WHAT IS CLAIMED IS:

1. A method of manufacturing a semiconductor device, the method comprising:

sequentially forming a target layer and a first mask layer on a substrate;

patterning the first mask layer to form a first opening in the first mask layer;

forming a spacer on an inner sidewall of the first opening;

forming a cut pattern covering at least a portion of the spacer;

forming on the first mask layer a first photoresist pattern having a second opening vertically overlapping at least the portion of the spacer;

forming a third opening in the first mask layer adjacent to the first opening by using the spacer as a mask to remove a portion of the first mask layer that is exposed to the second opening; and

after forming the third opening, using the first mask layer and the spacer as a mask to pattern the target layer,

wherein a top surface of the cut pattern is lower than that of a second filling layer formed on the substrate.

2. The method of claim 1, wherein a width of the second opening is greater than a width of the third opening.

3. The method of claim 1 or claim 2, wherein patterning the first mask layer to form the first opening comprises:

forming a second photoresist pattern on the first mask layer;

using the second photoresist pattern as a mask to pattern the first mask layer to include initial openings formed therein; and

etching a sidewall of the patterned first mask layer to expand the initial

openings formed in the first mask layer.

4. The method of claim 3,

wherein patterning the first mask layer to form the first opening further comprises forming a protective layer covering a top surface of the first mask layer,

wherein, when the sidewall of the patterned first mask layer is etched, the protective layer protects the top surface of the first mask layer.

5. The method of any one of claims 1 to 4,

wherein forming the cut pattern comprises:

forming a first filling layer covering at least a portion of the spacer; and

removing a portion of the first filling layer.

6. The method of any one of claims 1 to 5, wherein the cut pattern and the spacer are formed of the same material.

7. The method of any one of claims 1 to 6, wherein the cut pattern and the first mask layer are formed of the same material.

8. The method of any one of claims 1 to 7, further comprising forming a first memory layer between the target layer and the first mask layer,

wherein the cut pattern and the first memory layer are formed of the same material.

9. The method of any one of claims 5 to 8, wherein removing the portion of the first filling layer comprises performing a chemical mechanical polishing (CMP) process to form a discrete portion of the first filling layer positioned within the first

opening with respect to a plan view and performing an etch-back process to reduce a height of the discrete portion of the first filling layer.

10. The method of any one of claims 1 to 9, wherein forming the cut pattern further comprises etching sidewalls of the cut pattern to reduce a width of the cut pattern.

11. A method of manufacturing a semiconductor device, the method comprising:

sequentially forming a target layer and a first mask layer on a substrate;

performing a first photolithography process to form a first opening in the first mask layer;

forming a spacer on an inner sidewall of the first opening, the spacer defining a second opening within the first opening;

forming a cut pattern covering at least a portion of the spacer; and

performing a second photolithography process to form in the first mask layer a third opening immediately adjacent to the second opening with the spacer disposed between the second opening and the third opening,

wherein the third opening is formed in a self-aligned manner using the spacer, and

wherein a top surface of the cut pattern is lower than that of a second filling layer formed on the substrate.

12. The method of claim 11, wherein forming the third opening comprises removing a portion of the spacer.

13. The method of claim 11 or claim 12, wherein forming the cut pattern

comprises:

forming a first filling layer covering the spacer; and

removing a portion of the first filling layer.

14. The method of claim 13, wherein removing the portion of the first filling layer comprises performing an etch-back process to remove the portion of the first filling layer.

15. The method of any one of claims 11 to 14, further comprising etching sidewalls of the cut pattern to reduce a width of the cut pattern.