

Description

Background of the Invention

1. Field of the Invention

The invention relates generally to electrical components and a method of mounting electrical components, more particularly to electrical connectors, and even more particularly to through-board female headers with integral solder masks enabling access to the header contacts from both sides of the board.

2. Description of the Prior Art

The use of mass soldering techniques to attach electrical components to a common support structure is well known. One exemplary process is that known as wave soldering; others are known. One common support is a printed circuit board; others are known. Various types of electrical components, such as connectors, sockets and the like, provide interconnecting electrically conductive paths on or in a printed circuit board. These components electrically interconnect other electrical components or elements, such as resistors, capacitors, conductors, transistors, integrated circuits, etc.

The invention is described below with reference to a female type header that provides a socket for receiving pin contacts from another connector or other component for connecting the same to circuits on a printed circuit board. The description is directed to use of such a header and circuit board in a wave soldering process. However, it will be appreciated that the features of the invention may be used in connection with other types of components, other types of common support structures, other types of mass soldering techniques, and so on.

In a typical process for manufacturing circuitry employing a printed circuit board with components mounted on the board and wave soldered, the leads or solder tails (hereinafter simply referred to as solder tails) of electrical components are positioned in respective holes, preferably plated-through holes, in the printed circuit board. The plating in the holes is electrically connected to respective conductive paths or the like, printed on or otherwise formed with respect to the printed circuit board. The printed circuit board is passed through a molten solder wave that wipes against a surface of the printed circuit board to solder the connections between the solder tails and plated-through holes or other conductive paths or the like on the board.

Usually, some of the solder flows into the plated-through holes. Ordinarily, any space left between a lead and a plated-through hole would be expected to be filled with solder.

US-A-4 010 992 discloses an electrical component according to the prior art portion of claim 1 and a method of mounting such component.

Summary of the Invention

The electrical component of the present invention is defined in claim 1. A method of mounting the component is defined in claim 9.

According to the present invention, an electrical component is provided with features that enable solder tails to be attached to plated-through holes of a printed circuit board while those holes are occupied both by solder tails and by a mask that prevents molten solder from completely filling the hole. During wave soldering, adequate solder is provided to effect soldering of the solder tails to the conductive material (plating) in the holes and/or on the top or bottom of holes, while the mask prevents the hole from filling with molten solder. Preferably, the mask is frangibly attached to a major body portion of the component so that the mask subsequently can be removed, thus providing an open space in the hole. The open space in the hole permits a pin contact or the like to be inserted to engage the contacting portion of the component contact from the solder tail side of the printed circuit board.

The aforementioned electrical component may be in the form of a female header having plural openings and contacts therein with solder tails extending from the openings. The mask is in the form of plural pin-like masks that extend generally parallel to respective solder tails.

Brief Description of the Drawing

In the annexed drawings:

Figure 1 as an isometric view of an electrical component in accordance with the invention in the form of a through-board female header positioned in a printed circuit board, part of the circuit board being broken away to show the solder tails and solder masks of the headers;

Figure 2 is a fragmentary side elevation view of the header, partly broken away in section;

Figure 3 is a fragmentary top view of the header of Figure 2;

Figure 4 is a fragmentary bottom view of the header of Figure 2;

Figure 5 is an end elevation view, partly in section, of the header of Figure 2;

Figure 6 is an end elevation view of a box contact used in the header, such contact being

shown attached to a break away carrier strip for convenient manipulation;

Figure 7 is a top view of the contact of Figure 6 looking generally in the direction of the arrows 7-7;

Figure 8 is an end elevation view of the contact of Figure 6 looking generally in the direction of the arrows 8-8;

Figure 9 is a fragmentary side view of a single row header with contacts therein;

Figure 10 is an end view of the header of Figure 9;

Figure 11 is a schematic bottom view of the header of Figure 9 showing positioning of the solder tails and solder masks as they would appear in plated-through holes of a printed circuit board;

Figure 12 is a side elevation view of a dual in-line row header according to the invention, partly in section;

Figure 13 is a top view of the header of Figure 12;

Figure 14 is a bottom view of the header of Figure 12;

Figure 15 is an end view, partly in section, of the header of Figure 12;

Figure 16 is a fragmentary side view of a dual in-line row header with contacts therein;

Figure 17 is an end view of the header of Figure 16; and

Figure 18 is a schematic bottom view of the header of Figure 16 as the solder tails and masks would appear in plated-through holes looking from the bottom of a printed circuit board into which the header is inserted.

