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(54) **ARRAY SUBSTRATE AND LIQUID CRYSTAL DISPLAY**

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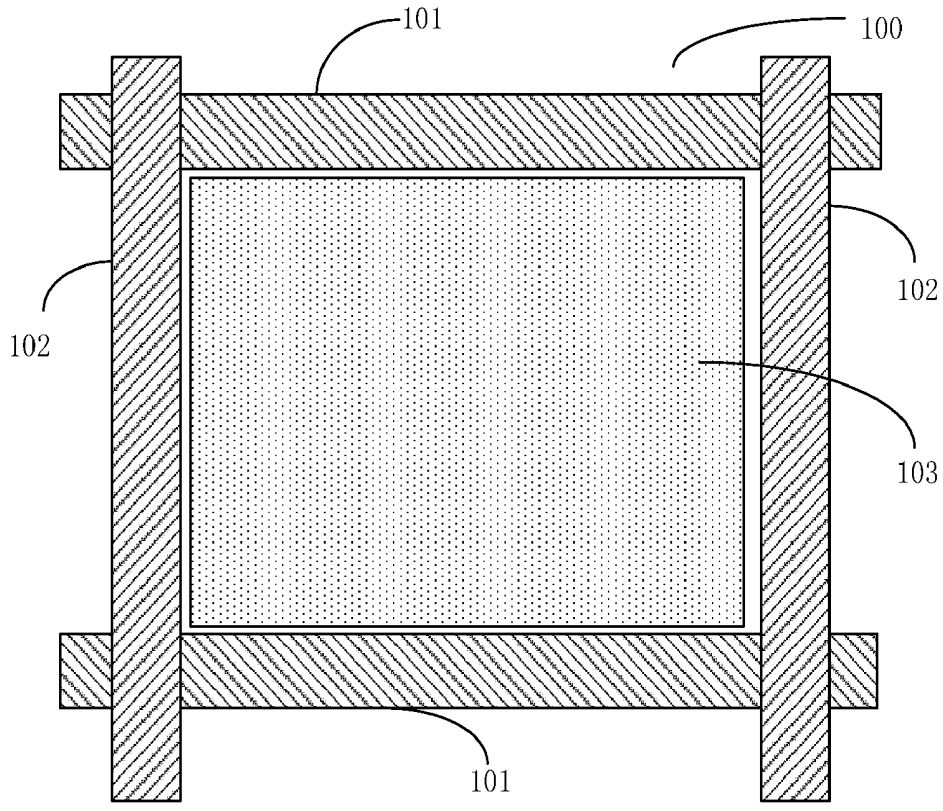
(57) **ABSTRACT**

An array substrate and a liquid crystal device are disclosed. The array substrate includes a substrate, and a plurality of scanning lines, a plurality of data lines, a plurality of pixel electrodes, a plurality of main pixel switches, a plurality of secondary pixel switches, a plurality of discharging switches, and a plurality of discharging capacitors are arranged on the substrate. Each pixel electrodes includes a main pixel electrode and a secondary pixel electrode. Each main pixel switch respectively connects to one scanning line, one data line, and one main pixel electrode. Each secondary pixel switch respectively connects to one scanning line, one data line, and one secondary pixel electrode. Each discharging switch respectively connects to one scanning line, one secondary pixel electrode, and one discharging capacitor. An electrical amount discharged from the discharging switch located in a central portion of the substrate toward the connected secondary pixel electrodes is less than the electrical amount discharged from the discharging switch located in a border of the substrate toward the connected secondary pixel electrode. In this way, an expected brightness of the liquid crystal panel can be achieved.



