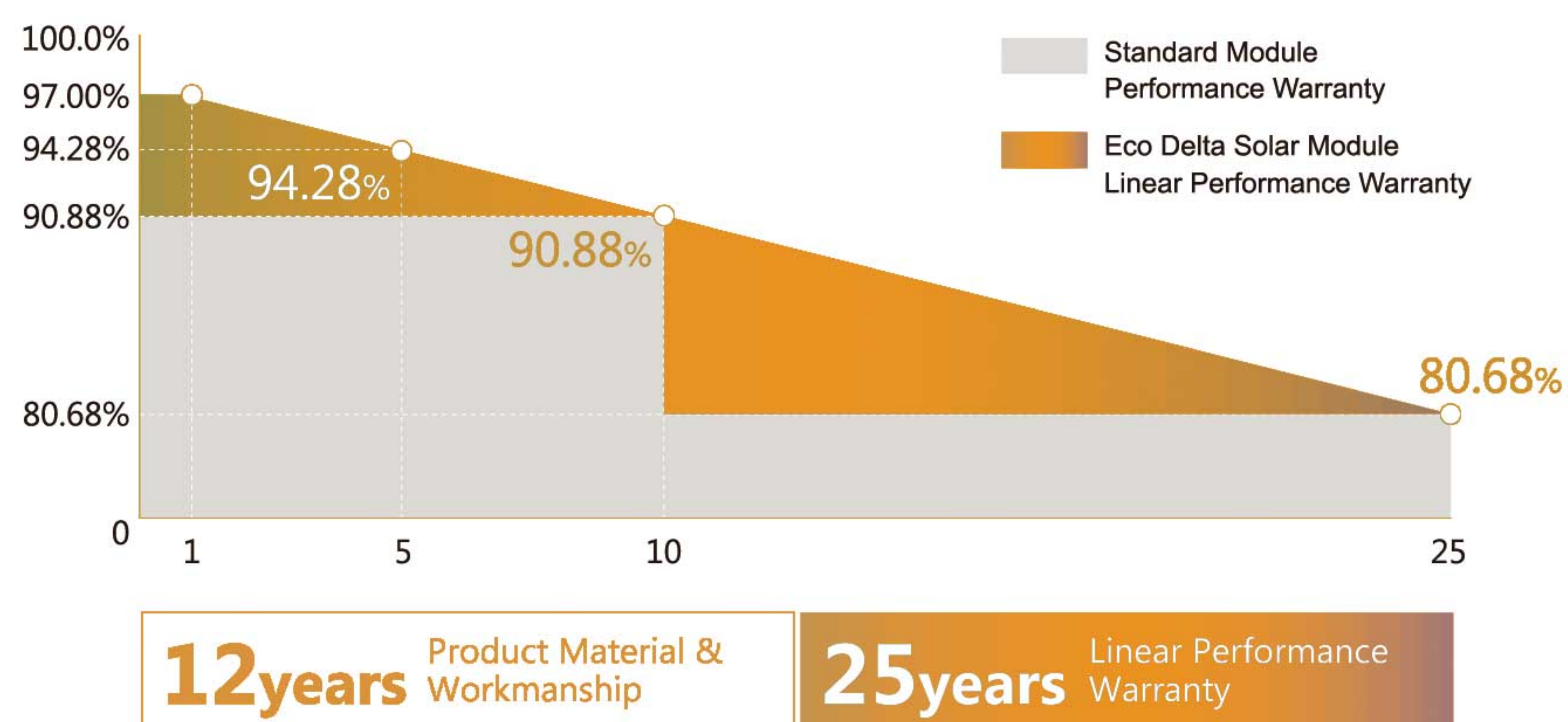


### PID RESISTANCE

Excellent PID resistance at 96 hours (@85°C/85%) test, and also can be improved to meet higher standards for the particularly harsh environment



### LINEAR PERFORMANCE WARRANTY



### QUALITY WARRANTY

Eco Delta guarantees that defects will not appear in materials and workmanship defined by IEC61215 or IEC61730 under normal installation, use and maintenance as specified in Eco Delta's installation manual for 12 years from the warranty starting date.

