

Characteristics of Thermal Shock on Electronic Parts Bonded by Ultrasonic Bonding System

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Ultrasonic wave is able to supply the necessary energy for bonding the parts instead of thermal energy during bonding process and thus the study on applying the ultrasonic wave bonding system to low temperature bonding process for electronic parts has been underway. In this study, three types of semiconductor chip and PCB were bonded for the test using ultrasonic bonding system and to verify the reliability of the parts bonded, thermal test was carried out. In thermal shock test, a cycle of staying at -40°C for 30 minutes and at 125°C for 30 minutes was repeated 100 to 1,000 times. The number of contact points and section were monitored before and after test. When it comes to 6 x 6 mm chip with 60 contact points, number of contact point was reduced to 37 after 100 cycles of test and for 10 x 10mm chip with 64 contact points, contact point was reduced to 48 after 1,000 cycles of test, and for 15 x 15mm chip with 65 contact points, contact point was reduced to 38 after finishing 500 cycles of test.