CLAIMS

What is claimed is:

1. A probe head of a vertical probe card, comprising:

a guide plate;

a composite board, the composite board disposed under the guide plate, the composite board comprising a first board layer and a second board layer, the first board layer and the second board layer being laminated together, and at least one through hole passed through the first board layer and the second board layer, wherein the friction coefficient of the first board layer is smaller than the friction coefficient of the second board layer, and the thermal expansion coefficient of the second board layer is smaller than the thermal expansion coefficient of the first board layer; and

at least one probe pin, one end of the probe pin supported by the guide plate and another end of the probe pin penetrated all the way through the through hole of the composite board, and the outer diameter of the probe pin smaller than the diameter of the through hole of the composite board.

2. The probe head of the vertical probe card as defined in claim 1, wherein the total surface area of the first board layer is smaller than the total surface area of the second board layer.

3. The probe head of the vertical probe card as defined in claim 2, wherein a shallow groove is formed on a portion of the surface of the second board layer which is not covered by the first board layer.

4. The probe head of the vertical probe card as defined in claim 1, wherein the thickness of the first board layer is equal to or smaller than the thickness of the second board layer.

5. The probe head of the vertical probe card as defined in claim 1, wherein the first board layer is made of a plastic material, and the second board layer is made of a

ceramic material.

6. A manufacturing method of a composite board of a probe head of a vertical probe card, comprising the steps of:

providing a first board layer;

providing a second board layer, wherein the friction coefficient of the first board layer is smaller than the friction coefficient of the second board layer, and the thermal expansion coefficient of the second board layer is smaller than the thermal expansion coefficient of the first board layer;

performing a joining operation so as to laminate the first board layer and the second board layer together; and

performing a drilling operation so as to form at least one through hole which is passed all the way through the first board layer and the second board layer.

7. The manufacturing method of the composite board of the probe head of the vertical probe card as defined in claim 6, wherein the joining operation is performed by using a locking method.

8. The manufacturing method of the composite board of the probe head of the vertical probe card as defined in claim 6, wherein the joining operation is performed by using an adhering method.

9. A manufacturing method of the probe head of the vertical probe card, comprising the steps of:

providing a ceramic substrate;

coating a liquid plastic material on the ceramic substrate, wherein a plastic layer is formed after the solidification of the liquid plastic material, in which the plastic layer constitutes a first board layer, and the ceramic substrate constitutes a second board layer; and

performing a drilling operation so as to form at least one through hole which is passed all the way through the first board layer and the second board layer.

10. The manufacturing method of the composite board of the probe head of the vertical probe card as defined in claim 9, wherein the friction coefficient of the first board layer is smaller than the friction coefficient of the second board layer, and the thermal expansion coefficient of the second board layer is smaller than the thermal expansion coefficient of the first board layer.

CLAIMS

What is claimed is:

1. A probe head of a vertical probe card, comprising:

a guide plate;

a composite board, the composite board disposed under the guide plate, the composite board comprising a first board layer and a second board layer, the first board layer and the second board layer being laminated together, and at least one through hole passed through the first board layer and the second board layer, wherein the friction coefficient of the first board layer is smaller than the friction coefficient of the second board layer, and the thermal expansion coefficient of the second board layer is smaller than the thermal expansion coefficient of the first board layer; and

at least one probe pin, one end of the probe pin supported by the guide plate and another end of the probe pin penetrated all the way through the through hole of the composite board, and the outer diameter of the probe pin smaller than the diameter of the through hole of the composite board;

wherein the first board layer is made of a plastic material and the second board layer is made of a ceramic material.

2. The probe head of the vertical probe card as defined in claim 1, wherein the total surface area of the first board layer is smaller than the total surface area of the second board layer.

3. The probe head of the vertical probe card as defined in claim 2, wherein a shallow groove is formed on a portion of the surface of the second board layer which is not covered by the first board layer.

4. The probe head of the vertical probe card as defined in claim 1, wherein the thickness of the first board layer is equal to or smaller than the thickness of the second board layer.

5. The probe head of the vertical probe card as defined in claim 1, wherein the first board layer is made of a plastic material, and the second board layer is made of a ceramic material.

6. A manufacturing method of a composite board of a probe head of a vertical probe card, comprising the steps of:

providing a first board layer;

providing a second board layer, wherein the friction coefficient of the first board layer is smaller than the friction coefficient of the second board layer, and the thermal expansion coefficient of the second board layer is smaller than the thermal expansion coefficient of the first board layer;

performing a joining operation so as to laminate the first board layer and the second board layer together; and

performing a drilling operation so as to form at least one through hole which is passed all the way through the first board layer and the second board layer;

wherein the first board layer is made of a plastic material and the second board layer is made of a ceramic material.

7. The manufacturing method of the composite board of the probe head of the vertical probe card as defined in claim 6, wherein the joining operation is performed by using a locking method.

8. The manufacturing method of the composite board of the probe head of the vertical probe card as defined in claim 6, wherein the joining operation is performed by using an adhering method.

9. A probe head of a vertical probe card configured for testing an electronic device under test, comprising:

a guide plate;

a composite board, the composite board disposed under the guide plate, the

composite board comprising a first board layer and a second board layer, the first board layer and the second board layer being laminated together, and at least one through hole passed through the first board layer and the second board layer, wherein the friction coefficient of the first board layer is smaller than the friction coefficient of the second board layer, and the thermal expansion coefficient of the second board layer is smaller than the thermal expansion coefficient of the first board layer; and

at least one probe pin, one end of the probe pin supported by the guide plate and another end of the probe pin penetrated all the way through the through hole of the composite board, and the outer diameter of the probe pin smaller than the diameter of the through hole of the composite board;

wherein the first board layer is made of a plastic material, and the second board layer is made of a ceramic material, the total surface area of the first board layer is smaller than the total surface area of the second board layer, the first board layer is facing the guide plate and the second board layer is facing the electronic device under test.