CLAIMS

1. A semiconductor device comprising:

a first conductive layer buried in an insulating layer;

a first insulating layer over the first conductive layer and the insulating layer;

a first layer over the first insulating layer;

a second layer over the first layer;

a third layer in contact with a top surface and a side surface of the second layer and with a side surface of the first layer;

a second insulating layer over the third layer;

a second conductive layer over the second insulating layer; and

an aluminum oxide film over the second conductive layer,

wherein each of the first layer, the second layer and the third layer contains indium, gallium and zinc.

2. The semiconductor device according to claim 1, wherein each of the first layer and the third layer has a higher proportion of gallium in atomic ratio than the second layer.

3. The semiconductor device according to claim 1, wherein the second layer is thicker than the first layer and the third layer.

4. The semiconductor device according to claim 1, wherein the aluminum oxide film contains excess oxygen.

5. The semiconductor device according to claim 1, wherein the aluminum oxide film has a region in contact with the first insulating layer.

6. The semiconductor device according to claim 1, wherein the semiconductor device is incorporated in one selected from the group consisting of a television set, an alarm device, an air conditioner, a refrigerator, and an electric vehicle.

7. A semiconductor device comprising:

a first conductive layer buried in an insulating layer;

a first insulating layer over the first conductive layer and the insulating layer;

a first layer over the first insulating layer;

a second layer over the first layer;

a third layer in contact with a top surface and a side surface of the second layer and with a side surface of the first layer;

a second insulating layer over the third layer;

a second conductive layer over the second insulating layer; and

an aluminum oxide film over the second conductive layer,

wherein each of the first layer, the second layer and the third layer contains indium, gallium and zinc, and

wherein the second conductive layer covers the top surface and the side surface of the second layer.

8. The semiconductor device according to claim 7, wherein each of the first layer and the third layer has a higher proportion of gallium in atomic ratio than the second layer.

9. The semiconductor device according to claim 7, wherein the second layer is thicker than the first layer and the third layer.

10. The semiconductor device according to claim 7, wherein the aluminum oxide film contains excess oxygen.

11. The semiconductor device according to claim 7, wherein the aluminum oxide film has a region in contact with the first insulating layer.

12. The semiconductor device according to claim 7, wherein the semiconductor device is incorporated in one selected from the group consisting of a television set, an alarm device, an air conditioner, a refrigerator, and an electric vehicle.

13. A semiconductor device comprising:

a first conductive layer buried in an insulating layer;

a first insulating layer over the first conductive layer and the insulating layer;

a first layer over the first insulating layer;

a second layer over the first layer;

a third layer in contact with a top surface and a side surface of the second layer and with a side surface of the first layer;

a second insulating layer over the third layer; and

a second conductive layer over the second insulating layer,

wherein each of the first layer, the second layer and the third layer contains indium, gallium and zinc.

14. The semiconductor device according to claim 13, wherein each of the first layer and the third layer has a higher proportion of gallium in atomic ratio than the second layer.

15. The semiconductor device according to claim 13, wherein the second layer is thicker than the first layer and the third layer.

16. The semiconductor device according to claim 13, wherein the semiconductor device is incorporated in one selected from the group consisting of a television set, an alarm device, an air conditioner, a refrigerator, and an electric vehicle.