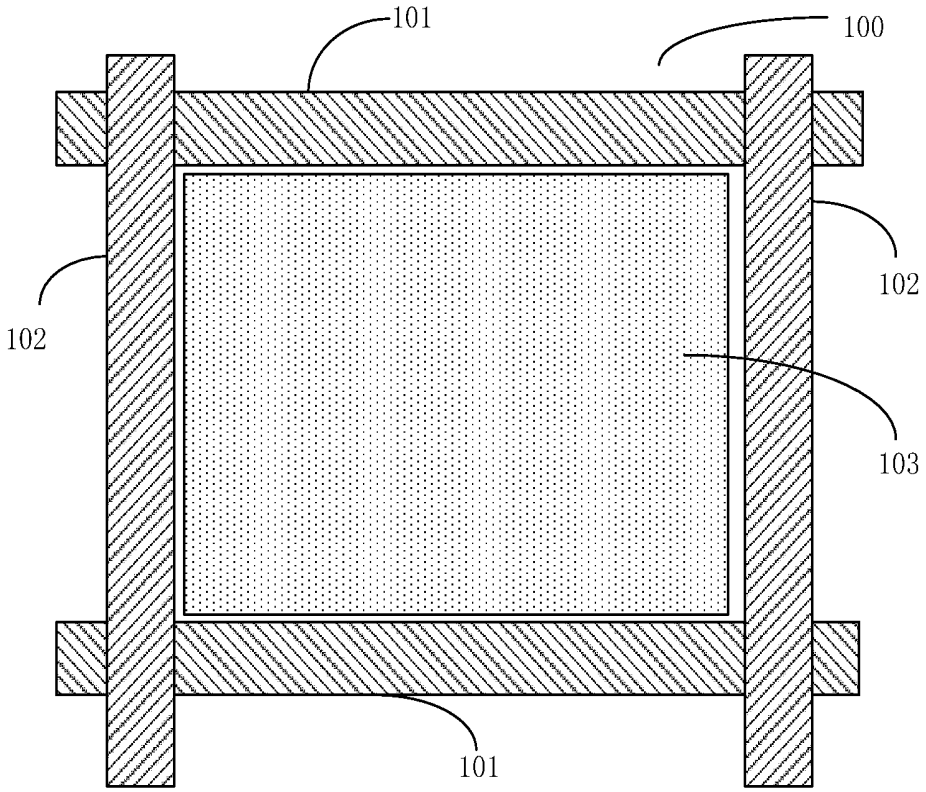


FIG. 1

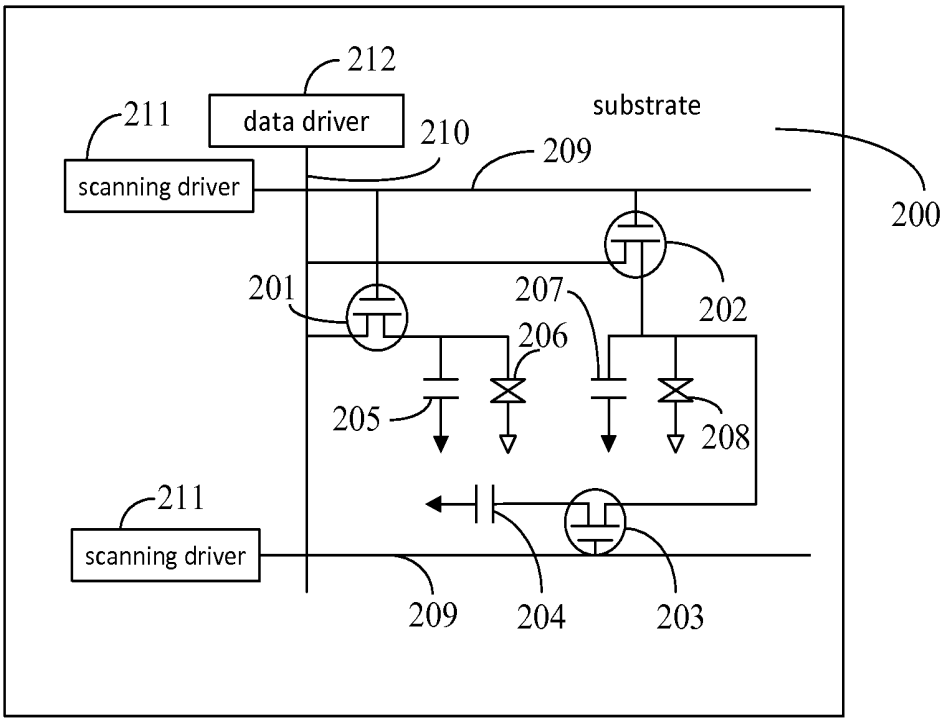

212
211
data driver
210
substrate
209
scanning driver
200
201
207
202
206
205
208
211
scanning driver
209
204
203

