

Description

Background of the invention

The present invention relates generally to an electrical contact terminal for press-fit mounting into an opening of a substrate such as a circuit board, said terminal having a mounting section comprising an oblong base portion and at least one separately formed flexible metal fin, a longitudinal midsection of said fin extending lengthwise in contact with an outside surface of said base portion, a longitudinal free edge of said fin extending away from said base portion and defining in relation to the circumference of said base portion a space in its longitudinal direction, and said fin being narrower in width and thickness at one end.

A contact terminal of this type is disclosed by German Patent Application 3,120,629.

Electrical contacts which are press-fit mounted in plated-through holes of printed circuit boards without need for soldering have become widely used in the electronics industry. Such electrical contacts are commonly referred to as press-fit terminals. Specific examples of such press-fit terminals are the H-shaped press-fit pin disclosed in U.S. Patent 4,728,164; granted March 1, 1988; the "Bow-Tie" press-fit pin disclosed in U.S. Patent 4,274,699 granted June 23, 1981; the "Action Pin" disclosed in U.S. Patent 4,186,982; and the "C-press" pin disclosed in U.S. Patent 4,017,143 granted April 12, 1977.

U.S. Patent 4,728,164 noted above discloses an electrical contact pin for mounting in the plated-through holes of a printed circuit board through compliant press-fit action. The mounting section has an H-shaped cross-section which comprises four compliant fins and a central crossbar. The contact pin is made from square wire or flat strip material and its H-shaped mounting section is formed by stamping or other suitable mechanical deformation techniques. The fins are therefore formed integrally with and are of the same metal as the crossbar, having been forced outward or extruded during stamping.

U.S. Patent 4,464,009 granted August 7, 1984 describes a solderless contact pin wherein the deformable mounting section is M-shaped or W-shaped. The mounting section is also formed by stamping and consists of two elongated beam members interconnected integrally to one another by a cross-member.

Insertion and retention of a press-fit terminal in place in a circuit board hole requires very accurate dimensioning of the mounting section. This is of great importance. If the mounting section is too small compared to the opening of the substrate, the electrical contact with the metallized wall of a plated-through hole may be unreliable. Also, the retention force applied to the wall of the hole to keep the terminal in place may not be sufficient. On the other hand, too large a mounting section may cause serious damage

to the metallized layer of the wall in the hole and consequently also lead to an unreliable electrical connection. It may cause twisting or shifting during mounting of the terminal in relation to the desired position.

The requirements for accurate dimensioning become even more critical when the size of the opening of the substrate decreases. In practice, it has become evident that the prior art electrical contacts with mounting sections produced by mechanical deformation such as stamping are inadequate for smaller hole dimensions unless one is willing to accept a relatively high waste percentage. It should be pointed out that accurate dimensioning of the mounting section is always necessary to achieve the required firm mechanical mounting and, if applicable, also a reliable electrical connection.

Rather than a mounting section of integrally formed members deformed through stamping and the like, U.S. Patent 4,684,203 granted August 4, 1987 discloses an electrical contact pin wherein one or two separate contact springs are attached to one or two lateral surfaces of the base pin. The mounting section of the base pin is flattened by pressing to provide two opposite flat surfaces. Separately formed and outwardly curved contact springs are then attached to each flat surface by welding at least one end of each contact spring to the base pin. The contact springs extend longitudinally along the length of the base pin and are outwardly curved or convex so that each is furthest from the flat lateral surface of the pin at the spring's mid-point. The contact springs are subjected to bending stress as the convex curve is forced by the hole wall to flatten against the flat lateral surfaces of the contact pin as the latter is inserted into the printed circuit board hole. This patent discloses that its contact pin package is designed for holes having a nominal diameter of 0.889 mm to 1.143 mm, or approximately the maximum range of conventional printed circuit board holes, which typically have a nominal diameter of about 1 mm.

