



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3: **14.03.2007 Bulletin 2007/11** (51) Int Cl.: **G09G 3/32<sup>(2006.01)</sup>**

(43) Date of publication A2: **12.07.2006 Bulletin 2006/28**

(21) Application number: **06100105.3**

(22) Date of filing: **05.01.2006**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL BA HR MK YU**

- **Kwak, Won-Kyu**  
Legal & IP Team  
Kiheung-Eup  
Yongin-City  
Kyeonggi-Do (KR)
- **Kim, Yang-Wan**  
Legal & IP Team  
Kiheung-Eup  
Yongin-City  
Kyeonggi-Do (KR)

(30) Priority: **05.01.2005 KR 2005000759**

(71) Applicant: **Samsung SDI Co., Ltd.**  
**Suwon-si**  
**Gyeonggi-do (KR)**

(74) Representative: **Hengelhaupt, Jürgen et al**  
**Gulde Hengelhaupt Ziebig & Schneider**  
**Wallstrasse 58/59**  
**10179 Berlin (DE)**

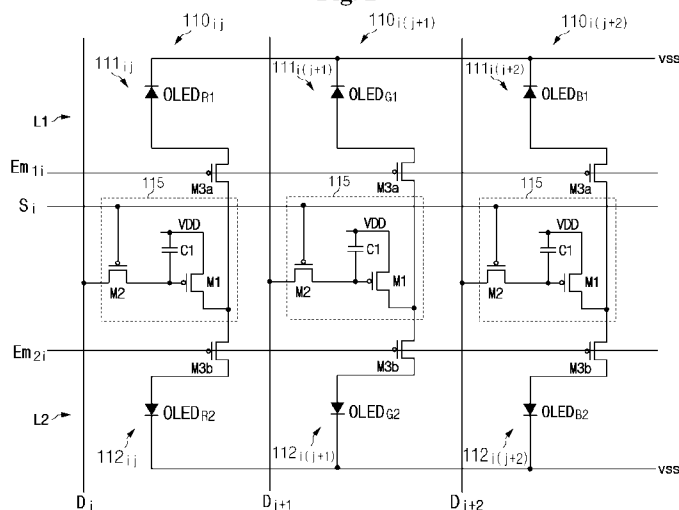
(72) Inventors:  
• **Park, Sung-Chon**  
Legal & IP Team  
Kiheung-Eup  
Yongin-City  
Kyeonggi-Do (KR)

(54) **Display device and driving method thereof**

(57) In an organic light emitting diode display, a plurality of sub-pixels sharing a select scan line that extends in a row direction forms a unit pixel, and the plurality of

sub-pixels are arranged in a column direction in the unit pixel. A field is divided into a plurality of subfields, and corresponding one of the plurality of sub-pixels emits light in each of the plurality of subfields.

**Fig. 2**





European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 06 10 0105

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	US 2004/070557 A1 (ASANO MITSURU [JP] ET AL) 15 April 2004 (2004-04-15) * paragraph [0070]; figure 2 *	1,3-7, 14,28-30 8	INV. G09G3/32
Y	-----		
X	EP 1 441 325 A2 (SAMSUNG SDI CO LTD [KR]) 28 July 2004 (2004-07-28) * figure 3 *	1,3-8, 14,28-30	
Y	-----		
A	US 2004/252084 A1 (MIYAGAWA KEISUKE [JP] ET AL) 16 December 2004 (2004-12-16) * figure 10 *	8  9-13, 15-20, 31-37	
P,X	----- EP 1 600 924 A (SAMSUNG SDI CO., LTD) 30 November 2005 (2005-11-30)  * paragraphs [0035] - [0039], [0043] - [0048], [0050] - [0053]; figures 1,2,4a,23,25 *	1,3-5,7, 8,14, 28-30	
A	----- US 2001/022565 A1 (KIMURA HAJIME) 20 September 2001 (2001-09-20)  * the whole document *	1,3-5,7, 8,14, 28-30	TECHNICAL FIELDS SEARCHED (IPC) G09G
A	----- EP 1 331 627 A (SEMICONDUCTOR ENERGY LAB [JP]) 30 July 2003 (2003-07-30)  * figure 5a *	8-13, 15-20, 31-37	
	-----		
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 5 February 2007	Examiner Fulcheri, Alessandro
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			

4

EPO FORM 1503 03.82 (P04C01)

**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims 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 the first ten claims.

**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 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: 1-5,7,8,14, 21-27,28-30,38-41

Current driven display device having two scan drivers, each providing selection and emission signals to a different group of rows of the display.

---

2. claim: 6

Current driven display device wherein the pixel includes an additional capacitor used to compensate the variation of threshold voltage of the transistor which drives the light emitting element.

---

3. claims: 9-13,15-20,31-37

Shift register for the scan driver of a current driven display device. The shift registers contain two drivers which operate with partially overlapped signals.

---

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

EP 06 10 0105

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.

05-02-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004070557 A1	15-04-2004	JP 3832415 B2	11-10-2006
		JP 2004133240 A	30-04-2004
		KR 20040033248 A	21-04-2004
		TW 241552 B	11-10-2005
-----			
EP 1441325 A2	28-07-2004	AT 330307 T	15-07-2006
		CN 1517965 A	04-08-2004
		DE 60306094 T2	11-01-2007
		JP 2004226960 A	12-08-2004
		KR 20040067029 A	30-07-2004
		US 2004145547 A1	29-07-2004
-----			
US 2004252084 A1	16-12-2004	AU 2003289450 A1	29-07-2004
		CN 1732498 A	08-02-2006
		EP 1577864 A1	21-09-2005
		WO 2004061809 A1	22-07-2004
		KR 20050093775 A	23-09-2005
-----			
EP 1600924 A	30-11-2005	JP 2005338837 A	08-12-2005
		US 2005264496 A1	01-12-2005
-----			
US 2001022565 A1	20-09-2001	TW 522360 B	01-03-2003
-----			
EP 1331627 A	30-07-2003	CN 1437178 A	20-08-2003
		US 2003137503 A1	24-07-2003
-----			

专利名称(译)	显示装置及其驱动方法		
公开(公告)号	<a href="#">EP1679687A3</a>	公开(公告)日	2007-03-14
申请号	EP2006100105	申请日	2006-01-05
[标]申请(专利权)人(译)	三星斯笛爱股份有限公司		
申请(专利权)人(译)	三星SDI CO. , LTD.		
当前申请(专利权)人(译)	三星移动显示器有限公司.		
发明人	PARK, SUNG-CHON LEGAL & IP TEAM KWAK, WON-KYU LEGAL & IP TEAM KIM, YANG-WAN LEGAL & IP TEAM		
IPC分类号	G09G3/32		
CPC分类号	G09G3/3233 G09G3/3266 G09G2300/0804 G09G2300/0819 G09G2300/0842 G09G2300/0852 G09G2300/0861 G09G2310/0205 G09G2310/0262 G09G2320/043		
代理机构(译)	hengelhaupt , Jürgen		
优先权	1020050000759 2005-01-05 KR		
其他公开文献	EP1679687A2 EP1679687B1		
外部链接	<a href="#">Espacenet</a>		

#### 摘要(译)

在有机发光二极管显示器中，共享沿行方向延伸的选择扫描线的多个子像素形成单位像素，并且多个子像素沿列方向布置在单位像素中。场被分成多个子场，并且多个子像素中的对应的一个子像素在多个子场中的每个子场中发光。

