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Solder Bond Test

By The Instron Applications Team

Summary

The purpose of this test was to determine a method for measuring the bond strength of solder ball contacts to IC packages. Tension tests were performed on two types of packages, one with 508 contacts and the other with 52 contacts. Square posts were bonded to the printed circuit board and to the top of the IC package. A fixture consisting of two sets of flat metal strips allowed flexible clevis pin coupling to the testing machine. The coupling was designed such that no bending moment was applied to the assembly.

Description of Tests

Tests were run until failure at 1 in/min and 3 in/min. Maximum load and maximum load per contact were reported. Those tests where failure occurred between the post and the top of the IC were labeled 'bad' and were not included in the statistics. In one group of tests, the maximum capacity of the 5544 test instrument was exceeded on all but one test. Other spcimens were retested on a 5569 test instrument with a 5 kN load cell.

Conclusions

The 3 in/min test speed was too fast. A 5565 with 5 kN load cell is recommended for this test to accomodate all specimens. The tests proved the feasibility of performing this test with a 5565 test instrument and a special fixture for attaching the specimen hanger.

Apparatus

- Model 5544 test instrument with 2 kN load cell
- Model 5569 test instrument with 5 kn load cell
- Tension software module