German Patent Application 3,120,629 noted above, discloses in one embodiment an electrical contact terminal for press-fit insertion having a base portion and separately formed flexible fins attached to a carrier strip. The contact terminal is loosely supported by part of the fins. In a further embodiment a sleeve-type fin is disclosed which substantially surrounds the base portion at its circumference. The sleeve is welded at its mid-point or longitudinal midsection to the base portion. As disclosed, this contact terminal is designed for insertion into holes having a diameter of 0.91 mm to 1.09 mm, which complies to conventional printed circuit board holes typically having a nominal diameter of about 1 mm.

By using individually, separately formed fins, the dimensionally inaccurate stamping operation of the production of the fins integrally with the contact terminal itself is eliminated. The fins according to Ger-

man Patent Application 3,120,629 can be produced with a dimensional accuracy desired for practical applications by punching or by a suitable mechanical machining technique from sheet material. Further, different metal materials can be used for the terminal base portion and the fins, thus enabling optimisation of the material properties of both during manufacture and use. This is not possible with many of the terminals of the prior art wherein the entire mounting section is integrally formed by a stamping operation.

Summary of the invention

Smaller size holes are becoming more important as the density of printed circuit boards increase. Many new connector devices have pitch distances of about 1.27 mm with hole diameters of about 0.6 mm. The present invention is designed and intended for such smaller holes. The need for very accurate dimensioning of the mounting section is particularly critical for such small size holes. It is especially important that the insertion forces be sufficiently low to avoid damaging the plated-through metallization in the hole yet the retention forces sufficiently high to achieve a gas-tight seal and a good electrical connection and to retain the contact pin in the hole without soldering.

The present invention provides an electrical terminal with a contact mounting section comprised of at least one separately formed flexible metal fin which can be accurately dimensioned for practical press-fit mounting. In particular for use with small sized plated-through holes of a printed circuit board for pitch distances of 1.27 mm or less.

This is accomplished according to the invention in that said fin is soldered or welded to the base portion at said one end which is narrower in width and thickness, and is clamped down to the base portion at its other end.

The tapered or narrowed end of said at least one fin forms the forward insertion end of the mounting section. In order to disturb as little as possible the shape of the mounting section suitable for insertion of the contact terminal in an opening of a substrate, said at least one fin is soldered or welded to the base portion at its tapered end. The fin is simply clamped around the base portion at its other end. Although the fin is attached only to the base portion near its ends, a construction sufficiently mechanically firm for mounting purposes is obtained. Preferably, the fins may be electrically welded or laser welded to the base portion.

To minimize damage of the metallized wall of a plated-through hole of a printed circuit board, an embodiment of the invention provides that the longitudinal free edge of the fin is rounded off on the side facing away from the base portion, i.e. the side facing the hole wall when mounted.

In a preferred embodiment of the present inven-

tion, the base portion of the terminal has a substantially elliptical cross-section, and its outside surface is flattened in the area of contacting the longitudinal midsection of the fin on a side with the largest radius of curvature.

When mounting the terminal in cylindrical openings, the elliptical cross-section, appropriately dimensioned together with the thickness and width of the fin, has the advantage that in the longitudinal direction of the base portion, such spaces are provided between the fin and base portion, that when the terminal is inserted, the fin is bent downward toward the base portion to fill these spaces and the mounting section deforms to achieve an almost round cross-section adapted to the shape of the opening.

To promote further the accurate positioning and dimensioning of the contact terminal, the base portion is flattened at least over a portion of its circumference on the side where a fin is attached. The flattened section of the base portion promotes the deformation of the fins as much as possible only near its longitudinal edges, which promotes press-fit action.

The mounting section may be located at one end of the terminal. When the latter is pin-shaped, the mounting section may also be located at a distance from the ends. In either case, the flexible fin changes shape and deform to the shape of the hole, thereby applying a force in the hole wall so to anchor the contact firmly in place when the mounting section is inserted into the hole.