Detail Description of the Preferred Embodiment

Referring now in detail to the drawings, wherein like reference numerals designate like parts in the several figures, and initially to Figure 1, an electrical component in the form of a through-board female header with integral solder masks is generally designated 10. The header 10 is shown in Figure 1 mounted with respect to a printed circuit board 12 for the purpose of providing electrical connections between electrically conductive paths (not shown) on or in the board and further electrically conductive members that are inserted to engage respective contacts 14 of the header. The contacts accordingly have solder tails 16 that are attached by solder to electrically conductive plating in plated-through holes 18 of the printed circuit board. Advantageously, as will become apparent from the following description, using pin-like solder masks 20 of the header 10 to occupy some of the area not occupied by a solder tail 16 in a plated-through hole prevents molten solder from fully fill-

ing such hole. After removal of the solder mask, a contacting portion 22 of the contact may be engaged by an external member inserted with respect to header 10 and board 12 from either side, i.e., from either the top or bottom thereof, as is illustrated in Figure 1.

The ability to make connections with the contacting portions 22 of the header 10 from either or both sides thereof, and from either or both sides of the printed circuit board 12, facilitates stacking of boards and/or making connections with boards in dense packing of the boards and/or circuits thereon. In connection with stacking of boards, it will be appreciated that one or more printed circuit boards 12 having headers 10 thereon may be stacked on a single group of pin contacts supported from a main mother board or the like.

Referring to Figures 1-5, the header 10 includes an electrically nonconductive or insulator body 30. The body has exterior side surfaces 32, 34, end surfaces 36, 38, top 40 and bottom 42. The body 30 may be made by plastic injection molding techniques. Exemplary material of which the body 30 may be made includes Rynite FR530, which is a glass filled PTE (polyethylene terephthalate) polyester available from E.I. DuPont de Nemours and Company of Wilmington, Delaware.

Within the body 30 are a plurality of cavities 44 that extend through the body. Openings 46 in the top 40 permit access to the cavities from the top of the header. The openings generally indicated at 48 are provided for access to the bottom of the cavities 44. Shelf walls 50 in each cavity may be provided to aid in properly positioning respective contacts 14 during their insertion into the cavities in the desired relation to the body 30. Shelves 50 preferably include oblique surfaces 51 facing toward opening 46 for guiding contacts 14 into the proper location in cavity 44.

Covering at least part of the bottom openings 48 are a plurality of pin-like solder mask members 20. Each solder mask member is elongate; preferably the length is adequate to extend fully through and partly beyond a plated-through hole 18 of the printed circuit board 12. The cross sectional shape of the solder mask pins 20 may be uneven, octagonal, as seen in Figure 4, for example. The mask pins 20 are attached to the body 30 in proximity to respective openings 48 to cover at least part of such openings while providing a clearance 52 on both sides of the mask. The clearances 52 are sufficiently large to receive therethrough respective solder tails 16, on the one hand, and are sufficiently small to tend to block the flow of molten solder into respective cavities 44, especially during wave soldering, on the other hand. The flowing of molten solder into such cavities 44 could impede proper operation of the contacting portion 22 of

respective contacts 14 and/or could tend to block access to such contacting portions, particularly from the bottom thereof.

