CLAIMS:

1. A thermally oxidized heterogeneous composite substrate, obtained by subjecting a heterogeneous composite substrate comprising a single crystal silicon film on a handle substrate to previous heat treatment at 650 to 850°C prior to thermal oxidative treatment at a temperature in excess of 850°C, and thereafter conducting thermal oxidative treatment at a temperature in excess of 850°C,

wherein the number of defects, which is counted by a HF immersion test of the heterogeneous composite substrate having 150 mm diameter after conducting thermal oxidation treatment, is 1,250 or less.

2. The thermally oxidized heterogeneous composite substrate of claim 1 wherein the handle substrate is made of glass, quartz or sapphire.

3. The thermally oxidized heterogeneous composite substrate of claim 1 or 2 wherein a buried oxide layer intervenes between the handle substrate and the single crystal silicon film.

4. The thermally oxidized heterogeneous composite substrate of any one of claims 1 to 3 wherein the previous heat treatment is conducted in an atmosphere of argon, nitrogen, oxygen, hydrogen, helium or a mixture of an inert gas and oxygen.

5. The thermally oxidized heterogeneous composite substrate of any one of claims 1 to 4 wherein the handle substrate has a coefficient of thermal expansion of 0.54 to 7.4 ppm at 400°C or lower.

6. The thermally oxidized heterogeneous composite substrate of claim 5 wherein the handle substrate is made of sapphire, a sapphire wafer having a coefficient of expansion of up to 7.4 ppm at room temperature to 400°C.

7. A method for manufacturing a thermally oxidized heterogeneous composite substrate, consisting of the steps of

subjecting a heterogeneous composite substrate comprising a single crystal silicon film on a handle substrate to previous heat treatment at 650 to 850°C, and thereafter conducting thermal oxidative treatment at a temperature in excess of 850°C.

8. A method for manufacturing a thermally oxidized heterogeneous composite substrate according to claim 7 wherein the handle substrate is made of glass, quartz or sapphire.

9. A method for manufacturing a thermally oxidized heterogeneous composite substrate according to claim 7 or 8 wherein the heterogeneous composite substrate comprises a buried oxide layer disposed between the handle substrate and the single crystal silicon film.

10. A method for manufacturing a thermally oxidized heterogeneous composite substrate according to any one of claims 7 to 9 wherein the previous heat treatment is conducted in an atmosphere of argon, nitrogen, oxygen, hydrogen, helium or a mixture of an inert gas and oxygen.

11. A method for manufacturing a thermally oxidized heterogeneous composite substrate according to any one of claims 7 to 10 wherein the handle substrate has a coefficient of thermal expansion of 0.54 to 7.4 ppm at 400°C or lower.

12. A method for manufacturing a thermally oxidized heterogeneous composite substrate according to claim 11 wherein the handle substrate is made of sapphire, a sapphire wafer having a coefficient of expansion of up to 7.4 ppm at room temperature to 400°C.

13. The method for manufacturing a thermally oxidized heterogeneous composite substrate according to any one of claims 7 to 12 wherein the handle substrate has a thickness of 500 to 800 μm, and the single crystal silicon film has a thickness of 50 to 500 nm.

14. The method for manufacturing a thermally oxidized heterogeneous composite substrate according to any one of claims 7 to 13 wherein the buried oxide layer has a thickness of 25 to 150 nm.

CLAIMS:

1. A method for manufacturing a thermally oxidized heterogeneous composite substrate, consisting of the steps of subjecting a heterogeneous composite substrate comprising a single crystal silicon film on a handle substrate to previous heat treatment at 650 to 850°C, and thereafter conducting thermal oxidative treatment at a temperature in excess of 850°C.

2. A method for manufacturing a thermally oxidized heterogeneous composite substrate according to claim 1 wherein the handle substrate is made of glass, quartz or sapphire.

3. A method for manufacturing a thermally oxidized heterogeneous composite substrate according to claim 1 or 2 wherein the heterogeneous composite substrate comprises a buried oxide layer disposed between the handle substrate and the single crystal silicon film.

4. A method for manufacturing a thermally oxidized heterogeneous composite substrate according to any one of claims 1 to 3 wherein the previous heat treatment is conducted in an atmosphere of argon, nitrogen, oxygen, hydrogen, helium or a mixture of an inert gas and oxygen.

5. A method for manufacturing a thermally oxidized heterogeneous composite substrate according to any one of claims 1 to 4 wherein the handle substrate has a coefficient of thermal expansion of 0.54 to 7.4 ppm at 400°C or lower.

6. A method for manufacturing a thermally oxidized heterogeneous composite substrate according to claim 5 wherein the handle substrate is made of sapphire, a sapphire wafer having a coefficient of expansion of up to 7.4 ppm at room temperature to 400°C.

7. The method for manufacturing a thermally oxidized heterogeneous composite substrate according to any one of claims 1 to 5 wherein the handle substrate has a thickness of 500 to 800 μm, and the single crystal silicon film has a thickness of 50 to 500 nm.

8. The method for manufacturing a thermally oxidized heterogeneous composite substrate according to any one of claims 1 to 7 wherein the buried oxide layer has a thickness of 25 to 150 nm.