In a preferred embodiment of an electrical contact according to the present invention two fins are secured to said base portion and are positioned substantially parallel to each other on opposite sides of said base portion, said fins having substantially the same width and thickness. The use of a symmetrically designed mounting section permits fins to bend uniformly near their longitudinal edges and engage with the wall of the opening. This effectively prevents a twisting or eccentric mounting of the contact which is especially important when the contacts are arranged in a row of a connector.

In an embodiment of the invention particularly suitable for mounting in relatively small openings, the contact is produced from an electrically conductive material having a greater mechanical strength than the material of the fins. The advantage of this embodiment resides in that, in spite of the relatively small dimensions, the contact can be produced with sufficient mechanical strength as a result of a suitable choice of material so that it does bend or otherwise deform when inserted in an opening. On the other hand, the fins may be produced from a material having mechanical strength properties which permit their bending during the insertion in an opening and thus adapted to the specific circumstances. A specific embodiment of the invention provides that the main contact body is formed of brass and the fins of phosphor

bronze or an alloy of beryllium and copper.

The present invention also relates to a method for making an electrical contact terminal comprising the steps of mechanically forming an oblong base portion of said terminal for a distance along said terminal's length, attaching at least one separately formed flexible metal fin to contact an outside surface of said base portion extending in its longitudinal direction, said fin being secured to a carrier strip via a transfer edge and extending in a direction perpendicular to said carrier strip and being formed from the material of the carrier strip, narrowing said fin at one end facing away from the carrier strip and forming said fin to straddle and contact said outside surface of the base portion, characterized in that said fin being secured to the base portion at its narrowed end by soldering or welding and secured to said base portion at its other end adjacent said carrier strip by clamping a portion of said fin down to the base portion, said base portion and at least one fin comprising a mounting section for press-fit mounting of said contact terminal into an opening of a substrate such as a circuit board.

The preferred embodiment of this process provides that said at least one fin is welded to said base portion either electrically or by means of a laser beam. The fins can be produced economically by punching from the material of the carrier strip.

When several contacts are to be inserted simultaneously in corresponding openings of a substrate, it is advantageous from a mounting viewpoint to provide a carrier strip with several contacts, each provided with a mounting section attached to this carrier strip, which is removed only after the contacts have been inserted, for example, by breaking off at the above-mentioned transfer edge.

Brief Description of the Drawings

The invention is further explained in more detail by means of preferred embodiment shown in the drawings.

Fig. 1 perspective shows a view of the mounting part of an electrical contact element according to the invention attached to a carrier strip;

Fig. 2 shows a longitudinal view of the mounting part along line II-II in Fig. 1;

Fig. 3 shows a cross-section of the mounting part along line III-III in Fig. 1 in which the situation in mounted state is indicated with interrupted lines.

Description of the Preferred Embodiment

Fig. 1 shows a preferred embodiment of the press-fit mounting section of an electrical contact according to the invention wherein the mounting section as a whole is illustrated and designated with the reference number 1. The contact may have any shape known or used in the art such as a pin contact, bus

contact, plug contact, or the like, or their combinations (not shown). The mounting section 1 can be located at one end of the contact or between its ends.

Starting from a square wire 2 of electrically conductive material, an oblong base portion 3 having an approximately angular elliptical cross-section is formed, for example, by stamping whereby the contours are indicated by a dashed line at the location of the desired mounting section 1. The sides of the base portion 3 with the largest radius of curvature are flattened at least in the center in longitudinal direction over a portion of the circumference. Against these flattened portions, two identical oblong flat rectangular fins 4 are provided running parallel to each other in such a way that the mounting section 1 has a symmetrical cross-section. The fins 4 originate from the carrier strip 5 in the direction perpendicular to the longitudinal edge of the wire 2. In other words, the flat carrier strip 5 provides the flat metal strips from which the fins are formed. This material may be purchased from the carrier strip and bent up so as to straddle opposite sides of the base portion 4, thus providing fins 4.

