MANUFACTURER

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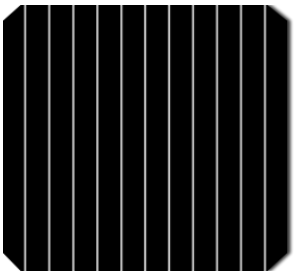
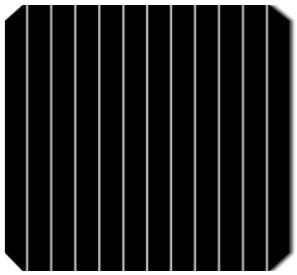
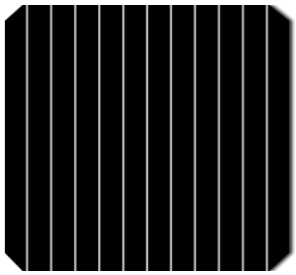
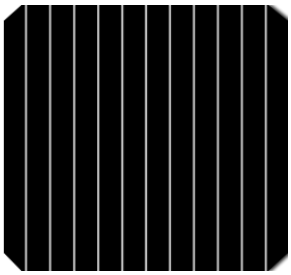
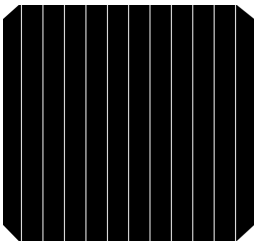
PHOTOVOLTAIC CELLS

Series	PV-CELLS	Reference	SI-ESF-C-M182X182MM-PERC	Type	MONOCRYSTALLINE

INTRODUCTION



MATERIALS

Solar Innova uses the latest materials to manufacture photovoltaic cells.

USE

Our cells are ideal for any application that uses the photoelectric effect as a clean energy source because of its minimal chemical pollution and no noise pollution.

EFFICIENCY

Our highly efficient monocrystalline silicon cells (made from a single crystal of very high purity silicon) transform the energy from solar radiation into direct current electrical energy.

Each cell is electrically rated to optimize the behavior of the module.

Its performance is excellent over the entire range of light spectrum, with particularly high yields in low light situations or cloudiness to direct sunlight (diffuse radiation).

With anisotropic etched surface.

Low reverse current, high shunting resistance and depensability.

100% checked reverse current and visual appearance.

Small light-induced degradation.

PERFORMANCE

Our modules comply with all safety requirements not only flexibility but also double insulation and high resistance to UV rays, all are suitable for use in outdoor applications. The design of these modules makes their integration in both industrial and residential buildings (one of the most emerging sectors in the photovoltaic market), and other infrastructure, simple and aesthetic.

QUALITY CONTROL

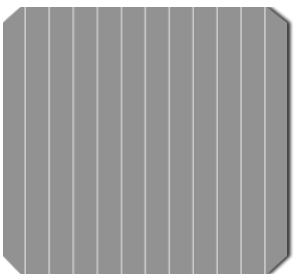
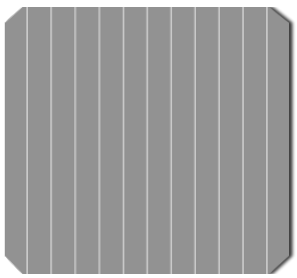
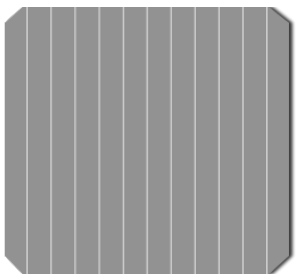
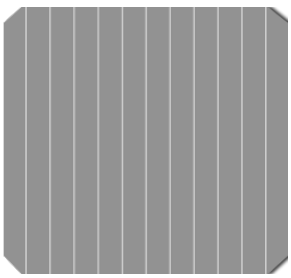
We have quality control divided into three elements:
- Regular inspections allow us to guarantee the quality of the raw material.
- Quality control in the process of our manufacturing procedures.
- Quality control of finished products, we conduct through inspections and tests of reliability and performance.

WARRANTIES

Our manufacturing plants have been prepared in accordance with:
- ISO 9001, in terms of Quality Systems and Business.
- ISO 14001, in terms of Environmental Management Systems.
- ISO 45001, in terms of Management Systems Health and Safety.

CERTIFICATES

Our PV modules are certified by internationally recognized laboratories and are proof of our strict adherence to international safety standards, long term performance and overall quality of products.