FIG. 2

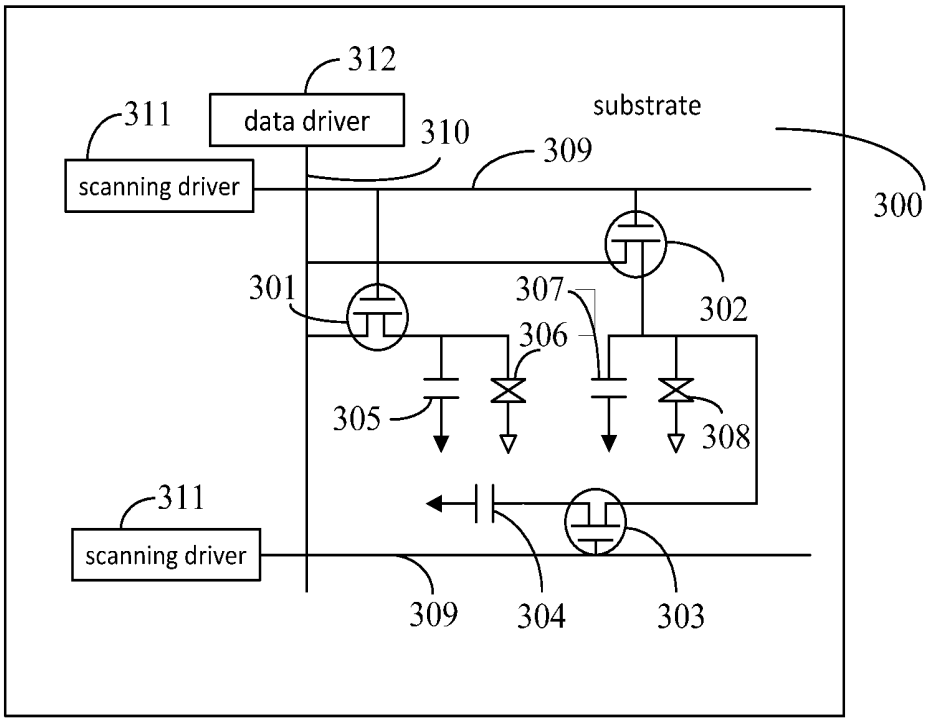

312
311
data driver
310
substrate
309
scanning driver
300
301
307
302
306
305
308
311
scanning driver
309
304
303

FIG. 3

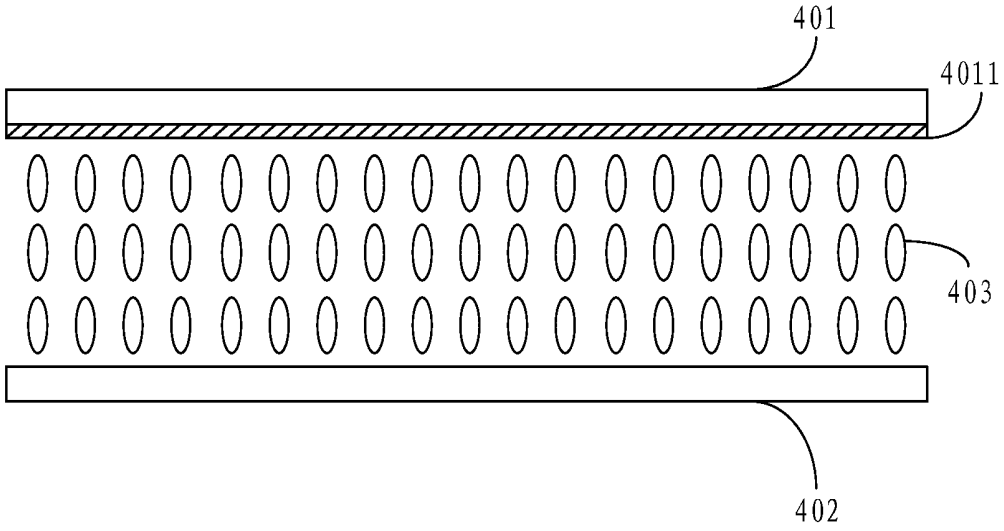


FIG. 4

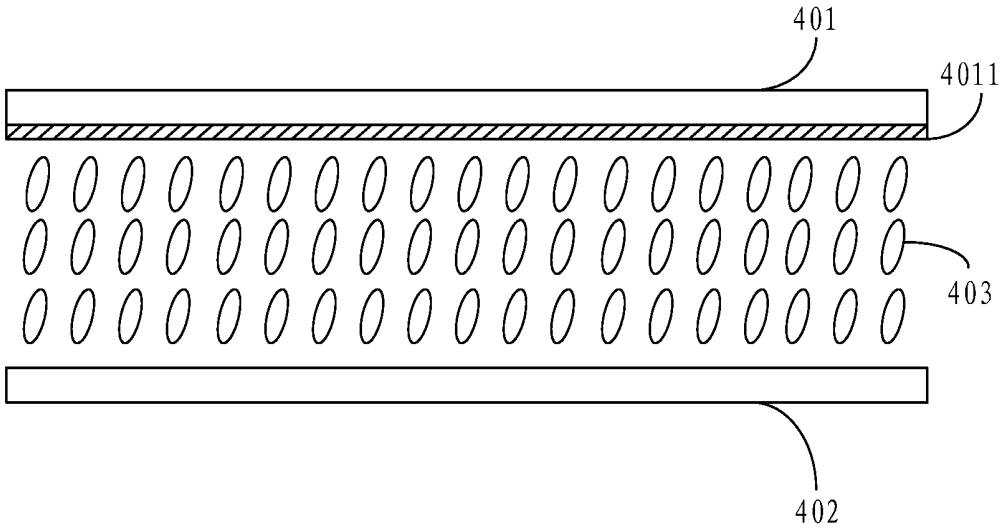


FIG. 5

ARRAY SUBSTRATE AND LIQUID CRYSTAL DISPLAY

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present disclosure relates to liquid crystal display technology, and more particularly to an array substrate and a liquid crystal display (LCD).

[0003] 2. Discussion of the Related Art

[0004] A LCD usually include an array substrate, a color filter (CF) substrate, and a liquid crystal layer arranged between the array substrate and the CF substrate. The LCD includes a plurality of pixel cells. Each pixel cell includes pixel electrodes, which is made by ITO, arranged on the array substrate, and a common electrode arranged on the CF substrate. The pixel electrodes and the common electrode on the CF substrate form an electrical field so as to control the alignment of the liquid crystal molecules arranged within a liquid crystal layer between the array substrate and the CF substrate.

