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How bifacial PERC solar cells differ from monofacial solar cells?

As shown in Table 5.1, the bifacial PERC cell used the same manufacturing sequence compared to monofacial PERC cells with only minimal recipe modifications for rear passivation, laser contact opening, and Al screen printing in order to produce bifacial PERC solar cells without investing into new or different production tools.

What are bifacial PERC+ cells?

PERC+ cells enable bifacial applications and reduce the Al paste consumption while applying the same processing sequence as industrial PERC solar cells. Applying a busbar-less front Ag grid we demonstrate a PERC+ cell with 22.1% front side efficiency. In 2015, two additional publications addressed the concept of bifacial PERC+ cells.

What is a bifacial P-PERC solar cell?

The single bifacial p -PERC solar cell (158.75 × 158.75 mm 2) was fabricated into a frameless module (20 × 20 cm2), capped by ethylene-octene copolymer (POE) and glasses on both sides, then disposed at 35 °C, 24 h, and -13000 V bias to the cells.

What is the difference between PERC & B PERC+ solar cells?

Typical scanning electron microscope (SEM) images of locally alloyed aluminum contacts of a PERC and b PERC+ solar cells. Whereas the local Al contacts of PERC cells often show voids and a thin back surface field (BSF), PERC+ cells exhibit filled contacts and a deep BSF.

What is the market share of bifacial p-Si solar cells?

According to the International Technology Roadmap for Photovoltaic (ITRPV) 2020 [14], the market share of bifacial p-Si solar cells in 2019 was about 20% and predicted to increase to 70% in 2030. The world-record i of PERCs was declared 24.06% by Longi Solar [15].

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.

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