CLAIMS

1. Cantilever contact probe (31) comprising a probe body (40) inserted between a descending probe section (31b) and an ascending probe section (31c), said descending probe section (31b) extending along a predetermined longitudinal axis (HH) inclined with respect to a reference plane (π) corresponding to a plane of a wafer of devices under test (35) when said contact probe is mounted in a cantilever probe head (30), said cantilever contact probe (31) further comprising at least one end portion (31a), formed in said descending probe section (31b), bent with respect to said longitudinal axis (HH) starting from a bending point (PG1) and ending with a contact tip (36A) of said cantilever contact probe (31) adapted to abut onto a contact pad (35A) of a device under test (35) of said wafer, said body (40) comprising at least one base portion (40a) provided with an upper portion (40d) extending, starting from said base portion (40a), along a longitudinal extension axis (A) of said shaped body (40), orthogonally to said reference plane (π) and a top portion (40e), connected to said upper portion (40d) and having a greater diameter (D2) than a diameter (D1) of said upper portion (40d), said upper and top portions (40d, 40e) being shaped so as to form a structure having a T-shaped cross section orthogonally to said reference plane (π), said upper portion (40d) being the stem of said element having a T-shaped cross section and said top portion (40e) being the crosspiece of said element having a T-shaped cross section, said base portion (40a) of said shaped body (40) comprising at least one pair of arms (40b1, 40b2) extending, from opposite parts of said base portion (40a) along a transversal extension axis (BB) of said shaped body (40) orthogonal to said longitudinal extension axis (AA) and parallel to said reference plane (π) characterized in that each of said arms (40b1, 40b2) comprises a respective projection (40c1, 40c2) which extends orthogonally starting therefrom, along said longitudinal extension axis (AA) of said shaped body (40) in the direction of said top portion (40e), said shaped body (40), comprising at least said base portion (40a), said upper portion (40d) and said top portion (40e) being made as a single piece.

2. Cantilever contact probe (31) according to claim 1,

characterized in that said ascending probe section (31c) extends from said top portion (40e) of said shaped body (40) and said descending probe section (31b) extends from said base portion (40a) of said shaped body (40).

3. Cantilever contact probe (31) according to ~~one or more of the preceding claims~~claim 1, characterized in that said base portion (40a) of said shaped body (40) has a ~~substantially~~ rectangular-shaped longitudinal section and a maximum transversal dimension along said transversal extension axis (BB) which is greater than said diameters (D1, D2) of said upper and top portions (40d, 40e).

4. Cantilever contact probe (31) according to ~~one or more of the preceding claims~~claim 1, characterized in that it comprises a further bending point (PG2) defined in said ascending probe section (31c) close to said top portion (40e) of said shaped body (40), said ascending probe section (31c) being ~~substantially~~ orthogonal to said reference plane (π) and ending with a further contact end (36B) of said cantilever contact probe (31).

5. Cantilever contact probe (31) according to ~~one or more of the preceding claims~~claim 1, characterized in that said shaped body (40) comprises an opening (38).

6. Cantilever contact probe (31) according to claim 5, characterized in that said opening (38) is formed closer to one of said arms (40b1, 40b2) having an extension which is greater than the other one of said arms (40b1, 40b2).

7. Cantilever contact probe (31) according to ~~one or more of the preceding claims~~claim 1, characterized in that it further comprises at least one damping portion (50, 51) formed at said descending probe section (31b) and/or at said ascending probe section (31c).

8. Cantilever contact probe (31) according to claim 7, characterized in that said at least one damping portion (50) is formed along said descending probe section (31b), ~~preferably~~ shaped as a pantograph portion connected to said end portion (31a) and to said descending probe section (31b) at respective bending points (PG1a, PG1b) and essentially comprises four sides (50a-50d) having variable sections arranged ~~substantially~~ as a parallelepiped and defining an empty space

(50e) therewithin.

9. Cantilever contact probe (31) according to claim 7~~ or 8~~, characterized in that said at least one damping portion (51) is formed at said ascending probe section (31c) and is essentially shaped as a spring portion connected to said shaped body (40) at said further bending point (PG2) and comprises said further contact end (36B) of said cantilever contact probe (31).

