(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 081 179 B1

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
27.07.2016 Bulletin 2016/30

(21) Application number: **09250124.6**

(22) Date of filing: **19.01.2009**

(51) Int Cl.:
G09G 3/32 *(2006.01)* ***H01L 27/32*** *(2006.01)*
H01L 23/495 *(2006.01)* ***H01L 23/498*** *(2006.01)*
H01R 9/00 *(2006.01)* ***H05K 1/00*** *(2006.01)*
H05K 5/02 *(2006.01)* ***H05K 1/11*** *(2006.01)*
G09G 3/20 *(2006.01)* ***H05K 1/14*** *(2006.01)*

(54) **Organic light emitting display**

Organische Licht emittierende Anzeige

Affichage électroluminescent organique

(84) Designated Contracting States:
DE FR GB

(30) Priority: **18.01.2008 KR 20080005617**

(43) Date of publication of application:
22.07.2009 Bulletin 2009/30

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Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to an organic light emitting display, and more particularly, the present invention relates to an organic light emitting display which minimizes the IR drop of power sources supplying power to an organic light emitting display panel.

Description of the Related Art

[0002] Among Flat Panel Displays (FPDs), organic light emitting displays display images using Organic Light Emitting Diodes (OLEDs) that generate light by re-combination of electrons and holes. Since an organic light emitting display has a high response speed and low power consumption, organic light emitting displays have been spotlighted as next generation displays.

[0003] In general, an organic light emitting display includes a pixel unit including a plurality of pixels, driving circuits for supplying driving signals to the pixel unit, and a power source for supplying power to the pixel unit.

[0004] The pixels emit light with a brightness corresponding to data signals supplied in synchronism with scan signals when the scan signals are supplied. The organic light emitting display panel then displays a predetermined image.

[0005] In the organic light emitting display, the emission brightness of the pixels is affected by the voltage supplied by the power sources. That is, the output of the power sources determine the emission brightness of the pixels together with the data signals.

[0006] Therefore, in order to display an image with uniform picture quality, the power sources must supply the same voltage to the pixels.

[0007] However, the power sources are Direct Current (DC) power sources having a predetermined voltage level and a voltage reduction IR drop occurs when a current passes through a power source line.

[0008] In particular, since the length of the power source line increases as the size of the display panel of the organic light emitting display increases, a brightness deviation between the pixels increases in accordance with the distance between the pixels and a power source pad that receives the output of the power sources.

[0009] Therefore, it is necessary to minimize the voltage reduction IR drop of the power sources.

[0010] US2007/0134830 discloses an organic light emitting display including a plurality of FPC films, one of which transmits a drive voltage VDD and the other a common voltage VSS. The drive voltage VDD is transmitted upward and downward in the OLED display panel, and the common voltage VSS may be transmitted upwards and downwards or from side to side in the OLED display panel.

SUMMARY OF THE INVENTION

[0011] Accordingly, it is an object of the present invention to provide an organic light emitting display which minimizes the voltage reduction IR drop of the power sources supplying power to an organic light emitting display panel.

[0012] The present invention provides an organic light emitting display according to claim 1.

[0013] Each of the plurality of first and second power source pads may receive the first and second voltages respectively from both directions of the voltage supplier FPCB.

[0014] A plurality of signal pads for supplying driving signals to the pixel unit may be arranged between the plurality of first and second power source pads. The organic light emitting display may further include a driving FPCB electrically coupled to the signal pads and provided independently from the voltage supplier FPCB, and the driving board is electrically coupled to the driving FPCB to drive the driving FPCB. Moreover, the driving board may be arranged to not overlap the pixel unit. The driving board may be electrically coupled to the voltage supplier FPCB to supply the first and second voltages to the voltage supplier FPCB. The driving FPCB may include at least one of a scan driver and a data driver and supply at least one of a scan signal and a data signal to the pixel unit.

[0015] In addition, the pixel unit may emit light from both sides thereeof.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] A more complete appreciation of the present invention, and many of the attendant advantages thereof, will be readily apparent as the present invention becomes better understood by reference to the following detailed description when considered in conjunction with the accompanying drawings in which like reference symbols indicated the same or similar components, wherein:

FIG. 1 is a block diagram of an example of an organic light emitting display according to an embodiment of the present invention;

FIG. 2 is a circuit diagram of an example of a pixel of FIG. 1;

FIG. 3 is an exploded perspective view of an organic light emitting display according to an embodiment of the present invention; and

FIG. 4 is a perspective view of an assembly of the organic light emitting display of FIG. 3.

DETAILED DESCRIPTION OF THE INVENTION

[0017] Hereinafter, certain embodiments of the present invention are described in detail with reference to the accompanying drawings. When a first element is described as being coupled to a second element, the first

element may be not only directly coupled to the second element but may also be indirectly coupled to the second element via a third element. Furthermore, some of the elements that are not essential to the complete understanding of the present invention have been omitted for clarity. Also, like reference numerals refer to like elements throughout.

[0018] FIG. 1 is a block diagram of an example of an organic light emitting display according to an embodiment of the present invention.

[0019] Referring to FIG. 1, the organic light emitting display 100 includes a scan driver 110, a data driver 120, a timing controller 140, a pixel unit 150, and a power source 130.

[0020] The scan driver 110 generates scan signals to correspond to Scan Control Signals SCSs supplied by the timing controller 140. The scan signals generated by the scan driver 110 are sequentially supplied to scan lines S1 to Sn.

