An Accommodative Approach Designed for TCP Gold-to-Gold Inner Lead Bonding

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Abstract

This research proposes an accommodative approach to resolve three major failure modes of bond pad crack, passivation crack and lead lifting in the gold-to-gold homogeneous bonding. The scenario is to increase the recipe of stage temperature to control the gold bump hardness first, and then compensate the chip warpage curvature by reducing the bonding head temperature from its operating condition. In which, the bonding force was determined from a mathematical formula. Two gold-to-gold TCP devices were adopted to conduct the engineering studies. The obtained results show that the present failure modes were eliminated to demonstrate the feasibility of proposed approach.

Keyword：gold-to-gold, homogeneous bonding, TCP