**Patent Claims:**

1. A method for manufacturing opto-electronic modules, said method comprising the steps of

a) providing a substrate wafer on which a multitude of detecting members are arranged;

b) providing a spacer wafer;

c) providing an optics wafer, said optics wafer comprising a multitude of transparent portions transparent for light generally detectable by said detecting members and at least one blocking portion for substantially attenuating or blocking incident light generally detectable by said detecting members;

d) preparing a wafer stack in which said spacer wafer is arranged between said substrate wafer and said optics wafer such that said detecting members are arranged between said substrate wafer and said optics wafer.

2. The method according to claim 1, wherein step a) comprises the step of

a1) placing said detecting members on said substrate wafer by pick-and-place.

3. The method according to claim 1 or claim 2, comprising the step of manufacturing said spacer wafer and said at least one blocking portion as a unitary part.

4. The method according to one of claims 1 to 3, wherein each of said multitude of transparent portions comprises at least one passive optical component comprising at least one optical structure each, in particular wherein each of said multitude of transparent portions comprises at least one lens member comprising at least one lens element each.

5. The method according to claim 4, further comprising the step of

c1) manufacturing said passive optical components by means of replication.

6. The method according to one of claims 1 to 5, wherein said spacer wafer is made of a material which substantially attenuates or blocks light generally detectable by said detecting members.

7. The method according to one of claims 1 to 6, wherein a multitude of emission members for emitting light generally detectable by said detecting members is arranged on said substrate wafer such that a multitude of neighboring emission members and detecting members are present on said substrate wafer.

8. The method according to claim 7, wherein said multitude of passive optical components comprises one plurality of passive optical components associated with one of said emission members each and another plurality of passive optical components associated with one of said detecting members each.

9. The module according to claim 7 or claim 8, wherein said spacer wafer is structured and arranged such that it reduces optical cross-talk between said emission members and said detecting members.

10. The method according to one of claims 1 to 9, comprising the step of

h) obtaining said spacer wafer by means of a replication process.

11. The method according to one of claims 1 to 10, wherein said opto-electronic modules are proximity sensors.

12. The method according to one of claims 1 to 11, further comprising the step of

e) providing said substrate wafer with solder balls on that side of the substrate sensor which is opposed to that side of the substrate member on which said detecting members are arranged.

13. The method according to one of claims 1 to 12, further comprising the step of

f) separating said wafer stack into a multitude of separate modules each comprising

- a portion of said substrate wafer;
- at least one of said detecting members;
- a portion of said spacer wafer;
- at least one of said transparent portions;
- a portion of said blocking portion.

14. The method according to one of claims 1 to 13, further comprising the step of

g) providing a baffle wafer arranged next to said optics wafer on that side of said optics wafer which is opposed to that side of said optics wafer on which said spacer wafer is arranged, said baffle wafer comprising a multitude of transparent regions;

wherein step d) is replaced by the step of

d') preparing a wafer stack in which said spacer wafer is arranged between said substrate wafer and said optics wafer such that said detecting members are

arranged between said substrate wafer and said optics wafer, and wherein said optics wafer is arranged between said baffle wafer and said spacer wafer.

15. The method according to claim 14, comprising the step of manufacturing said blocking portion and said spacer wafer as a unitary part.

16. The method according to one of claims 1 to 15, wherein said substrate wafer substantially is a printed circuit board assembly.

17. An opto-electronic module comprising

— a substrate;

— an optics member arranged generally parallel to said substrate;

— a detecting member arranged between said substrate and said optics member, mounted on said substrate, for detecting light having passed through said optics member;

— a separation member arranged between said substrate and said optics member;

wherein said optics member comprises at least one transparent portion transparent for light generally detectable by said detecting member and at least one blocking portion for substantially attenuating or blocking incident light generally detectable by said detecting member.

18. The module according to claim 17, said transparent portion comprising at least one passive optical component, more particularly at least one lens member.

19. The module according to claim 18, said at least one passive optical component comprising at least one optical structure, wherein said at least one optical structure is at least one of made of a hardened hardenable material and obtained using a replication process.

20. The module according to one of claims 17 to 19, wherein said substrate, said optics member and said separating member are of generally block- or plate-like shape, at least said separating member having at least one hole.

21. The module according to one of claims 17 to 20, wherein said optics member and said separation member are combined in one member, in particular wherein said at least one blocking portion and said separation member are manufactured as a unitary part.

22. The module according to one of claims 17 to 21, wherein lateral dimensions of

— said substrate;

— said optics member;

— said separation member;

are substantially identical.

23. The module according to according to one of claims 17 to 22, further comprising an emission member for emitting light generally detectable by said detecting member.

24. The module according to claim 23, wherein at least a portion of said separation member is arranged between said emission member and said detecting member for reducing optical cross-talk between said emission member and said detecting member.

25. The module according to claim 23 or claim 24, wherein said detecting member is encircled by said separating member, and wherein said emission member is encircled by said separating member.

26. The module according to one of claims 23 to 25, wherein said optics member comprises at least a first and a second passive optical components comprising at least one optical structure each, in particular, wherein said optics member comprises at least a first and a second lens members comprising at least one lens element each.

