

A CONTAINER FOR ELECTRICAL COMPONENTS".

The present invention relates to a container for storing a plurality of miniaturized electrical components, and more particularly to a tubular container effectively utilized for storing, for example, semiconductor devices which are subject to electrostatic breakdown, especially, semiconductor integrated circuit devices (which will hereinafter be referred to as IC devices).

A tubular structure which is formed so as to store a plurality of IC devices and having a window consisting of a transparent plastics material at a predetermined portion of an opaque conductive plastic body has been devised as a magazine, i.e. a container for storing a plurality of IC devices. One specific construction of this container is disclosed in United States Patent Specifications No. 4,327,832 (De Matteo) and No. 4,463,851 (Cecil). As will be evident from these specifications, the body of the structure is formed of an opaque conductive plastics material in order to prevent the same from being electrically charged, and the IC devices stored therein from being electrostatically destroyed. The transparent window is provided so that the mark representing the product name of the IC devices

can be read easily from the outside.

There is a problem that should the IC devices contact the transparent window, which is not subject to an antistatic treatment, they can be electrostatically
5 destroyed.

The specification of U.S. Patent No. 4,327,832 (De Matteo) mentioned above shows that electrically conductive plastic internal projections (legs) are provided integrally with a conductive plastic body on the
10 portion thereof which is in the vicinity of a transparent window, so as to prevent the IC devices from contacting the transparent window. The specification of U.S. Patent No. 4,463,851 (Cecil) also discloses a means for solving this problem, i.e. it discloses positioning a transparent
15 window on the outer surface of the top wall of a tube, and providing a gap, which is capable of preventing the IC devices from contacting the transparent window, by utilizing the thickness of the top wall. These prior art containers have large overall dimensions and are
20 excessively heavy.

The present invention provides a novel container which is not disclosed in any of the above earlier filed specifications and cannot be inferred from the techniques disclosed therein.

25 It is an object of the present invention to

provide a novel container having a light weight, a high mechanical strength and a simple construction, and designed so as to mechanically and electrically protect electrical components.

5 It is another object of the present invention to provide a novel container for mechanically and electrically protecting single-in-line type semiconductor integrated circuit devices.

 According to a first aspect of the present invention
10 there is provided a one-piece extruded container for semiconductor devices having a box-like shape resin encapsulation and a plurality of leads protruding downwards from at least two side surfaces thereof, the container comprising a tube formed of a plastics material so that a
15 plurality of semiconductor devices can be stored therein, said tube comprising a bottom wall, spaced side walls extending upwardly from said bottom wall, and a top wall joined to upper ends of said side walls, said bottom wall and said side walls being formed of an electrically
20 conductive plastics material of a substantially equal thickness, said top wall including a longitudinally extending transparent window of plastics material integrally extruded with said side walls, an upper surface of said transparent window being flush with remaining portions of
25 the top wall formed of the electrically conductive material, the electrically conductive portions sandwiching said transparent window having a thickness substantially equal to the thickness of said bottom wall and said side walls, the

thickness of said transparent window in said top wall being smaller than the thickness of said electrically conductive portions thereof so that a plane including a lower surface of said window and a plane including the lower surfaces of said conductive portions are spaced at a predetermined distance.

According to a second aspect of the present invention there is provided a one-piece extruded container for storing electrical components each of which includes a resin-sealed body, a radiating member extending from said body, and a plurality of leads extending from said body in a direction opposite to the direction in which said radiating member extends, the container comprising a tube of a plastics material, including a first housing portion for accommodating the resin-sealed body of said component, a second housing portion for accommodating the radiating member of said electrical component, and a third housing portion for accommodating the leads of said electrical component, a bottom wall of said first housing portion and said second and third housing portions including an electrically conductive plastics material, an integrally extruded top wall of said first housing portion including a transparent window of a plastics material positioned in the substantially central section thereof and extending in a longitudinal direction thereof and electrically conductive portions sandwiching said transparent window, an upper surface of the electrically conductive portions of said top wall of said first housing portion being flush with a top

surface of said transparent window, the thickness of said transparent window in said top wall being smaller than the thickness of said electrically conductive portions thereof so that a plane including a lower surface of said

5 transparent window and a plane including lower surfaces of said conductive portions are spaced at a predetermined distance.

