TITLE OF THE INVENTION: LASER ASSISTED BONDING DEVICE AND METHOD FOR BONDING A SEMICONDUCTOR DIE ONTO A SUBSTRATE

ABSTRACT

A laser assisted bonding device and a method for bonding a semiconductor die onto a substrate are provided. The laser assisted bonding device comprises: a compression bonding mechanism configured for picking up a semiconductor die and pressing the semiconductor die against a substrate, wherein the compression bonding mechanism comprises: a compression base comprising a vacuum passage extending through the compression base and fluidly connected with a vacuum source; and a compression head attached to the compression base, wherein the compression head comprises a plurality of blocks distributed across the compression head and being in contact with the semiconductor die when the semiconductor die is picked up or pressed against the substrate by the compression bonding mechanism, and a plurality of grooves separating the plurality of blocks from each other and being fluidly connected with the vacuum passage to form vacuum in the plurality of grooves, and wherein a size of a block of the plurality of blocks decreases with a distance of the block to the vacuum passage; and a laser source configured for emitting a laser beam to heat solder bumps between the semiconductor die and the substrate.

[Fig. 1B]