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PHOTOVOLTAIC CELLS

Series	PV-CELLS	Reference	SI-ESF-C-M182X182MM-PERC	Type	MONOCRYSTALLINE

PV CELLS

ELECTRICAL CHARACTERISTICS

STC CONDITIONS

Power maximum	[Pmpp]	Wp	7,63	7,66	7,69	7,73
Voltage at maximum power	[Vmpp]	V	0,60	0,60	0,60	0,60
Current at maximum power	[Impp]	A	12,77	12,78	12,82	12,86
Open circuit voltage	[Voc]	V	0,69	0,70	0,70	0,70
Short circuit current	[Isc]	A	13,40	13,43	13,43	13,45
Efficiency	[ηm]	%	22,83	22,93	23,03	23,14
Form Factor	[FF]	%	82,71	81,47	81,70	81,81

STC (Standard Test Conditions): Irradiance: 1000 W/m2 + Cell Temperature: 25º C + Air Mass: 1.5

* (Considering LID, the power range of the certification authority)

MECHANICAL CHARACTERISTICS

	WIDTH (X)		HIGH (Y)		DIAGONAL	AREA
Size	182,75	x	182,75	mm	247 mm	0,03 m2
Growth	(method)		CZ			
Conductive	(type)		P			
Dopant	(material)		Boro (B)			
Orientation			<100>			
Off orientation			<±3º			
Resistivity	(ρ)		0,5 – 3 Ω cm			
Minority carrier life	(τ d)		> 10 µS			
Oxygen content	(O2)		≤ 1 x 1018cm³			
Carbon content	(C)		≤ 2 x 1017cm³			
Dislocation density	(Nd)		≤ 3000/cm2			
TTV			< 30 µm			

COMPONENTS

MATERIAL	QUANTITY		THICKNESS (Z)		DESCRIPTION	
sc-Si	1	units	0,01	mm	Si3N4	anti-reflection coating
Busbars	11	units	0,001	mm	CuSn6	
Aluminium	1	units	0,01	mm	PERC-Al-BSF	
TOTAL			**0,021**	**mm**		

THERMAL CHARACTERISTICS

TEMPERATURE COEFFICIENTS			MONOCRYSTALLINE	
Temperature coefficient of short circuit current	α	[Isc]	0,0600	%/º C
Temperature coefficient of open circuit voltage	β	[Voc]	-0,3600	%/º C
Temperature coefficient of maximum power	γ	[Pmpp]	-0,3200	%/º C
Temperature coefficient of current at maximum power		[Impp]	0,0460	%/º C
Temperature coefficient of voltage at maximum power		[Vmpp]	-0,2600	%/º C
Nominal Module Operating Temperature		[NMOT]	+ 47 ± 2	º C

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PHOTOVOLTAIC CELLS

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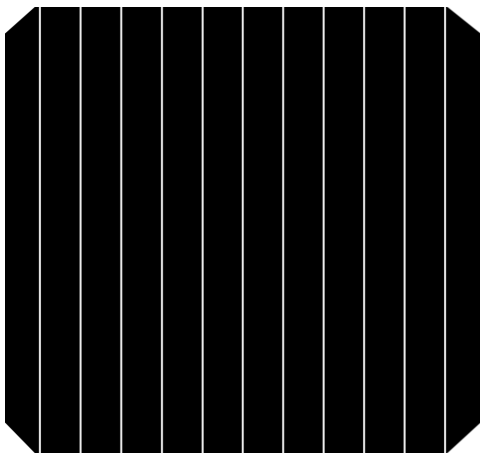
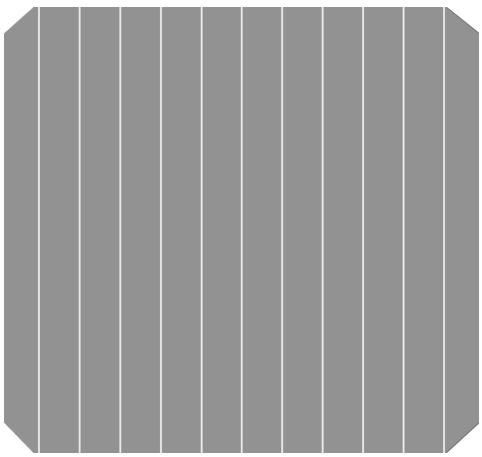
DRAWING

