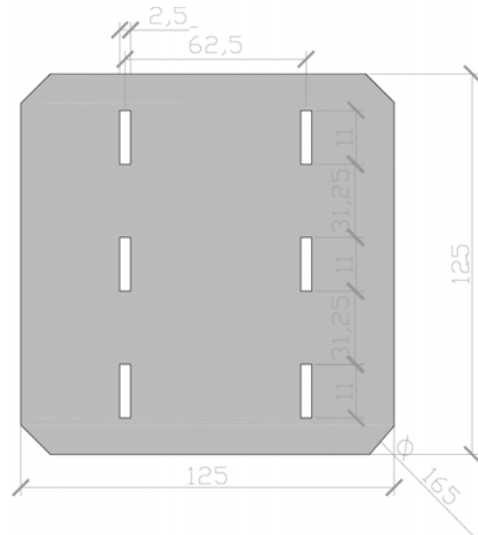
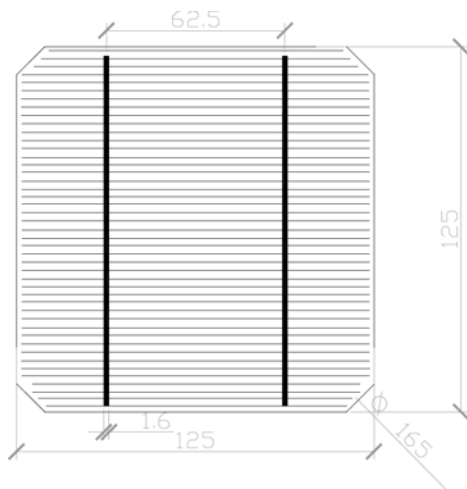




PHOTOVOLTAIC SOLAR ENERGY CELLS MONOCRYSTALLINE – SI-ESF-C-M125X125



- High efficiency solar cells with anisotropic etched surface.
- Low reverse current, high shunting resistance and dependability.
- Proper handling from incoming inspection through production, outgoing inspection and packaging.
- 100% checked reverse current and visual appearance.
- Small light-induced degradation.



Size	Thickness	Front side (-)	Rear side (+)
125 x 125 ± 0.5 mm	210 ± 30 µm	1.6 mm busbars (Ag) blue antireflection coating (Si3 N4)	2.3 mm wide soldering pads (Ag) back surface field (Al)

ELECTRICAL CHARACTERISTICS						
Efficiency (%)	Pmpp (W)	Vmpp (V)	Impp (A)	Voc (V)	Isc (A)	FF (%)
> 19.00	2.94	0.537	5.478	0.636	5.850	79.05
18.80-19.00	2.91	0.535	5.444	0.635	5.816	78.80
18.60-18.80	2.88	0.532	5.420	0.633	5.797	78.62
18.40-18.60	2.85	0.530	5.382	0.632	5.748	78.48
18.20-18.40	2.83	0.528	5.367	0.631	5.726	78.40
18.00-18.20	2.80	0.527	5.320	0.630	5.680	78.30
17.80-18.00	2.77	0.525	5.282	0.629	5.646	78.12
17.60-17.80	2.74	0.522	5.252	0.627	5.605	78.01
17.40-17.60	2.71	0.521	5.214	0.625	5.580	77.86
17.20-17.40	2.68	0.518	5.183	0.624	5.545	77.50

THERMAL CHARACTERISTICS		
Temperature coefficient of voltage at maximum power (Vmpp)	%/K	- 0,241
Temperature coefficient of current at maximum power (Impp)	%/K	+ 0,033
Temperature coefficient of maximum power γ (Pmpp)	%/K	- 0,368



PHOTOVOLTAIC SOLAR ENERGY

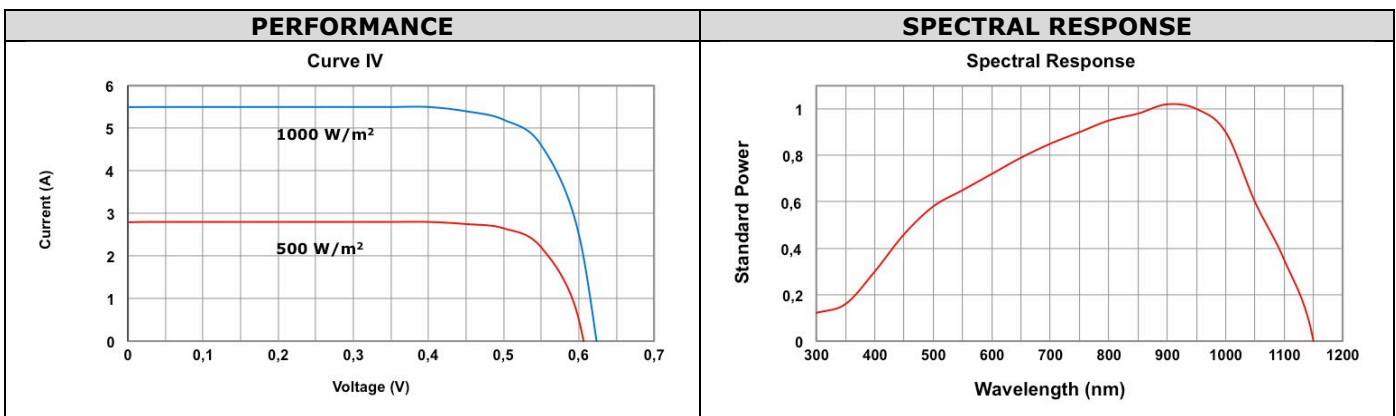
CELLS MONOCRYSTALLINE – SI-ESF-C-M125X125

MECHANICAL CHARACTERISTICS	
Growth Method	CZ
Conductive Type	P
Dopant	Boro (B)
Orientation	<100>
Off Orientation	<± 3°
Resistivity (ρ)	0.5 – 3 Ω cm
Minority Carrier Life (τ d)	> 10 μS
Oxygen Content (O₂)	≤ 1.0 × 10 ¹⁸ cm ³
Carbon Content (C)	≤ 2.0 × 10 ¹⁷ cm ³
Dislocation Density (Nd)	≤ 3,000 / cm ²
Size	125 x 125 ± 0.5 mm
Diameter	150 ± 0.5 mm
Thickness	210 ± 30 μm
TTV	< 30 μm

MEASUREMENTS PERFORMED IN ACCORDANCE WITH STANDARD TEST METHODS EN 60904-3 AND ASTM E1036, CORRECTED TO STANDARD TEST CONDITIONS (STC)		
Air quality/Spectral distribution	AM	1,5 ASTM G173-03e1 (2,008)
Luminous intensity/Radiation	W/m ²	1000
Cell temperature	° C	25 ± 2

TEST ACCURACY	
Temperature coefficient of power γ (P_{mp})	+ 1,50% rel
Efficiency	± 0,25% abs

MEASUREMENTS PERFORMED IN SOLAR SIMULATOR	
Class	AAA (according to IEC 60904-4)
Power measurement uncertainty is within	± 3 %



INTENSITY DEPENDENCE			
Intensity (W/m²)	Isc (*)	Voc (*)	P_{mp}
1000	1.0	1.000	1.000
900	0.9	0.999	0.899
800	0.8	0.994	0.796
500	0.5	0.974	0.488
300	0.3	0.949	0.285
200	0.2	0.932	0.185

(*) Ratio of Voc (Isc) at reduced intensity to Voc (Isc) at 1.000 W/m²