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(54) **MULTI-DOMAIN VERTICAL ALIGNMENT LIQUID CRYSTAL DISPLAY PANEL, PIXEL ARRAY STRUCTURE AND DRIVING METHODS THEREOF**

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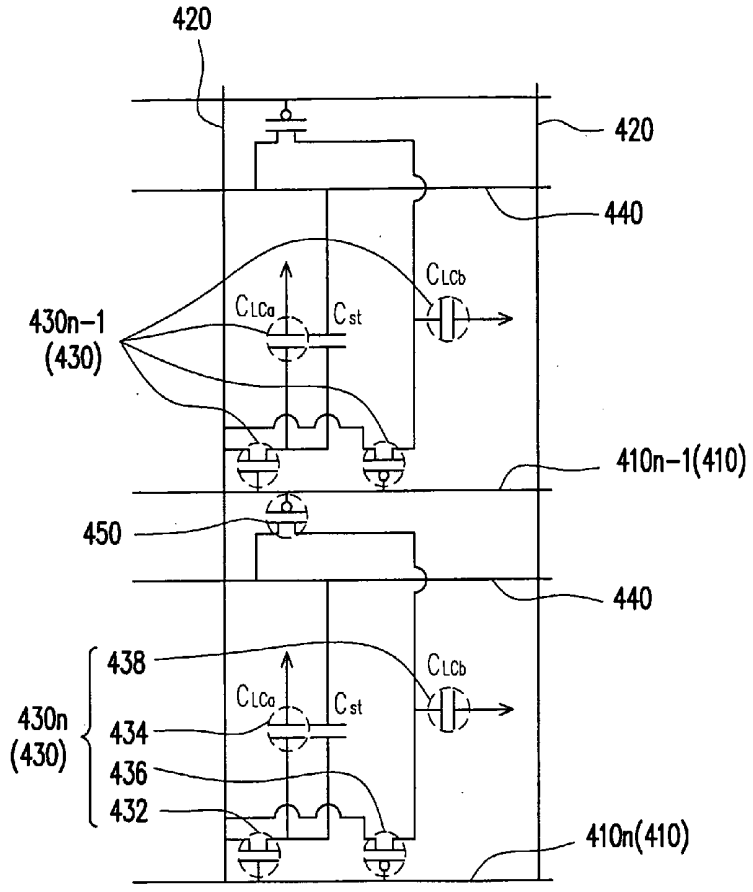
(57) **ABSTRACT**

A multi-domain vertical alignment (MVA) liquid crystal display panel including an active device array substrate, an opposite substrate and a liquid crystal layer is provided. The active device array substrate has a plurality of pixel electrodes and a plurality of auxiliary electrodes, wherein each pixel electrodes has at least a slit and each auxiliary electrode is disposed corresponding to the slit. The opposite substrate is disposed above the active device array substrate and the opposite substrate has a common electrode disposed between the active device array substrate and the opposite substrate. The liquid crystal layer is disposed between the active device array substrate and the opposite substrate. The above-mentioned multi-domain vertical alignment liquid crystal display panel has high aperture ratio and rapid response.



400

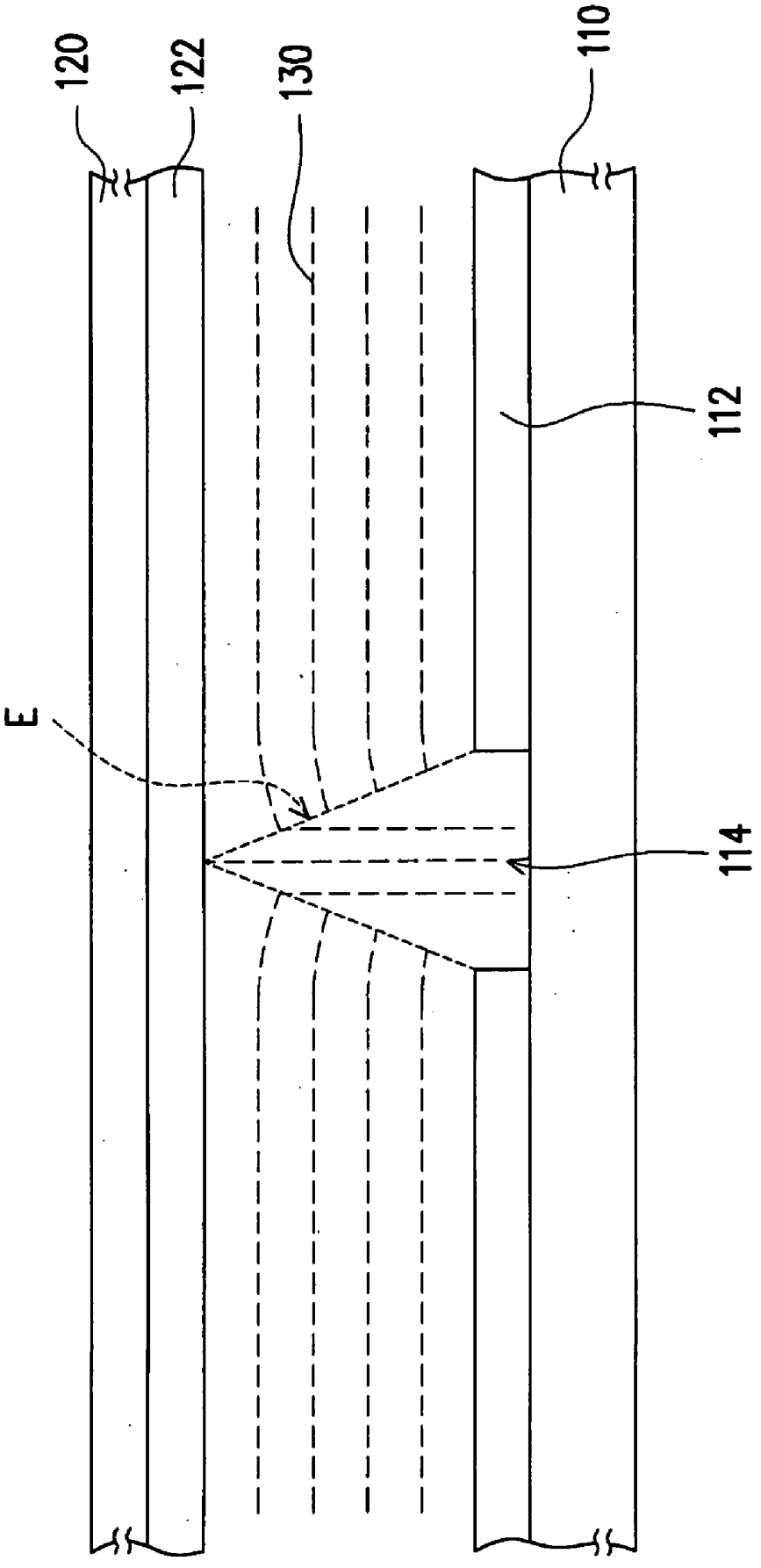


FIG. 1 (PRIOR ART)

