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SnPbめっきと鉛フリーはんだとの低融点反応層の再溶解温度測定

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Measurement of Re-Melting Temperature of Low Melting Temperature Reaction Layer between SnPb Plating and Lead-Free Solder

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Abstract

LSI suppliers have been making strong efforts to introduce LSI packages with lead free plating terminals. But, gull wing lead LSI packages still use Sn–Pb plating. Many papers report that the combination of Sn–Ag–Cu solder paste and Sn-Pb plating develops a low temperature layer on PWB copper pads and causes pad peel-off in the wave soldering process. This failure appears conspicuously in the case of low temperature solder alloys containing Bi such as Sn–Zn–Bi and Sn–Ag–In–Bi. This paper examines the composition of the low temperature layer and the peel-off limit temperature using an EPMA (Electron Probe Micro Analyzer), simulation software for the phase diagram, and an actual tensile test. As a result, the required control temperature for wave and selective soldering process is clarified.

Key Words: *Pb-Free Solder, Sn–Ag–Cu, Sn–Zn–Bi, In Addition, Phase Diagram, Crack, Low Temperature Layer, Sn–Pb Plating*