

Demonstration of the Bifacial Solar Panels and Decoration Technology

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Fig.1 Bypass diode



(a) Appearance



(b) Enlarged view

Fig.2 Solar panel with decorative sheet

Bypass diode: A protective component that diverts current when the solar panel is shaded.

Technical Issues to Address

The demand for solar panels to be installed in urban areas is expected to increase, with a particular preference for bifacial solar panels with excellent design. As a solution, we have developed a thin bypass diode embedded in solar panels. Additionally, we have developed a flat solar panel incorporating this diode and a method of enhancing its aesthetics.

Research Contents

We created a prototype of a stacked bypass diode suitable for integration into solar panels. Incorporating this diode into the solar panel resulted in a flat design, eliminating the need for backside wiring. Additionally, single- and multi-coloured decorative sheets were developed for application to solar panels to enhance their aesthetic appeal. The use of a dot pattern as a decorative element

ensures visibility while mitigating abnormal temperature rises during power generation.

Summary

Laminating the prototype stacked bypass diode onto a flat bifacial solar panel allowed for a bubble-free seal. When our single- and multi-coloured decorative sheets were applied to the solar panels, visibility was excellent. Additionally, the application of these sheets did not cause any new abnormal temperature rises.

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