The present invention will now be described in greater detail by way of examples with reference to the
10 accompanying drawings, wherein:-

Figure 1 is a perspective view of a first embodiment of a container for electrical components according to the present invention;

Figure 2 is a sectional view of the container

taken along the line X-X in Figure 1;

Figure 3 is an enlarged fragmentary view of the container of Figure 2;

Figure 4 is a sectional view of the container
5 with an electrical component inclined therein;

Figure 5 is a longitudinal section illustrating a method of manufacturing a container according to the present invention;

Figure 6 is a sectional view of a second
10 embodiment of the container according to the present invention;

Figure 7 is perspective view of a third embodiment of the container according to the present invention;

15 Figure 8 is a sectional view of the container taken along the line Y-Y in Figure 7;

Figure 9 is a sectional view of a fourth embodiment of the container according to the present invention; and

20 Figure 10 is a perspective view of a semiconductor integrated circuit device to be stored in the container of Figure 9.

In the first embodiment shown in Figures 1 and 2, the container is provided with a body 1 formed integrally
25 by using a plastic material in which the carbon is mixed

as an antistatic agent. The body 1 is formed to a cross-sectionally inverted-U-shaped elongated tube so that a plurality of DIP (dual in-line package) type IC devices 12 as articles for storage, each of which has a plurality of leads 16 arranged in two parallel rows, can be stored therein. This tube consists of a bottom wall 1A, the substantially intermediate portion of which projects upward, side walls 1B, 1C extending diagonally upward from the bottom wall 1A, and a top wall 1D joined to the upper ends of the side walls 1B, 1C. The bottom wall 1A, side walls 1B, 1C and parts of the top wall 1D, which the IC device 12 contacts, consist of an electrically conductive plastics material, such as carbon-mixed polyvinyl chloride.

15 In the top wall of the tube 1, a transparent window 2, which consists of a non-conductive transparent plastics material, such as transparent polyvinyl chloride, is formed integrally with the conductive parts thereof. The window 2 is formed in the shape of a narrow strip, which is provided in the central portion of the top wall of the tube. Specifically, the top wall 1D of the tube consists of a transparent lengthwise-extending window 2 positioned in the substantially central portion thereof, and electrically conductive portions 1d sandwiching the transparent window. The tube 1 is

provided at both its end portions with bores 13, 13b, 13c into which stopper pins 15 are inserted after the IC devices 12 have been placed therein, so as to prevent the IC devices 12 from sliding out. As shown in Figure 2, the upper surfaces of the conductive portions 1d of the tube 1 and that of the transparent window 2 are flush with one another, and the thickness of the window 2 is less than that of the conductive portions 1d.

Accordingly, the lower surface 2a of the transparent window 2 is higher than those 1a of the conductive portions 1d.

The thickness of the top wall will now be described in detail with reference to Figure 3 in which the top wall shown in Figure 2 is shown on a larger scale.

Referring to Figure 3, the top wall 1C has a flat upper surface. Specifically, the upper surface 1b of a conductive portion 1d and that 2b of the transparent window 2 are flush with each other. The thickness t_1 of the conductive portion 1d is about 0.9 mm which is substantially equal to the thickness of the bottom wall 1A and side walls 1B, 1C. The thickness of the window 2 is about 0.6 mm. Accordingly, a distance d of about 0.3 mm is obtained between the plane including the lower surface 1a of the conductive portion 1d and that 2a of

the plane including the window 2. As a result of providing this distance d , an IC device (shown by a one-dot chain line) does not contact the lower surface 2a of the window 2 even when the IC device 12 is moved.

5 The thicknesses of the electrically conductive portion t_1 of, and that t_2 of the transparent window 2 in, a container suitably used for storing IC devices are 1.0-0.7 mm and 0.6-0.4 mm respectively.