[0021] The data driver 120 generates data signals to correspond to Data and Data Control Signals DCSs supplied by the timing controller 140. The data signals generated by the data driver 120 are supplied to data lines D1 to Dm in synchronism with the scan signals.

[0022] The timing controller 140 generates the SCSs and the DCSs in response to externally supplied synchronizing signals. The SCSs generated by the timing controller 140 are supplied to the scan driver 110 and the DCSs are supplied to the data driver 120. In addition, the timing controller 140 transmits externally supplied Data to the data driver 120.

[0023] The pixel unit 150 includes a plurality of pixels 160 formed in regions partitioned off by the scan lines S1 to Sn and the data lines D1 to Dm. The pixel unit 150 displays an image to correspond to the scan signals supplied by the scan driver 110 and the data signals supplied by the data driver 120.

[0024] The power source 130 generates first and second voltages ELVDD and ELVSS using power supplied by an external power supply apparatus (not shown). Then, the power source 130 supplies the generated first and second voltages ELVDD and ELVSS to the pixel unit 150.

[0025] In the organic light emitting display 100, the pixel unit 150 is formed in the organic light emitting display panel. The scan driver 110 and/or the data driver 120 is mounted on the organic light emitting display panel or an additional Flexible Printed Circuit Board (FPCB). The scan driver 110 and/or the data driver 120 can be electrically coupled to the organic light emitting display panel through a pad unit.

[0026] In addition, the power source 130 and/or the timing controller 140 are mounted on a driving board outside the organic light emitting display panel to be electrically coupled to the organic light emitting display panel and/or the driving FPCBs through a FPCB.

[0027] FIG. 2 is a circuit diagram of an example of a pixel of FIG. 1. For convenience sake, in FIG. 2, a pixel is coupled to an nth scan line Sn and an mth data line Dm.

[0028] Referring to FIG. 2, the pixel 160 includes an Organic Light Emitting Diode (OLED), the scan line Sn, the data line Dm, a first voltage line ELVDD, and a pixel circuit 162 coupled to the OLED.

[0029] The anode electrode of the OLED is coupled to the pixel circuit 162 and the cathode electrode is coupled to the second voltage line ELVSS. The OLED emits light with a brightness corresponding to the amount of current supplied by the pixel circuit 162.

[0030] The pixel circuit 162 includes a first transistor M1, a second transistor M2, and a storage capacitor Cst.

[0031] The first electrode of the first transistor M1 is coupled to the data line Dm, and the second electrode of the first transistor M1 is coupled to a first node N1. The gate electrode of the first transistor M1 is coupled to the scan line Sn. The first transistor M1 is turned on when a scan signal is supplied to the scan line Sn to transmit a data signal supplied to the data line Dm to the first node N1.

[0032] The first electrode of the second transistor M2 is coupled to the first voltage line ELVDD, and the second electrode of the second transistor M2 is coupled to the anode electrode of the OLED. The gate electrode of the second transistor M2 is coupled to the first node N1. The second transistor M2 controls current that flows from the first voltage line ELVDD to the anode electrode of the OLED to correspond to a voltage supplied to the gate electrode thereof.

[0033] One terminal of a storage capacitor Cst is coupled to the first node N1, and the other terminal of the storage capacitor Cst is coupled to the first voltage line ELVDD and the first electrode of the second transistor M2. The storage capacitor Cst stores a voltage corresponding to a data signal supplied to the first node N1 when the scan signal is supplied to the scan line Sn and maintains the stored voltage for one frame.

[0034] The operation process of the pixel 160 is described in detail as follows. First, when the scan signal is supplied to the scan line Sn, the first transistor M1 is turned on. When the first transistor M1 is turned on, the data signal supplied to the data line Dm is transmitted to the first node N1 through the first transistor M1. When the data signal is transmitted to the first node N1, a voltage corresponding to a difference between the voltage of the first voltage line ELVDD and the data signal is stored in the storage capacitor Cst. Then, the second transistor M2 controls current that flows from the first voltage line ELVDD to the OLED to correspond to a voltage supplied to the gate electrode thereof. Therefore, the OLED emits light with a brightness corresponding to the amount of current supplied thereto to display an image.

[0035] As described above, the pixel 160 emits light with a brightness corresponding to the amount of current supplied by the second transistor M2. The voltage of the first node N1 to which the gate electrode of the second transistor M2 is coupled is maintained for one frame by the storage capacitor Cst.

[0036] The storage capacitor Cst stores a voltage corresponding to a difference between the voltage of the first voltage line ELVDD and the data signal while the data signal is supplied to maintain the voltage for one frame. Therefore, the emission brightness of the pixel 160 varies in accordance with the voltage of the first voltage line ELVDD and the data signal.

[0037] The voltage of the first voltage line ELVDD supplied to the pixels 160 can vary by the voltage reduction IR Drop which occurs when passing through a power source line. Therefore, the pixels 160 that receive the same data signal emit light with different brightness so that picture quality can deteriorate.

[0038] Therefore, the voltage reduction IR Drop of the first voltage line ELVDD must be minimized.

[0039] FIG. 3 is an exploded perspective view of an organic light emitting display according to an embodiment of the present invention. FIG. 4 is a perspective view of an assembly of the organic light emitting display of FIG. 3.

[0040] In FIGs. 3 to 4, the scan driver and/or the data driver are not mounted on the organic light emitting display panel but are mounted on an additional Flexible Printed Circuit Board (FPCB). However, the present invention is not limited thereto.