At the end 6 of the base portion 3 located near the carrier strip 5, the fins 4 are appropriately clamped down to the base portion 3. At the other end 7 of the base portion 3, the fins 4 are formed with reduced thickness, narrowing down in width as well as in thickness towards the base portion for easier insertion of the mounting section 1 in an opening. In order to maintain this shape as much as possible, the fins 4 are welded in place near this narrow end 7 of the base portion 3 preferably by means of a laser beam or electrically. The fins 4 define in relation to the circumference of the base portion 3 spaces 8 in its longitudinal direction. In order to further facilitate the insertion of the contact in an opening to prevent damage to the wall of the opening as much as possible, the longitudinal edges of the fins 4 are rounded off on the side facing the wall of the opening and away from the base portion 3. The contours of the cross-section of the fins 4 are also shown in Fig. 1 by the dashed lines.

Fig. 2 shows a longitudinal view along line II-II of the mounting section shown in Fig. 1. The fins 4 which are formed, for example, by punching from a carrier strip 5 are still connected to the carrier strip 5 via a transfer edge 9. The material forming the fins 4 therefore surround the base portion 3 at its end 6 on three sides, with the transfer edge 9 along the bottom. Since the fins 4 are clamped at the end 6 around the base portion 3, the contacts consequently remain attached to the carrier strip 5 via bottom edge 9. From a mounting viewpoint, this is advantageous since several contact elements having a mutual distance or pitch corresponding to the mounting holes in a substrate can then be mounted together simultaneously while attached to the carrier strip.

Fig. 3 shows a cross-section of the mounting sec-

tion along the line III-III of Fig. 1. Dashed lines show the situation in which the mounting section is accommodated in a cylindrical opening 10 in a substrate. This clearly shows the flattening of the base portion on the side where the fins are attached and the need for the spaces 8 to accommodate the bent longitudinal edges of the fins 4 formed between the circumference of the base portion 3 and the fins 4 in longitudinal direction of the base portion 3.

With the illustrated embodiment, contacts can be provided for a reliable and mechanically firm mounting in substrate openings having a diameter in the order of magnitude of 0.6 mm or less. In mounting contact elements with a pitch distance of 1.27 mm (0.050") and openings of 0.6 mm (0.024"), square wires 0.4 mm wide on a side with fins 0.6 mm wide and having a thickness of 0.12 mm can be used. Fins having such dimensions can readily be produced from rolled sheet material with a tolerance of only several micrometers. It is extremely difficult to achieve such tolerances by stamping. Quite obviously, both larger and smaller dimensions are possible, adapted to the specific dimensions of the mounting opening.

Since the contact's mounting section comprising the square wire and the fins can be selected of different material, it is possible, in contradistinction with currently available press-fit terminals made from one type of material by stamping, to readily meet special requirements in relation to electrical and mechanical properties. A preferred choice of material is a contact made of brass which provides for a sufficient mechanical strength and electrical conductivity and fins made of phosphor bronze or an alloy of beryllium and copper which have the desired spring characteristics and bending properties for an easy and firm mounting in an opening of a substrate.

The invention is not limited to the demonstrated and discussed preferred embodiments but can be provided in different variations, for example, with more than two fins disposed along the circumference of the base portion with fins twisted in longitudinal direction in relation to each other, with a base portion having a cross-section deviating from the shown angular elliptical shape, etc. The use of square wires as a starting material of course is not a necessity and neither is the provision of the contact mounted on a carrier strip.

Claims

1. An electrical contact terminal for press-fit mounting into an opening of a substrate such as a circuit board, said terminal having a mounting section (1) comprising an oblong base portion (3) and at least one separately formed flexible metal fin (4), a longitudinal midsection of said fin (4) extending lengthwise in contact with an outside surface of

said base portion (3), a longitudinal free edge of said fin (4) extending away from said base portion (3) and defining in relation to the circumference of said base portion (3) a space (8) in its longitudinal direction, and said fin (4) being narrower in width and thickness at one end, characterized in that said fin (4) is soldered or welded to the base portion (3) at said one end which is narrower in width and thickness, and is clamped down to the base portion (3) at its other end.

