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(54) **METHOD FOR MANUFACTURING THIN CRYSTALLINE SOLAR CELLS PRE-ASSEMBLED ON A PANEL**

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(57) **ABSTRACT**

A method for fabricating a photovoltaic (PV) cell panel wherein each of a plurality of silicon donor wafers has a separation layer formed on its upper surface, e.g., porous anodically etched silicon. On each donor wafer, a PV cell is then partially completed including at least part of inter-cell interconnect, after which plural donor wafers are laminated to a backside substrate or frontside. All of the donor wafers are then separated from the partially completed PV cells in an exfoliation process, followed by simultaneous completion of the remaining PV cell structures on PV cells. Finally, a second lamination to a frontside glass or a backside panel completes the PV cell panel. The separated donor wafers may be reused in forming other PV cells. Use of epitaxial deposition to form the layers of the PV cells enables improved dopant distributions and sharper junction profiles for improved PV cell efficiency.