[0041] Referring to FIGs. 3 and 4, the organic light emitting display includes an organic light emitting display panel 300, a voltage supplier FPCB 400, and a driving board 500. The voltage supplier FPCB 400 transmits first and second voltages ELVDD and ELVSS to the organic light emitting display panel 300. In addition, driving FPCBs 510 are further coupled between the driving board 500 and the organic light emitting display panel 300.

[0042] The organic light emitting display panel 300 includes a pixel unit 310 for displaying an image, a plurality of power source pads P_{ELVDD} and P_{ELVSS} for respectively supplying voltages ELVDD and ELVSS and driving signals to the pixel unit 310, and signal pads 320. The power source pads P_{ELVDD} and P_{ELVSS} and the signal pads 320 are positioned at edges 300a to 300d of the organic light emitting display panel 300.

[0043] The pixel unit 310 includes a plurality of pixels that are not shown. The pixel unit 310 displays an image to correspond to the driving signals supplied by the signal pads 320 and the voltages ELVDD and ELVSS supplied by the power source pads P_{ELVDD} and P_{ELVSS}.

[0044] The pixel unit 310 may be formed to emit light from both sides thereof. For example, the pixel unit 310 may include transparent devices formed on a transparent substrate to emit light from both sides. Alternately, the pixel unit 310 may emit light from sides thereof by including at least two pixel regions to emit light in different directions.

[0045] As such, since images can be displayed on both sides of the pixel unit 310 when the pixel unit 310 is formed to emit light from the both sides thereof, the utility of the organic light emitting display can be enhanced.

[0046] The power source pads P_{ELVDD} and P_{ELVSS} are distributed and arranged on at least two edges of one outer side of the pixel unit on one side of the organic light emitting display panel 300.

[0047] In more detail, the power source pads P_{ELVDD} and P_{ELVSS} include first power source pads P_{ELVDD} for receiving first voltages ELVDD and second power source pads P_{ELVSS} for receiving second voltages ELVSS.

[0048] Each of the first and second power source pads P_{ELVDD} and P_{ELVSS} is distributed on at least two edges of one side of the organic light emitting display panel 300 to receive the first and second voltages ELVDD and ELVSS from both sides of the voltage supplier FPCB 400.

[0049] For example, a plurality of the first power source pads P_{ELVDD} may be formed at first and second edges 300a and 300b to face each other on the one side of the organic light emitting display panel 300. Accordingly, the first power source pads P_{ELVDD} receive the first voltage ELVDD from both sides and can transmit the same to the pixel unit 310.

[0050] A plurality of the second power source pads P_{ELVSS} may be formed at third and fourth edges 300c and 300d to face each other on the one side of the organic light emitting display panel 300. Accordingly, the second power source pads P_{ELVSS} receive the second voltage ELVSS from both sides and can transmit the same to the pixel unit 310.

[0051] That is, the first power source pads P_{ELVDD} and the second power source pads P_{ELVSS} may be formed at different edges on the side of the organic light emitting display panel 300.

[0052] However, the arrangement of the power source pads P_{ELVDD} and P_{ELVSS} of the present invention is not limited to the above. That is, each of the first and second power source pads P_{ELVDD} and P_{ELVSS} is arranged in at least three edges on the one side of the organic light emitting display panel 300. Accordingly, each of the first and second power source pads P_{ELVDD} and P_{ELVSS} can receive the first and second voltages ELVDD and ELVSS from at least three directions. In this case, at least some of the first and second power source pads P_{ELVDD} and P_{ELVSS} may be formed at the same edge on the one side of the organic light emitting display panel 300.

[0053] The signal pads 320 are electrically coupled to the driving FPCB 510 provided independently from the voltage supplier FPCB 400 to transmit a driving signal supplied by the driving FPCB 510 to the pixel unit 310. A plurality of the signal pads 320 may be provided between the first and second power source pads P_{ELVDD} and P_{ELVSS}. A plurality of the driving FPCBs 510 may be electrically coupled to the signal pads.

[0054] The voltage supplier FPCB 400 includes a plurality of pads P electrically coupled to the first and second power source pads P_{ELVDD} and P_{ELVSS} of the organic light emitting display panel 300. For example, the voltage supplier FPCB 400 may include the pads P to be overlapped with and electrically coupled to the first and second power source pads P_{ELVDD} and P_{ELVSS} of the organic light emitting display panel 300.

[0055] In addition, the voltage supplier FPCB 400 is electrically coupled to the driving board 500 through a pad that is not shown. Accordingly, the voltage supplier FPCB 400 transmits the first and second voltages ELVDD and ELVSS from the driving board 500 to the organic light emitting display panel 300.

[0056] To this end, the voltage supplier FPCB 400 includes lines (not shown) formed in a single layer or multiple layers for supplying the first and second voltages ELVDD and ELVSS. The voltage supplier FPCB 400 uniformly applies the first and second voltages ELVDD and ELVSS to the entire organic light emitting display panel 300 through the internal line.

[0057] However, in the present invention, the voltage supplier FPCB 400 is arranged not to be overlapped with the pixel unit 310 of the organic light emitting display panel 300. For example, the voltage supplier FPCB 400 may be arranged on the outer circumference of the organic light emitting display panel 300 in the form of surrounding an edge on a side of the organic light emitting display panel 300.

[0058] In other words, since the voltage supplier FPCB 400 does not cover the pixel unit 310, the image is not disturbed from being displayed even when the pixel unit 310 emits light from both sides thereof.

[0059] The driving board 500 is electrically coupled to the voltage supplier FPCB 400 and the driving FPCB 510 and mounts a power supply and/or a timing controller which are not shown. The driving board 500 generates the voltages ELVDD and ELVSS and/or a control signal and transmits them to the voltage supplier FPCB 400 and/or the driving FPCB 510.

