

Description

Inductive component

The present invention relates to an inductive component according to the precharacterizing clause of Patent Claim 1.

In the case of inductive components, in which a core made of ferromagnetic material and winding former for holding electrically conductive windings are assembled at this stage to form a unit, this unit comprising the core and the winding former has until now been permanently connected to a supporting body by bonding, which supporting body has a shape which is matched to the unit comprising the core and the winding former, and has connecting pins for the electrical connection of the component windings. At the same time, the component parts, in particular the cores, may be damaged or destroyed by fractures or by cracks, for example as a result of the adhesive and the component parts having different thermal coefficients of expansion. Furthermore, the component characteristics may also be adversely affected by adhesive impurities.

It is admittedly known in the case of inductive components for magnet core halves and coil formers to be permanently connected together by the magnet core halves and the coil formers being assembled and being held together by clips, the clips acting on the magnet core halves. Reference is made to this, for example, in the Datenbuch Ferrite und Zubehör [Ferrites and accessories data manual], 1994, pages 215 and 357 by the applicant. However, this has not yet been considered for components of the type mentioned above.

The invention is based on the object of specifying a connection for inductive components of the type mentioned above, which connection has long-term stability and can be loaded mechanically.

In the case of an inductive component of the type mentioned initially, this object is achieved according to

the invention by the features in the characterizing part of Patent Claim 1.

Developments of the invention are the subject matter of the subclaims.

5 The invention will be explained in more detail in the following text with reference to exemplary embodiments which are illustrated in the figures of the drawing, in which:

Figure 1A and 1B show an integral unit comprising a
10 ferromagnetic core and a winding former of an inductive component; and

Figures 2A, 2B to 4A, 4B each show one embodiment of a component according to the invention.

15 Figures 1A and 1B respectively show a front view and a side view of an integral unit comprising a core 10, 11 made of ferromagnetic material, and a winding former 12. The core 10, 11 is in this case a double-E core with an outer frame 10 and a centre web 11. The winding former 12 is placed onto the centre web 11 in such a manner that
20 the core 10, 11 and the winding former 12 form an integral unit. The core shape is mentioned here only as an example. Any core shape is possible which can be assembled with a winding former to form a unit for the above purpose.

25 Figures 2A and 2B respectively show a side and a front view of a first embodiment of an inductive component. In this case, an integral unit is provided which corresponds to the integral unit comprising the core 10 and the winding former 12 according to Figures 1A and 1B.
30 The centre web 11 according to Figures 1A and 1B is not shown specifically in Figures 2A and 2B.

 In this embodiment, an L-shaped supporting body 20-1, 20-2, 21 having two limbs 21-1 and 21-2 is provided, one of the limbs, the limb 21-1 in the exemplary
35 embodiment, having a recess 21 for holding the winding former 12. The integral unit comprising the core 10 and the winding former 12 rests on the limb 20-1 which has the recess 21 and is seated on the limb 20-2 which is at right angles thereto.

According to the invention, the integral unit comprising the core 10 and the winding former 12 is held on the supporting body 20-1 by means of a spring clip 23 which engages around the limb 20-1 and around the core 10. In addition to a connection with long-term stability and which can be loaded mechanically, such attachment of the integral unit comprising the core 10 and the winding former 12 has the further advantage that the connection is detachable and, in order that the parts of the inductive component can be disposed of in a simple manner after their life has expired, connecting pins for electrical connection of a winding, which is located on the winding former 12, are provided in the limb 20-2 of the supporting body 20-1, 20-2, 21.

In the embodiment according to Figures 3A and 3B, which respectively show a side view and a front view of an inductive component constructed according to the invention, an integral unit comprising a core 10 and a winding former 12 is once again provided, corresponding to the integral unit according to Figures 1A and 1B.

In this embodiment, a supporting body 30 is designed to be planar and has a recess 31 for holding the winding former 12. The unit comprising the core 10 and the winding former 12 is placed onto one side of the supporting body 30 and is attached to it by means of a spring clip 33 which engages around the supporting body 30, 31 and around the core 10.

On the basis of the embodiment according to Figures 2A and 2B, connecting pins 32 are provided in the supporting body, for electrical connection of a winding which is not illustrated but is on the winding former 12.

In the embodiment according to Figures 4A and 4B of an inductive component which is designed according to the invention, a two-piece supporting body is formed by two parts 40-1, 40-2, which each have a recess 41 for holding the winding former 12. The integral unit comprising the core 10 and the winding former 12 is in this case arranged between the two supporting body parts 40-1, 40-2 and is held in the supporting body by a clip which

engages around the two supporting body parts 40-1, 40-2 and around the core 10.

5 Connecting pins 42 for electrical connection of a winding, which is not illustrated but is located on the winding former 12, are also provided in the supporting body parts 40-1, 40-2 in the case of this embodiment.

10 The spring clips 23, 33, 43 according to Figures 2A, 2B to 4A, 4B may be wire spring clips or leaf spring clips. The illustrations according to the figures in this case correspond to leaf spring clips. Corresponding wire spring clips are not shown specifically.

Patent Claims

1. Inductive component having a core (10) made of ferromagnetic material, a winding former (12) for holding electrically conductive windings, and a supporting body (20-1, 20-2, 21; 30, 31; 40-1, 40-2, 41), on which the core (10) and winding former (12) can be mounted in a state assembled to form a unit, characterized in that the supporting body (20-1, 20-2, 21; 30, 31; 40-1, 40-2, 41) has a shape which is matched to the unit comprising the core (10) and the winding former (12), and in that the unit comprising the core (10) and the winding former (12) is held on the supporting body (20-1, 20-2, 21; 30, 31; 40-1, 40-2, 41) by means of at least one spring clip (23; 33; 43).

2. Component according to Claim 1, characterized in that the supporting body (20-1, 20-2, 21) is designed in an L-shape, in that one limb (20-1) of the L-shaped supporting body (20-1, 20-2, 21) has a recess (21) for holding the winding former (12), in that the unit comprising the core (10) and the winding former (12) rests on the limb (20-1) which has the recess (21) and is seated on that limb (20-2) of the L-shaped supporting body (20-1, 20-2, 21) which is at right angles thereto, and in that the spring clip (23) engages around the limb (20-1) which has the recess (21) and around the core (10) formed by the unit comprising the core (10) and the winding former (12).

3. Component according to Claim 1, characterized in that the supporting body (30, 31) is designed to be planar and has a recess (31) for holding the winding former (12), in that the unit comprising the core (10) and the winding former (12) is placed onto one side of the supporting body (30, 31) and the spring clip (33) engages around the supporting body (30, 31) and around the core (10) formed by the unit comprising the core (10)



and the winding former (12).

4. Component according to Claim 1,
characterized

5 in that the supporting body (40-1, 40-2, 41) is designed
in two pieces, in that the two parts (40-1, 40-2) of the
supporting body (40-1, 40-2, 41) each have a recess (41)
for holding the winding former (10), in that the unit
comprising the core (10) and the winding former (12) is
10 arranged between the two supporting body parts (40-1,
40-2), and in that the spring clip (43) engages around
the two supporting body parts (40-1, 40-2) and around the
core (10).

5. Component according to one of Claims 1 to 4,
characterized

15 in that the spring clip (23; 33; 43) is a wire spring
clip.

6. Component according to one of Claims 1 to 4,
characterized

20 in that the spring clip (23; 33; 43) is a leaf spring
clip.

