IN FOCUS

SMIC's Low-Ag Solder Gets Recognition for Quality, Cost

Senju Metal Industry Co., Ltd. received the Silver Award for Technology Development Contribution at the Panasonic Excellent Partners Meeting held in Osaka, Japan in November 2011.

Panasonic Corp. conducted the meeting by inviting Excellent Partners selected from about 18,000 of the company's suppliers around the world. This year marked the fourth edition of the gathering.

Panasonic honored companies that have contributed to five activities being conducted jointly with its suppliers. These activities include ECO Value Creation (VC), technological development, quality, supply chain management (SCM), and cost reduction. Senju Metal Industry's M40 low-silver (Ag) solder paste was selected for the silver award for its contribution to better quality and lower cost.

The M40 is an alloy of Sn-1.0Ag-0.7Cu-1.6Bi-0.2In and secures workability and wettability equivalent to those of the M705 (Sn-3.0Ag-0.5Cu) despite its low Ag content.

The M40 has overcome the deterioration of heat cycle characteristics, a weak point of low-Ag solders. Furthermore, it also suppresses tombstoning (standing of chips) using its twin-peak melting behavior.

The Silver Award for Technology Development Contribution received from Panasonic Corp.

The development team of the M40 low-Ag solder paste.

Low-Ag Solder Pastes Adoption

Panasonic started using low-Ag solder pastes at its manufacturing plants of flat panel display TV outside of Japan in 2011, following the use of a low-Ag solder paste with Ag content of 1 percent for the packaging of reflow printed circuit boards for LCD TVs in Japan at the end of 2010. In the future, the company plans to use low-Ag solder pastes at all its plants in Japan and abroad.

In adopting low-Ag solder pastes, Panasonic has chosen Senju Metal Industry's low-Ag solders that enable the use of low-Ag solders using existing soldering equipment and conditions, while dealing with issues of low-Ag solders. Senju Metal Industry has compensated the rise of melting temperature and the deterioration of wettability, resulting from the reduction of Ag content, by adding minute amounts of bismuth (Bi) and indium (In) on top of tin (Sn), Ag, copper (Cu) as main elements of solder alloys. With this, the company has achieved improved connection reliability and lower melting point.

Satisfy Cost, Quality, Environmental Requirements

Kiichi Nakamura, Manager, Soldering Technology Department, Senju Metal Industry, says, "Tin-silver-copper-based solders have taken root for lead-free packaging. However, moves to introduce low-Ag solders have been gaining momentum due to the hikes of Sn and Ag prices worldwide. Responding to these market needs, our company has developed and delivered a low-Ag solder bar with 0.3 percent Ag for use in flow packaging. The number of equipment that adopts the low-Ag solder has been increasing as it can be used simply by changing nozzles. With solder pastes for reflow packaging, we have also developed and begun supplying a solder paste with 1 percent Ag, which can use soldering equipment and conditions for the solder paste with 3 percent Ag as they are by using our company's original low-Ag alloy. As manufacturers can introduce the solder paste with 1 percent Ag with no burden on manufacturing, we have proposed it to customers of diverse electronic products from flat-panel TVs to automotive devices and have received high acclaim."

Senju Metal Industry has combined a general-purpose flux and a halogen-free flux with the solder paste with 1 percent Ag, which features excellent balance among melting point, reliability and cost performance, and a low-Ag alloy solder paste with 0.3 percent Ag, which delivers even better cost performance. They were commercialized as the low-Ag series. Senju Metal Industry thus meets the market needs for low-Ag solders that satisfy low cost, high reliability, and high workability.

Senju Metal Industry also received the Supplier Continuous Quality Improvement (SCQI) award for FY2010 from Intel Corp. in April 2011. ❑

Copyright©2012 Dempa Publications, Inc.