WHAT IS CLAIMED IS:

1. An organic semiconductor substrate, comprising:

a base;

a first conductive pattern and a second conductive pattern disposed on the base and separated from each other;

a first metal oxide pattern and a second metal oxide pattern respectively covering the first conductive pattern and the second conductive pattern and respectively electrically connected to the first conductive pattern and the second conductive pattern;

an organic flat pattern layer comprising a first portion, wherein the first portion of the organic flat pattern layer is disposed between the first metal oxide pattern and the second metal oxide pattern, the first metal oxide pattern comprises a surface facing away from the base, the surface of the first metal oxide pattern comprises a first distance from the base, the first portion of the organic flat pattern layer comprises a surface facing away from the base, the surface of the first portion of the organic flat pattern layer comprises a second distance from the base, the second distance is less than or equal to the first distance, the organic flat pattern layer is in direct contact with the first metal oxide pattern and the second metal oxide pattern, the first metal oxide pattern and the second metal oxide pattern belong to a metal oxide pattern layer, and the metal oxide pattern layer is complementary to the organic flat pattern layer in a top view of the organic semiconductor substrate;

a source and a drain separated from each other, wherein the source and the drain respectively are disposed on the first metal oxide pattern and the second metal oxide pattern and are electrically connected to the first metal oxide pattern and the second metal oxide pattern, respectively;

an organic semiconductor pattern disposed on the source, the drain, and the first portion of the organic flat patterned layer, wherein two regions of the organic semiconductor pattern

respectively are electrically connected to the source and the drain;

an organic gate insulating layer disposed on the organic semiconductor pattern; and

a gate disposed on the organic gate insulating layer.

2. The organic semiconductor substrate of claim 1, wherein the second metal oxide pattern comprises a surface facing away from the base, the surface of the second metal oxide pattern comprises a third distance from the base, and the second distance is less than or equal to the third distance.

3. The organic semiconductor substrate of claim 1, wherein the first conductive pattern comprises a data line, and vertical projection of the first conductive pattern on the base is within vertical projection of the first metal oxide pattern on the base.

4. The organic semiconductor substrate of claim 1, wherein the first conductive pattern comprises a data line, the data line comprises a line width in a first direction, the data line comprises a length in a second direction intersecting with the first direction, the first metal oxide pattern comprises a width in the first direction, the first metal oxide pattern comprises a length in the second direction, the width of the first metal oxide pattern is greater than the line width of the data line, and the length of the first metal oxide pattern is greater than the length of the data line.

5. The organic semiconductor substrate of claim 1, further comprising:

a third conductive pattern disposed on the base and separated from the first conductive pattern and the second conductive pattern;

a third metal oxide pattern separated from the first metal oxide pattern and the second metal oxide pattern, wherein the third metal oxide pattern is electrically connected to and covers the third conductive pattern; and

a pixel electrode electrically connected to the drain and overlapping the third conductive pattern, wherein vertical projection of the third conductive pattern on the base is within vertical projection of the third metal oxide pattern on the base.

6. The organic semiconductor substrate of claim 1, further comprising:

a third conductive pattern disposed on the base and separated from the first conductive pattern and the second conductive pattern;

a third metal oxide pattern separated from the first metal oxide pattern and the second metal oxide pattern, wherein the third metal oxide pattern is electrically connected to and covers the third conductive pattern; and

a pixel electrode electrically connected to the drain and overlapping the third conductive pattern, wherein a width of the third metal oxide pattern in a first direction is greater than a width of the third conductive pattern in the first direction, a width of the third metal oxide pattern in a second direction is greater than a width of the third conductive pattern in the second direction, and the first direction is intersected with the second direction.

7. The organic semiconductor substrate of claim 1, wherein the source comprises a contact surface in direct contact with the first metal oxide pattern, the contact surface of the source comprises a fourth distance from the base, and the fourth distance is greater than or equal to the second distance.

8. The organic semiconductor substrate of claim 7, wherein the drain comprises a contact surface in direct contact with the second metal oxide pattern, the contact surface of the drain comprises a fifth distance from the base, and the fifth distance is greater than or equal to the second distance.

9. The organic semiconductor substrate of claim 1, wherein the organic flat pattern layer comprises a first opening and a second opening; in an top view of the organic semiconductor substrate, the first metal oxide pattern fills up and does not exceed the first opening of the organic flat pattern layer, and the second metal oxide pattern fills up and does not exceed the second opening of the organic flat pattern layer.