

# G1-PERC Cell MBC Solar

What is a PERC solar cell?

In the following years, the PERC concept was further developed into the passivated emitter and rear locally diffused (PERL) solar cell resulting in an efficiency of 25.0% by present standards which remained the world record efficiency for silicon solar cells for almost two decades.

What are the PERC+ conversion efficiencies of solar cell manufacturers?

First published PERC+conversion efficiencies of solar cell manufacturers were 20.3% in 2015 and 20.7% in 2016 which then continuously improved to 22.0% in 2017 as reported by LONGi Solar .

Are PERC+ solar cells bifacial?

PERC+cells enable bifacial applications and reduce the Al paste consumption while applying the same processing sequence in Table 5.1 as industrial PERC solar cells. Applying a busbar-less metal grid design ISFH demonstrated a PERC+cell with 22.1% front-side efficiency.

Which solar cell has the highest PERC+ efficiency?

The highest PERC+efficiency so far has been reported by ISFH by developing a busbar-less PERC+solar cell by screen printing only the Ag fingers on the front side without the Ag busbars as shown in Fig. 5.6, thereby reducing the shading losses of the Ag front grid.

How do PERC+ cells obtain a deeper Al-BSF compared to PERC+ cells?

PERC+cells obtain a deeper Al-BSF compared to PERC since the Al fingers confine the Si diffusion during firing according to experimental data (dots) and analytical models (lines). b Voided Al contacts symbolized by open circles are often found for large contact heights where the Al alloys deeply into the silicon wafer.

How do industrial PERC cells work?

As described in the previous section and displayed in Fig. 5.6, industrial PERC cells apply p-type wafers and a full-area screen-printed aluminum (Al) rear layer which only locally contacts the silicon wafer at areas where the rear passivation has been removed by laser contact opening (LCO).

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