

Pd 被覆 Cu ワイヤを用いたワイヤボンディング

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Wire Bonding Using Pd Plated Cu Wire

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Abstract

The distribution of elements at the bonding interface in Pd-plated Cu bonding wire and changes in the surface condition of the wire during long-term storage were investigated, and package reliability was evaluated, using an actual device. In the ball at the tip of the wire and in the first bonding portion after wire bonding, segregation of Pd was observed in the near surface region at the rate of 20~30 at% in the state of the PdCu alloy. Pd density was highest at the surface, and the PdCu alloy layer was thicker than the initial thickness of the Pd. In the bonding process, when both the first and second sides contacted the groundwork, the Pd plating moved to the surrounding area. The Cu core was thus connected directly to the groundwork, and the contribution of Pd to the bonding was found to be small. Keeping the wire in an air atmosphere for six months had little influence on its surface state. It is thought that the bonding wire used in this study could potentially solve the oxidation problems associated with conventional Cu wire. The reliability of a TSOP (thin small outline package) that was assembled using an actual semiconductor device and Pd-coated Cu wire was evaluated, and its ability to meet all required standards was confirmed.

Key Words: Copper, Palladium, Wire Bonding, Surface, Interface