CBM6 BiSoN

High Efficiency Bifacial N-type Monocrystalline Silicon Solar Cell

Production Technology and Properties

The new photovoltaic frontier is called **BiSoN**, the **bifacial** high efficiency N-type monocrystalline silicon solar cell up to **20,4%** front efficiency (**25,5%** efficiency with **30% rear side contribution**) developed in collaboration with the **ISC Konstanz** R&D Institute (Germany).

Bifacial
85% of bifaciality factor ($\varepsilon_{ff\ rear} = \varepsilon_{ff\ front} \times 0{,}85$)

High Efficiency
20,4% front efficiency, 25,5% total efficiency with 30% rear side contribution

N-Type
N-type monocrystalline silicon solar cell

Low Insolation
Excellent performance at low insolation due to the high shunt resistance, measured on each cell

Fill Factor
High Fill Factor and low series resistance to reduce the cell to module losses

Electrical Performance
Stable Electrical performance over time

LID near zero
It doesn't suffer LID-effect (Light Induced Degradation) that is near 0% instead of 2-3% occurring to all p-type cells

Hot Spot Protect
100% measurement of insulation resistance in dark condition to prevent the Hot Spot

Fraunhofer ISE
Cells calibrated by Fraunhofer ISE

Made In Italy
Engineered and produced in Italy

Certificates
ISO 9001:2008

Production and quality control

- 100% Quality control of the wafers used in production, performed at each step of the production process, from raw wafer acceptance test to the electrical testing of the cell. • Use of a MES System for total control, traceability and production improvement.
- Soft handling production to reduce the microcrack generation, breakage rate and mechanical stress.
- Innovative integrated treatment system with zero discharge capable to recover 97% of the waste process water.

MegaCell
NEXT SOLAR GENERATION

CBM6 BISoN

High Efficiency Bifacial N-type Monocrystalline Silicon Solar Cell

Front STC* electrical characteristics

Efficiency** [%]	Pmpp [W]	Isc [A]	Voc [V]	Impp [A]	Vmpp [V]	FF
19,60%	4,684	9,29	0,646	8,775	0,534	0,781
19,70%	4,708	9,31	0,646	8,786	0,536	0,783
19,80%	4,732	9,33	0,647	8,797	0,538	0,784
19,90%	4,756	9,35	0,647	8,808	0,540	0,786
20,00%	4,780	9,37	0,649	8,819	0,542	0,786
20,10%	4,804	9,38	0,651	8,831	0,544	0,787
20,20%	4,828	9,39	0,652	8,857	0,545	0,788
20,30%	4,852	9,40	0,652	8,880	0,546	0,791
20,40%	4,876	9,40	0,652	8,914	0,547	0,796

*STC (1000 W/m² , AM 1,5 - 25°C) IEC 60904-3 Ed.2
** Measurement tolerances: ± 1.5 % rel. (P_{MPP}); ± 5 % rel. (I_{SC}, V_{OC})

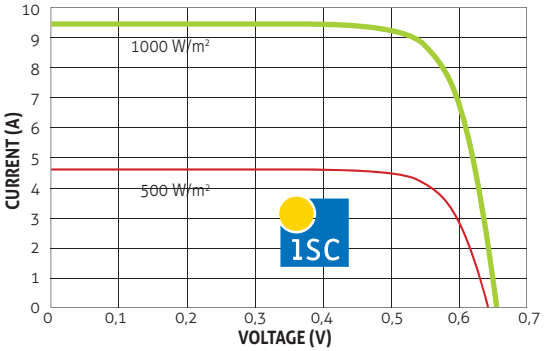
Typical rear side contribution at 20,30% front cell efficiency (Pmpp 4.82 W and Isc 9.37 A)

Additional irradiation from rear side (% of front side illumination)	10%	15%	20%	25%	30%
Bifacial gain	**8,5%**	**12,8%**	**17,0%**	**21,3%**	**25,5%**
Equivalent efficiency	**22,0%**	**22,9%**	**23,8%**	**24,6%**	**25,5%**
Pmpp	5,264	5,470	5,676	5,883	6,089
Isc	10,166	10,565	10,963	11,361	11,759

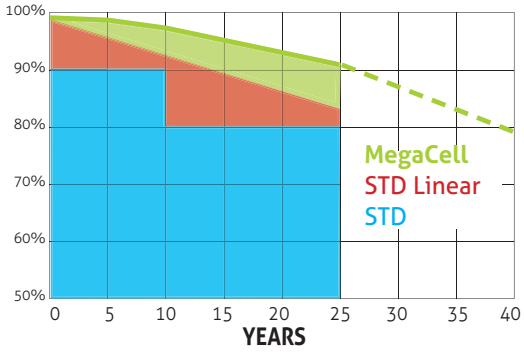
Physical Characteristics

	Front	Back
Product	Monocrystalline Silicon Cell using N type wafer	
Dimensions	156 x 156 +/- 0,5 mm	
Materials	Alkaline texturized surface Blue & Light Blue silicon nitride AR coating	
Bus bar	**Positive pole** (+), three bus bar 1,50 +/- 0,1mm Distance axis: 52 mm	**Negative pole** (-), three bus bar 1,50 +/- 0,1 mm Distance axis: 52 mm
Thickness (Si)	180 - 200 +/-20 µm	

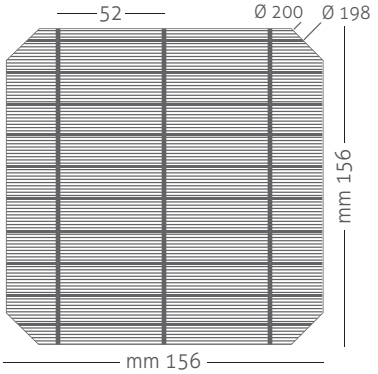
Typical I-V curve at 20,30% front efficiency



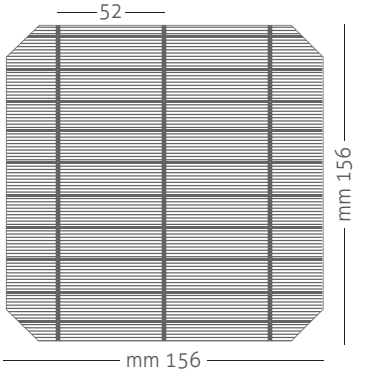
Expected glass-glass module warranty when using BiSoN cells



Layout front



Layout rear



Temperature coefficients

- Power - 0.397 % / K
- Current + 0.041 % / K
- Voltage - 0.280 % / K

Processing recommendation

Solder joint Copper ribbons coated with:

- 10 – 15 µm:
- 60 % Sn / 38 % Pb / 2 % Ag
- 60 % Sn / 40 % Pb

Cells per bypass diode:

- Maximum 24 cells per bypass diode.

Storage remarks

Keep the cells at room temperature and in a dry and clean atmosphere (25°C ± 5°C).

Megacell srl
Via Postumia 9B
35010 Carmignano di Brenta (PD) - ITALY
Tel +39 049 8257949
Fax +39 049 9431990
www.megacell.it
info@megacell.it

REV 1_15

MegaCell NEXT SOLAR GENERATION