[0060] However, in the present invention, since the driving board 500 is formed not to be overlapped with the pixel unit 310, the image is not disturbed from being displayed even when the pixel unit 310 emits light from both sides thereof. For example, the driving board 500 may be arranged on the outer circumference of the organic light emitting display panel 300 in the form of surrounding an edge on a side of the organic light emitting display panel 300.

[0061] The driving FPCB 510 may include a scan driver S/D for supplying a scan signal to the pixel unit 310 and/or a data driver D/D for supplying a data signal to the pixel unit 310.

[0062] The driving FPCB 510 is electrically coupled to the driving board 500 and is driven by the driving board 500. That is, the scan driver S/D and/or the data driver D/D which are arranged on the driving FPCB 510 may be driven corresponding to the control signals transmitted from the driving board 500.

[0063] According to the present invention described above, the power source pads P_{ELVDD} and P_{ELVSS} of the organic light emitting display panel 300 are distributed and arranged at two edges. The respective first and second voltages ELVDD and ELVSS are supplied to the organic light emitting display panel 300 from at least two directions.

[0064] Thus, in the organic light emitting display panel 300, the IR drop of the first and second voltages ELVDD and ELVSS can be minimized. Therefore, the organic light emitting display panel 300 can display an image with uniform image quality even in a big size. Accordingly, the organic light emitting display can be applied to various displays such as a TV and a sign board.

[0065] In addition, the organic light emitting display device according to the present invention further includes a plurality of pads P electrically coupled to the power source pads P_{ELVDD} and P_{ELVSS} of the organic light emitting display panel 300. In addition, according to the present invention, the voltage supplier FPCB 400 for supplying the first and second voltages ELVDD and ELVSS to the organic light emitting display panel 300 through the internal line is additionally provided. The first and second voltages ELVDD and ELVSS can be evenly applied to the organic light emitting display panel 300 through the internal line of the voltage line supplying FPCB 400.

[0066] Furthermore, since the voltage supplier FPCB 400 and the driving board 500 are designed not to be overlapped with the pixel unit 310 of the organic light emitting display panel 300, the present invention can be usefully applied to a dual type organic light emitting display. Therefore, the utility of an organic light emitting display can be enhanced.

[0067] While the present invention has been described in connection with certain embodiments, it is to be understood that the present invention is not limited to the disclosed embodiments, but, on the contrary, is intended to cover various modifications and equivalent arrangements included within the scope of the appended claims.

Claims

1. An organic light emitting display, comprising:

an organic light emitting display panel (300) including a pixel unit (310) to display an image, a plurality of first power source pads (P_{ELVDD}) and second power source pads (P_{ELVSS}) to supply voltages to the pixel unit;

a voltage supplier Flexible Printed Circuit Board (400) including a plurality of pads (P) respectively electrically coupled to the plurality of first and second power source pads (P_{ELVDD}, P_{ELVSS}); and

a driving board (500) configured to generate a first voltage (ELVDD) and a second voltage (ELVSS) different from the first voltage and to transmit the first voltage and the second voltage to the voltage supplier Flexible Printed Circuit Board (400);

wherein the plurality of first power source pads (P_{ELVDD}) are arranged at a first edge and a second edge of the pixel unit (310), the second edge being facing the first edge,

the plurality of first power source pads (P_{ELVDD}) are supplied by the first voltage (ELVDD) received from the voltage supplier Flexible Printed Circuit Board (400) via the plurality of pads,
the plurality of second power source pads (P_{ELVSS}) are arranged at a third edge and a fourth edge of the pixel unit, the fourth edge being facing the third edge and adjacent to the first and second edges, and
the plurality of second power source pads (P_{ELVSS}) are supplied by the second voltage (ELVSS) received from the voltage supplier Flexible Printed Circuit Board (400) via the plurality of pads,
characterised in that the voltage supplier Flexible Printed Circuit Board (400) is arranged on the outer circumference of the organic light emitting display panel so as to not overlap the pixel unit (310), and
the plurality of pads (P) are overlapped with the plurality of first and second power source pads without overlapping with the pixel unit.

2. An organic light emitting display as claimed in claim 1, wherein each of the plurality of first and the plurality of second power source pads receives a respective one of the first and second voltages from two opposite directions of the voltage supplier Flexible Printed Circuit Board (400).

3. An organic light emitting display as claimed in claim 1 or 2, wherein a plurality of signal pads (320) to supply driving signals to the pixel unit (310) are formed between the plurality of first and second power source pads (P_{ELVDD}, P_{ELVSS}).

4. An organic light emitting display as claimed in claim 3, further comprising:

a driving Flexible Printed Circuit Board (510) electrically coupled to the signal pads (320) and provided independently from the voltage supplier Flexible Printed Circuit Board (400);
wherein the driving board (500) is electrically coupled to the driving Flexible Printed Circuit Board (510) to drive the driving Flexible Printed Circuit Board.

5. An organic light emitting display as claimed in claim 4, wherein the driving Flexible Printed Circuit Board (510) includes at least one of a scan driver (110) and a data driver (120) and supplies at least one of a scan signal and a data signal to the pixel unit (310).

6. An organic light emitting display as claimed in any preceding claim, wherein the driving board (500) is arranged not to overlap the pixel unit (310).

7. An organic light emitting display as claimed in any preceding claim, wherein the driving board (500) is arranged on the outer circumference of the organic light emitting display panel.

