[Claims]

[Claim 1]

A semiconductor device comprising:

a stacked body including:

a first stacked portion including a plurality of electrode layers stacked in a first direction via an insulator;

a second stacked portion including a plurality of electrode layers stacked in the first direction via an insulator and being disposed separately from the first stacked portion in the first direction; and

a connection portion including a high dielectric layer provided between the first stacked portion and the second stacked portion, and having a dielectric constant higher than a dielectric constant of the insulator of the first stacked portion and a dielectric constant of the insulator of the second stacked portion; and

a column-shaped portion including:

a first portion provided in the first stacked portion and extending in the first direction;

a second portion provided in the second stacked portion and extending in the first direction; and

an intermediate portion provided in the connection portion and connected the first portion to the second portion,

the connection portion includes an insulating layer between the high dielectric layer and the second stacked portion, and

a maximum diameter of a portion, which is surrounded by the high dielectric layer, of the intermediate portion is smaller than a diameter of a lower end of the first portion when viewed from the first direction.

[Claim 2]

The device according to claim 1, wherein a maximum diameter of the intermediate portion is larger than a diameter of a lower end of the second portion when viewed from the first direction.

[Claim 3]

The device according to claim 1, wherein the high dielectric layer includes at least one selected from the group consisting of a hafnium oxide, an aluminum oxide, a silicon carbonitride, and a zirconium oxide.

[Claim 4]

The device according to claim 1, wherein a thickness of the high dielectric layer is greater than a thickness of the insulator of the first stacked portion and a thickness of the insulator of the second stacked portion in the first direction.

[Claim 5]

The device according to claim 1, wherein the column-shaped portion includes:

a semiconductor body extending in the first direction; and

a charge storage portion provided between the semiconductor body and the first stacked portion, and between the semiconductor body and the second stacked portion.

[Claim 6]

The device according to claim 5, wherein the semiconductor body has a corner portion surrounded by the connection portion.