

Abstract

Epitaxially coated semiconductor wafer and method for producing an epitaxially coated semiconductor wafer

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An epitaxially coated semiconductor wafer, comprising
a substrate wafer composed of monocrystalline silicon;
an epitaxial layer composed of silicon having a polished
surface on the front side of the substrate wafer, wherein the
10 polished surface has an RMS roughness of not more than
0.055 nm relative to a measurement window having an area of
10 $\mu\text{m} \times 10 \mu\text{m}$;

a denuded zone having a depth of not less than 6 μm and not
more than 14 μm , and

15 a region adjoining the denuded zone and having BMD nuclei
which can develop into BMDs having a peak density of not less
than $3.5 \times 10^9 \text{ cm}^{-3}$ at a distance of not more than 70 μm from
the polished surface of the epitaxial layer.

A method for producing an epitaxially coated semiconductor
20 wafer, comprising

depositing an epitaxial layer composed of silicon on the front
side of a substrate wafer;

treating the epitaxial layer with an oxidant;

25 an RTA treatment of the epitaxially coated semiconductor
wafer, wherein the epitaxial layer is exposed to an atmosphere
consisting of argon and ammonia and an oxynitride layer forms
on the epitaxial layer;

removing the oxynitride layer; and

polishing the epitaxial layer.

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Drawing for the abstract: fig. 1