

Study on Fabrication of Micro Connector Using UV-LIGA Process

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This thesis concerns the research development to aim at designing, the test fabrication and the evaluation of a micro connector with the narrowest pitches (80 μm) in the world used for high-density packaging. The press fabrication or the injection molding has been used as the current production methods of the connectors. These methods however face the limitation that the minimum pitches are larger than 300 μm . This research has described that I have succeeded in the fabrication and the quality evaluation of the micro connector that has 100 pins with 80 μm of the minimum pitches by selecting various materials used for the substrate and the fabrication process, and by optimizing the fabrication and processing condition. And also the definite problems for the practical application have been made clear from the evaluation test result.

This thesis consists of 8 Chapters as follows; (1) the recent market trend that makes the pitches of the connector narrower and the employment of UV-LIGA process that is promising technology for the fabrication of the micro structure which is corresponding to the current technology, (2) the standard process of UV-LIGA and its characteristic, (3) the definition of the specificity of the micro connector, the contact point design to achieve the reliable contact and to be suitable for UV-LIGA process, (4) the selection of materials and the design of the fabrication process employing the combination use of thick resist layer and UV-LIGA to get the micro structure with high aspect ratio at the low price, (5) the explanation of the important evaluation items for the actualization of the connector and its evaluation results under the various conditions, (6) the result of the high frequency simulation test has been described because of the use for the high frequency area, (7) several problems generated from the fabrication of the connector and the counter measures for these problems and the subjects for the further study, (8) summary of all results from this research.

In this research I have established the micro connector fabrication process which uses UV-LIGA process, and have made clear the definite problems for the practical uses in IT market. I am sure that the fruits from this research will contribute to the actualization of high-density packaging of connectors in future.