A frangible connection 54 is provided for each of the mask pin members 20. The frangible connection is formed by a directly molded piece of plastic or like material of which both the body 30 and pins 20 are made during a single injection molding process, for example. The frangible connection or connection material 54 preferably is at two sides of each pin 20. The frangible connection preferably is sufficiently strong to retain the mask pins 20 attached to the body 30 in position, as is illustrated, blocking the openings 48, while being sufficiently weak to permit breaking thereof for removal purposes. Breaking of the frangible connections 54 and removal of mask pins 20 may be effected by inserting a pin-type tool or pin-like contact member into the cavity 44 from the top opening 46 and pressing the same against the top 56 of the mask pin intended to be removed. A recess, groove or guiding slot 58 is provided in top 56 to guide such a tool generally to apply force evenly to a mask pin 20 to fracture both frangible connecting members 54 of a respective mask pin substantially simultaneously.

Preferably the plated-through holes 18 are larger than those typically found in printed circuit boards. Such larger size is provided to accommodate both the solder tails 16 and solder mask pins 20 therein. Additionally, at the bottom 42 of the header body 30, stand-offs 60 are provided for the usual purposes of maintaining bottom 42 of header 10 slightly spaced away from the top surface of the printed circuit board, for example, for cleaning, for heat dissipation, and so on.

Referring to Figures 6-8, an exemplary contact 14 is shown in detail. The contact includes a solder tail 16 and a contacting portion 22. The top end of the contact 14 is attached at a breakaway or frangible connection 62 to a carrier strip 64 which is provided to support a plurality of contacts for convenience of handling the same and inserting them simultaneously into the insulator body 30. The contacting portion is in the form of a box-type contact having a pair of arms or tines 66 with wiping portions 68 intended to wipe against a pin contact or the like inserted in engagement therewith. Near the top of the arms 66 is a sharp, spike-like protrusion 70 intended to bite into a wall of a respective cavity 44 to lock the respective contact in position in the cavity. Ordinarily, such positioning results in the top 72 of the contact being generally parallel to the top surface 40 of the insulator body 30.

Contact 14 includes a generally linear support structure 74 with a pair of protruding arms 76 that may cooperate, for example, with the shelves 50 in the cavity 44 to position contact 14 during insertion

of the contact into the cavity. The lower surfaces of arms 76 may slide on oblique surfaces 51 of shelves 50 to guide contact 14 for proper seating in cavity 44. At the bottom end of the support structure 74 is the solder tail 16. Solder tail 16 preferably is relatively wide and flat, as is illustrated, so as to fit in the clearance area 52 at the bottom of the header body 30 and to fit properly into a plated-through hole 18 of the printed circuit board 12.

The header 10 may be made by molding the insulator body 30, forming the contacts 14 in the manner illustrated, and then inserting the contacts with respect to the cavities 44. Insertion ordinarily would take place by inserting the solder tails 16 into the top openings 46; continuing to insert the solder tails 16 through respective clearance areas 52, and finishing the insertion with the arms 76 resting at the bottom of cavity 44. During the insertion, the barb or point 70 will bite into the side wall of the cavity 44 inhibiting withdrawal of the contact from the cavity. Preferably, the contact is pressed down into the cavity far enough so that the top 72 is generally parallel to the top 40 of the insulator body 30. After a plurality of contacts 14 carried by a carrier strip 64 have been so inserted into the insulator body 30, the strip 64 can be broken away and discarded.

Briefly referring to Figures 9 and 10, as well as to Figure 1, the relative positioning of the contacts, particularly the solder tails 16, relative to the insulator body 30 and the solder mask pins 20 thereof may be seen. The header 10 is shown as a single row header having a single row of contacts. The number of contacts in the row may vary, depending on the need, from only one to more than forty. As illustrated in Figures 9-11, the position of solder tails 16 with respect to mask pins 20 may vary. In those Figures, every other solder tail along the row of mask pins is disposed on an opposite side of a mask pin 20. The staggered solder tail arrangement adds to the mechanical stability of header 30 when mounted in resisting bending moments.

