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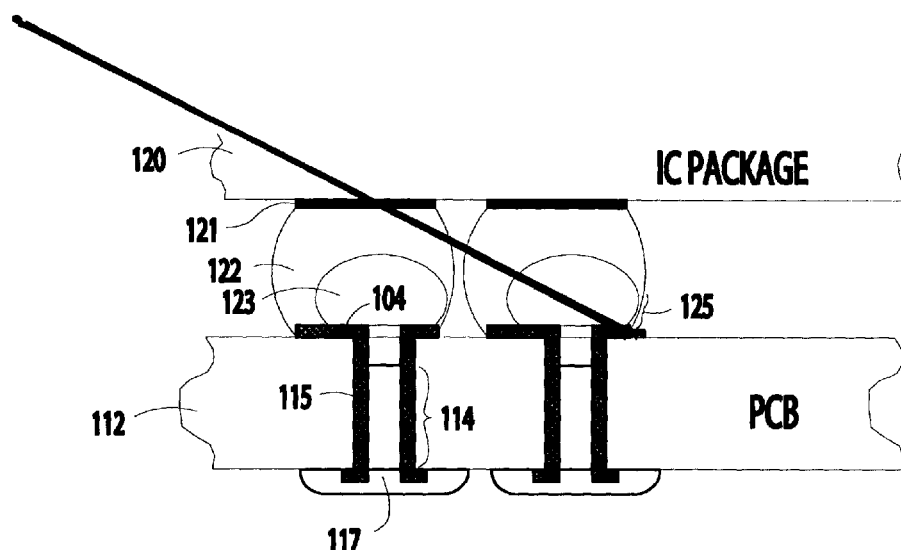
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(54) Title: **VIA-IN-PAD WITH OFF-CENTER GEOMETRY AND METHODS OF MANUFACTURE**



(57) Abstract: The electrical contacts (122) of an integrated circuit (120) are coupled to printed circuit board (PCB) bonding pads (104) that include vias (115). A method for fabricating an electronic assembly utilizes at least one operation in which a thermally expansive substance, such as a volatile organic compound (VOC), is applied to the PCB. Some of the VOC (114) goes into the via channels (115). The electrical contacts (122) of a surface mount technology component such as a ball grid array (BGA) solder ball component (120) are affixed to the bonding pads (104) using a reflow soldering technique. According to one embodiment, the vias (115) are formed off-center, so as to inhibit bridging between adjacent solder balls (122) during a solder reflow operation by minimizing the effect of solder ball ballooning (123) resulting from outgassing of the VOC from the via channels (115). A substrate and an electronic system are also described.



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