ISO9001  
ISO14001  
OHSAS18001



### About Eco Delta

Eco Delta Power Co.,Ltd specializes in research, development, production, and sales of solar PV products as well as provision of related services and provides customers around the world with high-quality PV products.

[www.ecodeltapower.com](http://www.ecodeltapower.com)



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## ECO-310-320/M-60(12BB)



### ELECTRICAL DATA @ STC

		ECO-310/M-60(12BB)	ECO-315/M-60(12BB)	ECO-320/M-60(12BB)
Peak Power(Pmax)	(W)	310	315	320
Maximum Power Voltage (Vmp)	(V)	33.30	33.50	33.70
Maximum Power Current(Imp)	(A)	9.32	9.40	9.49
Open-circuit Voltage (Voc)	(V)	40.45	40.26	40.70
Short-circuit Current(Isc)	(A)	9.91	9.94	9.99
Module Efficiency	(%)	18.90	19.20	19.55
Operating Temperature		-40°C~+85°C		
Maximum System Voltage		<input type="checkbox"/> 1000V <input type="checkbox"/> 1500V		
Maximum Series Fuse Rating		15A		
Power Tolerance		0~+3%		

\*STC (Standard Test Condition): Irradiance 1000W/ m<sup>2</sup>, Module Temperature 25°C, AM 1.5

### ELECTRICAL DATA @ NMOT

		ECO-310/M-60(12BB)	ECO-315/M-60(12BB)	ECO-320/M-60(12BB)
Peak Power(Pmax)	(W)	232	235	238
MPP Voltage (Vmp)	(V)	31.10	31.29	31.48
MPP Current(Imp)	(A)	7.46	7.52	7.59
Open Circuit Voltage (Voc)	(V)	37.54	37.70	37.77
Short Circuit Current(Isc)	(A)	7.90	7.92	7.96

\*Under Nominal Module Operating Temperature (NMOT), Irradiance of 800W/ m<sup>2</sup>, Spectrum AM 1.5, Ambient Temperature 20°C, Wind Speed 1m/s

### TEMPERATURE CHARACTERISTICS

Temperature coefficient of Pmax	-0.38%
Temperature coefficient of Voc	-0.31%
Temperature coefficient of Isc	0.05%
NMOT	41±3°C

### MECHANICAL DATA

Cell Type	Mono-Crystalline, 156.75*156.75mm
Cell Arrangement	60pcs
Dimension (L×W×H)	1650×992×35mm
Weight	18.0kg
Front Cover	3.2mm Tempered Glass
Frame	Anodized Aluminium Alloy
Junction Box	IP67, 3 Bypass Diodes
Cable Type	4mm <sup>2</sup>
Length of Cable	1000mm
Connector	PV Connector

