CLAIMS

1. A flip chip bonder comprising:

a flip mechanism configured to flip a chip;

a bonding tool configured to receive the chip flipped by the flip mechanism from the flip mechanism and to bond the received chip to a substrate; and

a cooling mechanism configured to cool the flip mechanism, wherein the flip mechanism includes a holding member for holding the flipped chip, and the cooling mechanism cools the holding member down to a predetermined temperature before the bonding tool receives the chip.

~~2. The flip chip bonder according to claim 1, wherein~~

~~the flip mechanism includes a holding member for holding the flipped chip, and~~

~~the cooling mechanism cools the holding member down to a predetermined temperature before the bonding tool receives the chip.~~

~~3~~2. The flip chip bonder according to claim 1~~2~~, wherein

a heat capacity of the holding member is larger than a heat capacity of the bonding tool.

~~4~~3. The flip chip bonder according to claim 1~~2~~, wherein

the holding member is a pickup flipping collet configured to pass the chip to the bonding tool in a state in which the chip is suctioned and flipped.

45. The flip chip bonder according to claim 23, wherein

the holding member is a pickup flipping collet configured to pass the chip to the bonding tool in a state in which the chip is suctioned and flipped.

56. The flip chip bonder according to claim 12, wherein

the holding member is a transfer stage configured to transfer the chip in a state in which the chip is flipped, and to pass the chip to the bonding tool in the flipped state.

67. The flip chip bonder according to claim 23, wherein

the holding member is a transfer stage configured to transfer the chip in a state in which the chip is flipped, and to pass the chip to the bonding tool in the flipped state.

78. The flip chip bonder according to claim 12, wherein

the cooling mechanism cools one of an inner surface and an outer surface of the holding member.

89. The flip chip bonder according to claim 12, wherein

the cooling mechanism is provided with:

a base body; and

a cooling member including: a ground plate having a ground surface with which a surface of the holding member is brought into contact; and a radiating member attached to the ground plate, and

the cooling member is supported on the base body by support mechanism that makes an orientation of the ground surface variable, so that the orientation of the ground surface aligns with an orientation of the surface of the holding member.

9~~10~~. The flip chip bonder according to claim 8~~9~~, wherein

a heat capacity of the cooling member is larger than a heat capacity of the holding member.

10~~1~~. The flip chip bonder according to claim 8~~9~~, wherein

the radiating member is attached to a surface of the ground plate on a side opposite of the ground surface.

11~~2~~. The flip chip bonder according to claim 8~~9~~, wherein

the radiating member is configured as radiator fins,

a cooling fan configured to cool the radiator fins is provided.

12~~3~~. The flip chip bonder according to claim 8~~9~~, wherein

the support mechanism supports the ground plate on the base body rotatably about two axes including: a first axis along the ground surface; and a second axis along the ground surface and perpendicular to the first axis.

13~~4~~. The flip chip bonder according to claim 8~~9~~, further comprising:

a cooling nozzle provided for the base body, and configured to blow cooling air to the holding member having the surface in contact with the ground surface.

14~~5~~. The flip chip bonder according to claim 8~~9~~, wherein

heat transfer from the holding member to the ground plate occurs when the ground surface of the ground plate is brought into contact with the surface of the holding member.

15~~6~~. A flip chip bonding method comprising:

a step of preparing a flip chip bonder including: a flip mechanism configured to flip a chip; a bonding tool configured to receive the chip flipped by the flip mechanism from the flip mechanism and to bond the received chip to a substrate; and a cooling mechanism configured to cool the flip mechanism; and

a cooling step of cooling ~~the~~a holding member down to a predetermined temperature by the cooling mechanism before the bonding tool receives the chip.