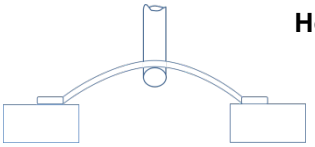
UNDERSTANDING WIRE PULL TESTING

ADVANCED TECHNOLOGY FOR RESEARCH & INDUSTRY

KNOWLEDGE BASE FACT SHEET

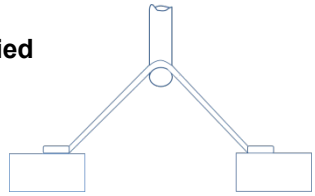
- SCOPE: Explanation of non-destructive and destructive testing of ultrasonically welded interconnects in microelectronics.

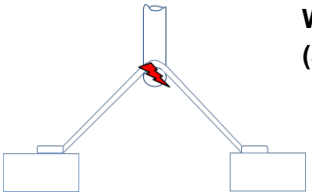
- Wire Pull testing is an established methodology for verifying ultrasonic wire bonding interconnects in microelectronics.
- Pull testing involves a precision tooltip applying an upward (**pulling**) load on the wire under test, while workpiece or product assembly is held stationary.
- As the tool moves upwards, the force (**load**) being applied to the work sample is accurately measured and recorded as the test result.
- Standard wire pull test involves a suitable **pull hook** being placed underneath the wire loop being tested.
- Load applied perpendicular (at 90°) to the workpiece under test.
- Destructive testing tests ultimate strength of the wire bonding until failure occurs.
- Non – destructive testing applies a pre-defined load to the wire under test for a pre-defined duration to test wire integrity on high value assemblies without compromising the interconnect itself.
- Pull test can be used for ball bond, wedge bond and ribbon bond interconnects.



Hook positioned under wire

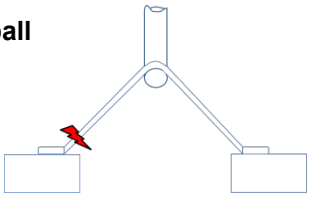
Load applied

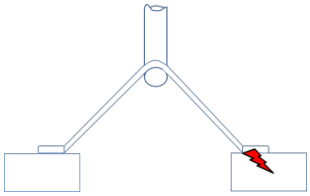




Wire breaks in span
(acceptable if sufficient strength)

Wire breaks at bond heel or above ball
(acceptable if sufficient strength)





Bond lift due to interface failure or metallisation lift (not usually acceptable)