

CLAIMS

1. A probe head (20) adapted to verify the operation of a device to be tested, ~~said~~the probe head (20) comprising at least one guide (40, 50) provided with a plurality of guide holes (40h, 50h) adapted to house a plurality of contact probes (21), said probe head (20) being characterized in that said guide (40, 50) is made of a material suitable for manufacturing integrated circuits and in that said guide comprises circuit components (60, 60a, 60b) integrated therein, said guide (40, 50) being thus an electronically active element of said probe head (20).
2. The probe head (20) according to claim 1, characterized in that said material forming said guide (40, 50) is selected from silicon and glassy materials, ~~preferably silicon~~.
3. The probe head (20) according to claim 1 or 2, characterized in that at least one guide hole (40h) of said guide (40) comprises a metallization (29).
4. The probe head (20) according to claim 3, characterized in that said metallization (29) covers at least one portion (40w) of an inner surface of said guide hole (40h).
5. The probe head (20) according to claim 3 ~~or 4~~, characterized in that said guide (40, 50) comprises a pad (30) which is electrically connected to said metallization (29).
6. The probe head (20) according to claim 1 ~~any one of the preceeding claims~~, characterized in that said guide (40, 50) comprises at least one conductive track (27) which extends from at least one of said guide holes (40h, 50h) ~~and/or connects said circuit components (60, 60a, 60b) of said guide (40)~~.
7. The probe head (20) according to claim ~~any one of the preceeding claims~~, characterized in that said guide (40, 50) comprises at least one

conductive track (27) which connects said circuit components (60, 60a, 60b) of said guide (40). ~~portion (26) which includes and electrically connects the holes of at least one group (40') of said guide holes (40h, 50h) to each others and is adapted to contact a corresponding group of~~
 5 ~~said contact probes (21), said contact probes of said corresponding group being adapted to carry a same type of signal.~~

8. The probe head (20) according to claim 7~~1~~, characterized in that said guide (40, 50) comprises at least one conductive portion (26) which includes and electrically connects the holes of at least one group (40') of
 10 said guide holes (40h, 50h) to each other and is adapted to contact a corresponding group of said contact probes (21), said contact probes of said corresponding group being adapted to carry a same type of
signal~~common pad (28) which is connected to said at least one conductive portion (26).~~

9. The probe head (20) according to claim 7~~or~~8, characterized in that said guide (40, 50) comprises at least one common pad (28) which is
 15 connected to said at least one conductive portion (26)~~at least one conductive portion (26) is arranged on at least one face (Fa, Fb, Fc, Fd) of~~
 20 said guide (40, 50), wherein guide holes which are not to be short-circuited are electrically insulated from said at least one conductive portion (26) by means of non-conductive zones in said guide (40, 50).

10. The probe head (20) according to claim 7~~or~~8, characterized in that said at least one conductive portion (26) is arranged on at least one face
 25 (Fa, Fb, Fc, Fd) of said guide (40, 50), wherein guide holes which are not to be short-circuited are electrically insulated from said at least one
conductive portion (26) by means of non-conductive zones in said guide (40, 50) in the form of a plurality of conductive layers, wherein
consecutive conductive layers are separated by non-conductive layers.

11. The probe head (20) according to ~~any one of the preceding claims,~~

30 ~~20 characterized in that said guide (40) is a lower guide of said probe~~

head (20), which also includes at least one upper guide (50) parallel to said lower guide (40) and separated therefrom by an air zone (G), said lower guide (40) being more in proximity to the device to be tested during the test claim 8, characterized in that said at least one conductive portion (26) is in the form of a plurality of conductive layers, wherein consecutive conductive layers are separated by non-conductive layers.

12. The probe head (20) according to ~~any one of the preceding claims,~~
characterized in that said circuit components integrated in said guide

~~(40) comprise at least one active component (60a)~~ claim 1, characterized in that said guide (40) is a lower guide of said probe head (20), which also includes at least one upper guide (50) parallel to said lower guide (40) and separated therefrom by an air zone (G), said lower guide (40) being more in proximity to the device to be tested during the test.

13. The probe head (20) according to ~~claim 1~~ claim 12, characterized in that said circuit components integrated in said guide (40) comprise at least one active component (60a) ~~guide (40) comprises active circuits configured to perform complex operations on signals carried by said contact probes.~~

14. The probe head (20) according to claim 1, characterized in that said guide (40) comprises active circuits configured to perform complex operations on signals carried by said contact probes ~~any one of the preceding claims, characterized in that said integrated circuit components (60) are included in circuits obtained by means of the integrated circuit technology on a semiconductor substrate.~~

15. The probe head (20) according to claim 1, characterized in that said integrated circuit components (60) are included in circuits obtained by means of the integrated circuit technology on a semiconductor substrate~~A method for manufacturing a probe head (20) adapted to verify the operation of a device to be tested, comprising the step of:~~

~~— providing at least one guide (40, 50) provided with a plurality of guide holes (40h, 50h) adapted to house a plurality of contact probes (21), said method being characterized by the step of:~~

~~— integrating circuit components (60) in said guide (40, 50) so as to make said guide (40, 50) an electronically active element of said probe head (20), wherein said guide (40) is made of a material suitable for housing integrated circuits.~~

16. A method for manufacturing a probe head (20) adapted to verify the operation of a device to be tested, comprising the step of:

- providing at least one guide (40, 50) provided with a plurality of guide holes (40h, 50h) adapted to house a plurality of contact probes (21),

said method being characterized by the step of:

- integrating circuit components (60) in said guide (40, 50) so as to make said guide (40, 50) an electronically active element of said probe head (20).

wherein said guide (40) is made of a material suitable for housing integrated circuits~~The method according to claim 15, further comprising a step of forming, by means of the integrated circuits technology, at least one conductive portion (26) and/or at least one conductive track (27).~~

5 17. The method according to claim 16, further comprising a step of forming, by means of the integrated circuits technology, at least one conductive portion (26) on said guide (40).

10 18. The method according to claim 16, further comprising a step of forming, by means of the integrated circuits technology, at least one conductive portion (26) on at least one face of said guide (40).

19. The method according to claim 16, further comprising a step of forming, by means of the integrated circuits technology, at least one conductive track (27) on said guide (40).

15 20. The method according to claim 16, further comprising a step of forming, by means of the integrated circuits technology, both at least one conductive portion (26) and at least one conductive track (27) on said guide (40).