DESCRIPTION

Title of the invention : CASE AND METHOD FOR PRODUCING CASE

TECHNICAL FIELD

[0001]

The present invention relates to a case for housing machines, electronic components, or the like.

BACKGROUND ART

[0002]

In recent years, development of smaller-size products such as appliances and electric/electronic devices is performed actively from the viewpoint of realizing effective use of living space and providing instruments with improved portability. More specifically, they are intended for space saving through miniaturization and optimized design of machines and electronic components (such as circuit boards) housed in cases. In addition, it is also mentioned that they use more rigid case materials that serve to provide thin-wall cases to realize an increased storage capacity inside the cases. Against such a background, many techniques intended for miniaturization of electronic components and optimized design of cases have been proposed.

[0003]

Specifically, Patent Document 1 describes an invention of a circuit board produced by a process in which thin metal plates having circuit patterns are integrated by insert-molding with synthetic resin. Patent Document 2 describes an invention of a case for an electronic device in which the position of its flexible substrate is specified.

PRIOR ART DOCUMENTS

PATENT DOCUMENTS

[0004]

Patent Document 1: Japanese Unexamined Patent Publication (Kokai) No. HEI 3-240300

Patent Document 2: Japanese Unexamined Patent Publication (Kokai) No. HEI 9-172287

SUMMARY

PROBLEMS TO BE SOLVED

[0005]

In the invention described in Patent Document 1, however, the thin metal plates are covered with an insulating film or an insulating layer and molded together with conductive resin. Although this may be effective for miniaturization and design optimization of electronic components, it will be impossible to produce a large-sized case by using thin metal plates. In

the invention described in Patent Document 2, a flexible printed circuit board is disposed on the inner surface of the case body to serve as a structural member for electromagnetic shielding. As a result, this may be effective for maintaining the electromagnetic wave shielding capability even if the outer surface is damaged, but it is necessary to form bosses and ribs for supporting the flexible substrate, which will prevent the realization of miniaturization and saving of space.

[0006]

As described above, the conventional techniques for the miniaturization of products such as appliances and electric/electronic devices will not serve for effective utilization of the spaces in cases. Thus, there has been a strong call for the development of a technique that serves for producing a case having an increased storage capacity while maintaining a high stiffness required to work as a tough case.

[0007]

The present disclosure has been made in view of the above problems and aims to provide a case having an increased storage capacity while maintaining a high stiffness required to work as a tough case.

MEANS OF SOLVING THE PROBLEMS

[0008]

The present disclosure, which aims for solving the above problems, is as described below.

[0009]

(1) In an aspect, there is provided a case comprising a cover having an electronic device, the electronic device being inserted inside the cover.

[0010]

(2) The case as set forth in item (1), wherein the cover has at least a flat member and the electronic device is inserted at least inside the flat member of the cover.

[0011]

(3) The case as set forth in either item (1) or (2) having a space for containing an electronic component.

[0012]

(4) The case as set forth in any one of items (1) to (3), wherein at least part of the cover is made of an electrically conductive material.

[0013]

(5) The case as set forth in any one of items (1) to (3), wherein at least part of the cover is made of a nonconductive material.

[0014]

(6) The case as set forth in any one of items (1) to (5), wherein the cover has a mechanism connectable to the electronic device.

[0015]
(7) The case as set forth in any one of items (1) to (6), wherein the upright wall member of the cover is made of the same material as the flat member of the cover.
[0016]
(8) In another aspect, there is provided a production method for the case containing the cover having the electronic device in such a manner that the electronic device is inserted in the cover, comprising : a step in which an electronic device and at least one material selected from the group consisting of prepreg, film, and nonwoven fabric are stacked in such a manner that the electronic device is located on the inner side to form a preform, and a step in which compression and/or reduced pressure is applied to shape the preform.

ADVANTAGEOUS EFFECTS

[0017]
The case according to the present disclosure realizes an increased storage capacity inside thereof while maintaining a high rigidity required to work as a tough case.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018]
[Fig. 1] Fig. 1 is a schematic cross-sectional view for illustrating the case according to the present invention.
[Fig. 2] Fig. 2 is a schematic cross-sectional view illustrating the case according to the present invention having a cover with a surface of an electrically conductive material.
[Fig. 3] Fig. 3 is a schematic cross-sectional view illustrating the case according to the present invention having a mechanism connectable to an electronic device.
[Fig. 4] Fig. 4 is a schematic cross-sectional view illustrating the case according to the present invention in which the cover and the other members are joined and integrated.
[Fig. 5] Fig. 5 is a schematic cross-sectional view illustrating the preform used in Example 1 of the present invention.
[Fig. 6] Fig. 6 is a schematic cross-sectional view illustrating the preform used in Example 2 of the present invention.
[Fig. 7] Fig. 7 is a schematic view illustrating a state in which a circuit is printed directly on a prepreg used in Example 3 of the present invention.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0019]
As a result of intensive studies, the inventors of the present invention found that if an electronic device is inserted in the cover used to form a case, it becomes possible to produce a case having an increased storage capacity, compared to cases having a cover