

Analysis of Plated-Through Hole Reliability of Printed Wiring Boards

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1. Introduction

There was a standard that via holes*1 of printed wiring boards (hereafter called "boards") must be soldered. However, soldering these holes is time-consuming, and for boards on which surface mounted packages are soldered by the reflow process, it is practically impossible to solder the holes.

We tested the plated-through hole reliabilities of boards having soldered via holes and boards having unsoldered via holes, and modified the standard of soldering via holes based on the test results.

This paper explains various standards relating to the plated-through hole reliability test, describes the kinds of test boards used and how the test was conducted. The results of the reliability test and conclusions of the study are then discussed.

*1 : Via hole : A plated-through hole used to connect different layers without inserting components.

2. Related Standards

3. Test Boards

4. Plated-Through Hole Reliability Test and Evaluation Criteria

4.1 Mechanical Vibration Test

4.2 Thermal Shock (Low and High Temperature) Test

4.3 Evaluation Criterion

5. Results

6. Discussion

6.1 Questionnaire to Board Manufacturers

6.2 Inspection of Via hole Soldering

7. Conclusion

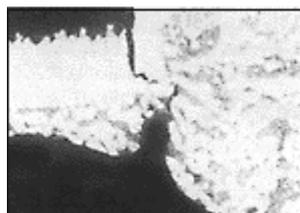
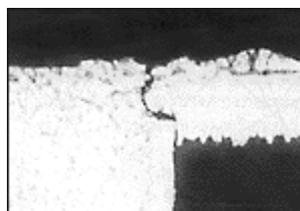


Fig. 3 Example of disconnection of the plated-through hole (Picture of cross sectional observation)