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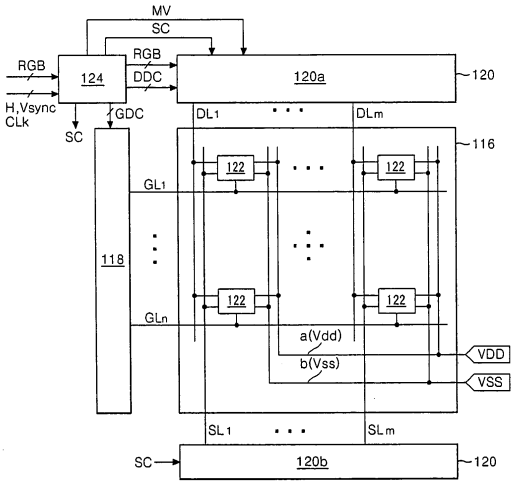
(54) Organic light emitting diode display and method of driving the same

(57) An organic light emitting diode display includes a data line, a gate line that crosses the data line to receive a scan pulse, a high potential driving voltage source to generate a high potential driving voltage, a low potential driving voltage source to generate a low potential driving voltage, a light emitting element to emit light due to a current flowing between the high potential driving voltage source and the low potential driving voltage source, a drive element connected between the high potential driving voltage source and the light emitting element to control a current flowing in the light emitting element depending on a voltage between a gate electrode and a source electrode of the drive element, and a driving current stabilization circuit to apply a first voltage to the gate electrode of the drive element to turn on the drive element and to sink a reference current through the drive element to set a source voltage of the drive element at a sensing voltage and to modify the voltage between the gate and source electrodes of the drive element to scale a current to be applied to the light emitting element from the reference current.

FIG. 4



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EUROPEAN SEARCH REPORT

Application Number
EP 08 01 6568

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	WO 2006/053424 A1 (IGNIS INNOVATION INC [CA]; NATHAN AROKIA [CA]; CHAJI REZA G [CA]; PEYM) 26 May 2006 (2006-05-26) * paragraph [0045] - paragraph [0053]; figures 1,2,22 * -----	1-10, 29-34, 37-39 23,24	INV. G09G3/32
X Y	WO 2007/037269 A1 (CASIO COMPUTER CO LTD [JP]; OZAKI TSUYOSHI [JP]) 5 April 2007 (2007-04-05) * figures 1,4,5,7,8,10 * & US 2008/180365 A1 (OZAKI TSUYOSHI [JP]) 31 July 2008 (2008-07-31) * paragraph [0095] * -----	1,14-22, 35,36 25-28	
X Y	WO 2008/018629 A1 (CASIO COMPUTER CO LTD [JP]; SHIRASAKI TOMOYUKI [JP]; OGURA JUN [JP]) 14 February 2008 (2008-02-14) * figures 10,12,13,16,17 * -----	1,14-22, 35,36 25-28	
Y	US 2005/212445 A1 (LEE HAN S [KR] LEE HAN SANG [KR]) 29 September 2005 (2005-09-29) * paragraphs [0042], [0043], [0048], [0075]; figures 5-7 * -----	23-28	TECHNICAL FIELDS SEARCHED (IPC) G09G

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	9 August 2011	Giancane, Iacopo

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

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Application Number
EP 08 01 6568

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 08 01 6568

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-13, 29-34, 37-39

An organic light emitting diode display having a data drive circuit which includes a first data driver to supply the first voltage to the data line during a first period and to supply a data voltage that is reduced from the first voltage by a data change amount to the data line during a second period, and a second data driver to sink the reference current through the sensing line to set the sensing voltage during the first period and to keep the set sensing voltage constant during the second period.

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2. claims: 14-22, 25-28, 35, 36

An organic light emitting diode display having a drive current stabilization circuit which changes a potential of the source electrode of the drive element of an OLED pixel to reduce or increase the voltage between the gate and source electrodes of the drive element to scale the current to be applied to the light emitting element from a reference current.

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3. claims: 23, 24

An organic light emitting diode display, wherein the drive element of an OLED pixel includes first and second driving elements connected in parallel between a high potential driving voltage source and a light emitting element and are alternately driven.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 01 6568

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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09-08-2011

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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	有机发光二极管显示器及其驱动方法		
公开(公告)号	EP2093749A3	公开(公告)日	2011-09-14
申请号	EP2008016568	申请日	2008-09-19
[标]申请(专利权)人(译)	乐金显示有限公司		
申请(专利权)人(译)	LG DISPLAY CO. , LTD.		
当前申请(专利权)人(译)	LG DISPLAY CO. , LTD.		
[标]发明人	NAM WOOJIN		
发明人	NAM, WOOJIN		
IPC分类号	G09G3/32		
CPC分类号	G09G3/3233 G09G3/3291 G09G2300/0819 G09G2300/0842 G09G2310/0251 G09G2310/0262 G09G2320/0295		
优先权	1020080016503 2008-02-22 KR		
其他公开文献	EP2093749A2 EP2093749B1		
外部链接	Espacenet		

摘要(译)

有机发光二极管显示器包括数据线，与数据线交叉以接收扫描脉冲的栅极线，用于产生高电位驱动电压的高电位驱动电压源，用于产生低电位的低电位驱动电压源驱动电压，由于在高电位驱动电压源和低电位驱动电压源之间流动的电流而发光的发光元件，连接在高电位驱动电压源和发光元件之间的驱动元件以控制电流根据驱动元件的栅电极和源电极之间的电压在发光元件中流动，以及驱动电流稳定电路，以将第一电压施加到驱动元件的栅电极以接通驱动元件并且通过驱动元件吸收参考电流，以将驱动元件的源电压设置在感测电压并修改vo在驱动元件的栅极和源极之间的电流，以从参考电流缩放要施加到发光元件的电流。

FIG. 4