8. An organic light emitting display as claimed in any preceding claim, wherein the driving board (500) is electrically coupled to the voltage supplier Flexible Printed Circuit Board (400) to supply the first and second voltages to the voltage supplier Flexible Printed Circuit Board.

9. An organic light emitting display as claimed in any preceding claim, wherein the pixel unit (310) emits light from both sides thereof.

Patentansprüche

1. Organische Licht emittierende Anzeige, umfassend:

eine organische Licht emittierende Anzeigeplatte (300) einschließlich einer Pixel-Einheit (310) zum Anzeigen eines Bildes, eine Vielzahl erster Stromquellen-Pads (P_{ELVDD}) und zweiter Stromquellen-Pads (P_{ELVSS}) zum Speisen von Spannungen an die Pixel-Einheit;
eine Spannung versorgende flexible Leiterplatte (400) einschließlich einer Vielzahl von Pads (P), die elektrisch an die Vielzahl erster bzw. zweiter Stromquellen-Pads (P_{ELVDD}, P_{ELVSS}) gekoppelt sind; und
eine Antriebsplatte (500), die konfiguriert ist, eine erste Spannung (ELVDD) und eine zweite Spannung (ELVSS) zu generieren, die verschieden von der ersten Spannung ist und die erste Spannung und die zweite Spannung an die Spannung speisende flexible Leiterplatte (400) zu übertragen;
wobei die Vielzahl erster Stromquellen-Pads (P_{ELVDD}) an einer ersten Kante und einer zweiten Kante der Pixel-Einheit (310) angeordnet ist, wobei die zweite Kante der ersten Kante zugewandt ist,
die Vielzahl erster Stromquellen-Pads (P_{ELVDD}) von der ersten Spannung (ELVDD) gespeist werden, die über die Vielzahl von Pads von der Spannung speisenden flexiblen Leiterplatte (400) empfangen wird,
die Vielzahl zweiter Stromquellen-Pads (P_{ELVSS}) an einer dritten Kante und einer vierten Kante der Pixel-Einheit angeordnet ist, wobei die vierte Kante der dritten Kante zugewandt ist und an die ersten und zweiten Kanten angrenzt, und
die Vielzahl zweiter Stromquellen-Pads (P_{ELVSS}) von der zweiten Spannung (ELVSS) gespeist werden, die über die Vielzahl von Pads

von der Spannung speisenden flexiblen Leiterplatte (400) empfangen wird,
dadurch gekennzeichnet, dass die Spannung speisende flexible Leiterplatte (400) am Außenumfang der organischen Licht emittierenden Anzeigeplatte angeordnet ist, um die Pixel-Einheit (310) nicht zu überlappen, und
die Vielzahl von Pads (P) mit der Vielzahl erster und zweiter Stromquellen-Pads überlappt wird ohne die Pixel-Einheit zu überlappen.

2. Organische Licht emittierende Anzeige nach Anspruch 1, wobei jeder der Vielzahl von ersten und der Vielzahl von zweiten Stromquellen-Pads eine jeweilige der ersten und zweiten Spannungen aus zwei entgegengesetzten Richtungen der Spannung speisenden flexiblen Leiterplatte (400) empfängt.

3. Organische Licht emittierende Anzeige nach Anspruch 1 oder 2, wobei eine Vielzahl von Signal-Pads (320) zum Speisen von Antriebssignalen an die Pixel-Einheit (310) zwischen der Vielzahl erster und zweiter Stromquellen-Pads (P_{ELVDD}, P_{ELVSS}) gebildet wird.

4. Organische Licht emittierende Anzeige nach Anspruch 3, ferner umfassend:

eine treibende flexible Leiterplatte (510), die elektrisch an die Signal-Pads (320) gekoppelt und unabhängig von der Spannung speisenden flexiblen Leiterplatte (400) bereitgestellt ist;
wobei die Antriebsplatte (500) elektrisch an die treibende flexible Leiterplatte (510) gekoppelt ist, um die treibende flexible Leiterplatte zu treiben.

5. Organische Licht emittierende Anzeige nach Anspruch 4, wobei die treibende flexible Leiterplatte (510) wenigstens einen Abtasttreiber (110) bzw. einen Datentreiber (120) einschließt und wenigstens ein Abtastsignal bzw. ein Datensignal an die Pixel-Einheit (310) speist.

6. Organische Licht emittierende Anzeige nach einem der vorhergehenden Ansprüche, wobei die Antriebsplatte (500) angeordnet ist, die Pixel-Einheit (310) nicht zu überlappen.

7. Organische Licht emittierende Anzeige nach einem der vorhergehenden Ansprüche, wobei die Antriebsplatte (500) am Außenumfang der organischen Licht emittierenden Anzeigeplatte angeordnet ist.

8. Organische Licht emittierende Anzeige nach einem der vorhergehenden Ansprüche, wobei die Antriebsplatte (500) elektrisch an die Spannung speisende flexible Leiterplatte (400) gekoppelt ist, um erste und zweite Spannungen an die Spannung speisende flexible Leiterplatte zu speisen.

9. Organische Licht emittierende Anzeige nach einem der vorhergehenden Ansprüche, wobei, die Pixel-Einheit (310) Licht von beiden Seiten davon emittiert.