[0005] The array substrate includes scanning lines arranged in a row direction, and data lines arranged in a column direction. The scanning lines intersect with the data lines but the scanning lines and the data lines are electrically isolated from each other. The pixel electrodes and thin film transistors (TFTs) are arranged within a plurality of cell areas defining by the scanning lines and the data lines. Gates of the TFTs electrically connects to the scanning lines. Sources of the TFTs electrically connects to one closest data line. Drains of the TFTs electrically connects to the pixel electrode within the same cell area.

[0006] When the data lines obtain data signals from the data driver and the scanning lines obtain scanning signals from the scanning driver, electrical levels of the pixel electrode change. As such, the alignment of the liquid crystal molecules within the liquid crystal layer changes due to the electrical levels applied to the liquid crystal capacitors have changed. In this way, the light transmission rate of the pixels is controlled, and so does the display brightness.

[0007] Usually, the pixel electrodes are charged by a reference voltage (Vest Vcom) via TFTs. Though the pixel electrodes are charge by the same reference voltage, but different RC delay exists due to the signal transmission between the Gate line of the TFT and the scanning line. As such, the charging rate of the pixels located in a central portion is smaller than that of the pixels located in a border. The different charging rate may result in that the electrical level of the pixels in the central portion is smaller than that in the border. The alignment of the liquid crystal molecules are different. When the liquid crystal panel displays grayscale images, the brightness of the border is obvious higher than that of the central portion such that the border of the panel seems paler.

SUMMARY

[0008] The object of the invention is to provide an array substrate and a liquid crystal device with an expected brightness.

[0009] In one aspect, an array substrate includes: a substrate; a plurality of scanning lines and a plurality of data lines arranged on the substrate; a plurality of pixel electrodes arranged on the substrate, and each pixel electrode a main pixel electrode and a secondary pixel electrode; a plurality of main pixel switches, a plurality of secondary pixel switches, a plurality of discharging switches, and a plurality of discharging capacitors arranged on the substrate; wherein a control end, a first end and a second end of each main pixel switch respectively connects to one scanning line, one data line, and one main pixel electrode, the control end, the first end, and the second end of each secondary pixel switch respectively connects to one scanning line, one data line, and one secondary pixel electrode, the control end, the first end, and the second end of each discharging switch respectively connects to one scanning line, one secondary pixel electrode, and one discharging capacitors; and during a displaying process, an electrical amount discharged from the discharging switch located in a central portion of the substrate toward the connected secondary pixel electrodes is less than the electrical amount discharged from the discharging switch located in a border of the substrate toward the connected secondary pixel electrode.

[0010] Wherein a capacitance of the charging capacitors gradually increases from the central portion to the charging capacitors in the border of the substrate.

[0011] Wherein a size of the channel of the discharging switch increases from the central portion to discharging switch in the border of the substrate.

[0012] In another aspect, a liquid crystal device includes: an array substrate comprising a substrate; a plurality of scanning lines and a plurality of data lines arranged on the substrate; a plurality of pixel electrodes arranged on the substrate, and each pixel electrode a main pixel electrode and a secondary pixel electrode; a plurality of main pixel switches, a plurality of secondary pixel switches, a plurality of discharging switches, and a plurality of discharging capacitors arranged on the substrate; wherein a control end, a first end and a second end of each main pixel switch respectively connects to one scanning line, one data line, and one main pixel electrode, the control end, the first end, and the second end of each secondary pixel switch respectively connects to one scanning line, one data line, and one secondary pixel electrode, and the control end, the first end, and the second end of each discharging switch respectively connects to one scanning line, one secondary pixel electrode, and one discharging capacitors; and during a displaying process, an electrical amount discharged from the discharging switch located in a central portion of the substrate toward the connected secondary pixel electrodes is less than the electrical amount discharged from the discharging switch located in a border of the substrate toward the connected secondary pixel electrode.

[0013] Wherein a capacitance of the charging capacitors gradually increases from the central portion to charging capacitors in the border of the substrate.

[0014] Wherein a size of the channel of the discharging switch increases from the central portion to the discharging switch in the border of the substrate.

[0015] In another aspect, a liquid crystal device includes an array substrate. The array substrate includes: a substrate; a plurality of scanning lines and a plurality of data lines arranged on the substrate, a plurality of pixel electrodes arranged on the substrate, and each pixel electrode a main pixel electrode and a secondary pixel electrode; a plurality of main pixel switches, a plurality of secondary pixel switches, a plurality of discharging switches, and a plurality of discharging capacitors arranged on the substrate; wherein a control end, a first end and a second end of each main pixel switch respectively connects to one scanning line, one data line, and one main pixel electrode, the control end, the first end, and the second end of each secondary pixel switch respectively con-

nects to scanning line, one data line, and one secondary pixel electrode, the control end, the first end, and the second end of each discharging switch respectively connects to one scanning line, one secondary pixel electrode, and one discharging capacitors; and during a displaying process, a total capacitance of at least a portion of the pixel electrodes are different after the discharging switches conduct a discharging process toward the connected second pixel electrodes such that a display brightness corresponding to the array substrate matches an expected distribution.