Figure 11 is a view looking up from the bottom of the printed circuit board 12. The margin 80 of two plated-through holes 18 is shown. The position of the solder mask pin member 20 in the holes 18 and the relative position of the solder tails 16 also are shown. Desirably, adequate space is provided at 82 to permit molten solder to flow during wave soldering to effect a solder connection of the solder tail 16 to the electrically conductive plating material or the like in the hole 18. What happens on the other side of the hole in the space not occupied by a solder tail is immaterial to the operation and advantages of the invention. Importantly, though, a large amount of space is occupied by the solder mask pin member 20 so that when member 20 is

removed in the manner described above, an open area is provided in the hole 18 large enough to accommodate a pin contact intended to be inserted therethrough.

Turning briefly to Figures 12-18, a dual in-line row configured header 10' is illustrated. Figures 12-18 are analogous to Figures 2-5 and 9-11, respectively. The header 10' and those various parts thereof illustrated in Figures 12-18 that correspond to those described above with reference to the header 10 and Figures 2-5 and 9-11 are identified with the same reference numerals, but with ' designations. Thus, for example, the header 10' includes an insulator body 30', electrical contacts 14', etc. The arrangement of the cavities 44' in the header 10' and of the contacts 14' associated with such cavities is in dual in-line configuration, a configuration that is well known in the electronics industry. The functioning of the various elements of Figures 12-18 is entirely analogous to their counterparts in Figures 2-5 and 9-11. Regardless of whether header 10 or 10' is used, a printed circuit board or other support is prepared to receive the header by opening an appropriate number of appropriately spaced holes, each large enough to receive a combined solder tail 16 or 16' and mask pin 20 or 20' in the board. Each hole is either through-plated with a metal or is disposed adjacent a solderable contact on the bottom side of the board. The tails and pins are inserted mechanically into the holes from the top side of the board. The solder tails are subjected to wave soldering so that mechanical and electrical bonds between the header solder tails and the solderable contacts of the printed circuit board or other support are formed. Components may be readily connected to the header through its top surface 40 or 40' to connect with one of contacts 14 or 14'. At the contacts 14 or 14' where it is desired to make an electrical connection from the bottom side of the board or support, mask pins 20 or 20' are detached from body 30 or 30'. For example, a tool may be inserted through the openings 46 or 46' opposite the mask pins that are to be removed and the frangible connecting members 54 or 54' detached to open the selected cavities 44 or 44' for access from the bottom side of the board or support. Only those mask pins where connections are to be made from the bottom side of the board need to be broken away. While the depicted headers include a mask pin next to each solder tail, headers according to the invention may include some solder tails that lack corresponding mask pins.

Claims

1. An electrical component comprising;
an electrically nonconducting body (30, 30');

cavity means (44, 44') in said body (30, 30');
at least part of an electrically conducting member (22) in said cavity means (44, 44'), said member (22) having a solder tail (16, 16') extending out of said body (30, 30') through an opening (48) in the body (30, 30');

characterized by

a pin-like solder masking member (20, 20') connected by frangible means (54, 54') to said body (30, 30') adjacent one side of said body and covering said opening (48) such that there is a clearance (52, 52') that is sufficiently large for said solder tail (16, 16') to pass therethrough yet sufficiently small to tend to block the flow of molten solder into the cavity means (44, 44').

2. The component of Claim 1 wherein said pin-like member (20, 20') is such that when it is detached from said body (30, 30') by breaking said frangible means (54, 54') removal of the pin-like member (20, 20') from said body provides a first opening (48) in said body (30, 30') for access to said conducting member (22).
3. The component of Claim 2 wherein a second opening (46, 46') in said body (30, 30') provides access to said conducting member (22) whereby said conducting member (22) is accessible from two different directions.
4. The component of Claims 1, 2 or 3 comprising a shelf (50, 50') in said body (30, 30') that positions said contact (22) in said cavity (44, 44').
5. The component of any one of Claims 1 to 4 wherein said contact (22) comprises a box contact having a box-like contacting means disposed in said cavity (44, 44') for electrically contacting an external member inserted thereinto.
6. The component of anyone of Claims 1 to 5 wherein said pin-like member (20, 20') has a recess (58, 58') facing said cavity (44, 44') for guiding an implement for engaging said pin-like member to break said frangible means (54, 54') whereby said pin-like member (20, 20') is detached from said body (30, 30').
7. The component of anyone of Claims 1 to 6 wherein said conducting member (22) is in the form of a box-type contact having a pair of arms or tines (66).
8. The component of Claim 7 wherein the pair of arms or tines (66) are provided with sharp



removed in the manner described above, an open area is provided in the hole 18 large enough to accommodate a pin contact intended to be inserted therethrough.