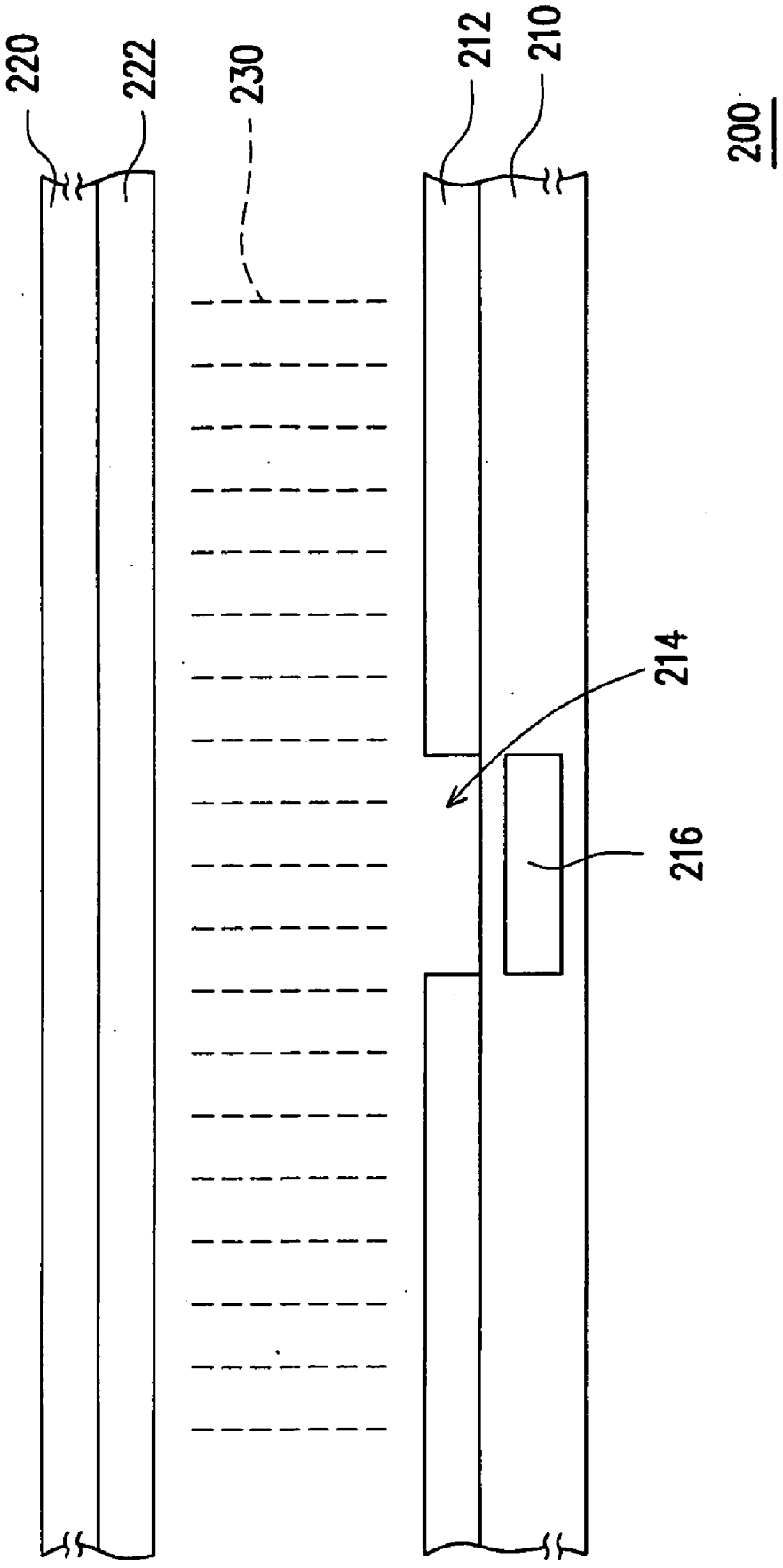


FIG. 2

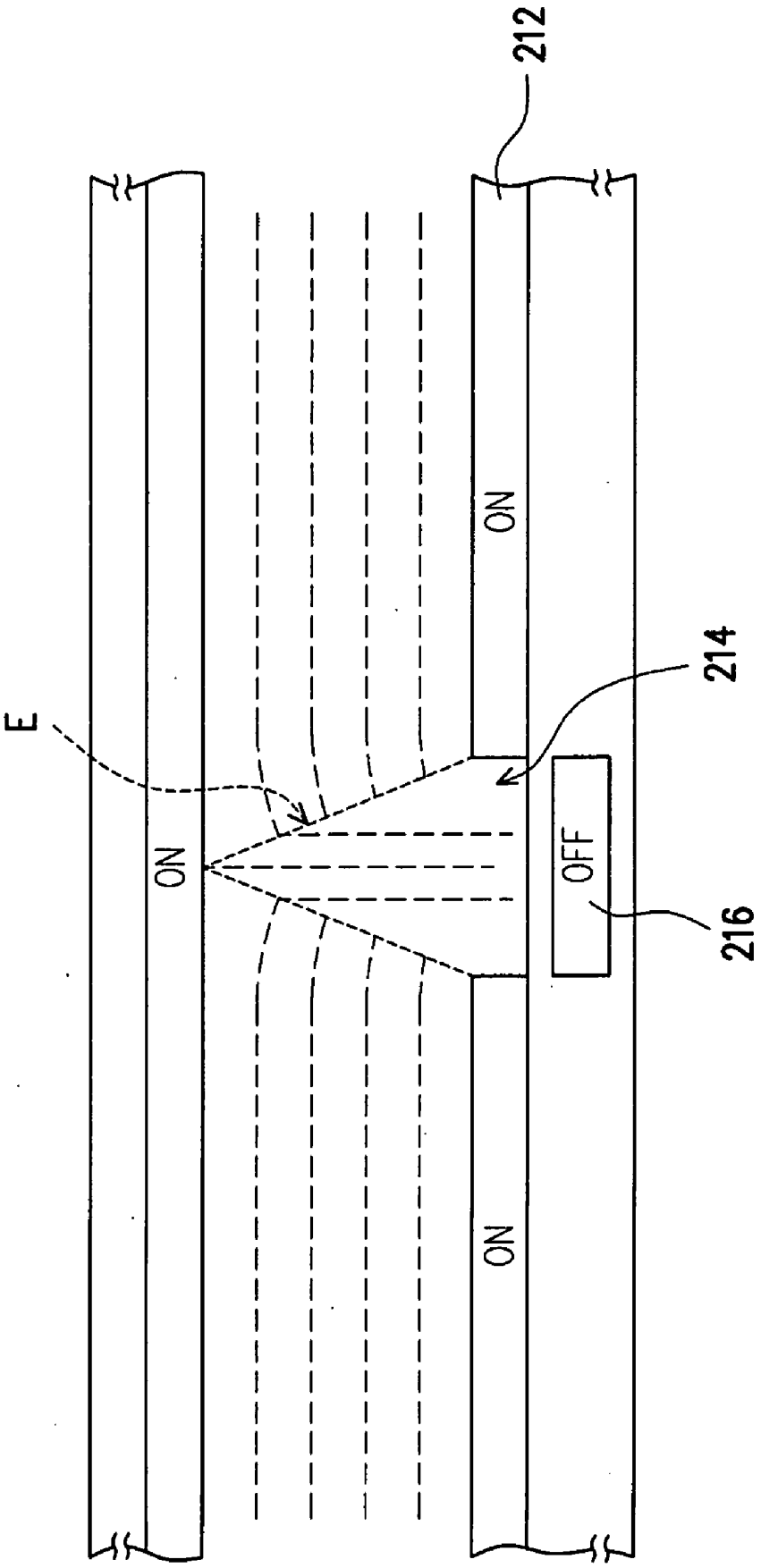


FIG. 3A

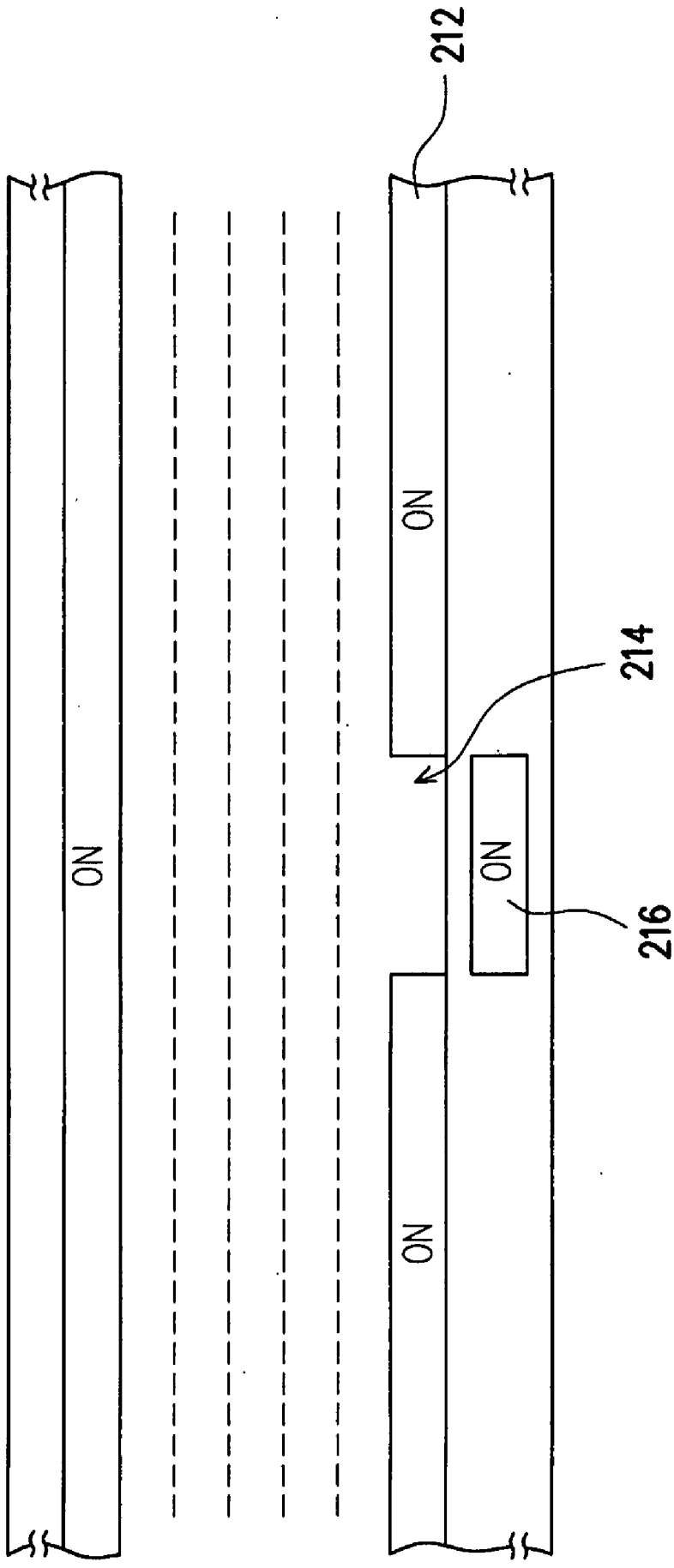


FIG. 3B

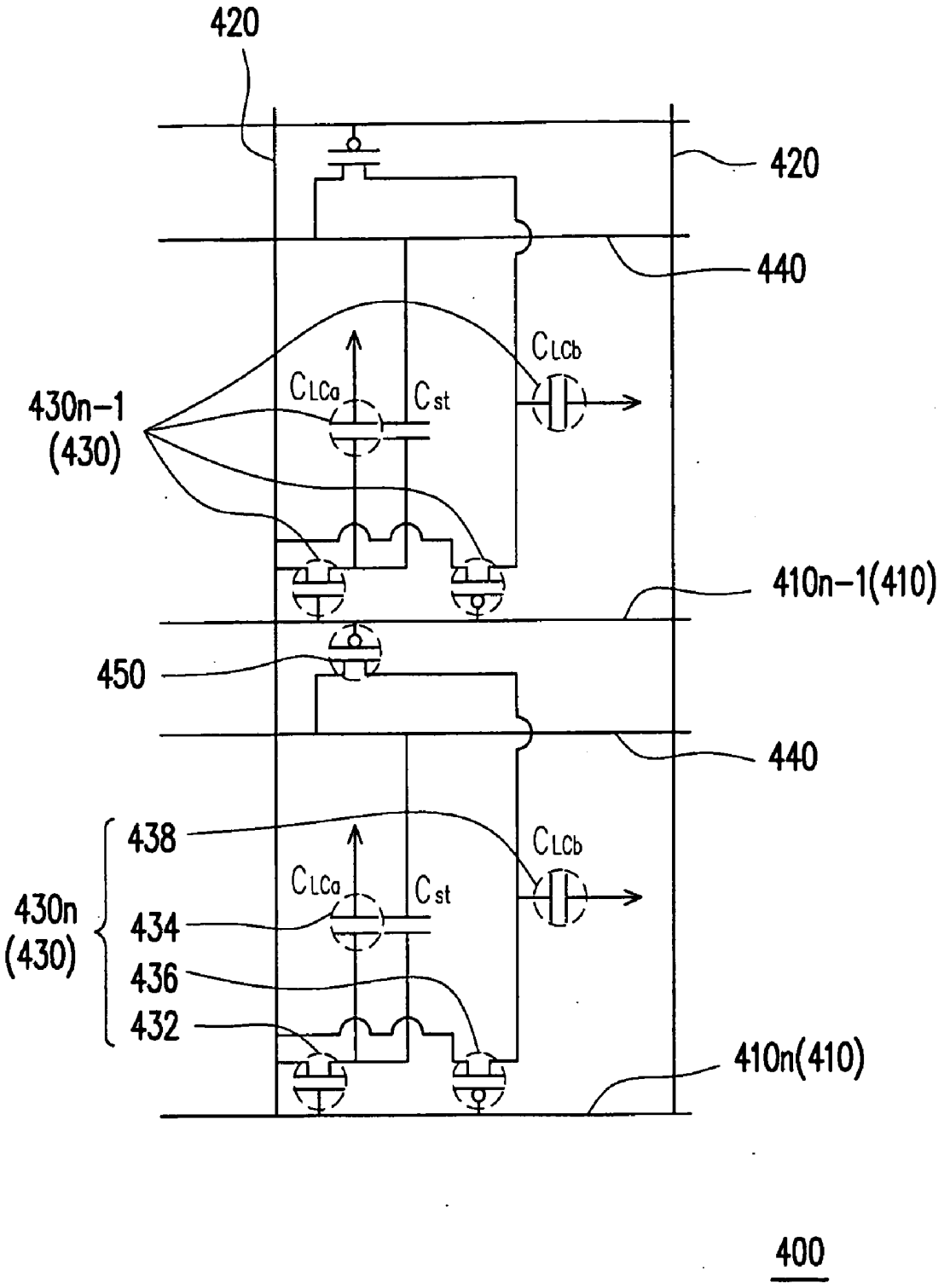

420
420
440
CLCb
CLCa
Cst
430n-1
(430)
410n-1(410)
450
440
438
CLCb
CLCa
Cst
430n
(430)
434
436
432
410n(410)
400

FIG. 4

