pulling a silicon single crystal in accordance with the Czochralski method, wherein the growing single crystal is doped with nitrogen and pulled in an atmosphere containing hydrogen;

processing the single crystal to form a polished monocrystalline substrate wafer composed of silicon which, from a center as far as an edge, consists of N region or has COP defects, the size of which is more than 20 nm and the average density of which is less than $2.5 \times 10^5/cm^3$, and which has a nitrogen concentration of not less than 3×10^{13} atoms/cm^3 and not more than 3×10^{14} atoms/cm^3 and an oxygen concentration of not less than 5.0×10^{17} atoms/cm^3 and not more than 5.8×10^{17} atoms/cm^3;

rapidly heating and cooling the substrate wafer in an atmosphere which substantially consists of NH_3 and argon in a volume ratio of not less than 1:25 and not more than 1:5 to a temperature of not less than 1165°C and not more than 1180°C and with a heating rate and a cooling rate of not less than 30 K/s and not more than 50 K/s;

slowly heating the rapidly heated and cooled substrate wafer from a temperature of not less than 500°C and not more than 550°C to a temperature of not less than 900°C and not more than 1000°C with a heating rate of not less than 3 K/min and not more than 7 K/min; and

keeping the substrate wafer at the temperature of not less than 900°C and not more than 1000°C over a period of not less than 5 hours and not more than 8 hours.

3. The method as claimed in claim 1 or claim 2, wherein the method comprises no additional thermal treatments of the substrate wafer which subject the substrate wafer to temperatures of more than 1000°C.

4. The method as claimed in claim 2 ~~or claim 3~~, wherein the growing single crystal is pulled in an atmosphere containing hydrogen having a partial