10. Cantilever probe head (30) comprising a support structure (32) adapted to house a plurality of cantilever contact probes (31), protruding in a cantilever manner from said support structure (32) on a device under test (35), characterized in that each cantilever contact probe (31) is realised according to any of the preceding claims and said cantilever contact probe (31) comprises a shaped body (40) intended to insert into corresponding housing seats (41) formed in said support structure (32) and adapted to retain said cantilever contact probes (31) in said cantilever probe head (30), said support structure (32) comprising at least one first portion (32A) and one second portion (32B~~), both preferably ring shaped,~~) overlapping each other, wherein said first portion (32A) of said support structure (32) comprises:

- at least one first housing seat (41d) for the housing of said upper and top portions (40d, 40e) of said shaped body (40) of said cantilever contact probes (31), said first housing seat (41d) having a cross section equal to the union of cross sections of said upper and top portions (40d, 40e) of said shaped body (40); and

- a pair of second housing seats (41c1, 41c2) having a cross section corresponding and complementary to a cross section of said projections (40c1, 40c2) of said arms (40b1, 40b2) of said shaped body (40), said projections (40c1, 40c2) being housed in said second housing seats (41c1, 41c2) during the normal working of said cantilever probe head (30),

and wherein said second portion (32B) of said support structure (32) comprises openings (41e), placed at said first housing seat (41a), allowing the passage of said top portion (40e) of said shaped body (40).

11. Cantilever probe head (30) according to claim 10,

characterized in that said support structure (32) further comprises at least one third portion (32C) placed at at least one arm (40b1, 40b2) of said shaped body (40) of each of said cantilever contact probes (31) and provided with an indentation adapted to house said at least one arm (40b1, 40b2).

12. Cantilever probe head (30) according to claim 10~~ or 11~~, characterized by further comprising at least one support plate (37) connected to said second portion (32B) of said support structure (32) and provided with holes (37A) suitable for the passage of said ascending probe sections (31c) provided with said further contact ends (36B) of said cantilever contact probes (31).

13. Cantilever probe head (30) according to claim 12, characterized in that said support plate (37) is made of an insulation material and is integral with said second portion (32B) of said support structure (32) or with said PCB board (33).

14. Cantilever probe head (30) according to claim 12~~ or 13~~, characterized in that said second portion (32B) of said support structure (32), provided with said support plate (37) is mounted in pressing contact with said PCB board (33), said further contact ends (36B) of said cantilever contact probes (31) at said ascending probe sections (31c) abutting onto contact pads (33A) of said PCB board (33).

15. Cantilever probe head (30) according to ~~any of claims~~claim 10~~ to 14~~, characterized in by comprising a plurality of modules (60), each provided with a support structure (32) from which cantilever contact probes (31) protrude, which end with respective contact tips or ends (36A, 36B), said modules (60) having an area having a value being equal to or 50% higher~~, preferably 20% higher~~ than~~, of~~ the value of an area occupied by a device under test (35) of said wafer of device under test (35).

16. Cantilever probe head (30) according to claim 15, characterized in that said plurality of modules (60) is distributed so as to cover an area of said PCB board (33) equal to that of said wafer of devices under test (35).

17. Cantilever probe head (30) according to claim 15~~ or 16~~, characterized in that each of said modules (60) comprises at least one

contact portion (61), suitably provided with at least one hole (61A) adapted to house at least one fixing element (62).

18. Cantilever probe head (30) according to ~~one or more of claims 15 to 17~~claim 15, characterized in that each of said modules (60) further comprises alignment pins (63) having suitable shapes which are complementary to as many housings.

19. Cantilever probe head (30) according to ~~one or more of claims 15 to 18~~claim 15, characterized in that it further comprises a support structure associated with said PCB board (33) for housing said modules (60), provided with said housings for said alignment pins (63) of said modules (60).

20. Cantilever probe head (30) according to ~~one or more of the claims 10 to 19~~claim 10, characterized by comprising contact probes (31) having respective second end portions (31c) with a different size, so as to modify a distribution of said contact pads (33A) of said PCB board (33).