Revendications

1. Affichage électroluminescent organique comprenant :

un panneau d'affichage électroluminescent organique (300) incluant une unité de pixel (310) pour afficher une image, une pluralité de premières plages de connexion de source d'alimentation (P_{ELVDD}) et de secondes plages de connexion de source d'alimentation (P_{ELVSS}) pour fournir des tensions à l'unité de pixel ;
une carte de circuit imprimé flexible de fourniture de tension (400) incluant une pluralité de plages de connexion (P) respectivement couplée électriquement à la pluralité de premières et secondes plages de connexion de source d'alimentation (P_{ELVDD}, P_{ELVSS}) ; et
une carte de commande (500) configurée de manière à générer une première tension (ELVDD) et une seconde tension (ELVSS), différente de la première tension, et à transmettre la première tension et la seconde tension à la carte de circuit imprimé flexible de fourniture de tension (400) ;
dans lequel la pluralité de premières plages de connexion de source d'alimentation (P_{ELVDD}) est agencée au niveau d'un premier bord et d'un deuxième bord de l'unité de pixel (310), le deuxième bord étant en regard du premier bord ;
dans lequel la pluralité de premières plages de connexion de source d'alimentation (P_{ELVDD}) est fournie par la première tension (ELVDD) reçue en provenance de la carte de circuit imprimé flexible de fourniture de tension (400) par l'intermédiaire de la pluralité de plages de connexion ;
dans lequel la pluralité de secondes plages de connexion de source d'alimentation (P_{ELVSS}) est agencée au niveau d'un troisième bord et d'un quatrième bord de l'unité de pixel, le quatrième bord étant en regard du troisième bord et adjacent aux premier et deuxième bords ; et
dans lequel la pluralité de secondes plages de connexion de source d'alimentation (P_{ELVSS}) est fournie par la seconde tension (ELVSS) reçue en provenance de la carte de circuit imprimé flexible de fourniture de tension (400), par l'intermédiaire de la pluralité de plages de connexion ;
caractérisé en ce que la carte de circuit impri-

mé flexible de fourniture de tension (400) est agencée sur la circonférence extérieure du panneau d'affichage électroluminescent organique de manière à ne pas chevaucher l'unité de pixel (310) ; et
la pluralité de plages de connexion (P) est en chevauchement avec la pluralité de premières et secondes plages de connexion de source d'alimentation sans chevauchement avec l'unité de pixel.

2. Affichage électroluminescent organique selon la revendication 1, dans lequel chaque plage de la pluralité de premières plages de connexion de source d'alimentation et de la pluralité de secondes plages de connexion de source d'alimentation reçoit l'une respective des première et seconde tensions en provenance de deux directions opposées de la carte de circuit imprimé flexible de fourniture de tension (400).

3. Affichage électroluminescent organique selon la revendication 1 ou 2, dans lequel une pluralité de plages de connexion de signaux (320) pour fournir des signaux de commande à l'unité de pixel (310) est formée entre la pluralité de premières et secondes plages de connexion de source d'alimentation (P_{ELVDD}, P_{ELVSS}).

4. Affichage électroluminescent organique selon la revendication 3, comprenant en outre :

une carte de circuit imprimé flexible de commande (510) couplée électriquement aux plages de connexion de signaux (320) et fournie indépendamment de la carte de circuit imprimé flexible de fourniture de tension (400) ;
dans lequel la carte de commande (500) est couplée électriquement à la carte de circuit imprimé flexible de commande (510) en vue de commander la carte de circuit imprimé flexible de commande.

5. Affichage électroluminescent organique selon la revendication 4, dans lequel la carte de circuit imprimé flexible de commande (510) inclut au moins l'un parmi un pilote de balayage (110) et un pilote de données (120), et fournit au moins l'un parmi un signal de balayage et un signal de données à l'unité de pixel (310).

6. Affichage électroluminescent organique selon l'une quelconque des revendications précédentes, dans lequel la carte de commande (500) est agencée de manière à ne pas chevaucher l'unité de pixel (310).

7. Affichage électroluminescent organique selon l'une quelconque des revendications précédentes, dans lequel la carte de commande (500) est agencée sur la circonférence extérieure du panneau d'affichage électroluminescent organique.

8. Affichage électroluminescent organique selon l'une quelconque des revendications précédentes, dans lequel la carte de commande (500) est couplée électriquement à la carte de circuit imprimé flexible de fourniture de tension (400) en vue de fournir les première et seconde tensions à la carte de circuit imprimé flexible de fourniture de tension.

9. Affichage électroluminescent organique selon l'une quelconque des revendications précédentes, dans lequel l'unité de pixel (310) émet de la lumière à partir des deux côtés de celle-ci.

