display apparatus 10 in FIG. 3 and FIG. 4, and the difference between the touch display apparatus 10B and the touch display apparatus 10 is as follows: the read-out line RL of the touch display apparatus 10B in FIG. 9 and FIG. 10 is formed on a different film layer from the first scan line SL1, the second scan line SL2 and the data line DL. In the embodiments of FIG. 9 and FIG. 10, the first scan line SL1 and the second scan line SL2 can be formed on a first metal layer, the data line DL can be formed on a second metal layer, and the read-out line RL can be formed on another conductive layer other than the first metal layer and the second metal layer.

[0097] Referring to FIG. 9 and FIG. 10, for example, in the present embodiment, the read-out line RL is arranged on the inner surface 114 of the first substrate 110, the touch display apparatus 10B further comprises an insulating layer 195, the insulating layer 195 is arranged on the read-out line RL and the inner surface 114 of the first substrate 110, the first touch electrode 120 is arranged on the insulating layer 195, the dielectric layer 130 is arranged on the first touch electrode 120, the first transistor T1 and the second transistor T2 are arranged on the dielectric layer 130, and the insulating layer 180 is arranged on the first transistor T1 and the second transistor T2.

[0098] The touch display apparatus 10B further comprises a second connecting pattern 192 arranged on the insulating layer 180 and electrically connected to the first end 172a of the second transistor T2. The second connecting pattern 192 is electrically connected to the read-out line RL through a contact 182 of the insulating layer 180, a contact 152 of the gate insulating layer 150, a contact 132 of the dielectric layer 130 and a contact 195a of the insulating layer 195.

[0099] In the present embodiment, the second connecting pattern 192 and the pixel electrode 190 can be formed on the same film layer, the material of the second

WHAT IS CLAIMED IS:

1. A touch display apparatus, comprising:

a first substrate provided with an outer surface and an inner surface opposite to each other, wherein the outer surface is a touch surface;

a second substrate arranged opposite to the first substrate;

a display medium arranged between the inner surface of the first substrate and the second substrate;

a plurality of pixel structures arranged between the first substrate and the display medium or between the second substrate and the display medium, wherein each of the pixel structures comprises a data line, a first scan line, a first transistor and a pixel electrode, the first transistor is provided with a first end, a second end and a control end, the data line is electrically connected to the first end of the first transistor, the first scan line is electrically connected to the control end of the first transistor, and the pixel electrode is electrically connected to the second end of the first transistor;

a first touch electrode arranged on the inner surface of the first substrate;

a second transistor arranged on the inner surface of the first substrate and provided with a first end, a second end and a control end;

a read-out line and a second scan line arranged on the inner surface of the first substrate, wherein the read-out line is electrically connected to the first end of the second transistor, the second scan line is electrically connected to the control end of the second transistor, the first touch electrode is electrically connected to the second end of the second transistor, and the first touch electrode is overlapped with a pixel electrode of a first pixel structure of the pixel structures, the read-out line extends through a part of the pixel electrode of the first pixel structure, and the read-out line is overlapped with

the part of the pixel electrode of the first pixel structure; and

a dielectric layer, wherein the first touch electrode is arranged between the first substrate and the dielectric layer, and the dielectric layer is arranged between the first touch electrode and a first transistor of the first pixel structure.

2. The touch display apparatus according to claim 1, wherein the dielectric layer is arranged on the first touch electrode, and the first transistor of the first pixel structure is arranged on the dielectric layer.

3. The touch display apparatus according to claim 1, wherein the dielectric layer is arranged on the first touch electrode, and the second transistor is arranged on the dielectric layer.

4. The touch display apparatus according to claim 3, further comprising:

a first connecting pattern electrically connected to the second end of the second transistor, wherein the first connecting pattern is electrically connected to the first touch electrode through a contact of the dielectric layer.

5. The touch display apparatus according to claim 4, further comprising:

an insulating layer arranged on the second transistor, wherein the first connecting pattern is arranged on the insulating layer and is electrically connected to the first touch electrode through a contact of the insulating layer.

6. The touch display apparatus according to claim 4, further comprising:

a color filter layer arranged on the dielectric layer and the second transistor, wherein the first connecting pattern is arranged on the color filter layer and is electrically connected to the first touch electrode through a contact of the color filter layer.

7. The touch display apparatus according to claim 4, wherein a material of the first connecting pattern is the same as a material of the pixel electrode of the first pixel structure.

8. The touch display apparatus according to claim 1, wherein the dielectric layer is arranged on the read-out line, and the touch display apparatus further comprises:

a second connecting pattern arranged on the dielectric layer, electrically connected to the first end of the second transistor, and electrically connected to the read-out line through a contact of the dielectric layer.

9. The touch display apparatus according to claim 8, further comprising:

an insulating layer arranged on the dielectric layer and the second transistor, wherein the second connecting pattern is arranged on the insulating layer and is electrically connected to the read-out line through a contact of the insulating layer.

