



(11)

EP 2 626 851 A3

(12)

## EUROPEAN PATENT APPLICATION

(88) Date of publication A3:  
30.10.2013 Bulletin 2013/44

(51) Int Cl.:  
G09G 3/32 (2006.01)

(43) Date of publication A2:  
14.08.2013 Bulletin 2013/33

(21) Application number: 12191721.5

(22) Date of filing: 08.11.2012

(84) Designated Contracting States:  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB  
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO  
PL PT RO RS SE SI SK SM TR  
Designated Extension States:  
BA ME

(30) Priority: 07.02.2012 KR 20120012433

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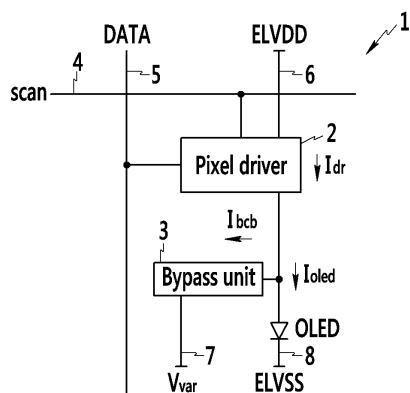
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### (54) Pixel and organic light emitting display device using the same

(57) A pixel unit (1) and an organic light emitting diode display using the pixel unit (1) are disclosed. The pixel unit (1) includes a pixel driver (2) with a driving transistor

for transmitting a driving current (Idr), an organic light emitting diode (OLED) receiving a first portion (Ioled) of the driving current (Idr), and a bypass unit (3) receiving a second portion (Ibcb) of the driving current (Idr).

FIG. 1





## EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (IPC)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	WO 2007/111202 A1 (PIONEER CORP [JP]; OCHI HIDEO [JP]) 4 October 2007 (2007-10-04) * paragraphs [0022], [0023], [0055]; figures 5a,7 *	1,2,4,5, 8,9	INV. G09G3/32
X	US 2003/103022 A1 (NOGUCHI YUKIHIRO [JP] ET AL) 5 June 2003 (2003-06-05) * paragraphs [0079] - [0084]; figures 3,6 *	1,3,8, 11-13	
X	US 2005/259093 A1 (OSAME MITSUAKI [JP] ET AL) 24 November 2005 (2005-11-24) * paragraphs [0041] - [0057]; figures 1,2A,2B,2C,2D *	1,11	
A	US 2009/273547 A1 (TANIKAME TAKAO [JP] ET AL) 5 November 2009 (2009-11-05) * figures 15,16A *	6,7,10, 14,15	
			TECHNICAL FIELDS SEARCHED (IPC)
			G09G
The present search report has been drawn up for all claims			
3	Place of search Munich	Date of completion of the search 19 September 2013	Examiner 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			



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### 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).

**LACK OF UNITY OF INVENTION  
SHEET B**Application Number  
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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, 2, 4, 5, 8, 9**

The pixel unit of claim 1 including a pixel driver, a bypass transistor and an OLED, wherein the gate electrode of the bypass transistor is electrically connected to the driving current output of the pixel driver.

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**2. claims: 3, 11-13**

The pixel unit of claim 1 including a pixel driver, a bypass transistor and an OLED, wherein a gate electrode of the bypass transistor is electrically connected to the scan line input of the pixel driver.

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**3. claims: 6, 7, 10, 14, 15**

The pixel unit of claim 1, wherein the pixel driver further comprises a driving transistor, a reset line input, an emission control line input, a reset transistor having a first electrode electrically connected to the gate electrode of the driving transistor, a second electrode electrically connected to the second electrode of the bypass transistor, and a gate electrode electrically connected to the reset line input, the driving transistor having a first electrode electrically connected to power source voltage input, a second electrode electrically connected to driving current output and a gate electrode electrically connected to a first electrode of a storage capacitor which has a second electrode electrically connected to the first electrode of the driving transistor, a first emission control transistor having a first electrode electrically connected to the power source voltage input, a second electrode electrically connected to the first electrode of the driving transistor and a gate electrode electrically connected to the emission control line input, and a second emission control transistor having a first electrode electrically connected to the second electrode of the driving transistor, a second electrode electrically connected to the driving current output and a gate electrode electrically connected to the emission control line input.

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

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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. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

19-09-2013

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 2007111202	A1	04-10-2007	NONE	
US 2003103022	A1	05-06-2003	CN 1417767 A KR 20030038522 A US 2003103022 A1	14-05-2003 16-05-2003 05-06-2003
US 2005259093	A1	24-11-2005	CN 1700269 A CN 101976547 A US 2005259093 A1	23-11-2005 16-02-2011 24-11-2005
US 2009273547	A1	05-11-2009	CN 101572056 A JP 2009288767 A KR 20090115692 A TW 201001375 A US 2009273547 A1 US 2012327138 A1	04-11-2009 10-12-2009 05-11-2009 01-01-2010 05-11-2009 27-12-2012

专利名称(译)	使用其的像素和有机发光显示装置		
公开(公告)号	<a href="#">EP2626851A3</a>	公开(公告)日	2013-10-30
申请号	EP2012191721	申请日	2012-11-08
[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DISPLAY CO. , LTD.		
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[标]发明人	JEONG JIN TAE KWAK WON KYU		
发明人	JEONG, JIN-TAE KWAK, WON-KYU		
IPC分类号	G09G3/32		
CPC分类号	G09G3/3233 G09G2300/0819 G09G2300/0861 G09G2320/0238 G09G3/325 G09G3/3258 G09G3/3266 G09G3/3291 G09G2300/0809 G09G2300/0814 G09G2300/0842 G09G2310/0278		
优先权	1020120012433 2012-02-07 KR		
其他公开文献	EP2626851A2 EP2626851B1		
外部链接	<a href="#">Espacenet</a>		

## 摘要(译)

公开了一种像素单元(1)和使用该像素单元(1)的有机发光二极管显示器。像素单元(1)包括像素驱动器(2)，其具有用于传输驱动电流(I<sub>dr</sub>)的驱动晶体管，接收驱动电流(I<sub>dr</sub>)的第一部分(I<sub>oled</sub>)的有机发光二极管(OLED)，以及旁路单元(3)接收驱动电流(I<sub>dr</sub>)的第二部分(I<sub>bcb</sub>)。

FIG. 1

