Claims

1. A process for manufacturing a roll of flexible carrier for electronic components, comprising

- a step of providing and unrolling a roll of flexible carrier (10, 20),

- a step of providing at least one singulated electronic component (14) having a top face (15) and a bottom face (16) and at least two different thicknesses (E, E') measured between the top face (15) and the bottom face (16), at least one bonding region (17) being located, on the bottom face (16), level with the first (E) of these thicknesses, and at least one region of extra thickness (18) being located, on the bottom face (16), level with the second (E') of these thicknesses, the second thickness (E') being larger than the first thickness (E),

wherein

the flexible carrier (10, 20) comprises an adhesive material (12, 22) suitable for receiving and fastening the singulated electronic component (14) before this singulated electronic component (14) is added to a chip-card (100),

the process comprising

- a step of producing a multiplicity of apertures (13, 25) with a regular arrangement in an unrolled portion of the flexible carrier (10, 20),

- a step of placing each provided singulated electronic component (14) on an unrolled portion of the flexible carrier (10, 20), in an aperture (13, 25), by placing the region of extra thickness (18) in one of the apertures (13, 25), so as to form in said at least one bonding region (17) of each provided electronic component (14), at least one bonding pad inserted between the flexible carrier and each provided singulated electronic component.

2. The process as claimed in claim 1, wherein the bonding pad (17) is made from said adhesive material (12).

3. The process as claimed in claim 1, comprising a step of adding at least one electronic component (14), with a segment of adhesive material (23) on said bottom face (16), to the flexible carrier (20).

4. The process as claimed in claim 3, comprising a step of covering the flexible carrier (20) with a layer of bonding material (22) on a main face that receives at least one electronic component (14).

5. The process as claimed in claim 1, comprising a step of placing the adhesive material (12) on a base strip (11) to form the flexible carrier (10) before the step of placing the bonding region (17) of the electronic component (14) above, directly in contact with the adhesive material (12).

6. The process as claimed in claim 1, wherein the flexible carrier (10) comprises a base strip (11), and the process comprises
- a step of cutting said base strip (11) so as to leave exposed at least one region of adhesive material (12), under an electronic component (14),
- a step of cutting the adhesive material (12) in said at least one region so as to detach the electronic component (14) with a segment of adhesive material (12) located in a bonding region (17).

7. The process as claimed in claim 1, comprising a step of laminating the adhesive material (12, 22) onto a base strip (11), before a step of producing apertures (13, 25) through the flexible carrier (10) formed from the base strip (11) and from the adhesive material (12, 22).

8. The process as claimed in claim 1, wherein the adhesive material (12) is a hot-melt film.

9. The process as claimed in claim 1, wherein the adhesive material (12) is a conductive anisotropic film that is electrically conductive through its thickness.

10. The process as claimed in claim 1, wherein the flexible carrier comprises paper.

11. A process for manufacturing a chip-card module, comprising providing a roll of flexible carrier bearing electronic components, each electronic component (14) borne by this flexible carrier (10, 20) being a singulated electronic component having a top face and a bottom face and at least two different thicknesses (E, E') measured between the top face and the bottom face, at least one bonding region being located, on the bottom face, level with the first (E) of these thicknesses, and at least one region of extra thickness being located, on the bottom face, level with the second (E') of these thicknesses, the second thickness (E') being larger than the first thickness (E), each singulated electronic component having the region of extra thickness in an aperture produced in an unrolled portion of the flexible carrier, each singulated electronic component being equipped with a segment of adhesive material (12, 23) in a bonding region (17), and each singulated electronic component essentially forming a chip-card module.

12. A process for manufacturing a chip-card, comprising a step of providing a roll of flexible carrier bearing singulated electronic components, each singulated electronic component borne by this flexible carrier having a top face and a bottom face and at least two different thicknesses (E, E') measured between the top face and the bottom face, at least one bonding region being located, on the bottom face, level with the first (E) of these thicknesses, and at least one region of extra thickness being located, on the bottom face, level with the second (E') of these thicknesses, the second thickness (E') being larger than the first thickness (E), each singulated electronic component having the region of extra thickness in an aperture produced in an unrolled portion of the flexible carrier, each singulated electronic component being equipped with a segment of adhesive material in a bonding region, and each singulated electronic component essentially forming a chip-card module, the process comprising a step of picking up at least certain of the singulated electronic components (14) borne by the flexible carrier (10) and placing said at least certain of the singulated electronic components picked up from the flexible carrier in a cavity (101) in a chip-card (100).

13. The process as claimed in claim 12, comprising a step of connecting each electronic component (13) placed in a chip-card (100) to a flexible printed circuit integrated into this chip-card (100).

14. A roll of flexible carrier bearing singulated electronic components (14), comprising:

- a multiplicity of apertures (13, 25) cut, in a regular arrangement, through the thickness of the flexible carrier (10) and

- singulated electronic components (14) having a top face (15) and a bottom face (16), and at least two different thicknesses (E, E') measured between the top face (15) and the bottom face (16), at least one bonding region (17) being located, on the bottom face (16), level with the first (E) of these thicknesses (E, E'), and a region of extra thickness (18) being located, on the bottom face (16), level with the second (E') of these thicknesses (E, E'), this second thickness (E') being larger than the first thickness (E), these singulated electronic components (14) being placed, each respectively, in one aperture (13, 25), by placing the region of extra thickness (18) into an aperture (13, 25), each singulated electronic component (14) being placed on the flexible carrier (10, 20) with an adhesive material (12, 23) placed in a bonding region (17).

15. The carrier as claimed in claim 14, wherein the adhesive material (12, 23) is a hot-melt film.

16. The carrier as claimed in claim 14, wherein the adhesive material (12, 23) is a conductive anisotropic film that is electrically conductive through its thickness.

17. A chip-card module manufactured with a process for manufacturing a roll of carrier for electronic components, comprising

- a step of providing and unrolling a roll of flexible carrier,

- a step of providing at least one singulated electronic component having a top face and a bottom face and at least two different thicknesses (E, E') measured between the top face and the bottom face, at least one bonding

region being located, on the bottom face, level with the first (E) of these thicknesses, and at least one region of extra thickness being located, on the bottom face, level with the second (E') of these thicknesses, the second thickness (E') being larger than the first thickness (E),

wherein

the flexible carrier comprises an adhesive material suitable for receiving and fastening the singulated electronic component before this singulated electronic component is added to a chip-card,

the process comprising

- a step of producing a multiplicity of apertures with a regular arrangement in an unrolled portion of the flexible carrier,

- a step of placing each provided singulated electronic component on an unrolled portion of the flexible carrier, in an aperture, by placing the region of extra thickness in one of the apertures, so as to form in said at least one bonding region of each provided electronic component, at least one bonding pad inserted between the flexible carrier and each provided singulated electronic component,

the chip-card module comprising a segment of adhesive material (12, 23) in said bonding region (17).

18. A chip-card comprising at least one cavity in which a module as claimed in claim 17 is fastened, by virtue of the segment of adhesive material (12, 23) present in a bonding region (17).

19. A process as in claim 1, comprising

- a step of manufacturing said at least one electronic component on a flexible strip,

- a step of cutting out said at least one electronic component from said flexible strip so as to obtain said singulated electronic component before fastening the singulated electronic component onto said flexible carrier.