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Specification

1. Title of the Invention
   Semiconductor Device

2. Claims
   A semiconductor device, comprising: an inner wiring; a dummy wiring; and a pallet, wherein the inner wiring has a role as a wiring between elements in the pellet, wherein the dummy wiring does not have a role as a wiring, and wherein the dummy wiring is disposed on the same layer in the pellet so that the sum of the area of the inner wiring and the area of the dummy wiring is equal or more than 50% of the area of the pellet.

3. Detailed Description of the Invention

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The present invention relates to a semiconductor device, specifically relates to a pattern construction for preventing of side-etching of an aluminum metal wiring in the case of formation of the aluminum metal wiring by using a reactive ion etching process.

<Prior Art>

Conventionally, when an aluminum metal wiring is formed, as shown in Fig.2, a method where aluminum layer 13 is isotopically wet-etched by etchant 15 using mask layer 14 as a mask has been used. These days, owing to enhancement of integration degree of the semiconductor, the miniaturization thereof has progressed, and an anisotropic reactive ion etching method has become used as shown in Fig.3. In this reactive ion etching method, product 26, which is obtained by the reaction of plasma 25 and the product released from resist 24 formed on the upper layer of aluminum metal 23, is adhered to the side wall of the aluminum metal wiring, suppresses the side-etching and further sustains anisotropic etching.

<Problem to be solved by the invention>

The above conventional reactive ion etching method is an anisotropic etching method. In the case where the lower layer of the aluminum metal wiring is formed of nitride film, etching of the aluminum metal progresses, and when the lower layer appears, nitrogen atoms released from this nitride film and the product formed on the side wall of the aluminum metal wiring react, thereby the product is removed. In this case, the more the nitrogen atoms are, the faster the reaction advances.

There is a drawback that, once this product is removed, the etching cannot maintain anisotropic nature and side-etching advances.

<Means for Solving the Problems>

In the present invention, a pellet includes a dummy wiring which does not have a role as a wiring so that an amount of exposure of the nitride film under the aluminum metal lower layer can be taken small.

<Examples>

Next, the present invention will be explained below with reference to the drawings.

Fig.1 is a diagram of one example of the present invention.

1 is a pellet. In the case where the total area within the pellet of aluminum metal wiring 2 which is patterned on the pellet drops to below 50% of the pellet area, dummy wiring 3, which does not have a role as a wiring, is disposed on the pellet, and the area of the dummy wiring 3 is adjusted so that the total area of the inner wiring 2

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and the dummy wiring 3 is equal or more than 50% of the pellet area.

<Effect of the Invention>

As explained above, according to the present invention, in the process of forming an aluminum metal wiring by the reactive ion etching method, side-etching generated in the aluminum metal wiring can be prevented by disposing a dummy wiring in a pallet, the dummy wiring not having a role as a wiring between elements in the pellet.

Meanwhile, the present invention can be applied to an aluminum alloy such as aluminum-silicon, aluminum-silicon-copper, in addition to a pure aluminum metal.

4. Brief Description of the Drawings

Fig.1 is a plan view showing one example of the present invention.

1…pellet, 2…aluminum metal wiring, 3…dummy wiring

Fig.2 is a cross-section diagram formed by a conventional wet-etching method.

11…wafer, nitride film, 13…aluminum metal layer, 14…resist, 15…etchant

Fig.3 is a cross-section diagram formed by a reactive ion etching method.

21…wafer, 22…nitride film, 23…aluminum metal, 24…resist, 25…ion, 26…product

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