深圳市卓茂科技有限公司
Seamark ZM Technology Group (H.K.) Company Limited

Address: 10 Building, Huaide Cuihai Industrial Park, Fuyong Street, Bao'an, Shenzhen, China
Tel: +8618779975930 Fax: 86-755-29929953 E-mail: Sales25@zhuomao.com.cn

Written by Joy Rong
More details: www.seamarkxray.com

SMT BGA voids Formation and prevention

News: The 2nd China Manufacturing Technology-Automation Exhibition (CMM) & the 1st China Electronics Manufacturing Resource Exhibition (CEM) was held at the Dongguan International Convention and Exhibition, such as B&P, Anda, Huancheng, Deshen Huawei, OPPO, VIVO, Xiaomi, ZTE, Foxconn, Flextronics, Lenovo and so on, More than 500 electronic manufacturing companies participated in the exhibition. In the annual feast of the field, the realization of mobile phone production automation can reduce 60% of employees?

BGA voids cause current-intensive effects and reduce the mechanical strength of the solder joint. Therefore, from the perspective of reliability, the cavity should be reduced. So how can you reduce BGA voids?

There are many reasons for the formation of BGA voids, such as the crystal structure of the solder joint alloy, the design of the PCB, the deposition amount of the solder paste, the reflow soldering process used, and the voids in the soldering process.

Next, we will explain the formation and prevention of BGA solder joint voids from the layer of solder paste to reduce the number of BGA solder joint void formation.

1. Furnace temperature curve is improperly set

① In the temperature rising section, the gradient is set too high, causing the rapidly escaping gas to detach the BGA from the pad;

② The duration of the heating section is not long enough. When the temperature rises, the gas that should be volatilized has not completely escaped. This part of the gas continues to escape during the reflow phase, affecting the fluxing system to play a role in the reflow phase.

2. The solder paste solvent is not properly matched

① During the heating phase, the rapidly escaping gas propels up the BGA, causing misalignment and barriers;

② During the reflow phase, a considerable amount of gas still escapes from the solder paste system, but is limited by the narrow space between the BGA and the pad. These volatile gases cannot smoothly escape through this space, causing them to be squeezed. Molten solder joints.

3. Insufficient ability of solder paste to wet the pad

4. The surface tension of the solder paste system is too high during the reflow phase

5. The solder paste system has a high non-volatile content

6. Carrier rosin quality

7. The amount of rosin used

Another reason for the BGA cavity is the back-wetting phenomenon during the welding process. The formation of this phenomenon is related to the duration of action of the active material in the solder paste system and the duration of action. During the BGA reflow soldering process, BGA pads are more prone to this undesirable phenomenon than SMT solder paste soldering.

After realizing these influencing factors, the corresponding testing measures were added in the research and development. For example, we introduced a thermogravimetric analyzer to conduct thermal analysis on the materials to be used and the solder paste produced, to visually understand these thermal characteristics, and to test Differences between design assumptions and actual performance, measures are taken to overcome them to ultimately meet the process requirements; and surface tension measurements are performed. The appropriate surface tension range is finally determined by measuring the surface tension of the solder paste system and its affected objects at different temperatures.

Family of Industrial X-ray inspection machine & BGA rework station

Last Article: SMT BGA solder ball inspection method

Next Article: Detecting advantages of AOI and X-ray Inspection Equipment

Maybe you still are interested in: Importance of X-ray inspection technology in the SMT FAI/ First Article Inspection

Highest Quality levels Tool X-ray for industries-SMT/batteries/ceramic/Electronic /semiconductor;

The difference between the detection equipment AOI & X-RAY