[0016] Wherein an electrical amount discharged from the discharging switches located in the central portion of the substrate to the connected second pixel electrode is less than that discharged amount from the discharging switches located in the border of the substrate to the connected second pixel electrode so as to obtain an uniform display brightness for the array substrate.

[0017] Wherein a capacitance of the charging capacitors gradually increases from the central portion to the charging capacitors in the border of the substrate.

[0018] Wherein a size of the channel of the discharging switch increases from the central portion to the discharging switch in the border of the substrate.

[0019] In view of the above, the discharging switches located in the central portion discharges a smaller electrical amount toward the connected secondary pixel electrodes than the discharging switches located in the border. As such, the issue that a smaller brightness occurs in the central portion of the substrate can be solved as the pixel electrodes located in the central portion has a larger electrical amount. Thus, the brightness of the liquid crystal panel is ensured.

[0020] Specifically, the display brightness of the central portion may be increased by gradually increasing the electrical amount of the secondary pixel electrodes located from the central portion to the border of the substrate. Alternatively, the display brightness of the border may be decreased by gradually decreasing the electrical amount of the secondary pixel electrodes located from the central portion to the border of the substrate.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] FIG. **1** is a schematic view of the array substrate in accordance with one embodiment.

[0022] FIG. **2** is a schematic view of the circuit of the array substrate in accordance with one embodiment.

[0023] FIG. **3** is a schematic view of the circuit of the array substrate in accordance with another embodiment.

[0024] FIG. **4** is a schematic view of the LCD in accordance with one embodiment.

[0025] FIG. **5** is a schematic view of the LCD in accordance with another embodiment.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0026] Embodiments of the invention will now be described more fully hereinafter with reference to the accompanying drawings, in which embodiments of the invention are shown.

[0027] FIG. **1** is a schematic view of the array substrate in accordance with one embodiment.

[0028] As shown in FIG. **1**, the array substrate includes a substrate **100**, a plurality of scanning lines **101** and a plurality of data lines **102**. The intersecting scanning lines and the data lines are electrically isolated from each other. The array substrate further includes a plurality of pixel electrodes **103**. It is to be noted that only one pixel electrode is shown in FIG. **1**.

[0029] FIG. **2** is a schematic view of the circuit of the array substrate in accordance with one embodiment.

[0030] As shown in FIG. **2**, the array substrate includes a substrate **200**, each of the pixel electrodes on the substrate **200** includes a main pixel electrode **205** and a secondary pixel electrode **207**.

[0031] The array substrate includes a plurality of main pixel switches **201**, a plurality of secondary pixel switches **202**, and a plurality of discharging capacitors **204**. As shown in FIG. **2**, a control end, a first end and a second end of each main pixel switch **201** respectively connects to one scanning line **209**, one data line **210**, and one main pixel electrode **205**. The control end, the first end, and the second end of each secondary pixel switch **202** respectively connects to scanning line **209**, one data line **210**, and one secondary pixel electrode **207**. The control end, the first end, and the second end of each discharging switch **203** respectively connects to one scanning line **209**, one secondary pixel electrode **208**, and one discharging capacitors **204**.

[0032] Referring to FIG. **2**, the array substrate further includes a scanning driver **211**, a data driver **212** connecting with the data line **210**. The scanning driver **211** is configured for providing scanning signals for the scanning line **209**. The data driver **212** is configured for providing the data signals for the data line **210**.

[0033] During operations, the scanning driver **211** outputs the scanning signals to the scanning line **209**. The main pixel switch **201** connected with the main pixel electrode **205** and the secondary pixel switch **202** connected with the secondary pixel electrode **207** are turn on. The data signals outputted from the data driver **212** are respectively transmitted to the main pixel electrode **205** and the secondary pixel electrode **207** for charging via the data line **210**. After the charging process is completed, the main pixel switch **201** and the secondary pixel switch **202** are turn off. At this moment, the scanning driver **211** outputs the scanning signals to a discharging switch **203** to turn it out so as to discharge the secondary pixel electrode **207**. In addition, during a displaying process, an electrical amount discharged from the discharging switch **203** located in a central portion of the substrate **200** toward the connected secondary pixel electrodes **207** is less than the electrical amount discharged from the discharging switch **203** located in a border of the substrate **200** toward the connected secondary pixel electrode **207**. In the embodiment, the capacity of the discharging capacitors **204** are different in accordance with its location. The discharging capacitors **204** located in the central portion have the smallest capacity, and the discharging capacitors **204** located in the border have the greatest capacity. With such configuration, the electrical amount for the secondary pixel electrodes is also increased gradually from the central portion to the border of the substrate. In this way, the display brightness of the central portion of the liquid crystal panel is also increases. Alternatively, the electrical amount for the secondary pixel electrodes is decreased gradually from the central portion to the border of the substrate to reduce the display brightness of the border of the liquid crystal panel. In this way, the uniformity and the brightness of the liquid crystal panel is enhanced. In other embodiments, a size of the channel of the discharging switch **203** gradually increases from the central portion to discharge switch **203** in the border to ensure

that a larger electrical amount is discharged from the secondary pixel electrodes **207** located in the border within the same discharging duration. As such, the voltage of the secondary pixel electrode **207** located in the central portion is higher than that of the secondary pixel electrode **208** located in the border of the substrate **200**.

