ABSTRACT OF THE DISCLOSURE

A method is provided for producing, with high reproducibility, an SOI substrate which is flat and high in quality, and simultaneously for achieving resources saving and reduction in cost through recycling of a substrate member. For accomplishing this, a porous-forming step is performed forming a porous Si layer on at least a surface of an Si substrate and a large porosity layer forming step is performed for forming a large porosity layer in the porous Si layer. This large porosity layer forming step is performed by implanting ions into the porous Si layer with a given projection range or by changing current density of anodization in said porous-forming step. At this time, a non-porous single-crystal Si layer is epitaxial-grown on the porous Si layer. Thereafter, the surface of the porous Si layer and a support substrate are bonded together, and then separation is performed at the porous Si layer with the large porosity. Subsequently, selective etching is performed to remove the porous Si layer.

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