CLAIMS

1. Substrate for a front side type imager, successively comprising a semiconductor support substrate (1), an electrically insulating layer (2) and a semiconductor active layer (3), characterised in that the active layer (3) is an epitaxial layer made of silicon-germanium having a thickness greater than 1 µm, the germanium content of said active layer being less than 10%.

2. Substrate according to claim 1, wherein the germanium content of the active layer (3) is less than or equal to 8%.

3. Substrate according to one of claims 1 or 2, wherein the thickness of the active layer (3) is less than a critical thickness of the silicon-germanium layer defined as being a thickness beyond which silicon-germanium relaxation takes place.

4. Substrate according to one of claims 1 to 3, wherein the thickness of the active layer is greater than 2 µm.

5. Substrate according to one of claims 1 to 4, further comprising a silicon layer (42) between the electrically insulating layer (2) and the silicon-germanium layer (42).

6. Substrate according to one of claims 1 to 5, wherein the electrically insulating layer (2) is made of silicon oxide.

7. Substrate according to one of claims 1 to 6, wherein the thickness of the electrically insulating layer (2) is comprised between 10 and 200 nm.

8. Substrate according to one of claims 1 to 5, wherein the electrically insulating layer is constituted of a stack of dielectric and/or metal layers (21, 22, 23) chosen in such a way that the reflectivity of said stack in a range of wavelengths comprised between 700 nm and 3 µm is greater than the reflectivity of a silicon oxide layer having a thickness equal to that of said stack.

9. Substrate according to claim 8, wherein the electrically insulating layer (2) successively comprises, from the support substrate (1) to the active layer (3), a silicon oxide layer (21), a titanium nitride layer (22) and a silicon oxide layer (23).

10. Front side type imager, characterised in that it comprises a substrate according to one of claims 1 to 9 and a matrix array of photodiodes in the active layer (3) of said substrate.

11. Method of manufacturing a substrate for a front side type imager, comprising the following steps:

- provision of a donor substrate (30, 40) comprising a semiconductor material suitable for the epitaxial growth of silicon-germanium;
- provision of a support substrate (1);
- bonding of the donor substrate (30, 40) on the support substrate (1), an electrically insulating layer (2) being at the bonding interface;
- thinning of the donor substrate (30, 40) so as to transfer a layer (34, 42) of the semiconductor material onto the support substrate (1);
- epitaxial growth, on the transferred layer (34, 42) of semiconductor material, of a silicon-germanium layer (35, 3) having a thickness greater than 1 µm, the germanium content of said silicon-germanium layer being less than 10%.

12. Method according to claim 11, wherein the semiconductor material of the donor substrate (30) suitable for the epitaxial growth of silicon-germanium is silicon-germanium.

13. Method according to claim 12, wherein said semiconductor material (31) is formed by epitaxy on a base substrate (32), said semiconductor material and the base substrate together forming the donor substrate (30).

14. Method according to claim 11, wherein the semiconductor material of the donor substrate (40) suitable for the epitaxial growth of silicon-germanium is silicon.

15. Method according to claim 14, wherein the thickness of the silicon layer (42) transferred onto the support substrate (1) is less than or equal to 400 nm.

16. Method according to one of claims 14 or 15, wherein, at the end of the epitaxial growth of silicon-germanium, the silicon layer (42) is conserved between the electrically insulating layer (2) and the silicon-germanium layer (3).

17. Method according to one of claims 14 or 15, further comprising a step of condensation of the silicon-germanium of the active layer (3) so as to convert the silicon layer (42) from which the epitaxial growth of silicon-germanium has been carried out into a silicon-germanium layer.

18. Method according to one of claims 11 to 17 comprising a step of formation of an embrittlement zone (33, 41) in the donor substrate (30, 40) so as to delimit a layer (34, 42) of the semiconductor material suitable for the epitaxial growth of silicon-germanium, and wherein the thinning of the donor substrate comprises a detachment along said embrittlement zone (33, 41).

19. Method according to claim 18, wherein the formation of the embrittlement zone (33, 41) comprises an implantation of atomic species in the donor substrate (30, 40).

20. Method according to one of claims 11 to 19, wherein the electrically insulating layer is formed by deposition, on the support substrate (1), of a stack of dielectric and/or metal layers (21, 22, 23) chosen in such a way that the reflectivity of said stack in a range of wavelengths comprised between 700 nm and 3 µm is greater than the reflectivity of a silicon oxide layer having a thickness equal to that of said stack.

21. Method according to claim 20 in combination with claim 19, wherein a sacrificial oxide layer (5) is formed on the donor substrate (40) before the implantation of the atomic species, the implantation of the atomic species being carried out through said sacrificial layer (5), said sacrificial oxide layer (5) being removed before bonding of the donor substrate (30, 40) on the support substrate (1).

22. Method according to one of claims 11 to 21, wherein the thickness of the active layer (3) is greater than 2 µm.

23. Method according to one of claims 11 to 22, wherein the thickness of the active layer (3) is less than a critical thickness of the silicon-germanium layer defined as being a thickness beyond which silicon-germanium relaxation takes place.

24. Method according to one of claim 11 to 23, wherein the germanium content of the active layer (3) is less than or equal to 8%.