

CLAIMS

1. A pixel array comprising:
a display medium module comprising at least two pairs of electrodes and a display medium,
5 each pair of electrodes comprising a first electrode and a second electrode, and the display medium being disposed between first electrodes and second electrodes of the display medium module;
an active switching element electrically connected to the first electrodes for allowing the first electrodes and the second electrodes to change a state of the display medium; and
10 a connecting module, integrated with the display medium module and comprising a plurality of conductors for electrically connecting active switching element of the pixel array to first electrodes of the display medium module.
2. The pixel array of claim 1, wherein the connecting module is an interposer disposed in
15 a perforation of the display medium module and/or the pixel array.
3. The pixel array of claim 1, wherein the active switching element comprises an active switching element substrate portion and a transistor portion formed directly on the active switching element substrate portion.
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4. The pixel array of claim 1, wherein the connecting module is disposed on the display medium module and/or the pixel array.
5. The pixel array of claim 1, wherein the connecting module comprises an
25 electromagnetic interference (EMI) shield and/or an insulating material for electrically isolating the conductors from each other.
6. The pixel array of claim 1, wherein the connecting module is a pitch connector, and a pitch between two conductors contacting with the active switching elements is less than a pitch
30 between two conductors contacting with two of the first electrodes.
7. A display apparatus comprising:
a plurality of pixel arrays, each pixel array comprising:
a display medium module comprising at least two pairs of electrodes and a display medium,
35 each pair of electrodes comprising a first electrode and a second electrode, and the display

medium being disposed between first electrodes and second electrodes of the display medium module;

an active switching element electrically connected to the first electrodes for allowing the first electrodes and the second electrodes to change a state of the display medium; and

5 a connecting module, integrated with the display medium module and comprising a plurality of conductors for electrically connecting the active switching element to first electrodes of the display medium module.

8. The display apparatus of claim 7, wherein the connecting module is an interposer
10 disposed in a perforation of the display medium module and/or the pixel array.

9. The display apparatus of claim 7, wherein the active switching element comprises an active switching element substrate portion and a transistor portion formed directly on the active switching element substrate portion.

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10. The display apparatus of claim 7, wherein each connecting module is disposed on the display medium module and/or the pixel array.

11. The display apparatus of claim 7, wherein each connecting module comprises an
20 electromagnetic interference (EMI) shield and/or an insulating material for electrically isolating the conductors from each other.

12. The display apparatus of claim 7, wherein the connecting module is a pitch connector,
and a pitch between two conductors contacting with the active switching element is less than a
25 pitch between two conductors contacting with two of the first electrodes.

13. A method for manufacturing a pixel array, comprising:

forming a display medium module of the pixel array, the display medium module comprising at least two pairs of electrodes and a display medium, each pair of electrodes
30 comprising a first electrode and a second electrode, and a display medium being disposed between first electrodes and second electrodes of the display medium module;

forming an active switching element of the pixel array, the active switching element being electrically connected to the first electrodes for allowing the first electrodes and the second electrodes to change a state of the display medium; and

embedding a connecting module with the display medium module to electrically connect the active switching element to the first electrodes via a plurality of conductors of the connecting module.

5 14. The method of claim 13, further comprising:
forming a perforation in the pixel array; and
wherein the connecting module is an interposer disposed in the perforation.

10 15. The method of claim 14, wherein the perforation is formed in the pixel array by using a
laser beam, etching or punching the display medium module.

16. The method of claim 13, wherein the connecting module is disposed on the display medium module and/or the display array.

15 17. The method of claim 13, wherein the active switching element comprises an active
switching element substrate portion and a transistor portion formed directly on the active
switching element substrate portion.

20 18. The method of claim 13, wherein the connecting module comprises an electromagnetic
interference (EMI) shield.

19. The method of claim 13, wherein the connecting module comprises insulating material for electrically isolating the conductors from each other.

25 20. The method of claim 13, wherein the connecting module is a pitch connector, and a
pitch between two conductors contacting with the active switching element is less than a pitch
between two conductors contacting with two of the first electrodes.