FIG. 1

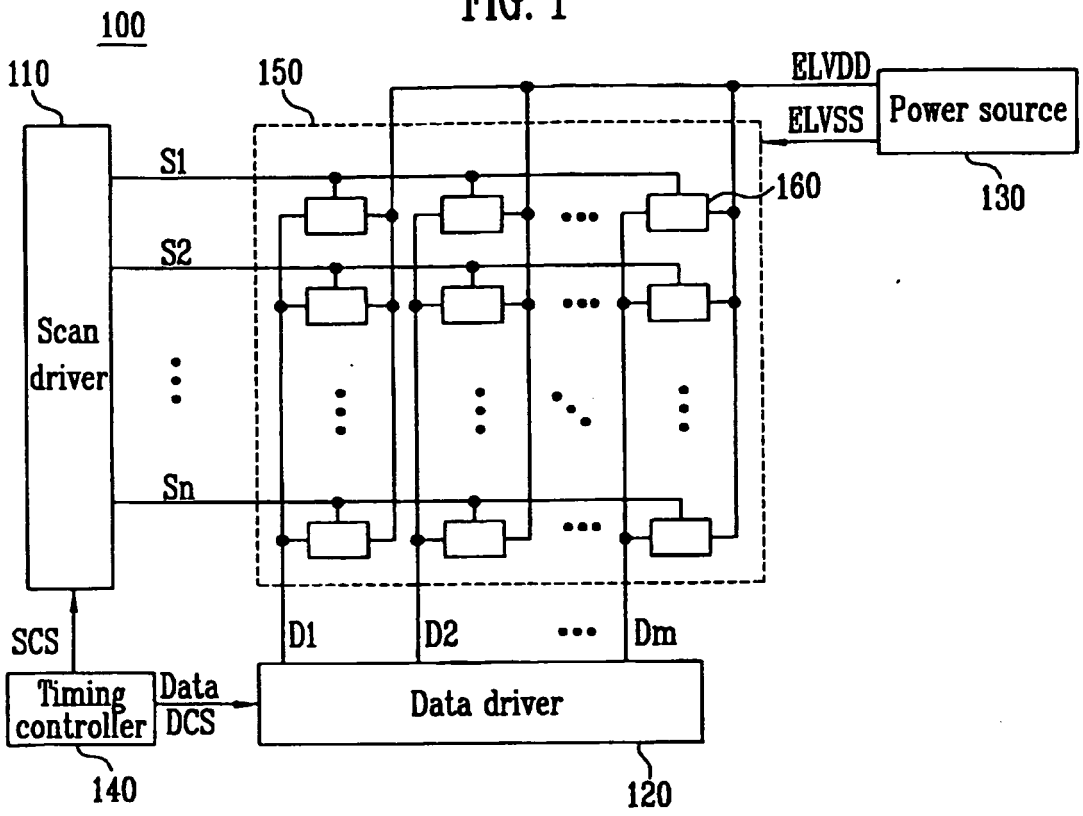

100
110
150
ELVDD
ELVSS
Power source
130
160
S1
S2
Sn
Scan driver
SCS
D1
D2
Dm
Timing controller
Data DCS
Data driver
140
120