2. An electrical contact terminal according to claim 1, wherein said longitudinal free edge of said fin (4) is rounded off on the side facing away from the base portion (3).
3. An electrical contact terminal according to claim 1 or 2, wherein said base portion (3) has a substantially elliptical cross-section, and its outside surface is flattened in the area of contacting said longitudinal midsection of said fin (4) on a side with the largest radius of curvature.
4. An electrical contact terminal according to any of the preceding claims, wherein two fins (4) are secured to said base portion (3) and are positioned substantially parallel to each other on opposite sides of said base portion (3), said fins (4) having substantially the same width and thickness.
5. An electrical contact terminal according to any of the preceding claims, wherein each fin (4) is welded to the base portion (3) by electrical or laser means.
6. An electrical contact terminal according to any of the preceding claims, wherein each fin (4) is formed by punching metal material from a carrier strip (5) which carries a plurality of said terminals connected to said carrier strip (5) via a transfer edge (9), each terminal provided with said mounting section (1).
7. An electrical contact terminal according to any of the preceding claims, wherein said base portion (3) is formed from a first electrically conductive material and each fin (4) is formed from a second electrically conductive material, and said first material has greater mechanical strength than said second material.
8. An electrical contact terminal according to claim 7, wherein said first material is brass and said second material is either phosphor bronze or an alloy of beryllium and copper.
9. A method for making an electrical contact terminal comprising the steps of mechanically forming



tion along the line III-III of Fig. 1. Dashed lines show the situation in which the mounting section is accommodated in a cylindrical opening 10 in a substrate. This clearly shows the flattening of the base portion on the side where the fins are attached and the need for the spaces 8 to accommodate the bent longitudinal edges of the fins 4 formed between the circumference of the base portion 3 and the fins 4 in longitudinal direction of the base portion 3.

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Since the contact's mounting section comprising the square wire and the fins can be selected of different material, it is possible, in contradistinction with currently available press-fit terminals made from one type of material by stamping, to readily meet special requirements in relation to electrical and mechanical properties. A preferred choice of material is a contact made of brass which provides for a sufficient mechanical strength and electrical conductivity and fins made of phosphor bronze or an alloy of beryllium and copper which have the desired spring characteristics and bending properties for an easy and firm mounting in an opening of a substrate.

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Claims

1. An electrical contact terminal for press-fit mounting into an opening of a substrate such as a circuit board, said terminal having a mounting section (1) comprising an oblong base portion (3) and at least one separately formed flexible metal fin (4), a longitudinal midsection of said fin (4) extending lengthwise in contact with an outside surface of said base portion (3), a longitudinal free edge of said fin (4) extending away from said base portion (3) and defining in relation to the circumference of said base portion (3) a space (8) in its longitudinal direction, and said fin (4) being narrower in width and thickness at one end, characterized in that said fin (4) is soldered or welded to the base portion (3) at said one end which is narrower in width and thickness, and is clamped down to the base portion (3) at its other end.
2. An electrical contact terminal according to claim 1, wherein said longitudinal free edge of said fin (4) is rounded off on the side facing away from the base portion (3).
3. An electrical contact terminal according to claim 1 or 2, wherein said base portion (3) has a substantially elliptical cross-section, and its outside surface is flattened in the area of contacting said longitudinal midsection of said fin (4) on a side with the largest radius of curvature.
4. An electrical contact terminal according to any of the preceding claims, wherein two fins (4) are secured to said base portion (3) and are positioned substantially parallel to each other on opposite sides of said base portion (3), said fins (4) having substantially the same width and thickness.
5. An electrical contact terminal according to any of the preceding claims, wherein each fin (4) is welded to the base portion (3) by electrical or laser means.
6. An electrical contact terminal according to any of the preceding claims, wherein each fin (4) is formed by punching metal material from a carrier strip (5) which carries a plurality of said terminals connected to said carrier strip (5) via a transfer edge (9), each terminal provided with said mounting section (1).
7. An electrical contact terminal according to any of the preceding claims, wherein said base portion (3) is formed from a first electrically conductive material and each fin (4) is formed from a second electrically conductive material, and said first material has greater mechanical strength than said second material.
8. An electrical contact terminal according to claim 7, wherein said first material is brass and said second material is either phosphor bronze or an alloy of beryllium and copper.
9. A method for making an electrical contact terminal comprising the steps of mechanically forming