FRONT



REAR

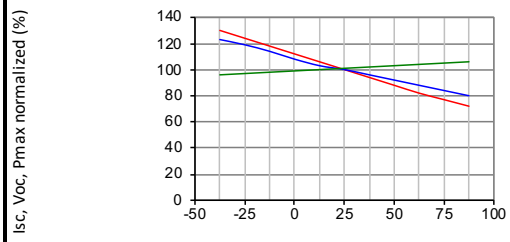


WIDTH (X) 182,75 mm

PERFORMANCE

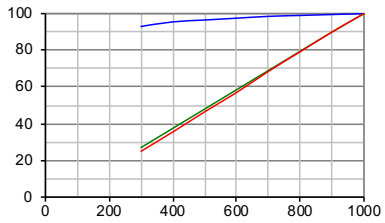
TEMPERATURE

Temperature depending on Isc, Voc and Pmax



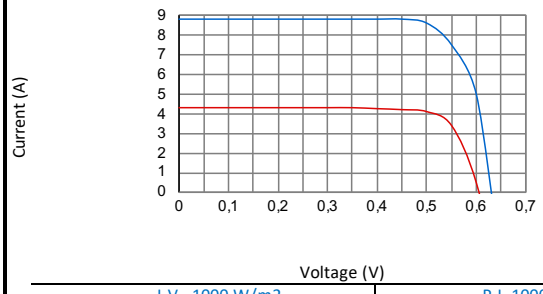
IRRADIANCE

Irradiance depending on Isc, Voc and Pmax
(cell temperature: 25º C)

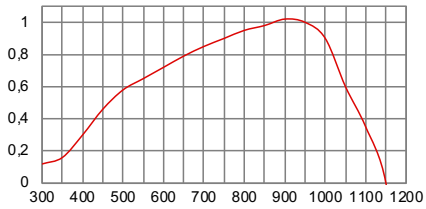


IV-IRRADIANCE

Electrical performance
(cell temperature: 25º C)



SPECTRAL RESPONSE



INTENSITY DEPENDENCE

Intensity	(W/m2)		1000	900	800	500	300	200
Power	[Pmpp]	Wp	1	0,910	0,800	0,500	0,290	0,190
Open circuit voltage	[Voc]	V	1	1,000	0,990	0,970	0,950	0,930
Short circuit current	[Isc]	A	1	0,910	0,810	0,510	0,310	0,210

* Ratio of Voc (Isc) at reduced intensity to Voc (Isc) at 1000 W/m2

SOLAR SIMULATOR

Class	AAA	IEC 60904-9	Power measurement uncertainty is	± 3 %

ELECTRICAL MEASURES

STC CONDITIONS			NMOT CONDITIONS		
Irradiance	1000 W/m2	IEC 60904-1	Irradiance	800 W/m2	IEC 61215
Cell temperature	25 ºC	IEC 60904-3	Ambient temperature	20 ºC	
Air Mass	1,5	ASTM G173	Air Mass	1,5	ASTM G173-03
		ASTM 1036	Wind speed	1 m/s	

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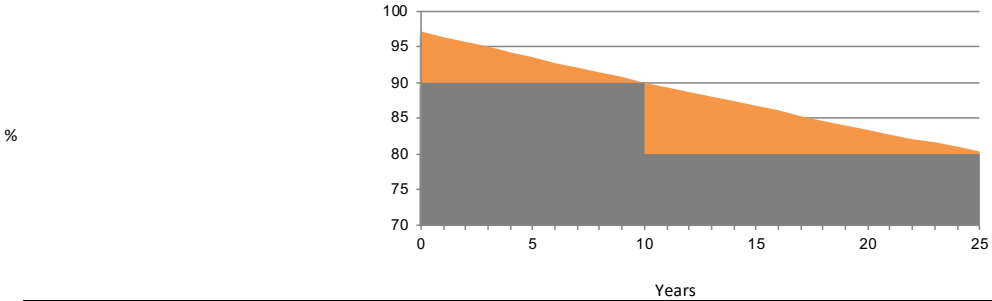
STANDARD GUARANTEES

LINEAR PERFORMANCE WARRANTY



Manufacturing defects	12	years.			
Performance	90	%	of rated power after	12	years of operation,
	80	%	of rated power after	25	years of operation.
Lifespan	> 30	years.			

CERTIFICATES

ISO 9001	Quality Management Systems.
ISO 14001	Environmental Management Systems.
ISO 45001	Occupational Health and Safety Management Systems.

EXPORT INFORMATION

HS Code	85414020	**TARiC code**	8541409021

COMMENTS

NOTICE

The specifications and technical data may be subject to possible modifications without notice.
This data sheet are conform to the requirements of the Standard EN 50380:2018.
Images for ilustration purposes only.