

PATENT SPECIFICATION (11)

1 593 760

1 593 760

- (21) Application No. 23183/78 (22) Filed 26 May 1978 (19)
(44) Complete Specification published 22 July 1981
(51) INT. CL.³ B65D 81/00 25/54
(52) Index at acceptance
B8P K14 Q



(54) IMPROVEMENTS IN THE PACKAGING OF DUAL-IN-LINE
ELECTRICAL COMPONENTS

(71) I, YEN WEI HSIUNG, a citizen of Taiwan of 137, Jalan Toh Guan, Singapore, 5, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to packaging members for electrical components consisting of main body and respective rows of protruding terminals, in a configuration known as "dual-in-line".

Some components of this type, for example metal-oxide semiconductor (MOS) integrated circuits, are highly susceptible to static electrical charges and must be packed in anti-static or conducting packages so as to prevent the application of a static charge to one of the pins of the device which could cause an internal electrical breakdown.

It has been proposed to protect MOS integrated circuits against the effect of static charges by connecting together their pins by means of a wire clip. However, this does not provide any mechanical protection for the devices. Another prior proposal has been to force the pins of the devices into a conductive foam plastics material. This is effective in protecting the devices against stray static charges but again provides only limited mechanical protection. Another prior proposal is to pack the components in an extruded elongate aluminium member which may be sealed at its ends and is provided with a gap in its top to enable the components to be seen. The member is of course conductive and provides reasonable electrical and mechanical protection for the devices. However, the components are still exposed to dust and humidity which may enter through the gap in the top and, further, the member is relatively expensive and heavy which considerably increases the cost of transporting the components. The aluminium members are generally used only once and destroyed on reaching their destination. This is obviously wasteful and expensive.

According to the invention, I provide a packaging member for electrical components consisting of a main body and respective

rows of protruding terminals, said member comprising a tubular member of uniform closed inverted U-shaped cross section formed of plastics material, said cross section consisting of a base wall portion adapted to support the main bodies of the components, a flanking portion on each side of the base portion adapted to receive respective rows of said terminals and a top portion adapted to overlie said main bodies and joining the respective flanking portions, said base and flanking portions being electrically conductive and said top portion being transparent.

The electrically conductive walls prevent the application of static charges to the pins of the components and the transparent wall allows a packer to see the components. The said portions of the tubular member may be metallised or treated with an anti-static compound to render the portions electrically conductive but preferably the tubular member is formed of p.v.c. containing carbon particles in the portions defining the conductive portions.

By making the tubular member of plastics material, the packaging member can be cheaply mass-produced and the product is very light, which leads to low transport costs.

Preferably the packaging member further comprises a pair of end plugs formed of plastics material and arranged to seal the ends of the tubular member. Thus the member may be sealed when packed with components and the components are protected against the effects of dust and humidity. Furthermore, the end plugs may be removed without damaging the tubular member, so the plugs and tubular member may be re-used repeatedly.

An embodiment of the invention will now be described by way of example and with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a packaging member according to the invention; and

Figures 2 and 3 are cross-sections of the apparatus of Figure 1 showing the position of an electrical component in use.

Referring to the drawings, Figure 1 shows apparatus for packing electrical components,

(17)

(formed in dual-in-line configuration, comprising a tubular member 2 of uniform closed cross-section and formed of plastics material. The apparatus also comprises a pair of end
55 plugs 3 of a plastics material for closing the ends of the tubular member 2. The plugs 3 for the respective ends of the tubular member 2 are identical.

As shown in Figures 2 and 3, the tubular member 2 has walls defining internally a
110 portion 4 for supporting the body 5 of a component and two regions 6 for receiving the respective rows of pins 7. The tubular member 2 is made of p.v.c. and the walls around the two regions 6, which are shown
115 black in Figures 2 and 3, are made electrically conductive by incorporating particles of carbon. The wall 8 which covers the top of the dual-in-line package in use is transparent
120 to enable the components to be seen.

The end plugs 3 each have a projecting portion 9 shaped to fit within the end of the tubular member 2 and a rim 10 which abuts
125 the end of the tubular member 2.

As may be seen in Figures 2 and 3 the tubular member 2 is shaped such that the pins of a component cannot contact the transparent wall 8 (which may not be electrically conductive) however the component
130 moves.