an oblong base portion (3) of said terminal for a distance along said terminal's length, attaching at least one separately formed flexible metal fin (4) to contact an outside surface of said base portion (3) extending in its longitudinal direction, said fin (4) being secured to a carrier strip (5) via a transfer edge (9) and extending in a direction perpendicular to said carrier strip (5) and being formed from the material of the carrier strip (5), narrowing said fin (4) at one end facing away from the carrier strip (5) and forming said fin (4) to straddle and contact said outside surface of the base portion (3), characterized in that said fin (4) being secured to the base portion (3) at its narrowed end by soldering or welding and secured to said base portion (3) at its other end adjacent said carrier strip (5) by clamping a portion of said fin (4) down to the base portion (3), said base portion (3) and at least one fin (4) comprising a mounting section (1) for press-fit mounting of said contact terminal into an opening of a substrate such as a circuit board.

10. A method according to claim 9, wherein said at least one fin (4) is welded to said base portion (3) either electrically or by means of a laser beam.

Patentansprüche

1. Elektrischer Kontaktanschluß für eine Preßsitz-Befestigung in einer Öffnung eines Substrats wie beispielsweise einer Leiterplatte, wobei der Anschluß eine Befestigungssektion (1) mit einem länglichen Basisabschnitt (3) und wenigstens einer getrennt hergestellten flexiblen Metallflosse (4) aufweist, wobei sich eine längs verlaufende Mittensektion der Flosse (4) in Längsrichtung in Kontakt mit einer Aussenfläche des Basisabschnitts (3) erstreckt, eine längs verlaufende freie Kante der Flosse (4) sich von dem Basisabschnitt (3) weg erstreckt und in Relation zum Umfang des Basisabschnitts (3) einen Raum (8) in dessen Längsrichtung definiert und wobei die Flosse (4) an einem Ende schmaler in der Weite und der Dicke ist, dadurch gekennzeichnet, daß die Flosse (4) an den Basisabschnitt (3) an dem einen Ende angelötet oder angeschweißt ist, welches die schmalere Weite und Dicke besitzt, und an ihrem anderen Ende nach unten zu auf den Basisabschnitt (3) angeklemmt ist.
2. Elektrischer Kontaktanschluß nach Anspruch 1, bei dem die längs verlaufende freie Kante der Flosse (4) auf der Seite abgerundet ist, die von dem Basisabschnitt (3) wegweist.