Turning briefly to Figures 12-18, a dual in-line row configured header 10' is illustrated. Figures 12-18 are analogous to Figures 2-5 and 9-11, respectively. The header 10' and those various parts thereof illustrated in Figures 12-18 that correspond to those described above with reference to the header 10 and Figures 2-5 and 9-11 are identified with the same reference numerals, but with ' designations. Thus, for example, the header 10' includes an insulator body 30', electrical contacts 14', etc. The arrangement of the cavities 44' in the header 10' and of the contacts 14' associated with such cavities is in dual in-line configuration, a configuration that is well known in the electronics industry. The functioning of the various elements of Figures 12-18 is entirely analogous to their counterparts in Figures 2-5 and 9-11. Regardless of whether header 10 or 10' is used, a printed circuit board or other support is prepared to receive the header by opening an appropriate number of appropriately spaced holes, each large enough to receive a combined solder tail 16 or 16' and mask pin 20 or 20' in the board. Each hole is either through-plated with a metal or is disposed adjacent a solderable contact on the bottom side of the board. The tails and pins are inserted mechanically into the holes from the top side of the board. The solder tails are subjected to wave soldering so that mechanical and electrical bonds between the header solder tails and the solderable contacts of the printed circuit board or other support are formed. Components may be readily connected to the header through its top surface 40 or 40' to connect with one of contacts 14 or 14'. At the contacts 14 or 14' where it is desired to make an electrical connection from the bottom side of the board or support, mask pins 20 or 20' are detached from body 30 or 30'. For example, a tool may be inserted through the openings 46 or 46' opposite the mask pins that are to be removed and the frangible connecting members 54 or 54' detached to open the selected cavities 44 or 44' for access from the bottom side of the board or support. Only those mask pins where connections are to be made from the bottom side of the board need to be broken away. While the depicted headers include a mask pin next to each solder tail, headers according to the invention may include some solder tails that lack corresponding mask pins.

Claims

1. An electrical component comprising;
an electrically nonconducting body (30, 30');

cavity means (44, 44') in said body (30, 30');
at least part of an electrically conducting member (22) in said cavity means (44, 44'), said member (22) having a solder tail (16, 16') extending out of said body (30, 30') through an opening (48) in the body (30, 30');

characterized by

a pin-like solder masking member (20, 20') connected by frangible means (54, 54') to said body (30, 30') adjacent one side of said body and covering said opening (48) such that there is a clearance (52, 52') that is sufficiently large for said solder tail (16, 16') to pass therethrough yet sufficiently small to tend to block the flow of molten solder into the cavity means (44, 44').

2. The component of Claim 1 wherein said pin-like member (20, 20') is such that when it is detached from said body (30, 30') by breaking said frangible means (54, 54') removal of the pin-like member (20, 20') from said body provides a first opening (48) in said body (30, 30') for access to said conducting member (22).
3. The component of Claim 2 wherein a second opening (46, 46') in said body (30, 30') provides access to said conducting member (22) whereby said conducting member (22) is accessible from two different directions.
4. The component of Claims 1, 2 or 3 comprising a shelf (50, 50') in said body (30, 30') that positions said contact (22) in said cavity (44, 44').
5. The component of any one of Claims 1 to 4 wherein said contact (22) comprises a box contact having a box-like contacting means disposed in said cavity (44, 44') for electrically contacting an external member inserted thereinto.
6. The component of anyone of Claims 1 to 5 wherein said pin-like member (20, 20') has a recess (58, 58') facing said cavity (44, 44') for guiding an implement for engaging said pin-like member to break said frangible means (54, 54') whereby said pin-like member (20, 20') is detached from said body (30, 30').
7. The component of anyone of Claims 1 to 6 wherein said conducting member (22) is in the form of a box-type contact having a pair of arms or tines (66).
8. The component of Claim 7 wherein the pair of arms or tines (66) are provided with sharp



spike-like protrusions (70) intended to bite into a wall of a respective cavity means (44, 44') to lock the respective conducting member (22) in position in said cavity means (44, 44').

