

Abstract

Method for forming thin semiconductor layer substrates for manufacturing solar cells

Described is a method for forming thin semiconductor layer substrates for manufacturing solar cells, in which method in a provided semiconductor substrate (1) alternately macroporous layers (33, 37) of low macroporosity and etched-away layers (35, 39) can be formed by electrochemical etching. The etched-away layers (35, 39) separate adjacent macroporous layers (33, 37) so that these are preferably self-supporting. In this arrangement an edge region (3) of the semiconductor substrate (1), which edge region (3) encompasses the macroporous layers (33, 37) at least in part, remains non-etched and is thus used for mechanically stabilizing the encompassed lightly-macroporous layers (33, 37) connected to it. The multilayer stack produced in this manner can subsequently, in a joint fluid process step, as an entity be subjected to further processing steps, for example can be coated with a passivating oxide. Subsequently, the macroporous layers can be separated, successively, from the stabilizing edge region (3) of the semiconductor substrate, wherein a mechanical connection between the macroporous layer (33) and the non-porous edge region (3) is interrupted. Prior to tearing off the respective uppermost layer, processes that have a single-sided effect can be applied. In this way a multitude of thin semiconductor layer substrates in the form of macroporous layers (33, 37) including good surface passivation and a reflection-reducing surface texture can be produced with only a few process steps.

[Fig. 3]