 As will be clearly appreciated from a
10 manufacturing point of view, which will be described later, the transparent window 2 and electrically conductive portions 1d are formed unitarily of the same material, i.e. polyvinyl chloride, and the bonding
15 strength of boundary portions B is very high. The part of the lower surface 1a of a conductive portion has a
 radius of curvature R of about 0.3 mm.

 It is necessary that a part of an IC device does not contact the lower surface of the transparent window when the IC device is inclined. Accordingly, the
20 container is designed with consideration given to the dimensions of the IC device, in such a manner that, even when the IC device 12 is inclined as shown by an arrow A in Figure 4, it contacts not the lower surface 2a of the
 window but the wall portions, which have the electrical
25 conductivity, of the container.

A method of manufacturing the above container will now be described.

The container can be moulded by a moulding apparatus shown in Figure 5, with an electrically
5 conductive body 1 and a transparent window 2 integrally formed. The moulding apparatus 3 shown in Figure 5 is provided with heating cylinders 4, 4', screws 5, 5', first and second hoppers 6, 7, a die 8 having a cross-sectional shape of the interior thereof which corresponds
10 to that of the container, a die 8' for use in determining the final dimensions of the container, and a cooling element 9. The carbon powder and plastic powder 10 are introduced into the first hopper 6, and plastic powder 11 into the second hopper 7. The plastic materials softened
15 in the heating cylinders 4, 4' are extruded continuously by the dies 8, 8' from the dies 8, 8' to be taken out through the cooling element 9. As a result, a tube as a container in which a body 1 and a transparent window 2 are unitarily moulded is obtained.

20 The quantity of the carbon powder introduced into the first hopper 6 is determined so that the resistivity of the electrically conductive portions of the moulded container becomes not more than 1×10^6 / . Polyvinyl chloride powder is selected to be used as the plastic
25 powder. The plastic powder may consist of polystyrol

instead of polyvinyl chloride. Since carbon is mixed in the electrically conductive body 1, this part assumes a dark or black colour.

A method of utilizing the above embodiment of the container and the operation and effects thereof will now be described in detail.

As shown in Figure 1, the DIL type IC device 12 is inserted into and removed from an end opening in the tube 1. The sliding out of the IC device 12 placed in the tube 1 is prevented by inserting the stopper pins 15 into the bores 13a, 13b, 13c made in both end portions of the tube.

The greater part of the tube 1 consists of an antistatically-treated carbon-containing resin, i.e. it is electrically conductive, so that electrostatic breakdown of the IC device does not occur even when the IC device contacts the tube 1. However, the resin constituting the transparent window 2 is transparent, i.e. consists of a non-carbon-containing non-conductive resin, so it is apt to be electrically charged. If the IC device were allowed to float in the tube it would contact the transparent window 2, so that electrostatic breakdown of the IC device would occur.

However, according to the embodiment of the present invention, the IC device 12 is prevented from

contacting the transparent window 2, by the electrically conductive portions of the tube 1 even if the device 12 is free to float in the tube. Therefore, electrostatic breakdown of the IC device can be prevented.

5 Since the lower surface 2a of the transparent window 2 is higher than that 1a of the top wall of the tube 1 as shown in Figures 3 and 4, in any floating movement, the IC device 12 necessarily contacts the lower surface of the top wall of the tube 1 first, and so is
10 prevented from contacting the window 2. Since the greater part of the tube 1 consists of a carbon-containing resin, this part is not electrically charged, so that electrostatic breakdown of the IC device 12 does not occur.

15 In the top wall of the tube 1 in this container, the upper surface of 2b of the transparent window 2 and the upper surfaces 1b of the electrically conductive portions 1d are flush with one another. This enables the container to be advantageously manufactured, and
20 advantageously used as a container for IC devices.

 Since the upper surface of the top wall of the tube 1 has no recesses and projections, the dies 8, 8' for forming the tube can be obtained at a low cost, and suffer little wear during the formation of the tube.
25 Accordingly, the frequency in replacing the dies is low,

so that the container can be provided at a low cost.

