Semiconductor Wafers of Silicon and Method for their Production

Abstract:

The invention relates to a method for producing semiconductor wafers of silicon, comprising the pulling of a single crystal growing on a phase boundary from a melt contained in a crucible and the cutting of semiconductor wafers from the pulled single crystal. During the pulling of the single crystal, heat is delivered to a center of the phase boundary and a radial profile of a ratio V/G from the center to an edge of the phase boundary is controlled, with G being the temperature gradient perpendicular to the phase boundary and with V being the pull rate at which the single crystal is pulled from the melt. The radial profile of the ratio V/G is controlled so that the effect of thermomechanical stress fields in the single crystal, which adjoin the phase boundary, is compensated for in respect of the creation of intrinsic point defects.

The invention also relates to defect-free semiconductor wafers of silicon, which can be produced by this method.