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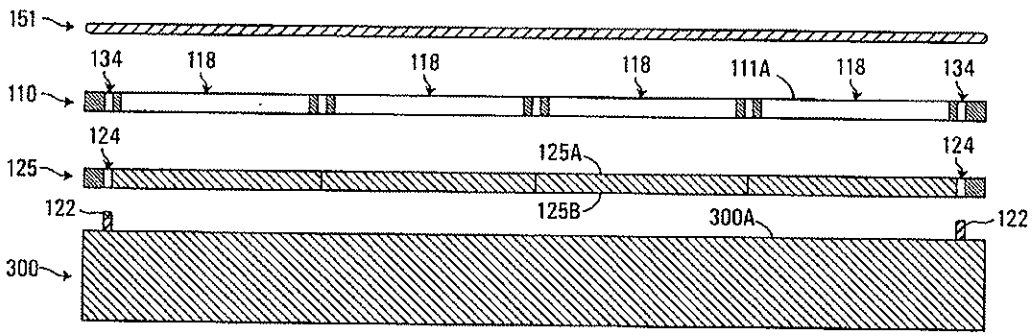
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(54) Title: METHOD AND APPARATUS FOR MAKING SEMICONDUCTOR PACKAGES



(57) Abstract: A method of packaging a plurality of semiconductor chips comprises: providing a substrate panel having a first coefficient of thermal expansion (CTE); providing a carrier having a second CTE that is less than the first CTE; heating the substrate panel and the carrier to first and second elevated temperatures respectively; mounting the substrate panel at about the first elevated temperature to the carrier, the carrier being at said second elevated temperature, to provide a connection between the carrier and the substrate panel; and cooling the carrier and the substrate panel from the first and second elevated temperatures thereby putting the substrate panel into tension in at least one direction. A stiffener panel may be affixed to the substrate panel and heated to an elevated temperature and while the substrate panel is heated to an elevated temperature. A plurality of dies may be mounted and electrically connected to the substrate panel. Under-filling of the plurality of dies may occur with the stiffener panel affixed to the substrate panel.

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