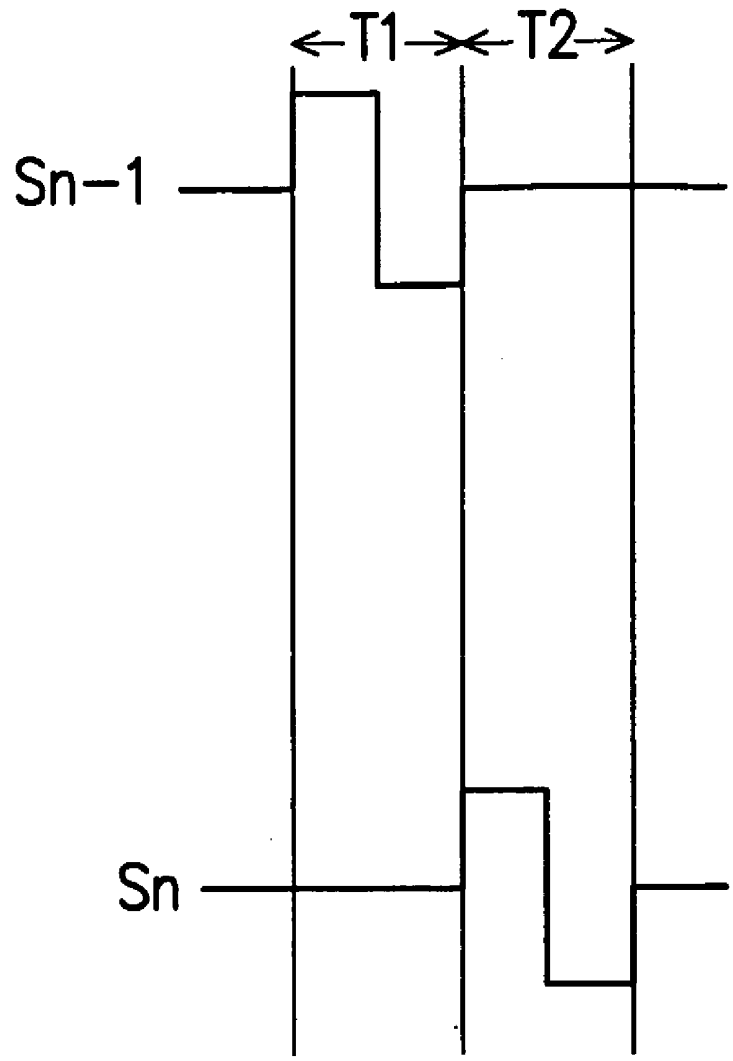


FIG. 5

MULTI-DOMAIN VERTICAL ALIGNMENT LIQUID CRYSTAL DISPLAY PANEL, PIXEL ARRAY STRUCTURE AND DRIVING METHODS THEREOF

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the priority benefit of Taiwan application serial no. 96132224, filed on Aug. 30, 2007. The entirety of the above-mentioned patent application is hereby incorporated by reference herein and made a part of this specification.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to a liquid crystal display panel (LCD panel) and driving methods thereof, more specifically, the present invention relates to a multi-domain vertical alignment (MVA) LCD panel and driving methods thereof.