[0034] In view of the above, the discharging switches located in the central portion discharges a smaller electrical amount toward the connected secondary pixel electrodes than the discharging switches located in the border. As such, the issue that a smaller brightness occurs in the central portion of the substrate can be solved as the pixel electrodes located in the central portion has a larger electrical amount. Thus, the brightness of the liquid crystal panel is ensured.

[0035] Specifically, the display brightness of the central portion may be increased by gradually increasing the electrical amount of the secondary pixel electrodes located from the central portion to the border of the substrate. Alternatively, the display brightness of the border may be decreased by gradually decreasing the electrical amount of the secondary pixel electrodes located from the central portion to the border of the substrate.

[0036] FIG. **3** is a schematic view of the circuit of the array substrate in accordance with another embodiment.

[0037] The array substrate **300** includes a substrate, a plurality of scanning lines **309** and a plurality of data lines **310**. The array substrate further includes a plurality of pixel electrodes arranged on the array substrate **300**. Each of the pixel electrode includes a first pixel electrode **305** and a second pixel electrode **307**.

[0038] A plurality of first pixel transistors **301**, a plurality of second pixel electrodes **302**, a plurality of discharging switches **303**, and a plurality of discharging capacitors **304** arranged on the substrate.

[0039] The control end, the first end and the second end of each first pixel transistors **301** respectively connects to one scanning line **309**, one data line **310**, and one first pixel electrode **306**. The control end, the first end, and the second end of each second pixel electrodes **302** respectively connect to one scanning line **306**, one data line **310**, and one secondary pixel electrode **308**. The control end, the first end, and the second end of each discharging switch respectively connects to one scanning line **309**, one secondary pixel electrode **308**, and one discharging capacitors **304**.

[0040] In the embodiment, the array substrate further includes the scanning driver **311** connected with the scanning line **309**, and the data driver **312** connected with the data line **310**. The scanning driver **311** is configured for providing the scanning signals for the scanning line **309**, and the data driver **312** is configured for providing the data signals for the data lines.

[0041] During operations, the scanning driver **311** outputs the scanning signals to the scanning line **309**. The secondary pixel switches **302** connected with the first pixel transistors **301** and the secondary pixel electrode **308** are turn on. The data signals outputted from the data driver **312** respectively charges the first pixel electrode **305** and the second pixel electrode **307** via the data line **310**. After the charging process is completed, the first pixel transistors **301** and the second pixel electrodes **302** are turn off. At this moment, the scanning driver **311** outputs the scanning signals to the discharging switches **303** so as to turn it on and to discharge the secondary pixel electrode **308**.

[0042] Each discharging switches **303** on the array substrate conducts the discharging process on the connected second pixel electrodes **307**. The total capacitance of the at least first pixel electrode and the second pixel electrode are different such that the display brightness corresponding to the array substrate matches an expected distribution.

[0043] In one embodiment, the electrical amount discharged from the discharging switches **303** located in the central portion of the substrate **300** to the connected second pixel electrode **307** is less than that discharged amount from the discharging switches **303** located in the border of the substrate **300** to the connected second pixel electrode **307** so as to obtain a uniform display brightness for the array substrate.

[0044] In order to achieve the above purpose, the capacitance of the discharging capacitors **304** is configured to be gradually increased from the central portion to the border of the substrate **300**. In this way, the electrical amount discharged from the discharging switches **303** located in the central portion of the substrate **300** to the connected second pixel electrode **307** is less than that discharged amount from the discharging switches **303** located in the border of the substrate **300** to the connected second pixel electrode **307**.

[0045] Alternatively, the discharging capability of the discharging switches **303**, such as the size of the channel, may be increased gradually central portion to the border of the substrate. As such, a smaller electrical amount is discharged from the discharging switches **303** located in the central portion to the connected second pixel electrode **307** than that discharged from the discharging switches **303** located in the border of the substrate **300** within the same discharging duration. Also, the voltage of the secondary pixel electrode **308** located in the central portion is a little bit higher than that located in the border.

[0046] It is to be noted that the total electrical amount of the first pixel electrode **305** and the second pixel electrode **307** are different. In other embodiments, the electrical amount of the pixels arranged in the border of the substrate may be increased by, but not limited to, increasing the electrical amount of the pixels of the second pixel electrodes. The uniform brightness of the liquid crystal panel may be enhanced by changing the electrical amount of the pixels of the second pixel electrodes.