9. A method of mounting an electrical component as defined in any one of Claims 1 to 8 onto a printed circuit board (12), said board having a plurality of holes (18, 18') extending therethrough, each hole being either through plated with a metal or being adjacent a solderable contact on the bottom side of the board, said method comprising:

inserting from the top side of the board the pin-like solder masking member (20, 20') of the non-conducting body (30, 30') and the solder tail (16, 16') extending out of said body (30, 30') jointly through one of said holes (18, 18') in the board (12);

connecting by soldering said solder tail (16, 16') to said plating of the hole or to said adjacent solderable contact; and then removing said solder masking member (20, 20') from the nonconducting body (30, 30') by breaking said frangible means (54, 54').

10. The method of Claim 9 when mounting a component as defined in Claim 3 and wherein said frangible means (54, 54') is broken by guiding an implement via said second opening (46, 46') into engagement with an end of the masking member (20, 20') facing said second opening (46, 46') and then using said implement to break the frangible means (54, 54').

11. The method of Claim 10 when mounting a component as defined in Claims 3 and 6 and wherein said implement is engaged with said recess (58, 58') formed in the pin-like member (20, 20').

Patentansprüche

1. Elektrisches Bauteil mit:
einem elektrisch nichtleitenden Körper (30, 30');
einer Vertiefungseinrichtung (44, 44') in dem Körper (30, 30');
wobei sich mindestens ein Teil eines elektrisch leitfähigen Bauelements (22) in der genannten Vertiefungseinrichtung (44, 44') befindet, wobei das genannte Bauelement (22) ein Lötende (16, 16') umfaßt, welches sich aus dem genannten Körper (30, 30') durch eine Öffnung (48) in dem Körper (30, 30') erstreckt;
gekennzeichnet durch:
ein stiftähnliches Lötmaskenglied (20, 20'),

welches neben einer Seite des Körpers durch eine zerbrechliche Einrichtung (54, 54') mit dem Körper verbunden ist und welches die genannte Öffnung (48) bedeckt, so daß ein Zwischenraum (52, 52') besteht, der ausreichend groß ist, sodaß das Lötende (16, 16') hindurchgeführt werden kann, welcher aber auch so klein ist, daß er dazu neigt, den Fluß geschmolzenen Lötmittels in die Vertiefungseinrichtung (44, 44') zu hemmen.

2. Bauteil nach Anspruch 1, dadurch gekennzeichnet, daß das stiftähnliche Glied (20, 20') bei Ablösung von dem Körper (30, 30') durch Zerschneiden der zerbrechlichen Einrichtung (54, 54') so beschaffen ist, daß eine Entfernung des stiftähnlichen Glieds (20, 20') von dem Körper eine erste Öffnung (48) in dem Körper (30, 30') vorsieht, und zwar für einen Zugang zu dem leitfähigen Bauelement (22).

3. Bauteil nach Anspruch 2, dadurch gekennzeichnet, daß eine zweite Öffnung (46, 46') in dem Körper (30, 30') einen Zugang zu dem leitfähigen Bauelement (22) vorsieht, wodurch das leitfähige Bauelement (22) von zwei verschiedenen Richtungen zugänglich ist.

4. Bauteil nach Anspruch 1, 2 oder 3, mit einem Einsatz (50, 50') in dem Körper (30, 30'), welcher den Kontakt (22) in der Vertiefung (44, 44') positioniert.