[0004] 2. Description of Related Art

[0005] At present, market demands LCDs with characteristics of high contrast ratio, no gray scale inversion, little color shift, high color richness, high color saturation, quick response and wide viewing angle and etc. Currently, wide viewing angle can be achieved by various technologies, such as TN LCD panel plus wide viewing angle film, in-plane switching (IPS) LCD, fringe field switching (FFS) LCD and multi-domain vertically alignment (MVA) LCD and so on.

[0006] In the case of MVA LCD of prior art, since protrusions or slits disposed on pixel electrodes may allow liquid crystal molecules to arrange in a plurality of directions to obtain a plurality of different alignment domains, the MVA LCD can meet wide viewing angle requirements.

[0007] FIG. **1** is a partial sectional view of a conventional MVA LCD panel. As shown in FIG. **1**, the MVA LCD panel **100** includes an active device array substrate **110**, an opposite substrate **120** and a liquid crystal layer **130** disposed between the two substrates **110** and **120**. The active device array substrate **110** comprises the pixel electrode **112** formed thereon, and the opposite substrate **120** comprises the common electrode **122** formed thereon. Meanwhile, in order to allow the MVA LCD panel **100** to achieve wide viewing angle effect, pixel electrode **112** has at least one slit **114** (only one shown in FIG. **1**), so that liquid crystal molecules in the liquid crystal layer **130** are arranged into a plurality of alignment domains. Generally, the size of the slits **114** may affect the display effect of the MVA LCD panel **100**. Specifically, the greater the size of the slits **114**, the larger the distortion of the electric field E above the slits **114**, and the quicker the response of liquid crystal molecules. However, since the inclined direction of the liquid crystal molecules above the slits **114** is difficult to control, light leakage phenomenon is likely to occur. For a normally black mode, the abnormal inclination of liquid crystal above the slits **114** may form disclination, and results in restricted aperture ratio of the MVA LCD panel **100**. In other words, the greater the size of the slits **114**, the more reduction in the aperture ratio of the MVA LCD **100** is resulted. On the other hand, when smaller size slits **114** are used, although the aperture ratio of the MVA LCD panel **100** can be increased, the response of liquid crystal molecules slows down accordingly.

[0008] Therefore, how to balance the aperture ratio and response of the MVA LCD panel **100** is still an important issue.

SUMMERY OF THE INVENTION

[0009] The present invention provides a MVA LCD panel having high aperture ratio and rapid response.

[0010] The present invention provides a driving method for the MVA LCD panel to increase the aperture ratio and response of the MVA LCD panel.

[0011] The present invention also provides a pixel array structure having high aperture ratio and rapid response.

[0012] The present invention also provides a driving method for the pixel array structure to increase the aperture ratio and response.

[0013] The present invention also provides a pixel structure having high aperture ratio and rapid response.

[0014] The present invention provides a MVA LCD panel, which includes an active device array substrate, at least one auxiliary electrode, an opposite substrate and a liquid crystal layer. The active device array substrate comprises a plurality of pixel electrodes, and each of the pixel electrodes comprises at least a slit; and the auxiliary electrode is disposed corresponding to the slits. The opposite substrate is disposed above the active device array substrate, and the opposite substrate has a common electrode between the opposite substrate and the active device array substrate. The liquid crystal layer is disposed between the active device array substrate and the opposite substrate.

[0015] In an embodiment of the present invention, the pixel electrodes are disposed above the auxiliary electrode.

[0016] In an embodiment of the present invention, the pixel electrodes are disposed under the respective auxiliary electrode.

[0017] In an embodiment of the present invention, the liquid crystal molecules of the liquid crystal layer located above the respective pixel electrodes are controlled through the respective pixel electrodes; and the liquid crystal molecules of the liquid crystal layer located above the auxiliary electrode are controlled through the auxiliary electrode.

[0018] The present invention also provides a driving method for driving the above-mentioned MVA LCD panel. The driving method includes inputting a first driving voltage to the pixel electrodes to drive the liquid crystal molecules above the pixel electrodes, respectively; and inputting a second driving voltage to the auxiliary electrode to drive the liquid crystal molecules above the auxiliary electrode, respectively.

[0019] In an embodiment of the present invention, after the first driving voltage is inputted to the pixel electrodes, the second driving voltage is then input to the auxiliary electrode.

[0020] The present invention also provides a pixel array structure including a plurality of scan lines, a plurality of data lines and a plurality of pixel units. The pixel units are electrically connected to the corresponding scan lines and data lines, and the respective pixel units include a first active device, the pixel electrode, a second active devices and the auxiliary electrode. The pixel electrode is electrically connected to one of the scan lines and one of the data lines through the first active device. When the first active device controlled by the corresponding scan line is turned on, the first active device enables the pixel electrode connecting with the corresponding data line. The auxiliary electrode is electrically connected to one of the scan lines and one of the data lines through the

second active device. When the second active device controlled by the corresponding scan line is turned on, the second active device enables the auxiliary electrode connecting with the corresponding data lines.

[0021] In an embodiment of the present invention, the first active device is a N type transistor, and the second active device is a P type transistor.

[0022] In an embodiment of the present invention, the first active device is a P type transistor, and the second active device is an N type transistor.

[0023] In an embodiment of the present invention, the pixel array structure further includes the common line and the third active device. The common line is coupled to the common voltage source, and the third active device is electrically connected to the previous level scan line. When the third active device controlled by the previous level scan line is turned on, the third active device enables the auxiliary electrode connecting with the common line.

[0024] In an embodiment of the present invention, the first active device includes N type transistor, and the second active device and the third active device include P type transistors.