FIG. 2

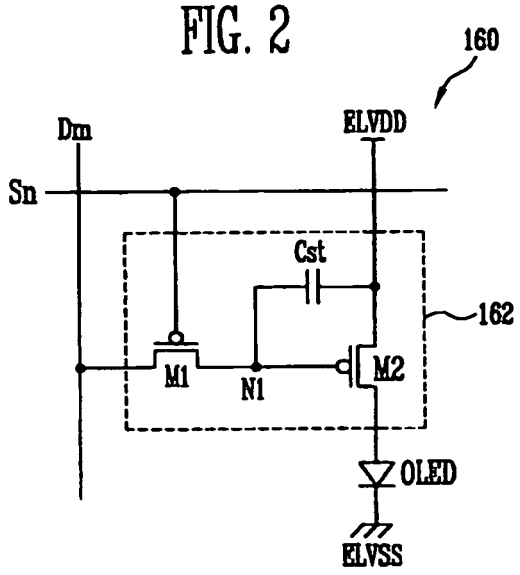

160
Dm
ELVDD
Sn
Cst
162
M1
N1
M2
OLED
ELVSS

FIG. 3

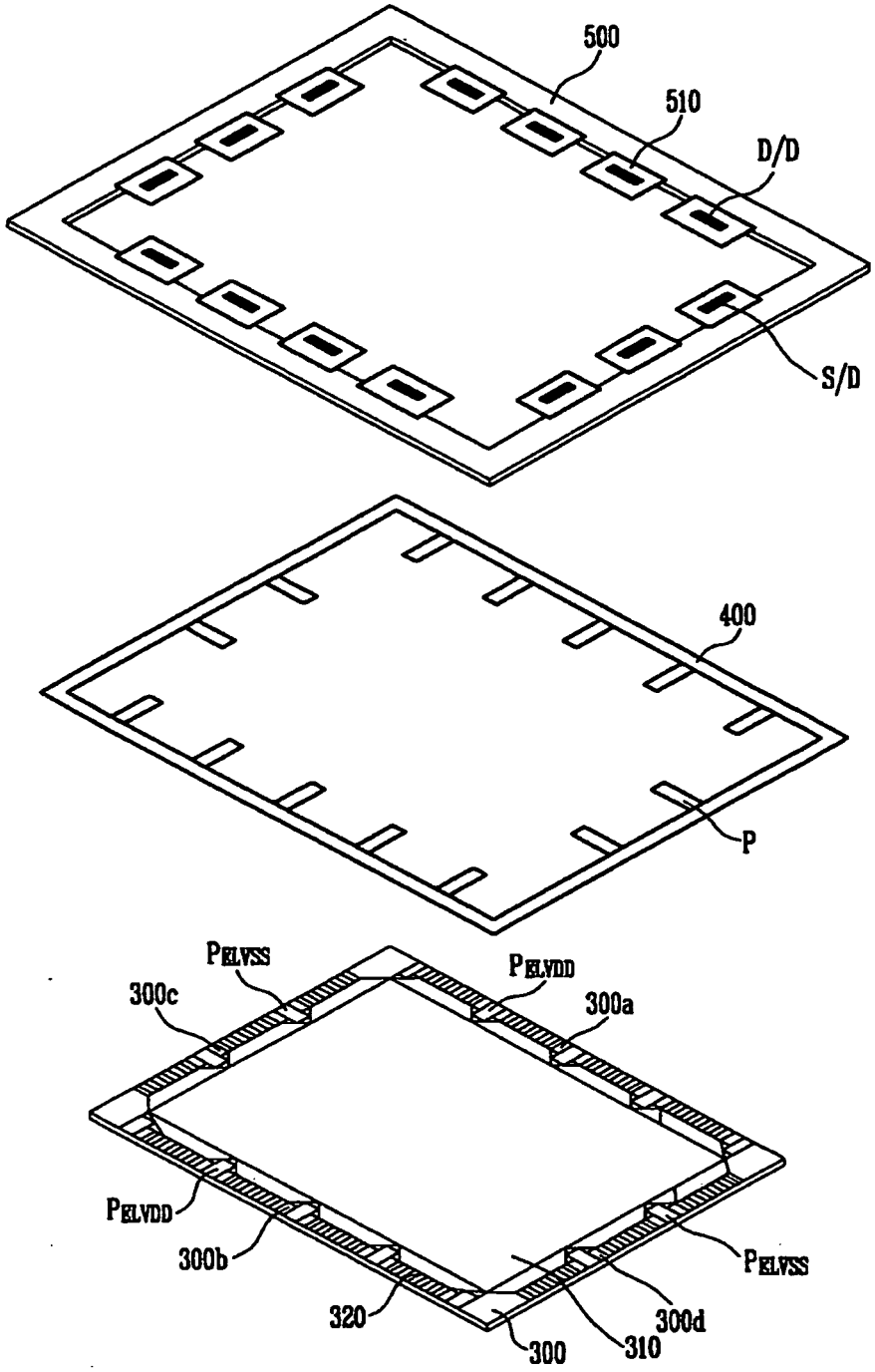
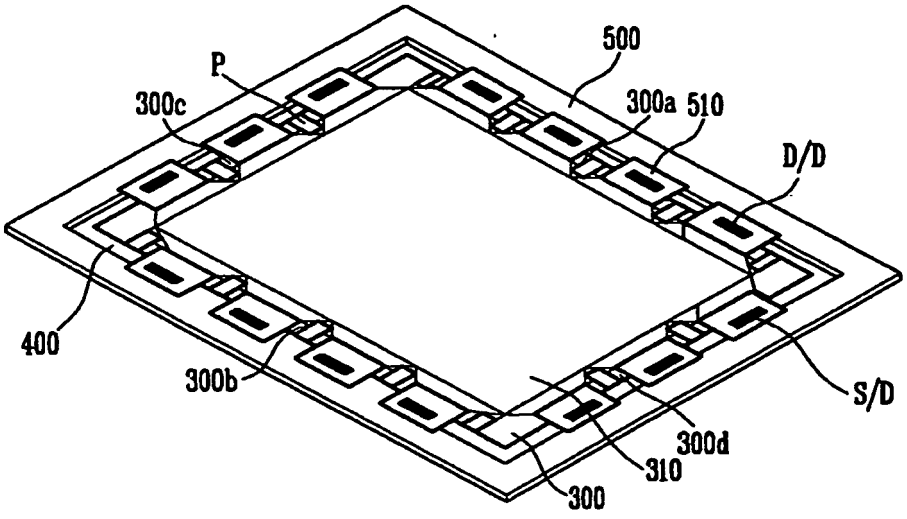

500
510
D/D
S/D
400
P
PELVSS
PELVDD
300c
300a
PELVDD
300b
PELVSS
320
300d
310
300

FIG. 4



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 20070134830 A **[0010]**

专利名称(译)	有机发光显示器		
公开(公告)号	EP2081179B1	公开(公告)日	2016-07-27
申请号	EP2009250124	申请日	2009-01-19
[标]申请(专利权)人(译)	三星显示有限公司		
申请(专利权)人(译)	三星移动显示器有限公司.		
当前申请(专利权)人(译)	三星DISPLAY CO.，LTD.		
[标]发明人	KIM TAE JIN GU BON SEOG		
发明人	KIM, TAE-JIN GU, BON-SEOG		
IPC分类号	G09G3/32 H01L27/32 H01L23/495 H01L23/498 H01R9/00 H05K1/00 H05K5/02 H05K1/11 G09G3/20 H05K1/14		
CPC分类号	G09G3/3208 G09G3/20 G09G2300/04 G09G2300/0426 G09G2320/0223 G09G2320/0233 H01L27/3276 H01L2251/5323 H01L2924/0002 H05K1/147		
优先权	1020080005617 2008-01-18 KR		
其他公开文献	EP2081179A2 EP2081179A3		
外部链接	Espacenet		

摘要(译)

一种有机发光显示器，其使提供给有机发光显示面板的电压的IR降最小化，包括有机发光显示面板（300），其具有在其上显示图像的像素单元以及设置在两个处的第一和第二电源焊盘。像素单元外部的多个边缘或多个边缘以从至少两个方向接收第一和第二电压，并且电压供应器柔性印刷电路板（FPCB）（400）包括电耦合到第一和第二电源焊盘并布置在外部的焊盘有机发光显示器的周边，以便不与像素单元重叠。

FIG. 1

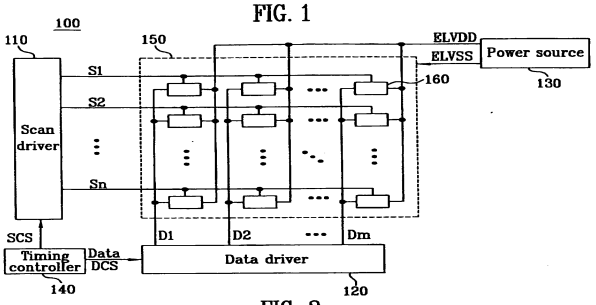

FIG. 2