When a plurality of such containers (tubes) are transferred in a piled state, the upper containers can be kept stable since the lower surfaces of the upper containers placed on the upper surfaces of the lower containers contact the same upper surfaces reliably without being inclined even if the lower surfaces are shifted slightly in the lateral direction.

A second embodiment will now be described in greater detail with reference to Figure 6.

This embodiment likewise comprises an electrically conductive tube body 1 and a transparent window 2 which are formed in a similar manner to that of the first embodiment. The materials used to make the second embodiment are also the same as those used in the first embodiment. The second embodiment differs from the first embodiment in that the parts of side walls of a tube 1, i.e. inclined wall portions 14 are formed so as to extend at a predetermined angle toward the positions close to the upper edge portions of an IC device placed in the tube. Specifically, the angle of the inclined wall portions 14 is determined so that the width W_T of the inner surface of a top wall 1D of the tube 1 becomes smaller than that W_p of a sealed body of the IC device

12.

Accordingly, in this embodiment, the floating IC device 12 necessarily contacts the inner surface 14a of an inclined wall portion 14 first, so that the IC device 12 can be prevented from contacting the transparent window 2.

A third embodiment of a container which can be used for storing a SIL (single-in-line package) type IC device will now be described in greater detail with reference to Figures 7 and 8.

Referring to Figure 7, an IC device 12 to be inserted in a container consists of a resin-sealed body 12a, a radiating member 17 extending from a side portion of the body 12a, and a plurality of leads 16 extending from the side portion of the body 12a which is on the opposite side of the side portion from which the radiating member 17 extends.

The container in which this IC device 12 is to be inserted forms an elongated tube 1 consisting of polyvinyl chloride. This tube 1 consists of a first housing portion 100 in which the resin-sealed body 12a of the IC device is held, a second housing portion 101 in which the radiating member 17 of the IC device is held, and a third housing portion 102 in which the leads 16 of the IC device is held. A bottom wall 100A of the first housing portion, and the second and third housing

portions 101 and 102 consist of an electrically
conductive plastics material, i.e. carbon-containing
polyvinyl chloride. A top wall 100B of the first housing
portion 100 is provided at the substantially central
5 portion thereof with a transparent window 2, which
consists of a non-conductive transparent plastics
material, such as transparent polyvinyl chloride, in such
a manner that an identification mark provided on the
upper surface of the resin-sealed body 12a of the IC
10 device is readily visible through the window 2. The tube
has electrically conductive portions 100b extending so as
to sandwich the transparent window 2. The portions of
the transparent window 2 and bottom wall 100A which are
in an end portion of the tube 1 are provided with bores
15 13a, 13b, respectively, into which a stopper pin 15 is
inserted after the IC device has been inserted in the
tube 1, so as to prevent the IC device from sliding out.
In order to limit the lateral movement of the IC device
12 in the first housing portion 100, the bottom wall 100A
20 and top wall 100B are provided with projections 100a,
100c, respectively.

As shown in Figure 8, the upper surface of the
top wall of the first housing portion 100 and that of the
transparent window 2 are flush with each other, and the
25 thickness of the transparent window 2 is less than that

of the electrically conductive portions 100b. Accordingly, the lower surface 2a of the transparent window 2 is higher than those of the electrically conductive portions 100b. Specifically, the construction of the parts of the transparent window 2 and electrically conductive portions 100b which are in the vicinity of the joint sections thereof is the same as that of the corresponding parts of the container in the first embodiment shown in Figure 3. The thickness of the carbon-mixed conductive portions (opaque portions) of the tube 1 in the third embodiment is about 0.9 mm, the conductive portions being formed at a constant thickness. The thickness of the transparent window is about 0.6 mm. Therefore, there is a distance of 0.3 mm between the plane including the lower surface of the transparent window 2 in and the plane including the electrically conductive portions 100b.

