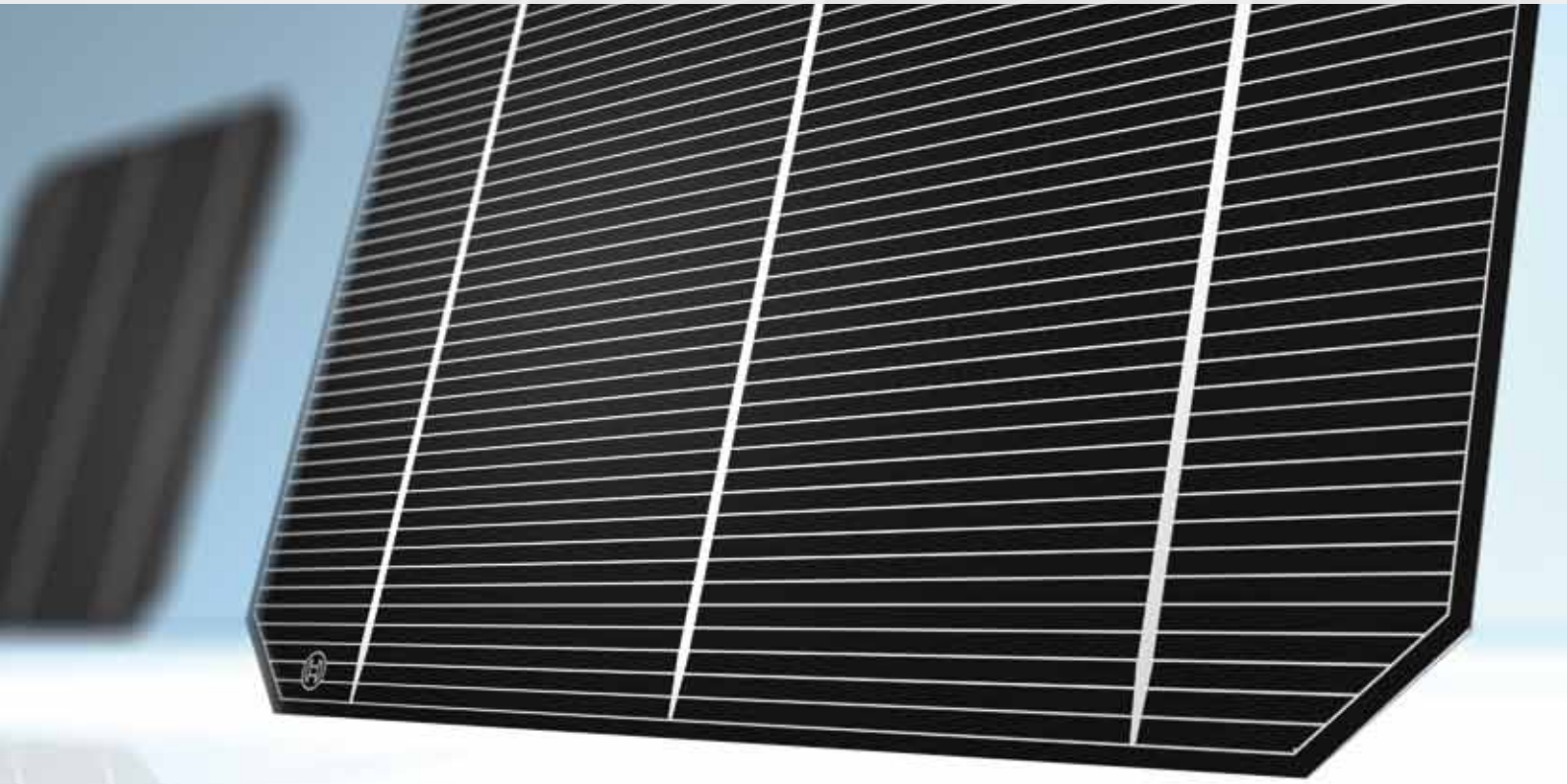
High performance – Stable yields.
Bosch Solar Cell M 3BB

Efficient – high-performance – reliable.
Solar cells from Bosch Solar Energy.

BOSCH



Our monochrystalline solar cells offer impressive features including:

- High annual yields, even with sub-optimal levels of sunlight, thanks to excellent performance in weak light conditions
- Exceptionally stable performance thanks to using purest silicon and to high-resistance wafers, produced in-house
- Improved cell processing as a result of narrow performance tolerances
- Reliability of short and long term supply, due to high production capacity
- Pioneering 3-busbar technology reduces the series resistance and helps to boost the power output in the module

Packaging:

- 150 pack as smallest packaging unit
- Suitable for controlling/checking incoming goods digitally using a barcode system

Production & quality control:

- 100 % classification under IEC 60904 and IEC 60891
- 100 % testing of reverse-current
- Regular calibration at Fraunhofer ISE

Product characteristics	
Dimensions	**156 mm x 156 mm** (±0.5 mm) pseudo square
Diagonal	205 mm ±1 mm
Average thickness	**200 µm** (±40 µm) / **180 µm** (-30/+40 µm)
Front contacts (–)	**3 x 1.5 mm busbar** (silver), textured, silicon nitride anti-reflective coating
Back contacts (+)	**3 x 2.8 mm busbar** (silver), full-surface aluminium BSF
Dark reverse current	I_{rev} < 1.5 A @ –12V
Power sorting	+50/–0 mW

Electrical data:

