Claims

1. Method for mounting a component on a substrate, comprising the following steps:
   i) Providing a component having a first surface, whereby the component is provided with electrical and thermal connecting sites;
   ii) providing a substrate having a second surface that is provided with a solder deposit;
   iii) mechanical contacting of the first surface of the component to the second surface of the substrate by means of the solder deposit, whereby the thickness of the solder deposit is 25 to 200 µm; and
   iv) heating the solder deposit beyond the liquidus temperature of the solder,
   whereby the solder deposit is formed by a solder paste comprising a solder and a flux, whereby the flux comprises a dicarboxylic acid A and a dicarboxylic acid B that differ from each other.

2. Method according to claim 1,
   characterised in that
   dicarboxylic acid A comprises 5 or more carbon atoms, preferably 6 to 8 carbon atoms, and in particular 6 carbon atoms.

3. Method according to any one or both of the claims 1 and 2,
   characterised in that
   dicarboxylic acid B comprises 4 or less carbon atoms, in particular 2 carbon atoms.

4. Method according to any one or more of the claims 1 to 3,
   characterised in that
   the weight ratio of dicarboxylic acid A to dicarboxylic acid B is 30:1 to 5:1, preferably 25:1 to 7:1, in particular 20:1 to 10:1.

5. Method according to any one or more of the claims 1 to 4,
characterised in that
the solder paste comprises the following:
a) 5 to 15% by weight of a flux and
b) 85 to 95% by weight of a solder,
whereby the weight specifications each relate to the total weight of the solder paste and whereby the flux comprises
i) 7 to 13% by weight dicarboxylic acid A, preferably adipic acid;
ii) 0.3 to 2.0% by weight dicarboxylic acid B, preferably oxalic acid; and
iii) amine, preferably selected from amine component X and amine component Y, whereby amine component X is a diamine with tertiary amino groups and amine component Y is a diamine or polyamine, in which at least 2 of the amino groups are separated from each other by at least 3 carbon atoms and which comprises at least 4 carbon atoms;
whereby the weight specifications of the dicarboxylic acids each relate to the total weight of the flux.

6. Method according to claim 5,
characterised in that
amine component X is selected from the group consisting of 1,2-tetramethylethylenediamine, 1,2-tetraethylethylenediamine, 1,2-tetrapropylethylenediamine, and 1,2-tetra-isopropylethylenediamine.

7. Method according to claim 5,
characterised in that
amine component Y is selected from the group consisting of N-coco-1,3-diaminopropane, 1,6-diaminohexane, 1,7-diaminoheptane, 1,8-diaminooctane, 1,9-diaminononane, and 1,10-diaminodecane.

8. Method according to any one or more of the claims 1 to 7,
characterised in that
the total amount of all dicarboxylic acids in the flux is maximally 15% by weight, preferably 7 to 13% by weight, each relative to the total weight of the flux.

9. Method according to any one or more of the claims 1 to 8,

characterised in that
the solder is a tin-based solder.

10. Method according to any one or more of the claims 1 to 9, characterised in that the solder contains silver in an amount of 0.1 to 8.0% by weight, preferably of 0.2 to 6% by weight, each relative to the total weight of the solder.

11. Method according to any one or more of the claims 1 to 10, characterised in that the solder contains copper in an amount of 0.1 to 1.5% by weight, preferably of 0.2 to 1.0% by weight, each relative to the total weight of the solder.

12. Method according to any one or more of the claims 1 to 11, characterised in that the solder has a liquidus temperature in the range of 200 to 250°C, preferably in the range of 200 to 230°C.

13. Method according to any one or more of the claims 1 to 12, characterised in that the surface of the component comprises at least one metal selected from the group consisting of copper, silver, gold, nickel, aluminium, tin, and palladium as well as alloys of two or more of said metals.

14. Method according to any one or more of the claims 1 to 13, characterised in that the surface of the substrate comprises at least one metal selected from the group consisting of nickel, gold, copper, tin, silver, aluminium, and palladium as well as alloys of two or more of said metals.

15. Component that is mounted on a substrate and can be obtained according to a method according to any one or more of the claims 1 to 14.

Claims

1. Method for mounting a QFP component on a substrate, comprising the following steps:

i) Providing a QFP component having a first surface;

ii) providing a substrate having a second surface that is provided with a solder deposit;

iii) mechanical contacting of the first surface of the QFP component to the second surface of the substrate by means of the solder deposit, whereby the thickness of the solder deposit is 25 to 200 µm; and

iv) heating the solder deposit beyond the liquidus temperature of the solder,

whereby the solder deposit is formed by a solder paste, characterised in that the solder paste comprises the following:

a) 5 to 15% by weight of a flux and

b) 85 to 95% by weight of a solder,

whereby the weight specifications each relate to the total weight of the solder paste and whereby the flux comprises

i) 7 to 13% by weight adipic acid;

ii) 0.3 to 1.5% by weight oxalic acid; and

iii) amine, selected from amine component X and amine component Y, whereby amine component X is a diamine with tertiary amino groups and amine component Y is a diamine or polyamine, in which at least 2 of the amino groups are separated from each other by at least 3 carbon atoms and which comprise at least 4 carbon atoms;

whereby the weight specifications of the dicarboxylic acids each relate to the total weight of the flux.

2. Method according to claim 1, characterised in that amine component X is selected from the group consisting of 1,2-tetramethylethylenediamine, 1,2-tetraethylethylenediamine, 1,2-tetrapropylethylenediamine, and 1,2-tetra-isopropylethylenediamine.

3. Method according to claim 1, characterised in that amine component Y is selected from the group consisting of N-coco-1,3-diaminopropane, 1,6-diaminohexane, 1,7-diaminoheptane, 1,8-diaminooctane, 1,9-diaminononane, and 1,10-diaminodecane.

4. Method according to any one or more of the claims 1 to 3, characterised in that the solder is a tin-based solder.

5. Method according to any one or more of the claims 1 to 4, characterised in that the flux comprises silver in an amount of 0.1 to 8.0% by weight, relative to the total weight of the solder.

6. Method according to any one or more of the claims 1 to 5, characterised in that the flux comprises copper in an amount of 0.1 to 1.5% by weight, relative to the total weight of the solder.

7. Method according to any one or more of the claims 1 to 6, characterised in that the solder has a liquidus temperature in the range of 200 to 250°C.

8. Method according to any one or more of the claims 1 to 7, characterised in that the surface of the QFP component comprises at least one metal selected from the group consisting of copper, silver, gold, nickel, aluminium, tin, and palladium as well as alloys of two or more of said metals.

9. Method according to any one or more of the claims 1 to 8, characterised in that the surface of the substrate comprises at least one material selected from the group consisting of nickel, gold, copper, tin, silver, aluminium, and palladium as well as alloys of two or more of said metals.