The container in this third embodiment is made by using the moulding apparatus 3 shown in Figure 5, in the same manner as that described in the first embodiment. Accordingly, the opaque electrically conductive portions of the tube 1 and the transparent window therein are integrally formed, so that these integrally formed parts do not separate. As will be clear from Figures 7 and 8, the container in the third embodiment has a cross-

sectionally H-shaped construction. Specifically, the thickness of the second and third housing portions, between which the first housing portion 100 is sandwiched, is greater than that of the first housing portion 100 so as to prevent the head portion and lower end portion of the stopper pin 15, which is inserted into the bores 13a, 13b, from projecting from the upper and lower main surfaces of the second and third housing portions 101 and 102. This enables a plurality of containers to be piled up stably without being inclined. Since this container has a cross-sectionally H-shaped construction, it has a high mechanical strength.

A fourth embodiment of a container which can be applied to a PLCC (plastic leaded chip carrier) type IC device will now be described in greater detail with reference to Figures 9 and 10.

A PLCC type IC device has an external appearance shown in Figure 10, and consists of a resin-sealed body 12a, and a plurality of leads 16 moulded in the shape of the letter "J" and extending outward from four side surfaces of the body 12a. A container for storing this IC device 12 is moulded to form an elongated shape, which has a cross-sectional shape shown in Figure 9. As shown, a tube 1 consists of a bottom wall 1A, side walls 1B, 1C extending upward from the bottom wall 1A, and a top wall

1D joined to the upper ends of the side walls 1B, 1C. The bottom wall 1A, side walls 1B, 1C and parts of the top wall 1D, which the IC device shown in Figure 10 contacts, consists of an electrically conductive plastics material, such as carbon-mixed polyvinyl chloride. The top wall 1D of the tube consists of a transparent window 2 positioned in the substantially central section thereof and composed of a non-conductive transparent plastics material, such as transparent polyvinyl chloride, and electrically conductive portions 1d. The upper surface of the top wall of and that of the transparent window 2 in the tube 1 are flush with each other, and the thickness of the window 2 is less than that of the electrically conductive portions 1d of the tube 1. Accordingly, the lower surface 2a of the transparent window 2 is higher than those of the electrically conductive portions 1d. The portions of the tube 1 which are in the vicinity of the joint sections between the transparent window 2 and the conductive portions 1d are constructed in the same manner as the corresponding portions of the tube of the first embodiment. The thickness of the carbon-mixed electrically conductive portions (opaque portions) of the tube 1 of the fourth embodiment is about 0.8 mm, and the thickness of the transparent window about 0.55 mm. Accordingly, there is

a distance of about 0.25 mm between the plane including the lower surface of the window 2 in the top wall 1D and that including the lower surfaces of the conductive portions 1d thereof. Owing to this distance, the IC device 12 can be prevented from contacting the lower surface 2a of the transparent window 2 even if the IC device is moved.

The bottom wall 1A is provided with a pair of projections P_1 , P_2 , and the top wall 1D a pair of projections P_3 , P_4 , as well. The distance between the projections P_1 , P_2 is greater than that between the projections P_3 , P_4 . The reasons why the distances between these projections are provided in this manner reside in that it is necessary to prevent the containers of the same construction, when they are piled up, from sliding sideways and collapsing.

The container of this embodiment is formed by using the moulding apparatus 3 shown in Figure 5, in the same manner as the container described in the first embodiment. Accordingly, the opaque conductive portions of the transparent window in the tube 1 are integrally formed, so that these parts of the tube 1 do not separate.

The containers described in the above described four embodiments have the following advantages:-

(a) Since the container body is formed so that a part thereof contacts the electrical components, such as IC devices stored therein, the electrical components can be prevented from contacting the transparent window.

5 This can prevent problems occurring, such as the electrostatic breakdown of the electrical components, which occurs if the electrical components contact the window which can easily become electrically charged.

(b) Since the container body is moulded tubularly
10 with the conductive portions and transparent window integrally formed, the rigidity of the container body with respect to the twisting force and bending force increases to a high level. This can prevent the deformation of the container body.