27. The module according to one of claims 23 to 26, wherein said emission member, said optics member and said detecting member are structured and arranged such, that when light emitted from said emission member having passed said at least one transparent portion and having been reflected by a surface located outside the module and having passed said at least one transparent portion again is detected by said detecting member, an amount of the so-detected light depends on a distance of said surface to said optics member.

28. The module according to one of claims 17 to 27, wherein said separation member is made of a material which substantially attenuates or blocks light generally detectable by said detecting member.

29. The module according to one of claims 17 to 28, wherein said separation member is at least one of made of a hardened hardenable material and obtained using a replication process.

30. The module according to one of claims 17 to 29, wherein said substrate provides at least one electrical connection from said detection member across said substrate.

31. The module according to one of claims 17 to 30, wherein said substrate is a printed circuit board assembly.

32. The module according to one of claims 17 to 31, being a proximity sensor.

33. An appliance comprising a multitude of modules according to one of claims 17 to 32, the appliance comprising a substrate wafer, an optics wafer, a spacer wafer, wherein the multitude of substrates is comprised in said substrate wafer, the multitude of optics members is comprised in said optics wafer, the multitude of separation members is comprised in said spacer wafer.

34. An electronic device comprising a printed circuit board and a module according to one of claims 17 to 32 mounted on said printed circuit board.

35. The device according to claim 34, wherein the device is a hand-held communication device.

**CLAIMS:**

1. A method of manufacturing a plurality of proximity sensor modules in a wafer-level process, the method comprising:

providing a substrate wafer on which are mounted a plurality of light emitters and a plurality of light detectors;

providing a second wafer composed of a combined separation member, optics member and baffle, wherein the separation member, optics member and baffle are formed as a unitary part composed of a same material as one another, wherein the material substantially attenuates or blocks light detectable by the light detector, and

attaching the second wafer to the substrate wafer to form a wafer stack, wherein:

the separation member laterally encircles each light emitter and light detector, and part of the separation member laterally separates each light emitter from an adjacent light detector;

the optics member laterally surrounds transparent elements, a respective first transparent element being disposed over each light emitter and a respective second transparent element being disposed over each light detector;

respective first and second lenses on each first transparent element, wherein the first lens is on a baffle side of the first transparent element, and the second lens is on a separation member side of the first transparent element, the separation member side of the first transparent element being closer to the substrate than the baffle side;

respective third and fourth lenses on each second transparent element, wherein the third lens is on a baffle side of the second transparent element, and the fourth lens is on a separation member side of the second transparent element, the separation member side of the second transparent element being closer to the substrate than the baffle side; and

first parts of the separation member, optics member and baffle form a respective inner wall region for each module, wherein the inner wall region separates an area of the module into which the light emitter emits light from an area of the module from which the light detector detects light.

2. The method of claim 1 further including separating the wafer stack into a plurality of modules each of which includes a light emitter and light detector, and wherein each module has outer walls defined by second parts of the separation member, optics member and baffle, wherein a first section of the inner wall region between the first and third lenses extends to a height that is substantially equal to a height of outer walls of the module, and a second section of the inner wall region separates the second lens from the fourth lens.

3. A proximity sensor module comprising:

a substrate on which are mounted a light emitter and a light detector;

a separation member, an optics member and a baffle formed collectively as a unitary part, the separation member, optics member and baffle being composed of a same material as one another, wherein the material substantially attenuates or blocks light detectable by the light detector, the separation member being disposed over the substrate, a portion of the separation member forming outer walls of the module is attached to a same surface of the substrate on which the light emitter and light detector are mounted, the optics member being on the separation member, and the baffle being on the optics member;

the separation member laterally encircling the light emitter and light detector, part of the separation member laterally separating the light emitter from the light detector;

the optics member laterally surrounding transparent elements, a first one of the transparent elements being disposed over the light emitter and a second one of the transparent elements being disposed over the light detector;

first and second lenses on the first transparent element, wherein the first lens is on a baffle side of the first transparent element, and the second lens is on a separation member side of the first transparent element, the separation member side of the first transparent element being closer to the substrate than the baffle side;

third and fourth lenses on the second transparent element, wherein the third lens is on a baffle side of the second transparent element, and the fourth lens is on a separation

member side of the second transparent element, the separation member side of the second transparent element being closer to the substrate than the baffle side; and

wherein parts of the separation member, optics member and baffle form a wall region separating an area of the module into which the light emitter emits light from an area of the module from which the light detector detects light.

4. The proximity sensor module of claim 3 wherein a first section of the wall region between the first and third lenses extends to a height that is substantially equal to a height of outer walls of the module, and a second section of the wall region separates the second lens from the fourth lens.

5. The proximity sensor module of claim 4 wherein the separation member has a plurality of openings, wherein the light emitter is arranged in one of the openings and the light detector is arranged in another one of the openings.

6. The proximity sensor module of claim 5 wherein the separation member, the baffle and the optics member are composed of a polymer material.

7. The proximity sensor module of claim 5 wherein ~~is~~ the separation member, the baffle and the optics member are composed of an epoxy resin material.

8. The proximity sensor module of claim 5 wherein the light emitter is a light emitting diode and the light detector is a photodiode.

9. The proximity sensor module of claim 8 wherein the light emitting diode is disposed on the substrate so as to emit light in a direction generally perpendicular to the substrate.

10. The proximity sensor module of claim 5 wherein the first, second, third and fourth lenses are composed of a resin material.