

CLAIMS

What is claimed is:

1. A universal probing assembly for parametric and reliability testing of devices on a semiconductor wafer, the assembly comprising:

a switchable magnetic slab;

a probe head comprising four adjusting mechanisms, including for translation along a X axis, a Y-axis, and a Z-axis, and for rotation about a Z-axis, wherein the X-axis, the Y-axis, and the Z-axis are perpendicular to one another;

a block comprising a tilt control mechanism for allowing tilting of the probe head perpendicular to a X-Y plane of the wafer, wherein the probe head is mounted to the block; and

an arm having a first end and a second end, wherein the first end is attached to the switchable magnetic slab and the second end is attached to the block, wherein the block can be attached to the arm using any one of three free side faces of the block, wherein the three free side faces is any side face of the block that is not the attachment side face on which probe head is mounted.

2. The universal probing assembly of Claim 1, further comprising a metal platen, wherein the switchable magnetic slab allows mounting of the arm, block, and probe head to the metal platen by increasing a magnetic field between the switchable magnetic slab and the metal platen.

3. The universal probing assembly of Claim 2, wherein the switchable magnetic slab allows release of the arm, block, and probe head from the metal platen by reducing the magnetic field between the switchable magnetic slab and the metal platen.

4. The universal probing assembly of Claim 1, wherein the tilt control mechanism comprises a movable part controlled by a screw to tilt the probe head.

5. The universal probing assembly of Claim 4, wherein the probe head is mounted on an attachment side face of the block.

6. The universal probing assembly of Claim 5, wherein the probe head is attached to a dove-tail receptacle on the attachment side face of the block, wherein the dove-tail receptacle can be tilted by the movable part.
7. The universal probing assembly of Claim 5, wherein the probe head is tiltable about the Y-axis.
8. The universal probing assembly of Claim 1, wherein the probe head can be mounted on a rail-based system using a locking mechanism and lever.
9. A probing assembly for parametric and reliability testing of devices on a semiconductor wafer, the assembly comprising:
 - a switchable magnetic slab;
 - a probe head comprising four adjustment mechanisms, including for translation along a X axis, a Y-axis, and a Z-axis, and for rotation about a Z-axis, wherein the X-axis, the Y-axis, and the Z-axis are perpendicular to one another;
 - a block comprising a tilt control mechanism for allowing tilting of the probe head, wherein the probe head is mounted to the block;
 - an arm having a first end and a second end, wherein the first end is attached to the switchable magnetic slab and the second end is attached to the block, wherein the block can be attached to the arm using any one of three free side faces of the block, wherein the three free side faces is any side face of the block that is not the attachment side face on which probe head is mounted; and
 - a metal platen to which the arm, block, and probe head can be mounted using a magnetic field between the switchable magnetic slab and the metal platen.
10. The universal probing assembly of Claim 9, wherein the switchable magnetic slab comprises a switch for adjusting a strength of a magnetic field between the switchable magnetic slab and the metal platen.

11. The universal probing assembly of Claim 10, wherein a stronger magnetic field mounts the magnetic slab, arm, and probe head more securely to the metal platen.
12. The probing assembly of Claim 15, wherein the four adjusting mechanisms include mechanisms for translation along a X axis, a Y-axis, and a Z-axis, and for rotation about a Z-axis, wherein the X-axis, the Y-axis, and the Z-axis are perpendicular to one another.
13. The probing assembly of Claim 12, wherein the four adjusting mechanisms are knobs that can be manually adjusted.
14. The probing assembly of Claim 13, wherein the probe head can be tilted about the Y-axis.
15. A probing assembly for parametric and reliability testing of devices on a semiconductor wafer, the assembly comprising:
 - a switchable magnetic slab;
 - a probe head comprising four adjusting mechanisms;
 - a block comprising a tilt control mechanism for allowing tilting of the probe head perpendicular to a X-Y plane of the wafer, wherein the probe head is mounted to the block; and
 - an arm that connects the switchable magnetic slab and the block.
16. The probing assembly of Claim 15, further comprising a metal platen, wherein the switchable magnetic slab controls a strength of a magnetic field between the switchable magnetic slab and the metal platen.
17. The probing assembly of Claim 15, wherein the probe head is attached to a first side face of the block and the block can be attached to the arm on any of a first, second, or third side face of the block.
18. The probing assembly of Claim 15, wherein the tilt control mechanism comprises a movable part controlled by a screw to tilt probe head.