15 (c) Since the container is moulded out of a resin containing an antistatic agent (metal powder), such as carbon, it cannot easily become electrically charged.

(d) Since the transparent window is provided, the interior of the container can be observed. This enables
20 the identification marks on and the quantity of the electrical components stored in the container to be readily ascertained.

The four embodiments of containers described above have the following advantages over the container
25 disclosed in U.S. Patent No. 4,327,832 (De Matteo)

referred to above.

In the constructions of the container according to the present invention, the tube is not provided on its inner surface with the special projections which are disclosed in the patent of De Matteo, and which are formed so as to prevent the electrical components from contacting the transparent window. Therefore, since the construction of the container according to the present invention is not complicated, the container can be formed to small dimensions and weight and at a low cost. This is a very important matter for the container as a transportation container after the basic problem of mechanically and electrically protecting the electrical components. In the container disclosed in the De Matteo Specification, it is considered possible that the projections wear or chip off due to the movements of the electrical components. Moreover, due to the provision of the projections on the inner surface of the tube and the necessity of leaving a spacial margin for the electrical components to be placed in the tube, the volume of the interior of the tube increases. This necessarily causes an increase in the dimensions of the container disclosed in the De Matteo Specification.

According to the present invention, the tube is formed so that the upper surfaces of the electrically

conductive portions of the top wall and that of the transparent wall therein becomes flush with each other. Therefore, dust is not deposited on the transparent window, so that the electrical components stored in the tube can be observed very easily. According to the container disclosed in the De Matteo Specification, there is a difference between the height of the upper surfaces of the electrically conductive portions of the top wall of the tube and that of the upper surface of the transparent window therein. This causes the deposition of dust to occur on the portions of the upper surface of the transparent window which are in the vicinity of the stepped portions, and the observation of the electrical components stored in the tube to be rendered more difficult. Moreover, it is considered probable that these stepped portions chip off in the course of time.

According to the present invention, the joint sections between the electrically conductive portions and transparent window extend substantially flat, and do not have a complicated construction. This enables the dies in an injection moulding machine for the production of this container to be constructed simply and obtained at a low cost. Consequently, the container can be manufactured at a low cost. According to the container disclosed in the De Matteo Specification, the joint

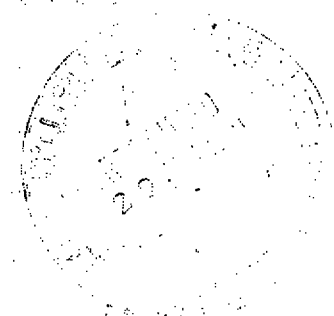
sections between the electrically conductive portions and transparent window are constructed in the shape of the letter "V", so that the steps of manufacturing a die for the production of this container become complicated.

5 Furthermore, the four embodiments of containers described above have the following advantages over the container disclosed in U.S. Patent No. 4,463,851 (Cechil) referred to above.

10 In the construction of the container according to the present invention, the tube is formed simply with the thickness of the transparent window in the top wall thereof reduced. Therefore, the tube has small dimensions and light weight as previously mentioned. Since the tube is integrally formed, it is not deformed, 15 nor does the transparent window separate from the conductive portions. In the container disclosed in the Cechil Specification, a transparent window is pasted on the whole of the top wall of the conductive container body provided with a slit. This causes the external 20 dimensions and weight of the container to increase. Due to the pasted construction of the container, deformation thereof easily occurs. It is considered probable that the transparent window will separate from the tube due to the force applied to the side walls thereof. Due to the 25 pasted construction of the tube, it is difficult to mould

the conductive body and transparent window integrally and simultaneously.

The present invention is not limited to the four above-described embodiments, and may be modified in various ways. For example, the shapes and sizes of the
5 conductive portions and transparent window can be varied in accordance with the shapes and sizes of the electrical components to be housed in the containers.



