CLAIMS

1. A contact probe (20) having a first end portion (20A) adapted to abut onto a contact pad of a device under test and a second end portion (20B) adapted to abut onto a contact pad of a PCB board of a testing apparatus, as well as a probe body (20C) extended between said first end portion (20A) and said second end portion (20B) along a longitudinal development direction (z) and provided with at least one opening (22) extending along said longitudinal development direction (z) and defines at least one pair of arms (21a, 21b) in said probe body (20C), characterized in that each of said arms (21a, 21b) of said at least one pair of arms has a transversal section, which is perpendicular to said longitudinal development direction (z), being not constant and having different areas at different points (A, B, C) along said probe body (20C).

2. The contact probe (20) according to claim 1, characterized in that said probe body (20C) has a pre-deformed shape with a curvilinear configuration in rest conditions, when said contact probe (20) is not in pressing contact onto a contact pad of a device under test.

3. The contact probe (20) according to claim 2, characterized in that said pre-deformed shape comprises at least one bend and a curvature change point (B) and in that said arms (21a, 21b) have transversal section of maximum value at said curvature change point (B).

4. The contact probe (20) according to claim 3, characterized in that said arms (21a, 21b) have a constantly growing transversal section starting from a first end of said arms (21a, 21b) up to said curvature change point (B) and constantly decreasing starting from said curvature change point (B) up to a second end of said arms (21a, 21b).

5. The contact probe (20) according to claim 3, characterized in that said arms (21a, 21b) have a transversal section that is variable only in correspondence of a portion of said probe body (20C) between a first intermediate point (A) and a second intermediate point (C) and

comprising said curvature change point (B), said transversal section being constant from a first end of said arms (21a, 21b) up to said first intermediate point (A), constantly growing starting from said first intermediate point (A) up to said curvature change point (B), constantly decreasing starting from said curvature change point (B) up to said second intermediate point (C) and constant from said second intermediate point (C) up to a second end of said arms (21a, 21b).

6. The contact probe (20) according to claim 1, characterized by further comprising at least one bending neck (26, 26A, 26B) made at an end of said probe body (20C) by means of a portion having a reduced section, said reduced section having a value being chosen between the 30-60% with respect to a section (Sez 20C) of said probe body (20C).

7. The contact probe (20) according to claim 1, characterized by further comprising at least one stopper (27), formed by an opening (27A) made in said contact head portion (20B), said opening (27A) being drop-shaped and defining two opposite portions in said contact head portion (20B) able to get close and away if subjected to transversal compression forces, said stopper (27) being an elastic stopper.

8. The contact probe (20) according to claim 2, characterized in that said pre-deformed shape comprises at least one pair of bends, arranged with curvature opposite with respect to said longitudinal development direction (z), a first bend having a curvature change at a first point (A') and being joined to a second bend at a second point (B'), said second bend having in turn a curvature change at a third point (C').

9. The contact probe (20) according to claim 8, characterized in that said arms (21a, 21b) have a transversal section which constantly grows starting from a first end of said arms (21a, 21b) up to said first curvature change point (A') and constantly decreases starting from said first point (A') up to said second point (B'), said transversal section growing again up to said third point (C') and decreasing again up to a second end of said arms (21a, 21b).

10. The contact probe (20) according to claim 8, characterized in that said arms (21a, 21b) have a constantly growing transversal section along said probe body (20C) comprising said first bend and said second bend, said constantly growing transversal section starting from a first end of said arms (21a, 21b) along said first point (A'), said second point (B') and said third point (C') up to a second end of said arms (21a, 21b).

11. The contact probe (20) according to claim 8, characterized in that said arms (21a, 21b) have a transversal section that is variable only along a portion of said probe body (20C) between said first point (A') and said third point (C') and comprising said second point (B'), said transversal section being constant from a first end of said arms (21a, 21b) up to said first point (A'), constantly growing starting from said first point (A') up to said second point (B') and from said second point (B') up to said third point (C') and constant from said third point (C') up to a second end of said arms (21a, 21b).

12. The contact probe (20) according to claim 8, characterized by comprising a first bending neck (26A) formed at a first end of said probe body (20C) in correspondence of said contact tip portion (20A) and a second bending neck (26B) formed at a second end of said probe body (20C) at said contact head portion (20B), by means of portions having a reduced section, said reduced section having a value being chosen between the 30-60% with respect to a section of said probe body (20C).

13. The contact probe (20) according to claim 12, characterized in that said first bending neck (26A) and said second bending neck (26B) have concave portions arranged symmetrically with respect to a concavity of one of said bends adjacent thereto.

14. The contact probe (20) according to claim 12, characterized by comprising at least one strengthening portion (28), positioned at an end of said opening (22) and comprising at least one of said arms (21a, 21b) having a portion (28A) with a larger section than a portion of said arm in correspondence of said end of said opening (22).

15. The contact probe (20) according to claim 1, characterized in that it has rectangular transversal sections and in that said variable transversal sections are obtained by means of variation of a dimension of a base of said rectangular transversal sections.

16. The contact probe (20) according to claim 1, characterized by comprising a contact tip portion (20A) having a thinned configuration and comprising a base portion (23A) having a section which is equal or comparable to a section of said probe body (20C), comparable meaning that the difference between said two sections is ± 20%, and an end tip (24A) of reduced section.

17. The contact probe (20) according to claim 1, characterized by comprising a contact head portion (20B) having a thinned configuration and comprising a base portion (23B) having a section which is equal or comparable to a section of said probe body (20C), comparable meaning that the difference between said two sections is ± 20%, and an end tip (24B) of reduced section.

18. The contact probe (20) according to claim 1, characterized in that said contact head portion (20B) comprises an enlarged portion (25), having a section greater than said section of said probe body (20C) and defining an undercut wall of said contact head portion (20B).

19. The contact probe (20) according to claim 1, characterized by having an overall longitudinal extension (Ls) having a value being chosen between a value ranging between 2 mm and 5 mm in rest conditions, when said contact probe (20) is not abutting onto a contact pad of a device under test.

20. A probe head (30) for testing a functionality of a device under test comprising at least one upper guide (31) provided with upper guide holes (31A) and a lower guide (32) provided with lower guide holes (32A) for housing a plurality of contact probes characterized in that said contact probes (20) are made according to any one of the preceding

claims.