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(11) **EP 1 536 405 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
03.05.2006 Bulletin 2006/18

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

(43) Date of publication A2:
01.06.2005 Bulletin 2005/22

(21) Application number: **04090384.1**

(22) Date of filing: **06.10.2004**

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

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(30) Priority: **27.11.2003 KR 2003085067**

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(54) **Light emitting display, display panel, and driving method thereof**

(57) A light emitting display including data lines for transmitting data voltages, scan lines for selecting select signals, and pixel circuits. The pixel circuit is coupled to a data line and a scan line. The pixel circuit includes a transistor including first, second, and third electrodes, wherein the third electrode outputs a current corresponding to a voltage between the first and second electrodes. A light emitting element coupled to the third electrode emits light corresponding to the current outputted by the

third electrode. A first switch transmits a data voltage in response to a select signal from the scan line. A voltage compensator receives the data voltage transmitted by the first switch and a second power supply voltage and applies a compensated data voltage based on the data voltage, a first power supply voltage and the second power supply voltage to the first electrode of the transistor.

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EUROPEAN SEARCH REPORT

Application Number
EP 04 09 0384

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	PATENT ABSTRACTS OF JAPAN vol. 2003, no. 10, 8 October 2003 (2003-10-08) -& JP 2003 173165 A (TOSHIBA CORP), 20 June 2003 (2003-06-20)	1-11, 22-28, 40-42	G09G3/32
Y	* abstract *	12,19-21	
A	* paragraph [0019] - paragraph [0022]; figures 1-3 *	29-39,43	
Y	----- EP 1 220 191 A (SAMSUNG SDI CO., LTD) 3 July 2002 (2002-07-03)	12,19-21	
A	* paragraphs [0001], [0010], [0032]; figure 6 *	13-18, 29-31, 37-39	
A	----- US 2003/016190 A1 (KONDO SHIGEKI) 23 January 2003 (2003-01-23) * paragraph [0061]; figures 1,3 *	22-25, 34-37	
A	----- US 2003/011584 A1 (AZAMI MUNEHICO ET AL) 16 January 2003 (2003-01-16)	1-11, 22-28, 32-36, 40-43	TECHNICAL FIELDS SEARCHED (IPC)
	* paragraphs [0002], [0061], [0091] - [0134]; figures 1A,1B,25A,25B *		G09G
	* abstract *		
P,A	----- CHOI S-M ET AL: "AN IMPROVED VOLTAGE PROGRAMMED PIXEL STRUCTURE FOR LARGE SIZE AND HIGH RESOLUTION AM-OLED DISPLAYS" 25 May 2004 (2004-05-25), 2004 SID INTERNATIONAL SYMPOSIUM DIGEST OF TECHNICAL PAPERS. SEATTLE, WA, MAY 25 - 27, 2004, SID INTERNATIONAL SYMPOSIUM DIGEST OF TECHNICAL PAPERS, SAN JOSE, CA : SID, US, PAGE(S) 260-263 , XP001222795 * figure 4a *	1-5, 26-28, 34-36	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 8 March 2006	Examiner Fanning, C
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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EPO FORM 1503 03 82 (P04C01)



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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(part), 2-5, 12(part), 13-18, 26-28, 29-31, 34-36, 37-39;

a voltage compensation circuit consisting of a capacitor with a first power supply voltage selectively applicable to a first electrode and a second power supply voltage selectively applicable to a second electrode of said capacitor, and a method of operating same.

2. claims: 1(part), 6-11, 32-33, 40-43

a voltage compensation circuit consisting of a capacitor with a second power supply voltage selectively applicable to a second electrode of said capacitor, and a switch for diode connecting the driving transistor of the pixel circuit to which this voltage comparator circuit is connected, and a method of operating same.

3. claims: 22-25

a voltage compensation circuit consisting of a first capacitor with a first power supply voltage selectively applicable to a first electrode and a second power supply voltage selectively applicable to a second electrode of said first capacitor; a second capacitor connected between the first electrode of the first capacitor and the first power supply voltage; and a method of operating same.

4. claims: 12(part), 19-21

a voltage compensation circuit which generates a compensated voltage based on the data voltage and the first power supply voltage.