3. Elektrischer Kontaktanschluß nach Anspruch 1 oder 2, bei dem der Basisabschnitt (3) einen im wesentlichen elliptischen Querschnitt hat und dessen Außenfläche an dem Bereich der Kontaktgabe mit der längs verlaufenden Mittensektion der Flosse (4) auf einer Seite mit dem größten Krümmungsradius abgeflacht ist.
4. Elektrischer Kontaktanschluß nach irgendeinem der vorhergehenden Ansprüche, bei dem zwei Flossen (4) an dem Basisabschnitt (3) befestigt sind und im wesentlichen parallel zueinander auf gegenüberliegenden Seiten des Basisabschnitts (3) positioniert sind, wobei die Flossen (4) im wesentlichen die gleiche Weite und Dicke haben.
5. Elektrischer Kontaktanschluß nach irgendeinem der vorhergehenden Ansprüche, bei dem jede Flosse (4) an den Basisabschnitt (3) mit Hilfe einer elektrischen Einrichtung oder einer Lasereinrichtung angeschweißt ist.
6. Elektrischer Kontaktanschluß nach irgendeinem der vorhergehenden Ansprüche, bei dem jede Flosse (4) durch Stanzen von Metallmaterial aus einem Trägerstreifen (5) hergestellt ist, der eine Vielzahl der Anschlüsse trägt, die mit dem Trägerstreifen (5) über eine Übertragungskante (9) verbunden sind, wobei jeder Anschluß mit der Befestigungssektion (1) ausgestattet ist.
7. Elektrischer Kontaktanschluß nach irgendeinem der vorhergehenden Ansprüche, bei dem der Basisabschnitt (3) aus einem ersten elektrisch leitenden Material hergestellt ist und jede Flosse (4) aus einem zweiten elektrisch leitenden Material hergestellt ist und wobei das erste Material eine größere mechanische Festigkeit als das zweite Material hat.
8. Elektrischer Kontaktanschluß nach Anspruch 7, bei dem das erste Material Messing ist und das zweite Material entweder Phosphorbronze oder eine Legierung aus Beryllium und Kupfer ist.
9. Verfahren zur Herstellung eines elektrischen Kontaktanschlusses, mit den Schritten einer mechanischen Verformung eines länglichen Basisabschnitts (3) des Anschlusses über einen Abstand entlang der Anschlußlänge hinweg, befestigen von wenigstens einer getrennt hergestellten flexiblen Metallflosse (4), um eine Kontaktierung mit der Aussenfläche des Basisabschnitts (3) vorzusehen, welches sich in dessen Längsrichtung erstreckt, wobei die Flosse (4) an einem Trägerstreifen (5) über eine Übertragungskante (9) befestigt ist und sich in einer Richtung senkrecht zu dem Trägerstreifen (5) erstreckt und aus



dem Material des Trägerstreifens (5) hergestellt wird, verjüngen der Flosse (4) an einem Ende, welches von dem Trägerstreifen (5) weg weist und verformen der Flosse (4) derart, daß sie rittlings auf der Außenoberfläche des Basisabschnitts (3) aufsitzt und Kontakt mit diesem hat, dadurch gekennzeichnet, daß die Flosse (4) an dem Basisabschnitt (3) an deren verjüngtem Ende durch Löten oder Schweißen befestigt wird und an ihrem anderen Ende an dem Basisabschnitt (3) nahe dem Trägerstreifen (5) durch ein nach unten erfolgendes Ankleben eines Abschnitts der Flosse (4) an den Basisabschnitt (3) befestigt wird, wobei der Basisabschnitt (3) und wenigstens eine Flosse (4) einen Befestigungssektion (1) besitzen, um eine Preßsitz-Befestigung des Kontaktanschlusses in einer Öffnung eines Substrates einer Leiterplatte vorzunehmen.

10. Verfahren nach Anspruch 9, in welchem die wenigstens eine Flosse (4) an den Basisabschnitt (3) entweder elektrisch oder mit Hilfe eines Laserstrahls angeschweißt wird.