In use, the components in dual-in-line configuration may be packed in the tubular member 2 and an end plug 3 fitted to each end. The conductive walls prevent the build-
135 up of possibly damaging static charges and the transparent wall 8 enables the components to be seen. On reaching their destination, the plugs 3 may be removed to give access to the components and the tubular
140 member 2 and plugs 3 may be re-used as often as desired.

WHAT I CLAIM IS:—

1. A packaging member for electrical
145 components consisting of a main body and respective rows of protruding terminals, said member comprising a tubular member of uniform closed inverted U-shaped cross section formed of plastics material, said cross
150 section consisting of a base wall portion adapted to support the main bodies of the components, a flanking portion on each side of the base portion adapted to receive respective rows of said terminals and a top portion
155 adapted to overlie said main bodies and joining the respective flanking portions, said base and flanking portions being electrically conductive and said top portion being transparent.

2. A packaging member as claimed in claim 1 wherein the tubular member is formed of p.v.c. which contains carbon particles in the portions defining the conductive walls.

3. A packaging member as claimed in

claim 1 or 2 further comprising a pair of end plugs formed of plastics material and arranged to seal the ends of the tubular member.

4. A packaging member for electrical
160 components, substantially as hereinbefore described with reference to the accompanying drawings.

For the Applicant,
FRANK B. DEHN & CO.,
Chartered Patent Agents,
Imperial House,
105-109 Kingsway,
London WC2B 6UZ.

Printed for Her Majesty's Stationery Office by Burgess & Son (Abingdon) Ltd. - 1961. Published at The Patent Office, 25 Southampton Buildings, London, W.C.2A 1AY, from which copies may be obtained.



formed in dual-in-line configuration, comprising a tubular member 2 of uniform closed cross-section and formed of plastics material. The apparatus also comprises a pair of end plugs 3 of a plastics material for closing the ends of the tubular member 2. The plugs 3 for the respective ends of the tubular member 2 are identical.

As shown in Figures 2 and 3, the tubular member 2 has walls defining internally a portion 4 for supporting the body 5 of a component and two regions 6 for receiving the respective rows of pins 7. The tubular member 2 is made of p.v.c. and the walls around the two regions 6, which are shown black in Figures 2 and 3, are made electrically conductive by incorporating particles of carbon. The wall 8 which covers the top of the dual-in-line package in use is transparent to enable the components to be seen.

The end plugs 3 each have a projecting portion 9 shaped to fit within the end of the tubular member 2 and a rim 10 which abuts the end of the tubular member 2.

As may be seen in Figures 2 and 3 the tubular member 2 is shaped such that the pins of a component cannot contact the transparent wall 8 (which may not be electrically conductive) however the component moves.

In use, the components in dual-in-line configuration may be packed in the tubular member 2 and an end plug 3 fitted to each end. The conductive walls prevent the build-up of possibly damaging static charges and the transparent wall 8 enables the components to be seen. On reaching their destination, the plugs 3 may be removed to give access to the components and the tubular member 2 and plugs 3 may be re-used as often as desired.

WHAT I CLAIM IS:—

1. A packaging member for electrical components consisting of a main body and respective rows of protruding terminals, said member comprising a tubular member of uniform closed inverted U-shaped cross section formed of plastics material, said cross section consisting of a base wall portion adapted to support the main bodies of the components, a flanking portion on each side of the base portion adapted to receive respective rows of said terminals and a top portion adapted to overlie said main bodies and joining the respective flanking portions, said base and flanking portions being electrically conductive and said top portion being transparent.

2. A packaging member as claimed in claim 1 wherein the tubular member is formed of p.v.c. which contains carbon particles in the portions defining the conductive walls.

3. A packaging member as claimed in

claim 1 or 2 further comprising a pair of end plugs formed of plastics material and arranged to seal the ends of the tubular member.

4. A packaging member for electrical components, substantially as hereinbefore described with reference to the accompanying drawings.

For the Applicant,
FRANK B. DEHN & CO.,
Chartered Patent Agents,
Imperial House,
15-19 Kingsway,
London WC2B 6UZ.

Printed for Her Majesty's Stationery Office by Burgess & Son (Abingdon) Ltd.—1981. Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.