CLAIMS

1. A probe head (20) comprising a plate-shaped support (22) and a plurality of contact probes (21A, 21B, 21C) being housed in respective pluralities of guide holes (25A, 27A, 29A, 36A; 25B, 27B, 29B, 36B; 28C, 29C, 36C) being realized in said plate-shaped support (22), said plurality of contact probes (21A, 21B, 21C) sliding within said pluralities of guide holes (25A, 27A, 29A, 36A; 25B, 27B, 29B, 36B; 28C, 29C, 36C) on occasion of their movement during testing operations performed by means of said probe head (20), said plurality of contact probes (21A, 21B, 21C) comprising at least a first group of contact probes (21A, 21B) being apt to carry only one type of signal chosen between ground and power supply signals (GND, PWR), said probe head (20) comprising at least one filtering capacitor (30) and at least a first and a second conductive portion (22A, 27A; 22B, 26A) realized on said plate-shaped support (22) and including a plurality of said housing guide holes (25A, 29A; 25B, 28B) housing said contact probes (21A, 21B) of said first group, said conductive portion (22A, 27A; 22B, 26A) electrically connecting said contact probes (21A, 21B) of said first group, said probe head (20) being characterized in that said plate-shaped support (22) comprises said first conductive portion (22A) formed in correspondence with its first face (Fa) and said second conductive portion (22B) formed in correspondence with a second and opposite face (Fb) thereof, a housing seat (33) of said filtering capacitor (30) being formed in said plate-shaped support (22) so as to place in communication said first and second faces (Fa, Fb), said filtering capacitor (30) having a first capacitor plate (31) connected to said first conductive portion (22A) and a second capacitor plate (32) connected to said second conductive portion (22B), said first and second conductive portions (22A, 22B) being apt to be connected to respective distinct voltage references, chosen between a power supply reference and a ground reference (PWR, GND) and in that said plate-shaped support (22) is a lower support of a pair of supports housing said contact probes (21A, 21B, 21C), lower meaning closer to a device under test (23) integrated on a wafer, said filtering capacitor (30) being in this way positioned in proximity of contact tips of said contact probes (21A, 21B, 21C) adapted to abut onto contact pads (23A, 23B) of said device under test (23).

2. The probe head (20) according to claim 1, characterized in that said first and second conductive portions (22A, 27A; 22B, 26A) comprise orthogonal portions (22Aw, 27Aw; 22Bw, 26Aw) which extend at least partially

within said housing guide holes (25A, 29A; 25B, 28B) of said contact probes (21A, 21B) of said first group.

3. The probe head (20) according to one of the preceding claims, characterized in that it comprises distinct conductive portions including distinct pluralities of said housing guide holes (25A, 27A, 29A, 36A; 25B, 27B, 29B, 36B; 28C, 29C, 36C) and being each apt to be connected to distinct voltage references, chosen between a power supply reference and a ground reference (PWR, GND).

4. The probe head (20) according to any one of the preceding claims, characterized in that said first and second conductive portions (22A, 22B) extend also in correspondence of said housing seat (33) to realize a connection with said first capacitor plate (31) of said filtering capacitor (30).

5. The probe head (20) according to claim 1, characterized in that said first conductive portion (22A) includes at least a first guide hole (25A) of said pluralities of housing guide holes (25A, 27A, 29A, 36A; 25B, 27B, 29B, 36B; 28C, 29C, 36C) housing a first contact probe (21A) of said first group and said second conductive portion (22B) includes at least a second guide hole (25B) of said pluralities of housing guide holes (25A, 27A, 29A, 36A; 25B, 27B, 29B, 36B; 28C, 29C, 36C) housing a second contact probe (21B) of said first group, said first conductive portion (22A) being formed in such a manner as not to contact said second housing guide hole (25B) being separated from said second guide hole (25B) by a first area (Df1) and said second conductive portion (22B) being formed in such a manner as not to contact said first housing guide hole (25A) being separated from said first guide hole (25A) by a second area (Df2), said first and second area (Df1, Df2) being portions of said plate-shaped support (22) not covered by said second and first conductive portions (22B, 22A).

6. The probe head (20) according to one of the preceding claims, characterized in that said plate-shaped support (22) comprises at least one pair of guides (27, 26), being plate-shaped and parallel to each other, separated by an air gap (34), each of said guides (27, 26) being provided with a plurality of said housing guide holes (29A, 28B) of said contact probes (21A, 21B) of said first group and a corresponding plurality of passing through guide holes (29B, 28A) of said contact probes (21B, 21A), each of said guides (27, 26) having at least a conductive portion (27A, 26A) including at least a guide hole (29A, 28B) of said plurality of housing guide holes (29A; 28B) housing a

contact probe (21A, 21B) of said first group.

7. The probe head (20) according to claim 6, characterized in that said conductive portions (27A, 26A) of said guides (27, 26) are separated from said passing through guide holes (29B, 28A) of said contact probes (21B, 21A) by area (Dfa1, Dfa2, Dfb1, Dfb2) being portions of said guides (27, 26) not covered by said conductive portions (27A, 26A).

8. The probe head (20) according to claim 6 or 7, characterized in that said conductive portions (27A, 26A) are formed on corresponding faces of said guides (27, 26).

9. The probe head (20) according to one of claims 6 to 8, characterized in that a first guide (27) of said guides (27, 26) comprises a housing seat (33A; 33B) housing said filtering capacitor (30A, 30B), said conductive portion (27A) of said first guide (27) extending also in correspondence of said housing seat (33A; 33B), said filtering capacitor (30A, 30B) being inserted in said housing seat (33A; 33B) and rests on said conductive portion (26A) of a second guide (26) of said guides (27, 26).

10. The probe head (20) according to one of claims 6 to 9, characterized in that said first and second guides (27, 26) further comprise a plurality of said housing guide holes (29C, 28C) housing contact probes (21C) of a second group of contact probes apt to carry working signals, said conductive portions (27A, 26A) of said guides (27, 26) being separated from said housing guide holes (29C, 28C) of contact probes (21C) of said second group by suitable areas (Dfc1, Dfc2) being portion of said first and second guides (27, 26) not covered by said conductive portions (27A, 26A).

11. The probe head (20) according to claim 10, characterized in that said contact probes (21C) of said second group are partially coated by an insulating material in a portion in correspondence of said housing guide holes (29C, 28C).

12. The probe head (20) according to one of claims 6 to 11, characterized in that said contact probes (21A, 21B) of said first group are partially coated by an insulating material in a portion in correspondence of said passing through guide holes (29B, 28A).

13. The probe head (20) according to one of claims 6 to 12, characterized in that said plate-shaped support (22) further comprises an intermediate guide (35) inserted between said pair of guides (27, 26) occupying said air zone (34), said intermediate guide (35) being provided with a plurality

of said housing guide holes (36C) housing contact probes (21C) of a second group of contact probes apt to carry working signals and a corresponding plurality of passing through guide holes (36A, 36B) of contact probes (21A, 21B) of said first group, said intermediate guide (35) slidingly contacting only said contact probes (21C) of said second group.

14. The probe head (20) according to claim 13, characterized in that said intermediate guide (35) comprises a further housing seat (37A, 37B) housing said filtering capacitor (30A, 30B), having similar size and being positioned in correspondence of said housing seat (33A, 33B) formed in said first guide (27) of said pair of guides (27, 26).

15. The probe head (20) according to one of the preceding claims, characterized in that it comprises a plurality of filtering capacitors (30, 30A, 30B).