

Specification

The invention relates to an electrolytic capacitor which is accommodated in a cup and comprises two coaxial connection elements leading away from its two end faces, comprising a prismatic casing of an insulating material surrounding the cup and having a recess in which the capacitor is accommodated and from which two connection elements project at each end, said connection elements which project from the casing being in the form of strips, said strips, by being bent over two times, being both turned down on one and the same side surface of the casing, said ends on said side surface being spaced from each other.

Such a capacitor is known from a publication by Y. Shibata, "Building a better aluminium electrolytic capacitor", in Journal of Electronic Engineering, November 1, 1982, pp. 47-50. Such electrolytic capacitors are known in a variety of constructions, either as a dry or a wet electrolytic capacitor. One such embodiment is shown by way of example in DE-AS 2438870.

It is the object of the invention to improve such an electrolytic capacitor in such a manner that it can be used in a simple manner also in a flat position in circuit groups, for example, in thickfilm circuits or on conductor plates.

According to the invention this is achieved in that the cup of the capacitor is a cylindrical cup, that the recess is a continuous cylindrical recess, and that the connection elements are flattened integral connection wires. In this manner it is not necessary for the special purpose of the electrolytic capacitor in a flat arrangement to manufacture a specially constructed electrolytic capacitor only for this purpose, but the electrolytic capacitors obtained in the normal production can for this purpose be adapted in a simple manner, which involves an essential simplification in the production.

In this connection it is stated that it is already known from US-PS 3124721 to flatten an electric component during its production starting from a cylindrical form so that it obtains a flat engaging surface and to fold the two connection foils terminating at the end faces on one of the said engaging surfaces. It may be seen that in this case a special product is manufactured originally and, in contrast with the present invention, a product which is already substantially ready for the special application in view is not adapted. It is also known per se, as is shown in US-PS 3516155, to fold the two terminating connection wires in a cylindrical electric component two times in opposite directions and to provide them with flattened ends to thus provide flat engaging surfaces for the

component. Such comparatively small and weak engaging surfaces, however, do not ensure a reliable and stable position of the component.

The invention will now be described in greater detail, by way of example, with reference to the drawing which shows an embodiment of the invention to which, however, it is not to be restricted.

Fig. 1 is a longitudinal sectional view of an electrolytic capacitor.

Fig. 2 is a side elevation of the electrolytic capacitor shown in Fig. 1 taken on the line II-II in Fig. 1

Fig. 3 is a side elevation of the electrolytic capacitor shown in Fig. 1 taken on the line III-III in Fig. 1.

As may be seen in particular from Fig. 1, the actual electrolytic capacitor 1 comprises a cup 2 in which the wound body 3 is accommodated. Said wound body 3 is in electrically conductive contact with one electrode circumferentially with the inner wall of the cup 2 which usually consists of electrically conductive material, it being possible, of course, to produce the said contacting in a different manner. An electrically conductive connection strip or pin 4 is provided in the interior of the wound body 3 for contacting with the other electrode, with which strip a connection wire 5 is connected which leads away from the end face of the electrolytic capacitor 1. A

second connection wire 6 which is electrically conductively connected to the bottom of the cup leads away from the bottom of the cup 2 which forms the other end face of the electrolytic capacitor. A stopper 7 which consists of a rather elastic material and which is inserted in the cup aperture and is held therein by milling of the edge of the cup and squeezing of the cup serves to seal the electrolytic capacitor. The connection strip or pin 4 and the connection wire 5 are passed through said stopper 7. Of course, within the scope of the prior art other types of seals for the electrolytic capacitor are possible. Such an electrolytic capacitor 1 is a conventional product which is commercially available.

In order to adapt such an electrolytic capacitor 1 for a reliable use as a lying component, a preferably square enveloping member 8 which surrounds the cup 2 and consists of an insulating material is provided. For that purpose, the enveloping member 8 comprises a continuous cylindrical recess 9 in which the electrolytic capacitor 1 with the cup 2 is accommodated and from which the two connection wires 5 and 6 project on each side. The cross-sectional shape of the recess 9 may be circular or polygonal. The circumferential cross-sectional shape of the enveloping member 8 may also be polygonal, for example, pentagonal. Such an enveloping member 8 may be manufactured as a separate component of a synthetic resin in the recess

of which the electrolytic capacitor 1 with its cup 2 is inserted. The enveloping member, however, may also be manufactured in that the electrolytic capacitor 1 is immediately embedded with a synthetic resin in a corresponding shape.

Furthermore, the connection wires 5 and 6 projecting from the recess 9 of the enveloping member 8 may also be flattened to form strips 10 and 11, respectively, and these strips 10 and 11 are then bent over two times (12, 13 and 14, 15, respectively), both on one and the same side surface 16 of the enveloping member 8, in which by corresponding elongation of the strips 10 and 11 the ends 17 and 18, respectively, are separated from each other on the said side surface 16. The bends 12, 13 and 14, 15, respectively, are produced in such a manner that the strips 10 and 11, respectively, engage the enveloping member 8 under a prestress, so that their position is ensured. Such a securing of the position of the strips 10 and 11, respectively, might, of course, also be done differently, for example, by adhering the section of the strips engaging the side surface 16 of the enveloping member 8 to the said side surface. Of course, flattening of the connection wires to form strips may also be done prior to providing the enveloping member 8 around the electrolytic capacitor 1.

An electrolytic capacitor adapted in this manner now is

very suitable for incorporating in a circuit group as a lying component since as a result of the prismatic shape of the enveloping member a side surface thereof forms a stable engaging surface and the connection wires flattened to form strips enable a good contacting after bending over the said strips on the side surface in question of the enveloping member. The production of such an electrolytic capacitor is particularly simple since for this purpose only the electrolytic capacitors conventionally obtained in the production have to be further constructed in the manner described hereinbefore.

As shown in Fig. 3, the strip sections, viewed in the longitudinal direction, engaging the enveloping member 8 in the present example are in alignment. However, by suitable shaping of the strips 10 and 11, respectively, it may also be achieved that the strip sections engaging the side surface 16 of the enveloping member 8, viewed in the transverse direction, are spaced apart and hence, viewed in the longitudinal direction, are not in alignment with each other, which may be desirable with respect to the electrical connection possibilities.

Advantageously, the enveloping member 8 at one end face is provided with at least one marking which can preferably be scanned by machine, so as to characterize the polarity of the electrolytic capacitor. For this purpose, as is shown in particular in Fig. 2, the side of the enveloping member 8 present opposite to the side surface in

the present case is provided with bevels 19 and 20, respectively.

If desired, the two laterally open ends of the recess 9 in the enveloping member 8 may also be filled with an insulating moulding mass, which may contribute to an improvement of the insulation properties.

It may be obvious from the above that there exist a number of modified embodiments of the example described without thereby departing from the scope of the present invention.

CLAIMS

1. An electrolytic capacitor (1) which is accommodated in a cup (2) and comprises two coaxial connection elements (5, 6) leading away from its two end faces, comprising a prismatic casing (8) of an insulating material surrounding the cup (2) and having a recess (9) in which the capacitor (1) is accommodated and from which two connection elements (10, 11) project at each end, said connection elements (10, 11) which project from the casing being in the form of strips, said strips (10, 11), by being bent-over two times (12, 13, 14, 15) being both turned down on one and the same side surface (16) of the casing (8), said ends (17, 18) on said side surface (16) being spaced from each other, characterized in that the cup (2) of the capacitor (1) is a cylindrical cup, that the recess (9) is a continuous cylindrical recess, and that the connection elements (10, 11) are flattened integral connection wires (5, 6).