Class	Pmpp [Wp]	Efficiency [%]	Vmpp* [mV]	Impp* [mA]	Voc* [mV]	Isc* [mA]
4.39	4.39-4.44	18.22-18.43	526	8354	623	8878
4.34	4.34-4.39	18.01-18.22	524	8302	617	8808
4.29	4.29-4.34	17.81-18.01	521	8286	615	8795
4.24	4.24-4.29	17.60-17.81	519	8249	614	8764
4.19	4.19-4.24	17.39-17.60	517	8179	613	8763
4.14	4.14-4.19	17.18-17.39	514	8116	613	8753
4.09	4.09-4.14	17.98-17.18	513	8060	613	8750
4.04	4.04-4.09	16.77-16.98	513	7926	612	8744

The electrical data applies for standard test conditions (STC): 1 000 W/m², 25 °C, AM 1.5 (IEC 60904-3 ed.2 2008); Tolerance P: ±1.5 % rel. **

Temperature coefficients: α (I_{sc}): +0.02 %/K β (V_{oc}): –0.36 %/K γ (P_{mpp}): –0.47 %/K

Storage conditions:

- Store at room temperature, protected from dust and moisture.

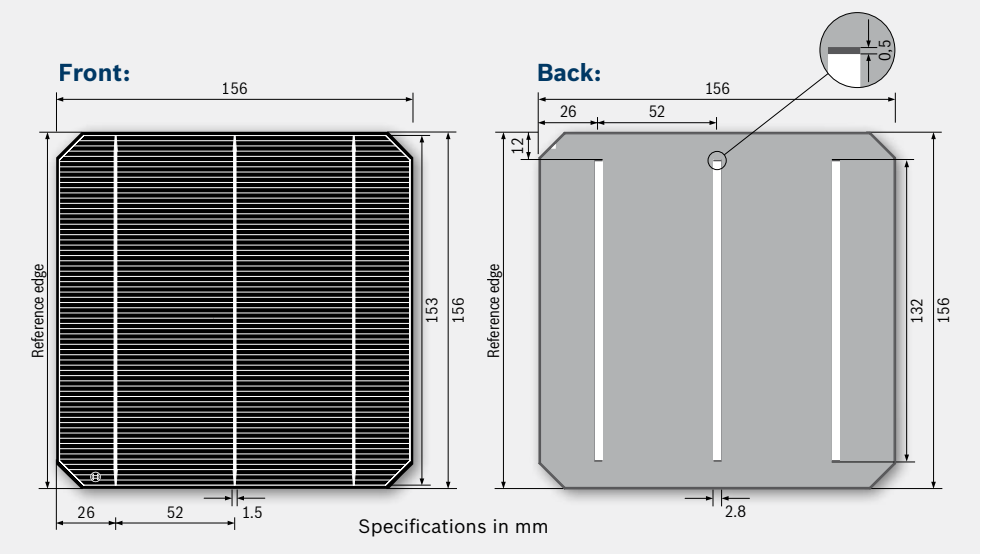
Recommendations for processing:

- Tin-plated copper strips
- Coating: 10-15 µm (62 % Sn / 36 % Pb / 2 % Ag)

Weak light performance:

Intensity [W/m²]	Vmpp [%]	Impp [%]
1000	0	0
900	–0.3	–10
500	–1.6	–50
300	–3.6	–70
200	–5.55	–80

The electrical data applies for 25 °C and AM 1.5 (IEC 60904-3 ed.2 2008).

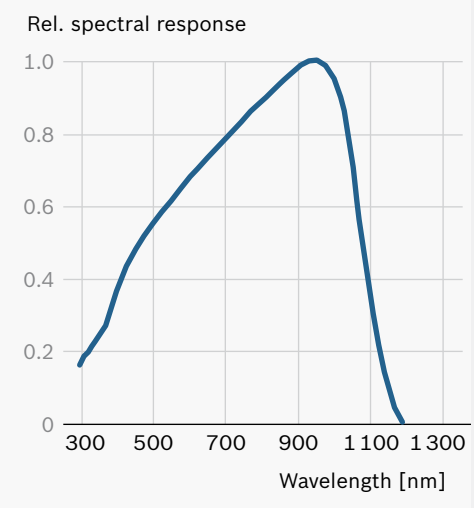


Specifications in mm

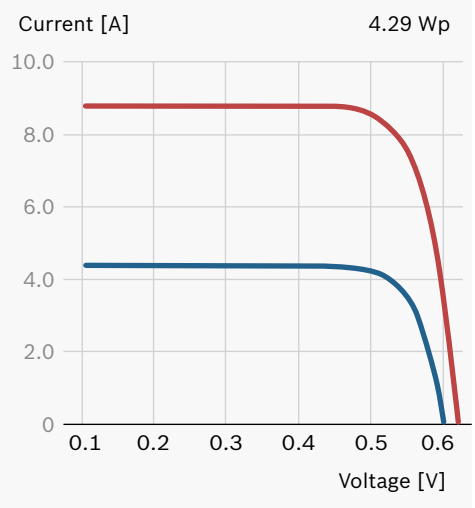
* These electrical parameters are typical mean values from historical production data. Bosch Solar Energy AG assumes no liability for the accuracy of this data for future production batches.

** The tolerance value relates to a reference cell calibrated by the Fraunhofer ISE in Freiburg

Spectral response:



I-V characteristic of Bosch Solar Cell M 3BB



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