10. The touch display apparatus according to claim 8, further comprising:

a color filter layer arranged on the dielectric layer and the second transistor, wherein the second connecting pattern is arranged on the color filter layer and is electrically connected to the read-out line through a contact of the color filter layer.

11. The touch display apparatus according to claim 8, wherein a material of the second connecting pattern is the same as a material of the pixel electrode of the first pixel structure.

12. The touch display apparatus according to claim 1, wherein a data line of the first pixel structure and the read-out line are arranged in a first direction, a first scan line of the first pixel structure and the second scan line are arranged in a second direction, and the first direction and the second direction are substantially perpendicular.

13. The touch display apparatus according to claim 1, wherein a data line of the first pixel structure is substantially parallel to the read-out line.

14. The touch display apparatus according to claim 1, wherein a first scan line of the first pixel structure is substantially parallel to the second scan line.

15. The touch display apparatus according to claim 1, wherein the part of the pixel electrode of the first pixel structure is a central part of the pixel electrode of the first pixel structure.

16. The touch display apparatus according to claim 1, wherein the pixel electrode of the first pixel structure comprises a first main part, a second main part and a plurality of branch parts, the first main part and the second main part are staggered, the branch parts are connected to the first main part and the second main part, and the

read-out line is overlapped with the first main part of the pixel electrode.

17. The touch display apparatus according to claim 1, wherein a vertical projection of a first scan line of the first pixel structure on the first substrate and a vertical projection of the second scan line on the first substrate are respectively positioned at two opposite sides of a vertical projection of the pixel electrode of the first pixel structure on the first substrate.

18. The touch display apparatus according to claim 1, further comprising:

a second touch electrode arranged on the inner surface of the first substrate, wherein the pixel structures comprise a second pixel structure, the second touch electrode is overlapped with a pixel electrode of the second pixel structure, the second touch electrode is arranged between the first substrate and the dielectric layer, the dielectric layer is arranged between the second touch electrode and the first transistor of the first pixel structure, and the second touch electrode is electrically connected to the second scan line.

19. The touch display apparatus according to claim 18, further comprising:

a third connecting pattern electrically connected to the second scan line, wherein the third connecting pattern is electrically connected to the second touch electrode through a contact of the dielectric layer.

20. The touch display apparatus according to claim 19, further comprising:

an insulating layer arranged on the dielectric layer and the second transistor,

wherein the third connecting pattern is arranged on the insulating layer and is electrically connected to the second touch electrode through a contact of the insulating layer.

21. The touch display apparatus according to claim 19, wherein a material of the third connecting pattern is the same as a material of the pixel electrode of the first pixel structure.

22. The touch display apparatus according to claim 1, further comprising:

a second touch electrode arranged on the inner surface of the first substrate, wherein the pixel structures comprise a second pixel structure, the second touch electrode is overlapped with a pixel electrode of the second pixel structure, the second touch electrode is arranged between the first substrate and the dielectric layer, and the dielectric layer is arranged between the second touch electrode and the first transistor of the first pixel structure; and

a control line, wherein the second touch electrode is electrically connected to the control line.

23. The touch display apparatus according to claim 22, further comprising:

a fourth connecting pattern electrically connected to the control line, wherein the fourth connecting pattern is electrically connected to the second touch electrode through a contact of the dielectric layer.

24. The touch display apparatus according to claim 23, further comprising:

an insulating layer arranged on the dielectric layer and the second transistor, wherein the fourth connecting pattern is arranged on the insulating layer and is electrically connected to the second touch electrode through a contact of the insulating layer.

25. The touch display apparatus according to claim 23, wherein a material of the fourth connecting pattern is the same as a material of the pixel electrode of the first pixel structure.

26. The touch display apparatus according to claim 22, wherein a plurality of data lines of the pixel structures and the read-out line are arranged in a first direction, a plurality of first scan lines of the pixel structures, the second scan line and the control line are arranged in a second direction, and the first direction and the second direction are substantially perpendicular.

27. The touch display apparatus according to claim 18, further comprising:

another read-out line, wherein the another read-out line extends through a part of the pixel electrode of the second pixel structure, and the another read-out line is overlapped with the part of the pixel electrode of the second pixel structure.

28. The touch display apparatus according to claim 27, wherein the part of the pixel electrode of the second pixel structure is a central part of the pixel electrode of the second pixel structure.

29. The touch display apparatus according to claim 22, further comprising:

another read-out line, the another read-out line extends through a part of the pixel electrode of the second pixel structure, and the another read-out line is overlapped with the part of the pixel electrode of the second pixel structure.

30. The touch display apparatus according to claim 29, wherein the part of the pixel electrode of the second pixel structure is a central part of the pixel electrode of the second pixel structure.

31. The touch display apparatus according to claim 22, wherein the another read-out-line is interlaced with the control line.