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

EP 04 09 0384

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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08-03-2006

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 2003173165	A	20-06-2003	NONE	

EP 1220191	A	03-07-2002	CN 1361510 A	31-07-2002
			JP 2002215096 A	31-07-2002
			KR 2002056353 A	10-07-2002
			US 2002118150 A1	29-08-2002

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US 2003011584	A1	16-01-2003	CN 1397922 A	19-02-2003
			TW 554558 B	21-09-2003

专利名称(译)	发光显示器，显示面板及其驱动方法		
公开(公告)号	EP1536405A3	公开(公告)日	2006-05-03
申请号	EP2004090384	申请日	2004-10-06
[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DISPLAY CO. , LTD.		
[标]发明人	KIM YANG WAN		
发明人	KIM, YANG-WAN OH, CHOON-YUL, LEGAL & IP TEAM KIM, KYOUNG-DO, LEGAL & IP TEAM		
IPC分类号	G09G3/32 H01L51/50 G09F9/30 G09G3/20 G09G3/30 H01L27/32		
CPC分类号	G09G3/3233 G09G2300/043 G09G2300/0819 G09G2300/0842 G09G2310/0251 G09G2310/0262 G09G2320/02 G09G2320/0223 G09G2320/043		
代理机构(译)	hengelhaupt , Jürgen		
优先权	1020030085067 2003-11-27 KR		
其他公开文献	EP1536405B1 EP1536405A2		
外部链接	Espacenet		

摘要(译)

一种发光显示器，包括用于传输数据电压的数据线，用于选择选择信号的扫描线和像素电路。像素电路耦合到数据线和扫描线。像素电路包括晶体管，该晶体管包括第一，第二和第三电极，其中第三电极输出与第一和第二电极之间的电压对应的电流。耦合到第三电极的发光元件发射对应于第三电极输出的电流的光。第一开关响应于来自扫描线的选择信号发送数据电压。电压补偿器接收由第一开关传输的数据电压和第二电源电压，并将基于数据电压，第一电源电压和第二电源电压的补偿数据电压施加到晶体管的第一电极。

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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT

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X	PATENT ABSTRACTS OF JAPAN vol. 2003, no. 10, 8 October 2003 (2003-10-08) - & JP 2003 173165 A (TOSHIBA CORP), 20 June 2003 (2003-06-20) * abstract *	1-11, 22-28, 40-42	G09G3/32
Y	* paragraph [0019] - paragraph [0022]; figures 1-3 *	12, 19-21, 29-39, 43	
Y	EP 1 220 191 A (SAMSUNG SDI CO., LTD) 3 July 2002 (2002-07-03) * paragraphs [0001], [0010], [0032]; figure 6 *	12, 19-21, 13-18, 29-31, 37-39	
A	US 2003/016190 A1 (KONDO SHIGEKI) 23 January 2003 (2003-01-23) * paragraph [0061]; figures 1, 3 *	22-25, 34-37	
A	US 2003/011584 A1 (AZAMI MUNEHITO ET AL) 16 January 2003 (2003-01-16) * paragraphs [0002], [0061], [0091] - [0134]; figures 1A, 1B, 25A, 25B *	1-11, 22-28, 32-36, 40-43	TECHNICAL FIELDS SEARCHED (IPC)
			G09G
P.A	CHOI S-M ET AL: "AN IMPROVED VOLTAGE PROGRAMMED PIXEL STRUCTURE FOR LARGE SIZE AND HIGH RESOLUTION AM-OLED DISPLAYS" 25 May 2004 (2004-05-25), 2004 SID INTERNATIONAL SYMPOSIUM DIGEST OF TECHNICAL PAPERS, SEATTLE, WA, MAY 25 - 27, 2004, SID INTERNATIONAL SYMPOSIUM DIGEST OF TECHNICAL PAPERS, SAN JOSE, CA : SID, US, PAGE(S) 260-263 * XP001222795 * figure 4a *	1-5, 26-28, 34-36	

The present search report has been drawn up for all claims

Name of applicant		Date of completion of the search	Examiner
The Hague		8 March 2006	Fanning, C
CATEGORY OF CITED DOCUMENTS			
X	particularly relevant if taken alone	1	priority or priority underlying the invention
Y	particularly relevant if combined with another document of the same category	2	state of the art
A	technological background	3	document cited in the application
P	prior art document	4	document cited for other reasons
		5	member of the same patent family, corresponding document

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10/05/06 (P.02)