



Low Profile Zone Shear

Application Note

Low profile zone shear (up to 50mm/second) is an important test for many manufacturers in the semiconductor industry when the interconnect profile is low relative to the surface that they are bonded to.

As the interconnect ball/bump size decreases test set-up becomes increasingly important in order to gain consistent results. The Nordson DAGE low profile zone shear test methodology is optimized to have control over a much smaller shear height as well as accommodate a range of loads from less than 5kg up to 40kg, maintaining test speed, and even application of the load. The latter is especially important when the balls/bumps are very small, less than 300 μ m in diameter down to around 20 μ m.

Features and Benefits

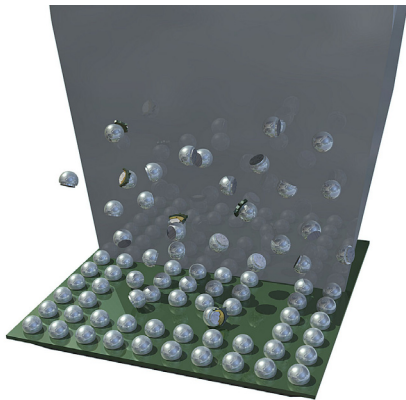
- **Zone shear testing for both low force (<5kg) and high force (<40kg) applications**
- **Exceptional shear height control across all load ranges enables reproducible zone shear of small bumps, down to 20 μ m diameter**
- **Innovative work holder overcomes coplanarity problems which lead to consistent testing**
- **Choice of XY stages for low speed, high speed, high force and low force testing**

Conducting the Test

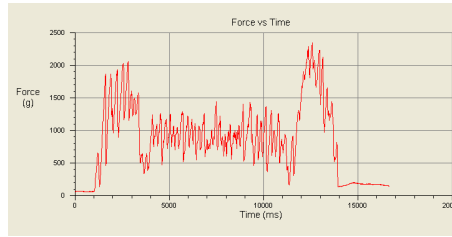
Nordson DAGE addresses load application in two ways. Firstly, the load cartridge design means that shear height can be set and maintained to $\pm 1\mu\text{m}$ throughout shearing of the sample. Secondly, a specialized work holder can be precisely adjusted so that the shear tool is co-planar with the sample.

Holding the sample firmly is critical in all shear testing but particularly so in zone shear. The work holder combines both vacuum and mechanical mechanisms.

Maintaining test speed throughout load application is important in zone shear testing and Nordson DAGE provides two XY table options; 40kg maximum load at 5mm/s or 20kg maximum load at 50mm/s



Zone shear test



This force versus time graph shows a typical output from a zone shear test. In this case the sample comprised two arrays of bumps, an outer dense one surrounding a less dense array. This is reflected in the higher loads at the beginning and end of the test.

Further Information

- There is the choice of 5kg or 50kg load cell cartridge
- A wide range of shear tool face widths are available to meet individual requirements
- A range of XY stages are available with a 160mm XY stage as standard to meet a wide range of requirements
- Sample sizes of up to 50mm x 50mm can be accommodated
- Full technical support is available worldwide

For more information, please contact your Nordson DAGE regional office or speak with your Nordson DAGE representative, all of which are listed on www.nordsondage.com.

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