CLAIMS

1. A single crystal silicon wafer comprising two major, parallel surfaces, one of which is a front surface and one of which is a back surface, a central plane between the front surface and the back surface, a circumferential edge joining the front surface and the back surface, a front surface layer having a depth, D, measured from the front surface and toward the central plane, and a bulk region being between the front surface layer and the central plane, wherein the single crystal silicon wafer has a thickness between 500 micrometers and 1000 micrometers, and further wherein:

the bulk region comprises oxygen precipitates at an average density of at least $1\times10^{8}\,cm^{-3}$ and a peak density of oxygen precipitates of at least $1\times10^{9}\,cm^{-3}$, wherein the peak density is between 10 micrometers and 100 micrometers from the front surface of the single crystal silicon wafer;

the front surface layer comprises oxygen precipitates at a density of less than $1\times10^{7}\,cm^{-3}$, wherein the depth, D, of the front surface layer is between 1 micrometer and 10 micrometers; and

the front surface has no gate oxide integrity pattern related crystal defect bands.

2. The single crystal silicon wafer of claim 1 wherein the bulk region comprises oxygen precipitates at an average density of at least $1\times10^{9}\,cm^{-3}$.

3. The single crystal silicon wafer of claim 1 wherein the bulk region comprises oxygen precipitates at a peak density of at least $5\times10^{9}\,cm^{-3}$, and further wherein the peak density is less than 40 micrometers from the wafer surface.

4. The single crystal silicon wafer of claim 1 wherein the bulk region comprises oxygen precipitates at a peak density of at least $5\times10^{9}\,cm^{-3}$, and further wherein the peak density is less than 30 micrometers from the wafer surface.

5. The single crystal silicon wafer of claim 1 wherein the bulk region comprises oxygen precipitates at a peak density of at least $5\times10^{9}\,cm^{-3}$, and further wherein the peak density is less than 20 micrometers from the wafer surface.

6. The single crystal silicon wafer of claim 1 wherein the front surface layer comprises oxygen precipitates at a density of less than $1\times10^{6}\,cm^{-3}$.

7. The single crystal silicon wafer of claim 1 wherein the front surface layer comprises oxygen precipitates at a density of less than $1\times10^{5}\ cm^{-3}$.

8. The single crystal silicon wafer of claim 1 wherein the depth, D, of the front surface layer is between 5 micrometers and 10 micrometers.

9. The single crystal silicon wafer of claim 1 wherein the single crystal silicon wafer is p-type.

10. The single crystal silicon wafer of claim 1 wherein the single crystal silicon wafer has a thickness between 725 micrometers and 800 micrometers.

11. The single crystal silicon wafer of claim 1 wherein the single crystal silicon wafer has a thickness between 750 micrometers and 800 micrometers.