### OPTIONAL

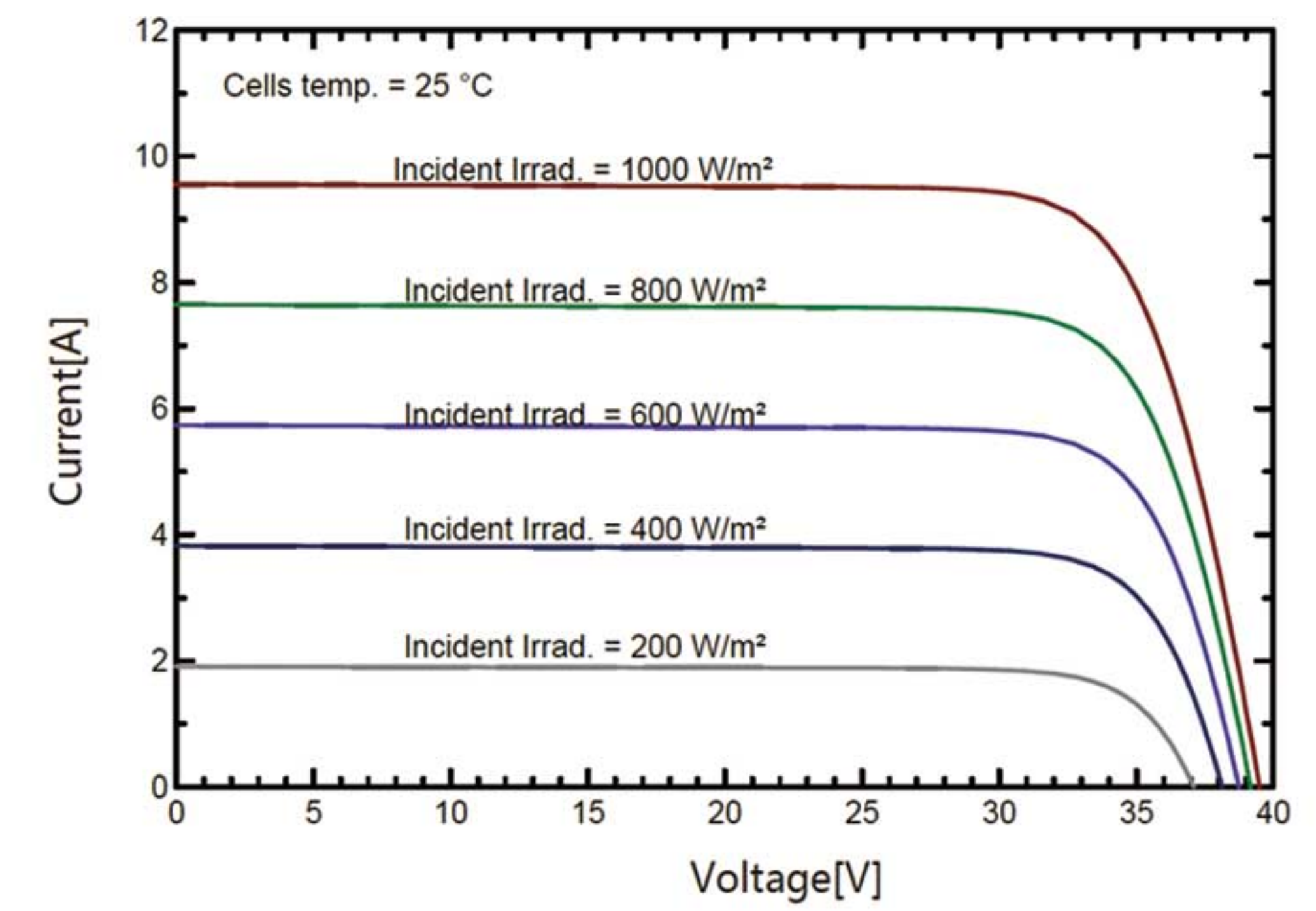
Frame	<input type="checkbox"/> Black
Backsheet	<input type="checkbox"/> Black
Connector	<input type="checkbox"/> Original MC4
Cable	<input type="checkbox"/> Customized
Module Size	<input type="checkbox"/> Customized

### PACKING MANNER

Packing Type	40'HQ
Piece/Pallet	30
Piece/Container	840

\*The specification and key features described in this datasheet may deviate slightly and are not guaranteed. Due to ongoing innovation, R&D enhancement, ECO DELTA POWER CO., LTD Reserves the right to make any adjustment to the information described herein at any time without notice. Please always obtain the most recent version of the datasheet which shall be duly incorporated into the binding contract made by the parties governing all transactions related to the purchase and sale of the products described herein.

### Current-Voltage Curve under different irradiance



### Current-Voltage Curve under different working temperatures

