

What is claimed is:

1. A multi-layer wiring board, in which more than one wiring layers are stacked on a substrate with an insulating layer
5 between them,

wherein a wire formed in the wiring layer has a double layered structure consists of a first layer and a second layer, and said first layer is made of a first conductive material and said second layer is made of a second conductive material
10 having relative magnetic permeability larger than that of the first conductive material,

thereby the characteristic impedance of said wire is adjusted to a value closer to 50 ohm than that of a wire which has the same thickness as of said wire having the double layered
15 structure, and is made of said first conductive material only,
wherein the thickness of the first layer is not less than 6 μ m, but not more than 20 μ m, and the thickness of the second layer is not less than 25%, but not more than 50% of the thickness of the first layer.

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2. A multi-layer wiring board of claim 1, wherein the first conductive material is copper or silver, and the second conductive material is nickel, cobalt, or an alloy comprising nickel and/or cobalt.

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3. A multi-layer wiring board of claim 1 or 2, wherein the width of the wire is not less than 10 μ m, but not more than 25 μ m,
~~the thickness of the first layer is not less than 6 μ m, but not more than 20 μ m, and the thickness of the second layer is not~~
30 ~~less than 5%, but not more than 50% of the thickness of the~~

~~first layer.~~

4. A multi-layer wiring board of any one of claims 1 to 3,
wherein the second layer is placed at a position further from
5 the substrate than the first layer.

5. A multi-layer wiring board of any one of claims 1 to 4,
wherein the material which forms the insulating layer is
polyimide.

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6. A multi-layer wiring board of any one of claims 1 to 5,
wherein the wire has a multi-layered structure of more than
two layered comprising at least one layer made of a third
conductive material having a relative magnetic permeability
15 larger than that of the first conductive material as a third
layer in addition to the double layered structure, thereby the
characteristic impedance of the wire is adjusted to a value
closer to 50 ohm than that of a wire having the same thickness
as the wire of the multi-layered structure and is made of the
20 first conductive material only.

7. A multi-layer wiring board of claim 6, wherein the third
conductive material is nickel, cobalt, or an alloy comprising
nickel and/or cobalt.

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8. A process for manufacturing a multi-layer wiring board
of any one of claims 1 to 5, in which more than one wiring layers
are stacked on a substrate with an insulating layer between
them, comprising the following steps in a process for forming
30 a wire in the wiring layer;

a step of forming a first layer using a first conductive material, and

a step of forming a second layer, which stacks together with the first layer, using a second conductive material having
5 a relative magnetic permeability larger than that of the first conductive material, thereby adjusting the characteristic impedance of the wire to a value closer to 50 ohm than the characteristic impedance of a wire having the thickness of the sum of the thicknesses of the first and the second layers, and
10 is made of said first conductive material only.

9. A process for manufacturing a multi-layer wiring board of claims 6 or 7, in which more than one wiring layers are stacked on a substrate with an insulating layer between them,
15 comprising the following steps in a process for forming a wire in the wiring layer;

a step of forming a first layer using a first conductive material, and

a step of forming a second layer and at least one third
20 layer, which stack together with the first layer, using a second conductive material and a third conductive material, respectively, both having a relative magnetic permeability larger than that of the first conductive material, thereby adjusting the characteristic impedance of the wire to a value
25 closer to 50 ohm than the characteristic impedance of a wire having the thickness of the sum of the thicknesses of the first, the second and the third layers, and is made of said first conductive material only.

30 10. A probe card, which equips with a multi-layer wiring board

of any one of claims 1 to 7.