[0025] In an embodiment of the present invention, the first active device and the third active device are N type transistors, and the second active device is P type transistor.

[0026] In an embodiment of the present invention, the first active device is P type transistor, and the second active device and the third active device are N type transistors.

[0027] In an embodiment of the present invention, the first active device and the third active device are P type transistors, and the second active device is N type transistor.

[0028] The present invention also provides a driving method for driving the above-mentioned pixel array structure. The driving method includes sequentially inputting scan signals to the scan lines, so as to sequentially turn on the first active device and the second active device controlled by the same scan line; and sequentially inputting an image data to the pixel electrodes and the auxiliary electrode through the data lines.

[0029] In an embodiment of the present invention, the scan signal has a positive half-cycle signal and a negative half-cycle signal.

[0030] The present invention also provides a pixel structure including the pixel electrode, at least an auxiliary electrode, the first active device and the second active device. The pixel electrode has at least one slit, and the auxiliary electrode is disposed corresponding to the slits. The first active device is electrically connected to the pixel electrode, and the second active device is electrically connected to the auxiliary electrode.

[0031] In an embodiment of the present invention, the pixel electrode may be disposed above or under the auxiliary electrode.

[0032] In an embodiment of the present invention, the liquid crystal molecules of the liquid crystal layer located above the pixel electrodes are controlled through the pixel electrodes; while the liquid crystal molecules of the liquid crystal layer located above the auxiliary electrode are controlled through the auxiliary electrode.

[0033] Since the auxiliary electrode in the present invention is disposed corresponding to the slits of the pixel electrodes, the liquid crystal molecules located above the slits are controlled by the auxiliary electrode. In this way, the response of the liquid crystal molecules in the MVA LCD panel and the aperture ratio of the MVA LCD panel are enhanced.

[0034] In order to the make the aforementioned and other objects, features and advantages of the present invention comprehensible, a preferred embodiment accompanied with figures is described in detail below.

BRIEF DESCRIPTIONS OF DRAWINGS

[0035] FIG. **1** is a sectional view of a conventional MVA LCD panel.

[0036] FIG. **2** is a sectional view of the MVA LCD panel according to an embodiment of the present invention.

[0037] FIG. **3**A and FIG. **3**B schematically illustrated driving methods of the MVA LCD panel according to an embodiment of the present invention.

[0038] FIG. **4** is a partial diagram of the pixel array structure according to an embodiment of the present invention.

[0039] FIG. **5** is a time sequence chart of the scan signal according to an embodiment of the present invention.

DESCRIPTION OF EMBODIMENTS

[0040] In the MVA LCD panel, the slits or alignment protrusions, which are used to control liquid crystal molecules to perform multi-domain alignment, often cause reduced aperture ratio. In order to reduce negative effect (i.e. the reduced aperture ratio phenomenon) that slits contribute to reduced aperture ratio, the present invention uses the auxiliary electrode corresponding to the slits to increase the aperture ratio of the MVA LCD panel.

[0041] FIG. **2** is a partial sectional view of the MVA LCD panel of an embodiment of the present invention. Referring to FIG. **2**, a MVA LCD panel **200** includes the active device array substrate **210**, the opposite substrate **220**, at least one auxiliary electrode **216** and the liquid crystal layer **230**. The active device array substrate **210** has a plurality of pixel electrodes **212**, wherein the pixel electrode **212** has at least one slit **214** (for example, only one slit is shown in the present embodiment), and the auxiliary electrode **216** is disposed corresponding to the slits **214**. The opposite substrate **220** is disposed above the active device array substrate **210**, and the opposite substrate **220** has a common electrode **222**. The common electrode **222** is disposed between the opposite substrate **220** and the active device array substrate **210**. The liquid crystal layer **230** is disposed between the active device array substrate **210** and the opposite substrate **220**.

[0042] As shown in FIG. **2**, the pixel electrode **212** is disposed above the auxiliary electrode **216**, for example. In an alternative embodiment, the pixel electrode **212** is disposed under the auxiliary electrode **216**. It is noted that the liquid crystal molecules of the liquid crystal layer **230** located above the pixel electrodes **212** are controlled by the pixel electrodes **212**; and the liquid crystal molecules located above the auxiliary electrode **216** are controlled by the auxiliary electrode **216**.

[0043] In the present embodiment, the auxiliary electrode **216** is disposed corresponding to the slits **214** on the pixel electrodes **214**. Therefore, the liquid crystal molecules above the slits **214** can be controlled by the auxiliary electrode **216**. For the MVA LCD panel **200**, the situation that the arrangement of the liquid crystal molecules above the slits **214** is hard to control can be improved. Furthermore, in a normally black mode MVA LCD panel **200**, since the arrangement of direction of the liquid crystal molecules located above the slits **214** can be controlled by the auxiliary electrode **216**, the disclination phenomenon occurred at the slits **214** may be

improved. In other words, if the slits **214** are enlarged in order to increase the response of the liquid crystal molecules, the display quality of the MVA LCD panel **200** is still not likely to be degraded (i.e. the aperture ratio is not significantly reduced).

[0044] Specifically, the above-mentioned MVA LCD panel **200** may be driven with a driving method below so as to provide rapid response and good display quality. FIG. **3**A and FIG. **3**B schematically illustrate the driving method of the MVA LCD panel of an embodiment of the present invention. Referring to FIG. **3**A, the driving method of the MVA LCD panel **200**, for example, includes inputting the first driving voltage to the pixel electrodes **212** first to drive the liquid crystal molecules above the pixel electrodes **212**. At this time, distribution of the electric field E at the edge of the slits **214** and the region above of the slits **214** is driven, which can drive the liquid crystal molecules above the pixel electrode **212** to arrange as required. Since the slits **214** have appropriate size, the deformation degree of the electric field E is enough to allow the liquid crystal molecules above the pixel electrode **212** to show the required arrangement quickly and correctly.

[0045] Referring to FIG. **3**B, the second driving voltage is input to the auxiliary electrode **216** to drive the liquid crystal molecules above the auxiliary electrode **216**. In the present embodiment, after the first driving voltage is input to the pixel electrodes **212**, the second driving voltage is then input to the auxiliary electrode **216**, so that a portion of the liquid crystal molecules above the slits **214** show the required arrangement. Thus, the liquid crystal molecules above the pixel electrode **212** may be controlled by the pixel electrode **212**, while the liquid crystal molecules above the slits **214** may be controlled by the auxiliary electrode **216**.