CLAIMS:-

1. A one-piece extruded container for semiconductor devices having a box-like shape resin encapsulation and a plurality of leads protruding downwards from at least two side surfaces thereof, the container comprising a tube formed of a plastics material so that a plurality of semiconductor devices can be stored therein, said tube comprising a bottom wall, spaced side walls extending upwardly from said bottom wall, and a top wall joined to upper ends of said side walls, said bottom wall and said side walls being formed of an electrically conductive plastics material of a substantially equal thickness, said top wall including a longitudinally extending transparent window of plastics material integrally extruded with said side walls, an upper surface of said transparent window being flush with remaining portions of the top wall formed of the electrically conductive material, the electrically conductive portions sandwiching said transparent window having a thickness substantially equal to the thickness of said bottom wall and said side walls, the thickness of said transparent window in said top wall being smaller than the thickness of said electrically conductive portions thereof so that a plane including a lower surface of said window and a plane including the lower surfaces of said conductive portions are spaced at a predetermined distance.



* C L M S *

2. A container according to claim 1, wherein said bottom wall, said side walls, and the electrically conductive portions of said top wall consist of conductive polyvinyl chloride, said transparent window in said top wall
5 consisting of transparent polyvinyl chloride.

3. A container according to claim 2, wherein said conductive polyvinyl chloride contains carbon.

4. A container according to any one of claims 1 to 3, wherein the thickness of said electrically conductive
10 portions of said top wall is about 0.9 mm, the thickness of said transparent window therein being about 0.6 mm.

5. A container according to any one of claims 1 to 4, wherein the portions of said transparent window in said top wall which are in the vicinity of both ends of said tube are
15 provided with holes into which stoppers are inserted for preventing said electrical components falling out of the container.

6. A container according to any one of claims 1 to 5, having a pair of outward projections on the top wall and a
20 pair of outward projections on the bottom wall, wherein both pairs of projections extend longitudinally of the container.

7. A one-piece extruded container for storing electrical components each of which includes a resin-sealed



body, a radiating member extending from said body, and a plurality of leads extending from said body in a direction opposite to the direction in which said radiating member extends, the container comprising a tube of a plastics material, including a first housing portion for accommodating the resin-sealed body of said component, a second housing portion for accommodating the radiating member of said electrical component, and a third housing portion for accommodating the leads of said electrical component, a bottom wall of said first housing portion and said second and third housing portions including an electrically conductive plastics material, an integrally extruded top wall of said first housing portion including a transparent window of a plastics material positioned in the substantially central section thereof and extending in a longitudinal direction thereof and electrically conductive portions sandwiching said transparent window, an upper surface of the electrically conductive portions of said top wall of said first housing portion being flush with a top surface of said transparent window, the thickness of said transparent window in said top wall being smaller than the thickness of said electrically conductive portions thereof so that a plane including a lower surface of said transparent window and a plane including lower surfaces of said conductive portions are spaced at a predetermined distance.

8. A container according to claim 7, wherein the



bottom wall of said first housing portion, electrically
conductive portions of said top wall and said second and
third housing portions are formed of a conductive polyvinyl
chloride, said transparent window in said top wall being
5 formed of transparent polyvinyl chloride.

9. A container according to claim 8, wherein said
conductive polyvinyl chloride contains carbon.

10. A container according to any one of claims 7 to 9,
wherein the thickness of said electrically conductive
10 portions of said top wall of said first housing portion is
about 0.9 mm, the thickness of said transparent window
therein being about 0.6 mm.

11. A container according to any one of claims 7 to
10, wherein said electrical components stored in said tube
15 are semiconductor devices.

12. A container according to any one of claims 7 to
11, wherein the portions of said transparent window in said
first housing portion which are in the vicinity of both ends
of said tube are provided with holes into which a stopper
20 for preventing the falling of said electrical components is
inserted.

13. A container for electrical components constructed
substantially as herein described with reference to and as



illustrated in Figures 1 to 4; or Figure 6; or Figures 7 and 8; or Figures 9 and 10 of the accompanying drawings.



* C L M S *