SUMMARYPROBLEM TO BE SOLVED

[0006]

The coefficient of thermal conductivity of an adhesive composition obtained by the techniques described above, however, cannot be said to be sufficiently high, and an adhesive composition having a higher coefficient of thermal conductivity has been required. An object of the embodiments disclosed herein is to provide an adhesive composition sheet excellent in film thickness-wise thermal conductivity after cured.

SOLUTIONS TO THE PROBLEM

[0007]

In an aspect, there is provided an adhesive composition sheet containing an organic compound and inorganic particles, the adhesive composition sheet including a structure in which at least a layer A that contains an organic compound and a layer B that contains an organic compound and inorganic particles are laminated, the layer A having a content rate of the organic compound larger than the content rate of the organic compound in the layer B, and the layer A and/or the layer B containing anisotropically shaped thermal conductive inorganic particles.

[0008]

The present disclosure includes, as regards the adhesive

composition sheet, an adhesive composition sheet having a three-or-more layer structure in which the layer A and the layer B are laminated alternately.

[0009]

In another aspect, there is provided a semiconductor device comprising a cured product of the adhesive composition sheet as defined above.

[0010]

The present disclosure further includes a method of producing a semiconductor device that includes the steps of bonding an electronic component to a heat dissipator or bonding electronic components to each other with an adhesive composition sheet interposed between the electronic component and the heat dissipator or between the electronic components, and curing the adhesive composition sheet, the adhesive composition sheet including a layer A that contains at least an organic compound and a layer B that contains an organic compound and inorganic particles, the layer A having a content rate of the organic compound larger than the content rate of the organic compound in the layer B, and the layer A and/or the layer B containing anisotropically shaped thermal conductive inorganic particles.

[0010a]

In another aspect, there is provided a method of producing a

semiconductor device, the method comprising: the steps of bonding an electronic component to a heat dissipator or bonding electronic components to each other with an adhesive composition sheet interposed between the electronic component and the heat dissipator or between the electronic components; and curing the adhesive composition sheet, the adhesive composition sheet including a layer A that contains at least an organic compound and a layer B that contains an organic compound and inorganic particles, the layer A having a content rate of the organic compound larger than a content rate of the organic compound in the layer B, and the layer A and/or the layer B containing anisotropically shaped thermal conductive inorganic particles.

EFFECTS

[0011]

According to the present disclosure, there can be provided an adhesive composition sheet excellent in film thickness-wise thermal conductivity after cured. The adhesive composition sheet of the present disclosure is used to efficiently conduct the heat generated from a semiconductor chip such as a power semiconductor exteriorly via the adhesive composition sheet excellent in thermal conductivity, suppressing a temperature rise of the semiconductor chip, to provide a semiconductor device that has no malfunction and is high in reliability.

EMBODIMENTS OF THE INVENTION

[0012]

An adhesive composition sheet of the present invention is an adhesive composition sheet containing an organic compound and inorganic particles, the adhesive composition sheet including a structurein which at least a layer A that contains an organic compound and a layer B that contains an organic compound and inorganic particles are laminated, the layer A having a content rate of the organic compound larger than the content rate of the organic compound in the layer B, and the layer A and/or the layer B containing anisotropically shaped thermal conductive inorganic particles.

[0013]

The adhesive composition sheet may be a two-layered sheet in which each one of the layer A and the layer B are laminated