Revendications

1. Une broche de contact électrique pour montage par pressage à force dans une ouverture d'un substrat telle qu'une plaquette de circuit imprimée, ladite broche présentant une section de montage (1) comprenant une partie de base oblongue (3) et au moins une ailette (4) métallique flexible formée séparément, une section médiane longitudinale de ladite ailette (4) s'étendant dans le sens de la longueur en contact avec une surface extérieure de ladite partie de base (3), un bord longitudinal libre de ladite ailette (4) s'étendant à distance de ladite partie de base (3) et définissant en relation avec la circonférence de ladite partie de base (3) un espace (8) dans sa direction longitudinale, et ladite ailette (4) étant plus étroite en largeur et en épaisseur à l'une de ses extrémités, caractérisée en ce que ladite ailette (4) est brasée ou soudée à la partie de base (3) à ladite extrémité qui est plus étroite en largeur et en épaisseur, et est plaquée sur la partie de la base (3) à son autre extrémité.
2. Une broche de contact électrique selon la revendication 1, dans laquelle ledit bord libre longitudinal de ladite ailette (4) est arrondi du côté situé en face et à distance de la partie de base (3).
3. Une broche de contact électrique selon la revendication 1 ou 2, dans laquelle ladite partie de base (3) présente une section transversale sensiblement elliptique, et sa surface extérieure

étant aplatie sur l'aire venant en contact avec ladite section médiane longitudinale de ladite ailette (4) sur une face présentant le plus grand rayon de courbure.

4. Une broche de contact électrique selon l'une quelconque des revendications précédentes, dans laquelle deux ailettes (4) sont fixées à ladite partie de base (3) et sont disposées de façon sensiblement parallèle l'une à l'autre sur des faces opposées de ladite partie de base (3), lesdites ailettes (4) présentant sensiblement la même largeur et la même épaisseur.
5. Une broche de contact électrique selon l'une quelconque des revendications précédentes, dans laquelle chaque ailette (4) est soudée à la partie de base (3) par des moyens électriques ou des moyens laser.
6. Une broche de contact électrique selon l'une quelconque des revendications précédentes, dans laquelle chaque ailette (4) est formée par découpage du matériau métallique d'une bande de support (5) qui porte une pluralité desdites broches reliées à ladite bande de support (5) par un bord de transfert (9), chaque broche étant munie de ladite section de montage (1).
7. Une broche de contact électrique selon l'une quelconque des revendications précédentes, dans laquelle ladite partie de base (3) est formée à partir d'un premier matériau électriquement conducteur et chaque ailette (4) est formée à partir d'un second matériau électriquement conducteur, et ledit premier matériau présente une plus grande résistance mécanique que ledit second matériau.
8. Une broche de contact électrique selon la revendication 7, dans laquelle ledit premier matériau est le laiton et ledit second matériau est soit le bronze phosphoreux, soit un alliage de béryllium ou de cuivre.
9. Un procédé pour réaliser une broche de contact électrique comprenant les étapes consistant à former mécaniquement une partie de base oblongue (3) de ladite broche sur une certaine distance le long de la longueur de ladite broche, à fixer au moins une ailette métallique flexible (4) formée séparément pour venir en contact avec une surface extérieure de ladite partie de base (3) s'étendant dans sa direction longitudinale, ladite ailette (4) étant fixée à une bande de support (5) via un bord de transfert (9) et s'étendant dans une direction perpendiculaire à ladite bande de support (5) et étant formée à partir du matériau de la bande



de support (5), à rétrécir ladite ailette (4) à une
extrémité située en face et à distance de la bande
de support (5) et à former ladite ailette (4) pour
qu'elle chevauche ladite surface extérieure de la
partie de base (3) et vienne en contact avec cette
surface, caractérisée en ce que l'on fixe ladite ai-
lette (4) à la partie de base (3), à son extrémité
rétrécie, par brasage ou soudage et on la fixe à
ladite partie de base (3) à son autre extrémité ad-
jacente à ladite bande de support (5) en plaquant
une partie de ladite ailette (4) sur la partie de
base (3), ladite partie de base (3) et au moins une
aillette (4) comprenant une section de montage
(1) pour le montage par pressage de ladite broche
de contact dans une ouverture d'un substrat telle
qu'une plaquette de circuit imprimé.

10. Un procédé selon la revendication 9, dans lequel
ladite au moins une ailette (4) est soudée à ladite
partie de base (3) soit électriquement soit au
moyen d'un rayon laser.

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