5. Bauteil nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, daß der Kontakt (22) einen Dosenkontakt mit einer dosenähnlichen Kontakteinrichtung umfaßt, welche sich für eine elektrische Kontaktherstellung mit einem darin eingeführten externen Bauelement in der Vertiefung (44, 44') befindet.

6. Bauteil nach einem der Ansprüche 1 bis 5, dadurch gekennzeichnet, daß das stiftähnliche Glied (20, 20') eine Aussparung (58, 58') aufweist, welche zu der Vertiefung (44, 44') ausgerichtet ist, um ein Instrument zum Eingriff mit dem stiftähnlichen Glied zu führen, um die zerbrechliche Einrichtung (54, 54') zu durchbrechen, wodurch das stiftähnliche Glied (20, 20') von dem Körper (30, 30') losgelöst wird.

7. Bauteil nach einem der Ansprüche 1 bis 6, dadurch gekennzeichnet, daß das leitfähige Bauelement (22) in der Form eines dosenartigen Kontakts mit einem Paar von Armen oder Zinken (66) gegeben ist.



8. Bauteil nach Anspruch 7, dadurch gekennzeichnet, daß das Paar von Armen bzw. Zinken (66) mit scharfen, spitzenähnlichen Vorsprüngen (70) versehen ist, welche in eine Wand einer entsprechenden Vertiefungseinrichtung (44, 44') greifen sollen, um das entsprechende leitfähige Bauelement (22) in der Vertiefungseinrichtung (44, 44') einzurasten.

9. Verfahren zur Befestigung eines elektrischen Bauteils nach einem der Ansprüche 1 bis 8 auf einer Leiterplatte (12), wobei die Leiterplatte eine Mehrzahl sich durch diese erstreckender Löcher (18, 18') aufweist, wobei jedes Loch entweder mit einem Metall durchplattiert ist oder sich an der Unterseite der Platte neben einem lötfähigen Kontakt befindet, wobei das Verfahren folgendes umfaßt:

das Einführen des stiftähnlichen Lötmaskenglieds (20, 20') des nichtleitenden Körpers (30, 30') von der Oberseite der Platte und wobei sich das Lötende (16, 16') gemeinsam durch eins der Löcher (18, 18') in der Platte (12) aus dem Körper (30, 30') erstreckt;

die Lötverbindung des Lötendes (16, 16') mit der Plattierung des Lochs oder dem benachbarten, lötfähigen Kontakt;

und dann die Entfernung des Lötmaskenglieds (20, 20') von dem nichtleitenden Körper (30, 30'), durch Durchbrechen der zerbrechlichen Einrichtung (54, 54').

10. Verfahren nach Anspruch 9, bei Befestigung eines Bauteils nach Anspruch 3 und dadurch gekennzeichnet, daß die zerbrechliche Einrichtung (54, 54') durch Einführung eines Instruments durch die zweite Öffnung (46, 46') in Eingriff mit einem zu der zweiten Öffnung (46, 46') ausgerichteten Ende des Maskenglieds (20, 20') durchbrochen wird und wobei das Instrument dann zum Durchbrechen der zerbrechlichen Einrichtung (54, 54') verwendet wird.

11. Verfahren nach Anspruch 10, bei Befestigung eines Bauteils nach Anspruch 3 und 6 und dadurch gekennzeichnet, daß sich das Instrument im Eingriff mit der Aussparung (58, 58') befindet, welche in dem stiftähnlichen Glied (20, 20') ausgebildet ist.

Revendications

1. Composant électrique comportant un corps électriquement non conducteur (30, 30') ;
des éléments de cavités (44, 44') dans ledit corps (30, 30') ;

au moins une partie d'un élément électriquement conducteur (22) dans lesdits éléments de cavités (44, 44'), ledit élément (22) présentant une queue à souder (16, 16') dépassant hors dudit corps (30, 30') à travers une ouverture (48) dans le corps (30, 30') ; caractérisé par

un élément masquant à souder (20, 20') en forme de broche connecté par des moyens frangibles (54, 54') audit corps (30, 30') au voisinage d'un côté dudit corps et couvrant ladite ouverture (48) de telle sorte qu'il y a un espace (52, 52') qui est suffisamment grand pour que ladite queue à souder (16, 16') passe à travers tout en étant suffisamment petit pour avoir tendance à bloquer l'écoulement de soudure fondue dans les éléments de cavités (44, 44').

