

CLAIMS

1. A device substrate comprising:
 - a buried layer having a higher thermal conductivity than at least SiO₂ and being an electrical insulator, the buried layer having a thickness of 50 to 10000 nm;
 - a Si device layer formed on one surface of the buried layer;
 - a substrate having a higher thermal conductivity than at least SiO₂ and being an electrical insulator, the substrate formed on an opposite surface of the buried layer;
 - an adhesive having a heat-resistant temperature of at least 150°C, the adhesive formed between the buried layer and the substrate.
2. The device substrate according to claim 1, wherein the buried layer is made of one selected from the group consisting of AlN, Si₃N₄, Al₂O₃, and diamond, and a combination thereof.
3. The device substrate according to claim 1, wherein the substrate is a ceramic or a single crystal made of one selected from the group consisting of AlN, Si₃N₄, and Al₂O₃, and a combination thereof.
4. The device substrate according to claim 1, further comprising a layer formed between the buried layer and the substrate and made of one selected from the group consisting of SiO₂, Si₃N₄, and oxynitrides (SiO_xN_y), and a combination thereof.
5. The device substrate according to claim 1, wherein the adhesive is a thermosetting epoxy modified silicone.

6. The device substrate according to claim 1, wherein a thickness of the adhesive is 0.1 to 5 μm .

7. A method for manufacturing a device substrate, comprising:

a provisional bonding step of provisionally bonding a Si device layer side of an SOI device substrate to a support substrate using a provisional bonding adhesive, the SOI device substrate including a Si base substrate, a buried layer formed on the Si base substrate, and a Si device layer formed on the buried layer, the buried layer having a thickness of 50 to 10000 nm;

a Si base substrate removing step of removing the Si base substrate of the provisionally bonded SOI device substrate by one selected from the group consisting of grinding, polishing, and etching and a combination thereof until the buried layer is exposed, so as to obtain a thinned device wafer;

a transfer bonding step of transfer-bonding the buried layer side of the thinned device wafer and a transfer substrate to each other using a transfer adhesive having a heat-resistant temperature of at least 150°C by applying heat and pressure; and

a separation step of separating the support substrate from the Si device layer.

8. The device substrate-manufacturing method according to claim 7, further comprising an adhesive removing step of removing the provisional bonding adhesive remaining on a surface of the Si device layer after the separation step.

9. The device substrate-manufacturing method according to claim 7, wherein a silicone resin having acid resistance is used as the provisional bonding adhesive.

10. The device substrate-manufacturing method according to claim 7, wherein the buried layer is made of one selected from the group consisting of AlN, Si₃N₄, Al₂O₃, and diamond, and a combination thereof.

11. The device substrate-manufacturing method according to claim 7, further comprising a step of forming a layer on a bonding surface of the buried layer to the transfer substrate and/or a bonding surface of the transfer substrate to the buried layer, the layer made of one selected from the group consisting of SiO₂, Si₃N₄, and oxynitrides (SiO_xN_y), and a combination thereof.

12. The device substrate-manufacturing method according to claim 7, wherein the transfer substrate is a ceramic or a single crystal made of one selected from the group consisting of AlN, Si₃N₄, and Al₂O₃, and a combination thereof.