

ContainerPower Energy Solutions

P-type bifacial monocrystalline silicon solar modules



Overview

Bifacial monocrystalline P-type cells are a highly efficient solar photovoltaic module made of monocrystalline silicon material and have the characteristics of absorbing light energy on both sides. What is a bifacial solar module?

LONGi launched its mono-PERC modules in 2016, featuring integrated PERC technology on monocrystalline silicon and low light degradation, and its cell efficiency has increased from 21% to 24.06%. Bifacial modules collect solar energy from both the front and back side of the module, increasing the total power output per module.

What is a bifacial silicon solar panel?

The bifacial silicon-based cell architecture consists of PERC+, p -PERL, n -PERC, n -PERT, n-PERL, heterojunction, IBC and TOPCon cells. A typical bifacial silicon solar panel consists of a glass sheet on both front and back sides, a transparent polymer sheet and a thin silicon wafer layer with a shelf life of at least 25 years.

What is a monofacial solar panel?

This is precisely achieved from monofacial solar cells to bifacial solar cells. As discussed in the previous section, the monofacial solar panels are made up of either a p - or n-type silicon wafer layer covered on both sides with Ethylene Vinyl Acetylene (EVA), a polymer material kept as the cover to protect the silicon wafer.

What are the applications of bifacial solar cells?

The applications of bifacial solar cells are the same as conventional applications of monofacial counterparts, with at least a 35% increase in overall power production efficiency. Initial applications of bifacial solar cells include using as sun-shading elements with a set of parallel strings with bifacial cells .

Are bifacial solar panels better than monofacial?

Under better albedo and proper mounting angles, a typical bifacial solar panel is expected to show 50% more power conversion efficiency than the monofacial counterpart. Bifacial silicon solar cells are monofacial cells with a back surface opened with a dielectric passivated layer, and a polymer back cover is replaced with a transparent sheet.

What are the characteristics of bifacial solar cells?

Characteristics of bifacial cells: bifaciality factor The specialty of bifacial solar cells is their high energy yields due to the front and backside illumination. The energy yields are measured as bifaciality factor ($\phi\eta$) and are defined as the ratio of the energy yields at the rear (η_{rear}) and front (η_{front}) sides. $\phi\eta = \eta_{\text{rear}} / \eta_{\text{front}}$

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