[0047] In view of the above, the discharging switches located in the central portion discharges a smaller electrical amount toward the connected secondary pixel electrodes than the discharging switches located in the border. As such, the issue that a smaller brightness occurs in the central portion of the substrate can be solved as the pixel electrodes located in the central portion has a larger electrical amount. Thus, the brightness of the liquid crystal panel is ensured.

[0048] Specifically, the display brightness of the central portion may be increased by gradually increasing the electrical amount of the secondary pixel electrodes located from the central portion to the border of the substrate. Alternatively, the display brightness of the border may be decreased by gradually decreasing the electrical amount of the secondary pixel electrodes located from the central portion to the border of the substrate.

[0049] FIG. **4** is a schematic view of the LCD in accordance with one embodiment. In this embodiment, the LCD includes an array substrate **401** recited in the above embodiment, i.e., the array substrate as shown in FIG. **2**. Corresponding to FIG. **2**, the pixel electrode **4011** is arranged on the array substrate.

The array substrate further includes a CF substrate **402** being arranged opposite to the array substrate **401**, and liquid crystal molecules **403**.

[0050] Referring to FIGS. **2** and **4**, during operations, the scanning driver **211** outputs the scanning signals to the scanning line **209**. Each main pixel switch **201** and secondary pixel switch **202** are turned on, and all of the discharging switches **203** are turned off. The data signals outputted from the data driver **212** respectively charges the main pixel electrode **205** and the secondary pixel electrode **207** via the data line **210**. After the charging process is complete, each main pixel switch **201** and secondary pixel switch **202** are turned off. The scanning driver **211** outputs the scanning signals to turn on the discharging switch **203**. The discharging switch **203** discharges the connected secondary pixel electrodes **207**. The electrical amount discharged from the discharging switch **203** located in the central portion to the connected secondary pixel electrode **207** is less than that discharged from the discharging switch **203** located in the border to the connected secondary pixel electrode **207**.

[0051] The pixel electrode **4011** on the array substrate **401** and a common electrode (not shown) on the CF substrate **402** form an electrical field therebetween. Due to the above discharging process toward the secondary pixel electrode **207**, the electrical amount stored on each of the pixel electrodes on the substrate **200** corresponds to its location. Thus, the alignment of the liquid crystal molecules **403** between the array substrate **401** and the CF substrate **402** are the same due to the electrical field. As shown in FIG. **5**, such alignment results in an uniform brightness of the liquid crystal panel.

[0052] In view of the above, the discharging switches located in the central portion discharges a smaller electrical amount toward the connected secondary pixel electrodes than the discharging switches located in the border. As such, the issue that a smaller brightness occurs in the central portion of the substrate can be solved as the pixel electrodes located in the central portion has a larger electrical amount. Thus, the brightness of the liquid crystal panel is ensured.

[0053] Specifically, the display brightness of the central portion may be increased by gradually increasing the electrical amount of the secondary pixel electrodes located from the central portion to the border of the substrate. Alternatively, the display brightness of the border may be decreased by gradually decreasing the electrical amount of the secondary pixel electrodes located from the central portion to the border of the substrate.

[0054] In another embodiment, the LCD includes the array substrate as shown in FIG. **3**. After performing the discharging process conducted by each discharging switches to the connected second pixel electrodes on the array substrate, the total capacitance of the at least first pixel electrode and the second pixel electrode are different. As such, the display brightness corresponding to the array substrate matches an expected distribution.

[0055] In view of the above, the discharging switches located in the central portion discharges a smaller electrical amount toward the connected secondary pixel electrodes than the discharging switches located in the border. As such, the issue that a smaller brightness occurs in the central portion of the substrate can be solved as the pixel electrodes located in the central portion has a larger electrical amount. Thus, the brightness of the liquid crystal panel is ensured.

[0056] Specifically, the display brightness of the central portion may be increased by gradually increasing the electrical amount of the secondary pixel electrodes located from the central portion to the border of the substrate. Alternatively, the display brightness of the border may be decreased by gradually decreasing the electrical amount of the secondary pixel electrodes located from the central portion to the border of the substrate.

[0057] It is believed that the present embodiments and their advantages will be understood from the foregoing description, and it will be apparent that various changes may be made thereto without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the examples hereinbefore described merely being preferred or exemplary embodiments of the invention.

What is claimed is:

1. An array substrate, comprising:

a substrate;

a plurality of scanning lines and a plurality of data lines arranged on the substrate;

a plurality of pixel electrodes arranged on the substrate, and each pixel electrode a main pixel electrode and a secondary pixel electrode;

a plurality of main pixel switches, a plurality of secondary pixel switches, a plurality of discharging switches, and a plurality of discharging capacitors arranged on the substrate;

wherein a control end, a first end and a second end of each main pixel switch respectively connects to one scanning line, one data line, and one main pixel electrode, the control end, the first end, and the second end of each secondary pixel switch respectively connects to one scanning line, one data line, and one secondary pixel electrode, the control end, the first end, and the second end of each discharging switch respectively connects to one scanning line, one secondary pixel electrode, and one discharging capacitors; and

during a displaying process, an electrical amount discharged from the discharging switch located in a central portion of the substrate toward the connected secondary pixel electrodes is less than the electrical amount discharged from the discharging switch located in a border of the substrate toward the connected secondary pixel electrode.