2. Composant selon la revendication 1, dans lequel ledit élément en forme de broche (20, 20') est tel que lorsqu'il est détaché dudit corps (30, 30') par rupture desdits moyens frangibles (54, 54'), le retrait de l'élément en forme de broche (20, 20') dudit corps fournit une première ouverture (48) dans ledit corps (30, 30') pour l'accès audit élément conducteur (22).

3. Composant selon la revendication 2, dans lequel une deuxième ouverture dans ledit corps (30, 30') offre accès audit élément conducteur (22), moyennant quoi ledit élément conducteur (22) est accessible à partir de deux directions différentes.

4. Composant selon les revendications 1, 2 ou 3 comportant un rebord (50, 50') dans ledit corps (30, 30') qui positionne ledit contact (22) dans ladite cavité (44, 44').

5. Composant selon l'une quelconque des revendications 1 à 4, dans lequel ledit contact (22) comporte un contact en caisson comprenant un élément de contact en forme de caisson disposé dans ladite cavité (44, 44') pour être en contact électrique avec un élément extérieur qui y est inséré.

6. Composant selon l'une quelconque des revendications 1 à 5, dans lequel ledit élément en forme de broche (20, 20') présente un évidement (58, 58') en regard de ladite cavité (44, 44') pour guider un outil pour engager ledit élément en forme de broche afin de rompre lesdits moyens frangibles (54, 54'), moyennant quoi ledit élément en forme de broche (20, 20') est détaché dudit corps (30, 30').



7. Composant selon l'une quelconque des revendications 1 à 6, dans lequel ledit élément conducteur (22) a la forme d'un contact de type en caisson possédant une paire de branches ou fourchons (66). 5
8. Composant selon la revendication 7, dans lequel la paire de branches ou fourchons (66) est munie de saillies aiguës en forme de pointes (70) destinées à venir en prise avec une paroi d'un élément de cavité respectif (44, 44') afin de verrouiller l'élément conducteur respectif (22) en position dans lesdits éléments de cavités (44, 44'). 10
9. Procédé de montage d'un composant électrique selon l'une quelconque des revendications 1 à 8 sur une plaquette (12) à circuit imprimé, ladite plaquette comportant plusieurs trous (18, 18') la traversant, chaque trou étant soit plaqué avec un métal, soit voisin d'un contact soudable sur la face de dessous de la plaquette, ledit procédé comprenant : 15
 - l'insertion, à partir de la face de dessus de la plaquette, de l'élément masquant à souder en forme de broche (20, 20') du corps non conducteur (30, 30') et de la queue à souder (16, 16') dépassant hors dudit corps (30, 30'), conjointement, à travers l'un desdits trous (18, 18') dans la plaquette (12) ; 20
 - la connexion par soudage de ladite queue à souder (16, 16') audit plaquage du trou ou audit contact soudable adjacent ; et ensuite 25
 - le retrait dudit élément masquant à souder (20, 20') du corps non conducteur (30, 30') par rupture desdits moyens frangibles (54, 54'). 30
10. Procédé selon la revendication 9 pour le montage d'un composant selon la revendication 3, et dans lequel lesdits moyens frangibles (54, 54') sont rompus par le guidage d'un outil via ladite deuxième ouverture (46, 46') qui vient s'engager dans une extrémité de l'élément masquant (20, 20') en regard de ladite deuxième ouverture (46, 46') et ensuite l'utilisation dudit outil pour rompre les moyens frangibles (54, 54'). 35
11. Procédé selon la revendication 10 pour le montage d'un composant selon les revendications 3 et 6, et dans lequel ledit outil est engagé dans ledit évidement (58, 58') formé dans l'élément en forme de broche (20, 20'). 40

55