[0046] In an embodiment of the present invention, after the first driving voltage is input to the pixel electrodes **212**, the second driving voltage is input to the auxiliary electrode **216** before the first driving voltage is ended. In an alternative embodiment of the present invention, after the first driving voltage is inputted completely, the second driving voltage is then input to the auxiliary electrode **216**. In other words, the input of the first driving voltage and the second driving voltage may overlap at a portion of time, or not overlap at all.

[0047] As a whole, the display quality of the MVA LCD panel **200** may not likely be affected by the slits **214**. In the mean time, the size of the slits **214** is not limited, which is helpful to increase the response of liquid crystal molecules in the MVA LCD panel **200**.

[0048] In order to express the spirit of the present invention more clearly, a pixel array structure is provided below. FIG. **4** is a sectional diagram of the pixel array structure of an embodiment of the present invention. Referring to FIG. **4**, the pixel array structure **400** includes a plurality of scan lines **410**, a plurality of data lines **420** and a plurality of pixel units **430**. The pixel units **430***n* are electrically connected to the corresponding scan lines **410***n* and data lines **420**, and the pixel unit **430***n* includes the first active device **432**, the pixel electrode **434**, the second active device **436** and the auxiliary electrode **438**. The pixel electrode **434** is electrically connected to the corresponding scan line **410***n* and the data line **420** through the first active device **432**. When the first active device **432** is controlled by the corresponding scan line **410***n* to be enabled, the first active device **432** enables the pixel electrode **434** connecting with the corresponding data line **420**. In addition, the auxiliary electrode **438** is electrically connected to the corresponding scan line **410***n* and the data line **420** through the second active device **436**. When the second active device **436** controlled by the corresponding scan line **410***n* is turned on, the second active device **436** enables the auxiliary electrode **438** connecting with the corresponding data line **420**.

[0049] In the present embodiment, the first active device **432** is a N type transistor, and the second active device **436** is a P type transistor. In other embodiments, the first active device **432** is a P type transistor, and the second active device **436** is an N type transistor.

[0050] Particularly, the pixel array structure **400** includes the common line **440** and the third active device **450**. The common line **440** is coupled to a common voltage source, and the third active device **450** are electrically connected to the previous level scan line **410***n*−1. When the third active device **450** controlled by the previous level scan line **410***n*−1 is turned on, the third active device **450** enables the auxiliary electrode **438** connecting with the common line **440**. Specifically, when the pixel unit **430***n*−1 connected to the previous level scan line **410***n*−1 is turned on, the auxiliary electrode **438** and the common line **440** are connected to each other via the third active device **450**.

[0051] It is noted that the third active device **450** may be either N type transistor or P type transistor. For example, the combinations of the first active device **432**, the second active device **436** and the third active device **450** are listed below. When the first active device **432** is N type transistor, both of the second active device **436** and the third active device **450** may be P type transistors. In an alternative embodiment of the present invention, when the first active device **432** is N type transistor, the second active device **436** is P type transistor and the third active device **450** is N type transistor. In addition, when the first active device **432** is P type transistor, both of the second active device **436** and the third active device **450** are N type transistors. In other embodiment of the present invention, when the first active device **432** is P type transistor, the second active device **436** is N type transistor and the third active device **450** is P type transistor.

[0052] The driving method of the pixel array structure **400** will be described later. FIG. **5** is a time sequence chart of the scan signal of an embodiment of the present invention. Referring to FIG. **4** and FIG. **5**, the driving method includes sequentially inputting the scan signal Sn−1 and the scan signal Sn to the scan line **410***n*−1 and the scan line **410***n*. When the scan signal Sn is input to the scan line **410***n*, the first active device **432** and the second active device **436** controlled by the scan line **410***n* are turned on in sequence. At this time, the image data is input to the pixel electrode **434** and the auxiliary electrode **438** in sequence through the data line **420**.

[0053] Next, the driving method of the pixel unit **430***n* will be used as an example to describe the present invention in detail. Referring to FIG. **4** and FIG. **5**, within time T**1** and T**2**, the scan signal Sn−1 and the scan signal Sn are respectively input to the scan line **410***n*−1 and the scan line **410***n* in sequence. The scan signal Sn−1 and the scan signal Sn both have positive half-cycle signal and negative half-cycle signal. Within time T**2**, the scan signal Sn with positive half-cycle signal and negative half-cycle signal may turn on the first active device **432** and the second active device **436** controlled by the scan line **410***n* in sequence. Therefore, the image data transmitted by the data line **420** may be input to the pixel electrode **434** and the auxiliary electrode **438** in sequence. When the structure design of the LCD panel is as the MVA

LCD panel **200** of the above embodiment, quick response of liquid crystal molecules and good display quality may be achieved.

[0054] It should be noted that the first active device **432** and the second active device **436** are turned on in sequence. And the fore section of the scan signal Sn in FIG. **5** is positive half-cycle signal, and the rear section of the scan signal Sn in FIG. **5** is negative half-cycle signal. In FIG. **5**, the first active device **432** in the present embodiment is an N type transistor, and the second active device **436** is a P type transistor. Such combination can allow the second active device **436** to be turned on after the first active device **432** is turned on. Of course, in other embodiments, when the first active device **432** is a P type transistor, and the second active device **436** is an N type transistor, the scan signal Sn can be designed as that the fore section of the scan signal Sn is negative half-cycle signal and the rear section is positive half-cycle signal.

[0055] In addition, within time T**1**, i.e. the time during the pixel unit **430***n*−1 connected to the previous level scan line **410***n*−1 is displaying images, the third active device **450** of the pixel unit **430***n* is turned on. At this time, the auxiliary electrode **438** and the common line **440** may be connected to each other via the third active device **450**, so that the voltage of the auxiliary electrode **438** and the voltage of the common line **440** are substantially the same. In this way, the display quality problem due to the fact that the voltage of the pixel electrode **434** is affected by the voltage of the auxiliary electrode **438** of a previous image data will be solved.

[0056] Since the scan signals Sn−1, Sn input to the scan lines **410***n*−1, **410***n* both have positive half-cycle signal and negative half-cycle signal, the third active device **450** may be either N type transistor or P type transistor.

