CLAIMS

1. A manufacturing method for a semiconductor device having a dolmen structure, the semiconductor device comprising: a substrate; a first chip disposed on the substrate; a plurality of support pieces disposed around the first chip on the substrate; and a second chip disposed to be supported by the plurality of support pieces and to cover the first chip, the method comprising processes of:

(A) preparing a laminate film comprising a base material film, a pressure-sensitive adhesive layer and a support piece formation film in order;

(B) forming the support pieces on a surface of the pressure-sensitive adhesive layer by singulating the support piece formation film;

(C) picking up a said support piece from the pressure-sensitive adhesive layer;

(D) disposing the first chip on a substrate;

(E) disposing the plurality of support pieces around the first chip or around a region in which the first chip is to be disposed on the substrate;

(F) preparing an adhesive piece-attached chip comprising the second chip and a bonding adhesive piece provided on one surface of the second chip; and

(G) constructing a dolmen structure by disposing the adhesive piece-attached chip on surfaces of the plurality of support pieces,

wherein the support piece formation film has a multi-layer structure comprising at least a metal layer and a thermosetting resin layer,

wherein the thermosetting resin layer is in contact with the pressure-sensitive adhesive layer,

wherein the support piece comprises a metal piece which is obtained by singulating the metal layer and a bonding adhesive piece obtained by singulating the thermosetting layer, and

wherein the melt viscosity at 120°C of the thermosetting resin layer and bonding adhesive piece is 4300 to 50000 Pa.s..

2. The manufacturing method for a semiconductor device according to claim 1, wherein a process of irradiating the pressure-sensitive adhesive layer with an ultraviolet ray is not provided between the process (B) and the process (C).

3. The manufacturing method for a semiconductor device according to claim 1 or 2,

Wherein the method further comprises a process of heating the support piece formation film or the support piece before the process (G).

4. A support piece formation laminate film used in a manufacturing process of a semiconductor device having a dolmen structure, the semiconductor device comprising: a substrate; a first chip disposed on the substrate; a plurality of support pieces disposed around the first chip on the substrate; and a second chip disposed to be supported by the plurality of support pieces and to cover the first chip, the film comprising, in order:

a base material film;

a pressure-sensitive adhesive layer; and

a support piece formation film,

wherein the support piece formation film has a multi-layer structure comprising at least a metal layer and a thermosetting resin layer,

wherein the thermosetting resin layer is in contact with the pressure-sensitive adhesive layer,

wherein the support piece comprises a metal piece which is obtained by singulating the metal layer and a bonding adhesive piece obtained by singulating the thermosetting layer, and

wherein the melt viscosity at 120°C of the thermosetting resin layer and bonding adhesive piece is 4300 to 50000 Pa.s..

5. The support piece formation laminate film according to claim 4, wherein the metal layer is a copper layer or an aluminum layer.

6. The support piece formation laminate film according to claim 4 or 5, wherein a thickness of the support piece formation film is 5 to 180 μm.

7. The support piece formation laminate film according to any one of claims 4 to 6, wherein the pressure-sensitive adhesive layer does not contain a resin having a photoreactive carbon-carbon double bond.

8. The support piece formation laminate film according to claim 4, wherein the thermosetting resin layer contains an epoxy resin.

9. The support piece formation laminate film according to claim 8, wherein the thermosetting resin layer contains an elastomer.

10. A manufacturing method for a support piece formation laminate film used in a manufacturing process of a semiconductor device having a dolmen structure, the semiconductor device comprising: a substrate; a first chip disposed on the substrate; a plurality of support pieces disposed around the first chip on the substrate; and a second chip disposed to be supported by the plurality of support pieces and to cover the first chip, the method comprising processes of:

preparing a laminate film comprising a base material film, a pressure-sensitive adhesive layer and a thermosetting resin layer in order; and

forming a metal layer on a surface of the thermosetting resin layer;

wherein the support piece formation film has a multi-layer structure comprising at least a metal layer and a thermosetting resin layer,

wherein the thermosetting resin layer is in contact with the pressure-sensitive adhesive layer,

wherein the support piece comprises a metal piece which is obtained by singulating the metal layer and a bonding adhesive piece obtained by singulating the thermosetting layer, and

wherein the melt viscosity at 120°C of the thermosetting resin layer and bonding adhesive piece is 4300 to 50000 Pa.s..