Answer guidelines to QE 2006 Paper B

Note: The answer guidelines contain some points (non-exhaustive) that could be covered in the answer to this Paper.

QUESTION 1

1. Novelty
   - Over D1
   - Over D2
2. Inventive Step
   - Over D1
   - Over D2
3. D1 and D2 in combination
4. Bases for amendments (cites to specification)
5. New claim, support and argument therefor

QUESTION 2

1. Amend claim 1 to include moving step of claim 2
2. Fix antecedent basis errors, claim numbering, dependencies
3. New method claims directed to horizontal movement (like claims 11-14 below
4. New device claim (like claims 15 and 16 below)

Exemplary Claims

1. A method of electrically connecting a first device to a second device with an insulated wire using a capillary, the method comprising the steps of:

forming ~~the~~ a first bond by wirebonding ~~the~~ a first end of the insulated wire to ~~the~~ a first bond pad of the first device, thereby electrically connecting the ~~bond~~ insulated wire and the first device;

moving a tip of the capillary holding the insulated wire over a surface of a second bond pad of the second device such that the insulated wire is rubbed between the capillary tip and the second bond pad horizontally, thereby tearing the bond wire insulation so that at least a portion of a metal core of the wire contacts the second bond pad; and

forming ~~the~~ a second bond by bonding at least the exposed portion of the ~~bond~~ insulated wire to the second bond pad, thereby electrically connecting the first device and the

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second device.

2. The method of claim 1, wherein the capillary has a roughened tip that enhances abrasion of the insulation during said moving step~~, the method further comprising the step of moving the capillary tip holding the bond wire over the surface of the second bond pad of the second device such that the bond wire is rubbed between the capillary tip and the second bond pad horizontally thereby tearing the bond wire insulation so that the metal core of the wire contacts the second bond pad~~.

3. The method of claim 1, wherein the second bonding step includes thermocompression bonding.

4. The method of claim 1, wherein the first bond is a ball bond.

5. The method of claim 4 ~~5~~, wherein the second bond comprises a ~~stitch~~ wedge bond.

6 ~~7~~. (renumbered) The method of claim 1, wherein the second device comprises a carrier and the second bond pad is a lead finger.

7 ~~8~~. (renumbered) The method of claim 1, further comprising the step of heating the second bond pad prior to said moving step.

8 ~~9~~. (renumbered) The method of claim 1, wherein the insulated wire comprises one of a gold, copper or aluminum wire having an organic insulative coating.

9 ~~10~~. (renumbered) The method of claim 8 ~~10~~, wherein the insulated wire has a diameter of less than about 25 *u*m.

10 ~~11~~. (renumbered) The method of claim 8 ~~10~~, wherein the insulative coating ~~is~~ has a thickness of about 0.5 *u*m to 2.0 *u*m.

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11. (new) The method of claim 1, wherein the moving step includes moving the capillary tip such that the capillary movement has a combination of a positive shift movement in a first direction over the second bond pad and a negative shift movement in a second direction over the second bond pad.

12. (new) An improved method of bonding an insulated wire having one end connected to a first bond pad to a second bond pad, the improved method comprising the steps of:

pressing the wire against the second bond pad;

horizontally moving a tip of a capillary holding the wire over the surface of the second bond pad such that the bond wire is rubbed between the capillary tip and the second bond pad, thereby tearing the bond wire insulation so that at least a portion of a metal core of the wire contacts the second bond pad;

bonding the exposed portion of the bond wire to the second bond pad via thermocompression bonding; and

lifting the capillary off of the second bond pad, thereby breaking the wire.

13. (new) The method of claim 12, wherein the capillary has a roughened tip that enhances abrasion of the insulation during said moving step

14. (new) The electrical connection method of claim 12, wherein the moving step includes moving the capillary tip such that the capillary movement has a combination of a positive shift movement in a first direction over the second bond pad and a negative shift movement move in a second direction over the second bond pad.

15. (new) An improved capillary for a wirebonder, the improvement comprising an outer surface of the capillary being roughened, said roughened surface for tearing an insulative coating on a coated wire.

16. (new) A capillary for a wirebonder, the capillary comprising:

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a tip having a hole through which a bond wire protrudes, wherein an outer surface of the tip is roughened, said roughened surface for tearing an insulative coating on a coated wire.
QUESTION 3 1. Advice to client as to why the claims were rejected 2. Advise client on the teachings of the prior art vis-à-vis the roughened tip and moving step 3. Discuss amendments to claim 1, e.g., antecedents 4. Discuss any new claims (fall back positions re roughened tip or moving step) 5. Discuss potential lack of unity (or need to pay for a new search of the apparatus claims) vs. the current method claims 6. Discuss new device claim D1 is not directed to wire bonding; D1 does not disclose a capillary for wire bonding; The purpose of the suction tip in D1 is to securely hold a chip, whereas the purpose of the roughened capillary tip is to tear insulation of a wire.