[0057] To sum up, in the MVA LCD panel of the present invention, the auxiliary electrode is disposed corresponding to the slits in the pixel electrodes. The liquid crystal molecules above the slits are controlled by the auxiliary electrode, so as to be able to display images accurately. Therefore, the MVA LCD panel of the present invention is not likely to have disclination phenomenon caused by unclear inclined direction of liquid crystal molecules. Furthermore, the MVA LCD panel of the present invention has higher aperture ratio and good display quality. In the mean time, the size of the slits may be enlarged according to practical needs, which can further increase the response of the liquid crystal molecule in the MVA LCD panel.

[0058] It will be apparent to those skilled in the art that various modifications and variations can be made to the structure of the present invention without departing from the scope or spirit of the invention. In view of the foregoing, it is intended that the present invention cover modifications and variations of this invention provided they fall within the scope of the following claims and their equivalents.

What is claimed is:

1. A multi-domain vertical alignment (MVA) liquid crystal display (LCD) panel, comprising:

an active device array substrate, having a plurality of pixel electrodes, wherein each of the pixel electrodes has at least a slit;

at least an auxiliary electrode, disposed corresponding to the slits;

an opposite substrate, disposed above the active device array substrate, the opposite substrate having a common electrode located between the opposite substrate and the active device array substrate; and

a liquid crystal layer, disposed between the active device array substrate and the opposite substrate.

2. The MVA LCD panel of claim **1**, wherein the pixel electrodes are disposed above the auxiliary electrode.

3. The MVA LCD panel of claim **1**, wherein the pixel electrodes are disposed under the auxiliary electrode.

4. The MVA LCD panel of claim **1**, wherein liquid crystal molecules of the liquid crystal layer located above the pixel electrodes are respectively controlled through the pixel electrodes.

5. The MVA LCD panel of claim **1**, wherein liquid crystal molecules of the liquid crystal layer located above the auxiliary electrode are controlled through the auxiliary electrode.

6. A driving method for driving the MVA LCD panel of claim **1**, the driving method comprising:

inputting a first driving voltage to the pixel electrodes to drive liquid crystal molecules above the pixel electrodes, respectively; and

inputting a second driving voltage to the auxiliary electrode to drive liquid crystal molecules above the auxiliary electrode, respectively.

7. The driving method of claim **6**, wherein after the first driving voltage is input to the respective pixel electrodes, the second driving voltage is then input to the auxiliary electrode.

8. A pixel array structure, comprising:

a plurality of scan lines;

a plurality of data lines;

a plurality of pixel units, electrically connected to one of the scan lines and one of the data lines respectively, each of the pixel units comprising:

a first active device;

a pixel electrode, electrically connected to one of the scan lines and one of the data lines through the first active device, wherein the first active device enable the pixel electrode connecting with the corresponding data line when the first active device controlled by the corresponding scan line is turned on;

a second active device; and

an auxiliary electrode, electrically connected to one of the scan lines and one of the data lines through the second active device, wherein the second active device enable the auxiliary electrode connecting with the corresponding data line when the second active device controlled by the corresponding scan line is turned on.

9. The pixel array structure of claim **8**, wherein the first active device is an N type transistor and the second active device is a P type transistor.

10. The pixel array structure of claim **8**, wherein the first active device is a P type transistor and the second active device is an N type transistor.

11. The pixel array structure of claim **8**, further comprising:

a common line, coupled to a-common voltage source; and

a third active device, electrically connected to a previous level scan line, wherein the third active device enable the auxiliary electrode connecting with the common line when the third active device controlled by the previous level scan line is turned on.

12. The pixel array structure of claim **11**, wherein the first active devices comprise N type transistors; and the second active devices and the third active devices comprise P type transistors.

13. The pixel array structure of claim **11**, wherein the first active devices and the third active devices are N type transistors; and the second active devices are P type transistors.

14. The pixel array structure of claim **11**, wherein the first active devices are P type transistors; and the second active devices and the third active devices are N type transistors.

15. The pixel array structure of claim **11**, wherein the first active devices and the third active devices are P type transistors; and the second active devices are N type transistors.

16. A driving method for driving the pixel array structure of claim **9**, the driving method comprising:

inputting a scan signal to the scan lines sequentially, so as to sequentially turn on the first active devices and the second active devices controlled by the same scan line; and

inputting an image data to the pixel electrode and the auxiliary electrode sequentially through the data lines.

17. The driving method of claim **16**, wherein the scan signal comprises a positive half-cycle signal and a negative half-cycle signal.

18. A pixel structure, comprising:

a pixel electrode, having at least a slit;

at least an auxiliary electrode, disposed corresponding to the slits;

a first active device, electrically connected to the pixel electrode; and

a second active device, electrically connected to the auxiliary electrode.

19. The pixel structure of claim **18**, wherein the pixel electrode is disposed above the auxiliary electrode.

20. The pixel structure of claim **18**, wherein the pixel electrode is disposed under the auxiliary electrode.

21. The pixel structure of claim **18**, wherein liquid crystal molecules of the liquid crystal layer located above the pixel electrode are controlled by the pixel electrode.

22. The pixel structure of claim **18**, wherein liquid crystal molecules of the liquid crystal layer located above the auxiliary electrode are respectively controlled by the auxiliary electrode.

* * * * *

专利名称(译)	多域垂直配向液晶显示面板，像素阵列结构及其驱动方法		
公开(公告)号	US20090059108A1	公开(公告)日	2009-03-05
申请号	US12/198106	申请日	2008-08-25
[标]申请(专利权)人(译)	胜华科技股份有限公司		
申请(专利权)人(译)	胜华科技股份有限公司		
当前申请(专利权)人(译)	胜华科技股份有限公司		
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摘要(译)

提供一种多域垂直配向（MVA）液晶显示面板，包括有源器件阵列基板，相对基板和液晶层。有源器件阵列基板具有多个像素电极和多个辅助电极，其中每个像素电极至少具有一个狭缝，每个辅助电极对应于该狭缝设置。对向基板设置在有源器件阵列基板上方，对向基板具有设置在有源器件阵列基板和对向基板之间的公共电极。液晶层设置在有源器件阵列基板和相对基板之间。上述多畴垂直配向液晶显示面板具有高孔径比和快速响应。