2. The array substrate of claim **1**, wherein a capacitance of the charging capacitors gradually increases from the central portion to the charging capacitors in the border of the substrate.

3. The array substrate of claim **2**, wherein a size of the channel of the discharging switch increases from the central portion to discharging switch in the border of the substrate.

4. A liquid crystal device, comprising:

an array substrate comprising a substrate;

a plurality of scanning lines and a plurality of data lines arranged on the substrate;

a plurality of pixel electrodes arranged on the substrate, and each pixel electrode a main pixel electrode and a secondary pixel electrode;

a plurality of main pixel switches, a plurality of secondary pixel switches, a plurality of discharging switches, and a plurality of discharging capacitors arranged on the substrate;

wherein a control end, a first end and a second end of each main pixel switch respectively connects to one scanning line, one data line, and one main pixel electrode, the control end, the first end, and the second end of each

secondary pixel switch respectively connects to one scanning line, one data line, and one secondary pixel electrode, and the control end, the first end, and the second end of each discharging switch respectively connects to one scanning line, one secondary pixel electrode, and one discharging capacitors; and

during a displaying process, an electrical amount discharged from the discharging switch located in a central portion of the substrate toward the connected secondary pixel electrodes is less than the electrical amount discharged from the discharging switch located in a border of the substrate toward the connected secondary pixel electrode.

5. The liquid crystal device of claim **4**, wherein a capacitance of the charging capacitors gradually increases from the central portion to charging capacitors in the border of the substrate.

6. The liquid crystal device of claim **4**, wherein a size of the channel of the discharging switch increases from the central portion to the discharging switch in the border of the substrate.

7. A liquid crystal device, comprising:

an array substrate comprises:

a substrate;

a plurality of scanning lines and a plurality of data lines arranged on the substrate, a plurality of pixel electrodes arranged on the substrate, and each pixel electrode a main pixel electrode and a secondary pixel electrode;

a plurality of main pixel switches, a plurality of secondary pixel switches, a plurality of discharging switches, and a plurality of discharging capacitors arranged on the substrate;

wherein a control end, a first end and a second end of each main pixel switch respectively connects to one scanning line, one data line, and one main pixel electrode, the control end, the first end, and the second end of each secondary pixel switch respectively connects to scanning line, one data line, and one secondary pixel electrode, the control end, the first end, and the second end of each discharging switch respectively connects to one scanning line, one secondary pixel electrode, and one discharging capacitors; and

during a displaying process, a total capacitance of at least a portion of the pixel electrodes are different after the discharging switches conduct a discharging process toward the connected second pixel electrodes such that a display brightness corresponding to the array substrate matches an expected distribution.

8. The liquid crystal device of claim **7**, wherein an electrical amount discharged from the discharging switches located in the central portion of the substrate to the connected second pixel electrode is less than that discharged amount from the discharging switches located in the border of the substrate to the connected second pixel electrode so as to obtain an uniform display brightness for the array substrate.

9. The liquid crystal device of claim **7**, wherein a capacitance of the charging capacitors gradually increases from the central portion to the charging capacitors in the border of the substrate.

10. The liquid crystal device of claim **7**, wherein a size of the channel of the discharging switch increases from the central portion to the discharging switch in the border of the substrate.

* * * * *

专利名称(译)	阵列基板和液晶显示器		
公开(公告)号	US20160049131A1	公开(公告)日	2016-02-18
申请号	US14/381018	申请日	2014-08-18
[标]申请(专利权)人(译)	深圳市华星光电技术有限公司		
申请(专利权)人(译)	深圳中星光电科技有限公司		
当前申请(专利权)人(译)	深圳市中国星光电科技有限公司.		
[标]发明人	WANG JINJIE		
发明人	WANG, JINJIE		
IPC分类号	G09G3/36		
CPC分类号	G09G2300/0426 G09G3/3696 G09G3/3648 G02F1/136213 G09G2300/0443 G09G2310/0232 G09G2320/0223 G09G2320/0233		
优先权	201410397922.0 2014-08-13 CN		
外部链接	Espacenet USPTO		

摘要(译)

公开了一种阵列基板和液晶装置。阵列基板包括基板，多条扫描线，多条数据线，多个像素电极，多个主像素开关，多个次像素开关，多个放电开关，以及多个放电电容器布置在基板上。每个像素电极包括主像素电极和次像素电极。每个主像素开关分别连接到一条扫描线，一条数据线和一条主像素电极。每个次像素开关分别连接到一条扫描线，一条数据线和一个次级像素电极。每个放电开关分别连接到一条扫描线，一个次级像素电极和一个放电电容器。从位于基板的中央部分中的放电开关朝向连接的次级像素电极放电的电量小于从位于基板的边界中的放电开关朝向连接的次级像素电极放电的电量。以这种方式，可以实现液晶面板的预期亮度。