

CLAIMS

1. A process for fabricating a semiconductor-on-insulator substrate for radiofrequency applications, comprising the following steps:

5 - forming a donor substrate through epitaxial growth of an undoped semiconductor layer on a p-doped semiconductor seed substrate,

 - forming an electrically insulating layer on the undoped epitaxial semiconductor layer,

 - implanting ion species through said electrically insulating layer, so as to form, in the undoped epitaxial semiconductor layer, a weakened area defining a semiconductor thin layer to be transferred,

10 - providing a semiconductor carrier substrate having an electrical resistivity greater than or equal to 500 Ω .cm,

 - bonding the donor substrate to the carrier substrate via the electrically insulating layer,

15 - detaching the donor substrate along the weakened area so as to transfer the semiconductor thin layer from the donor substrate to the carrier substrate.

2. The process according to Claim 1, wherein the undoped epitaxial semiconductor layer has a thickness between 10 and 1000 nm.

20 3. The process according to either Claim 1 or Claim 2, wherein the seed substrate is boron-doped.

4. The process according to one of Claims 1 to 3, wherein forming the electrically insulating layer comprises thermally oxidizing the material of the undoped epitaxial semiconductor layer.

5. The process according to one of Claims 1 to 4, wherein forming the donor substrate comprises forming, between the seed substrate and the undoped epitaxial semiconductor layer, an intermediate layer made of a material different from the material of the epitaxial semiconductor layer, chosen so as to allow selective etching of the undoped epitaxial layer with respect to the intermediate layer.

6. The process according to Claim 5, wherein the material of the undoped epitaxial layer is silicon and the material of the intermediate layer is silicon-germanium with a germanium content less than or equal to 30%.

7. The process according to either Claim 5 or Claim 6, comprising, after the detachment, selectively etching the remainder of the undoped epitaxial semiconductor layer with respect to the intermediate layer and then selectively etching the intermediate layer with respect to the seed substrate, and forming a new donor substrate by successively
5 forming, on said seed substrate, a new intermediate layer and a new undoped epitaxial layer.

8. The process according to one of Claims 1 to 7, wherein the electrically insulating layer has a thickness between 10 and 150 nm.

10

9. The process according to one of Claims 1 to 8, wherein the transferred semiconductor layer has a thickness between 4 and 300 nm.