

WHAT IS CLAIMED IS:

1. A method for producing a bump-formed plate-like member used for producing an electronic component obtained by encapsulating at least one chip in a resin, the bump-formed plate-like member being provided with at least one bump on one side, the method comprising:

molding the plate-like member and the at least one bump at a same time by molding using a molding die, wherein

the at least one bump is at least one electrode of the electronic component,

the molding is performed by electroforming,

the molding die is a molding die produced by molding using a master die,

the at least one bump has a through hole penetrating in a direction parallel with the plane direction of the plate-like member, and

the at least one bump having a through hole has a projection projecting at the end opposite to an end formed in the plate-like member in a direction perpendicular to a plate surface of the plate-like member.

2. A method for producing a bump-formed plate-like member used for producing an electronic component obtained by encapsulating at least one chip in a resin, the bump-formed plate-like member being provided with at least one bump on one side, the method comprising:

molding the plate-like member and the at least one bump at a same time by molding using a molding die, wherein

the at least one bump is at least one electrode of the electronic component,

the molding is performed by electroforming,

the molding die is a molding die produced by molding using a master die,

the at least one bump may be a plate-like bump,

the plate-like bump has a through hole and a projection,

the through hole penetrates the plate-like bump in a direction parallel with a plate surface of the plate-like member, and
the projection projects at the end opposite to an end formed in the plate-like member in a direction perpendicular to the plate surface of the plate-like member.

3. The method according to claims 1 or 2, wherein
the at least one bump includes a deformable portion.
4. The method according to any one of claims 1 to 3, wherein
the molding die is divided into plural pieces and the molding is performed in a state where the divided pieces are assembled as a molding die.
5. The method according to claim 4, wherein
the molding die is divided into plural pieces substantially in parallel with a plane direction of the plate-like member.
6. The method according to claim 4 or 5, wherein
the molding die is a resin die.
7. The method according to any one of claims 1 to 6, wherein
the molding using the molding die is performed using a metal.
8. The method according to any one of claims 1 to 6, wherein
the molding using the molding die is performed using a conductive resin.
9. The method according to claim 8, wherein
the conductive resin is a mixture of a resin and a conductive particle.

10. The method according to any one of claims 1 to 6, wherein
the molding using the molding die is performed using a resin, and the method further comprises:
applying a conductive film to a surface of the at least one bump and a bump-formed surface of the bump-formed plate-like member.
11. The method according to any one of claims 1 to 10, wherein
the molding die has a die surface corresponding to a shape of the bump-formed surface of the bump-formed plate-like member and at least one hole corresponding to a shape of the at least one bump on the die surface, and
the molding is performed by bringing a material for forming the bump-formed plate-like member into contact with the die surface and an inner surface of the at least one hole.
12. The method according to any one of claims 1 to 10, wherein
the molding die has a die surface corresponding to a shape of the bump-formed surface of the bump-formed plate-like member and at least one projection corresponding to a shape of the at least one bump on the die surface, and
the molding is performed by bringing a material for forming the bump-formed plate-like member into contact with the die surface and a surface of the at least one projection.
13. The method according to any one of claims 1 to 12, wherein
the at least one bump has a tapered shape formed to be thinner in diameter toward its end.
14. A bump-formed plate-like member produced by the method according to any one of claims 1 to 13.

15. The bump-formed plate-like member according to claim 14, wherein the at least one bump includes a deformable portion.
16. The bump-formed plate-like member according to claim 14, wherein the at least one bump is a zigzag bump, and in the zigzag bump, the deformable portion is configured to be shrunk in a direction perpendicular to the plane direction of the plate-like member by zigzag bending of at least the deformable portion as viewed in a direction parallel with the plane direction of the plate-like member.
17. The bump-formed plate-like member according to any one of claims 14 to 16 wherein the at least one bump has a through hole penetrating in a direction parallel with the plane direction of the plate-like member, the at least one bump having a through hole has a projection projecting at the end opposite to an end formed in the plate-like member in a direction perpendicular to a plate surface of the plate-like member, and the deformable portion surrounds the through hole.
18. The bump-formed plate-like member according to any one of claims 14 to 17, wherein the at least one bump is a columnar bump.
19. The bump-formed plate-like member according to any one of claims 14 to 18, wherein the at least one bump may be a plate-like bump.

20. The bump-formed plate-like member according to claim 19, wherein
the plate-like bump has a through hole and a projection,
the through hole penetrates the plate-like bump in a direction parallel with a
plate surface of the plate-like member, and
the projection projects at the end opposite to an end formed in the plate-like
member in a direction perpendicular to the plate surface of the plate-like member.
21. The bump-formed plate-like member according to claim 20, wherein
the deformable portion surrounds the through hole of the plate-like bump.
22. The bump-formed plate-like member according to any one of claims 14 to 21,
wherein
the plate-like member is a heat radiation plate or a shield plate.
23. The bump-formed plate-like member according to any one of claims 14 to 22,
wherein
the plate-like member includes a resin containing portion.
24. The bump-formed plate-like member according to claim 23, wherein
the plate-like member has a protuberance at a peripheral edge on a bump-formed
surface side of the plate-like member to form the resin containing portion in a central
portion of the plate-like member.