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Archive – Poster Jay Kim, Daniel Shin

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Kelvin Contact Solution for WLCSP

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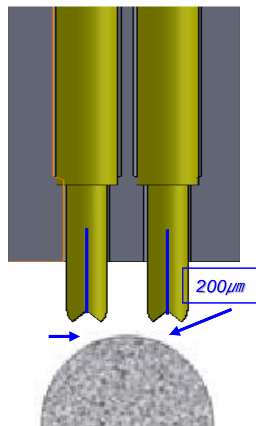
Problem Statement

- Portable and wireless devices have prompted smaller packaging and dense IC devices.
- The demand for thinner packages and WLP (Wafer Level Package) has increased.
- WLP testing requires higher accuracy and precision.
- The use of Kelvin probes becomes the solution of choice which, in turn, creates further issues with Ball Contact and Current Carrying Capacity.

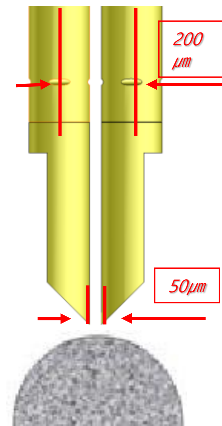
Test Set Up #1: (Ball Contact)

- Mount General Kelvin and Improved Kelvin Probes into respective sockets
- Contact both probes onto balls
- Measure distance and capture images of ball marks

General Kelvin Probe

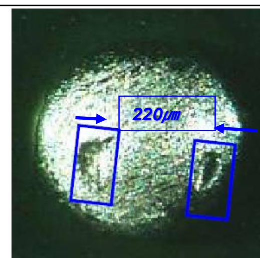


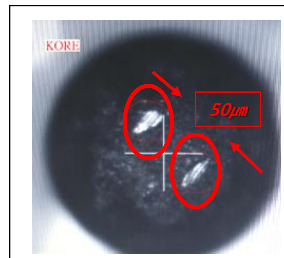
Improved Kelvin Probe



Test Results:

- Probe marks
- Mark distance





Test Set Up #2:

(Current Carrying Capacity)

- Set up same-sized and different-sized pairs of Kelvin probes. On different-sized pairs, thicker probe is for power and the other for sense. Fig 1.
- Flow 0.5A to each pin for ten minutes and then measure the forces and CRES of the pins how much they can pass the flow. Fig 2

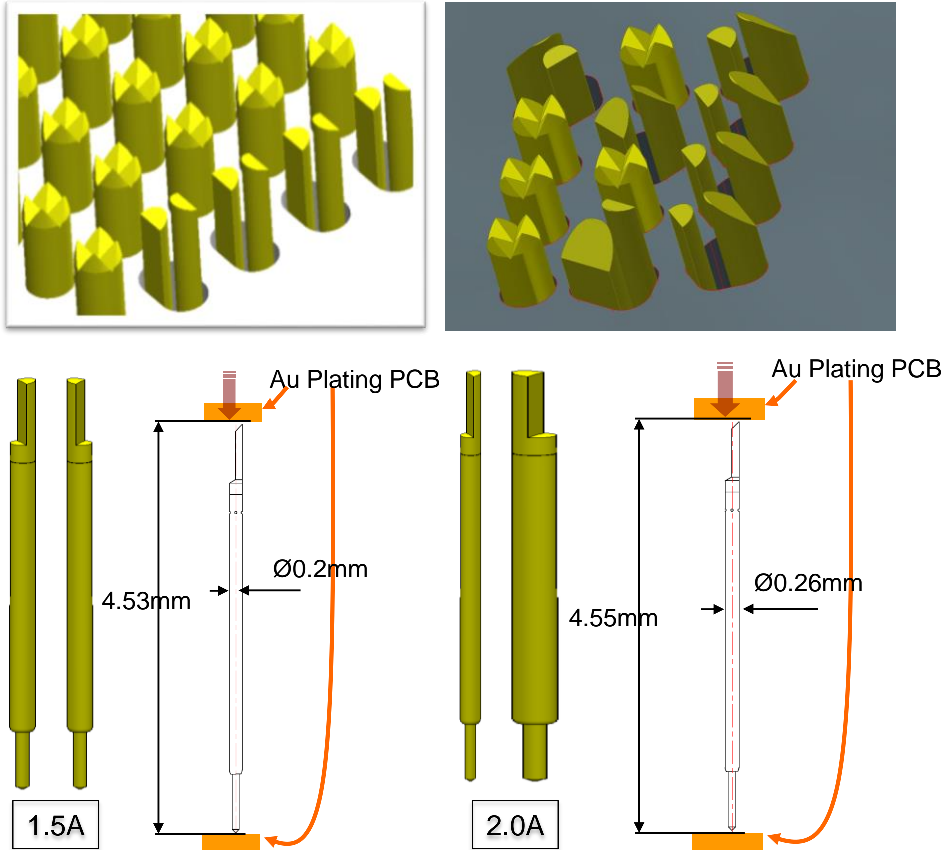


Fig 1. Different Pin Size for Force Pins

Fig 2.
Current Flow and Force/CRES Measurement

Summary:

(Ball Contact)

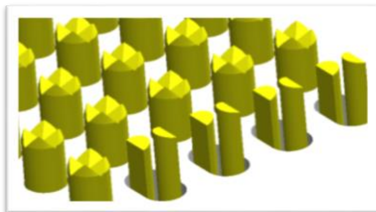
- Improved Kelvin Probes (LK Probe) provide optimal ball contact (smaller and shorter distance ball marks) compared to General Kelvin Probes

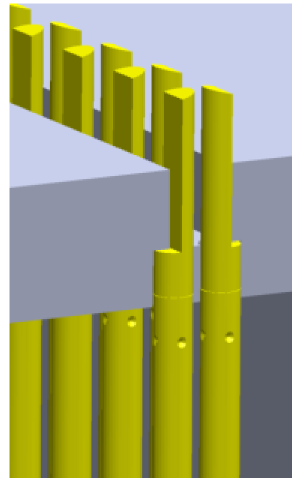
(Current Carrying Capacity)

- Compared to same-sized Kelvin probes, different-sized Kelvin probes provide higher Current Carrying Capacity

Recommendation:

General LEENO Kelvin Socket Structure





High Force LEENO Kelvin Socket Structure