



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
23.05.2007 Bulletin 2007/21

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

(43) Date of publication A2:
12.01.2005 Bulletin 2005/02

(21) Application number: **04090270.2**

(22) Date of filing: **05.07.2004**

(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

(30) Priority: **07.07.2003 KR 2003045610**

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

(72) Inventors:
• **Chung, Ho-Kyoon,**
c/o Samsung SDI Co., Ltd.
Suwon-Si
Gyeonggi-do (KR)
• **Kim, Yang-Wan,**
c/o Samsung SDI Co., Ltd.
Suwon-Si
Gyeonggi-do (KR)

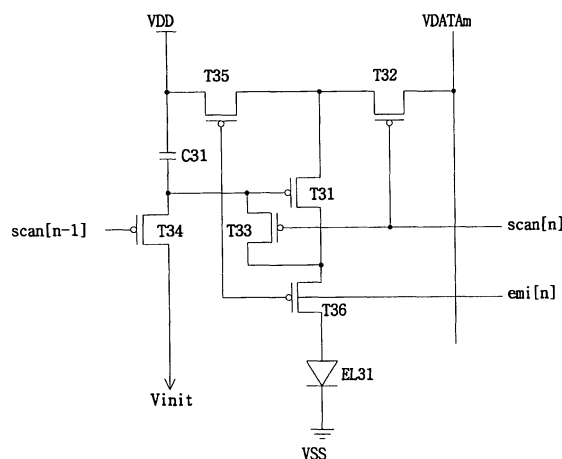
- **Oh, Choon-Yul,**
c/o Samsung SDI Co., Ltd.
Suwon-Si
Gyeonggi-do (KR)
- **Kwon, Oh-Kyong,**
c/o Samsung SDI Co., Ltd.
Suwon-Si
Gyeonggi-do (KR)
- **Choi, Sang-Moo,**
c/o Samsung SDI Co., Ltd.
Suwon-Si
Gyeonggi-do (KR)

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

(54) **Organic light emitting device pixel circuit with self-compensation of threshold voltage and driving method therefor**

(57) A pixel circuit in an organic light emitting device capable of realizing high gradation representation by self-compensating a threshold voltage, and a method for driving the same. The pixel circuit includes an electroluminescent element for emitting light in response to an applied driving current. A first transistor delivers a data signal voltage in response to a current scan line signal. A second transistor generates a driving current to drive the electroluminescent element in response to the data signal voltage. A third transistor connects the second transistor in the form of a diode in response to a current scan signal to self-compensate the threshold voltage of the second transistor. A capacitor stores the data signal voltage delivered to the second transistor. A fourth transistor delivers a power supply voltage to the second transistor in response to a current light-emitting signal. A fifth transistor provides the driving current, provided from the second transistor, for the electroluminescent element in response to the current light-emitting signal.

FIG. 3





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 09 0270

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
D,X	US 6 229 506 B1 (DAWSON ROBIN MARK ADRIAN [US] ET AL) 8 May 2001 (2001-05-08) * column 1, line 1 - line 16 * * column 4, line 41 - column 5, line 31 * * figures 1,3 * -----	1,4-7,20	INV. G09G3/32
X	US 2003/067424 A1 (AKIMOTO HAJIME [JP] ET AL) 10 April 2003 (2003-04-10) * paragraph [0082] - paragraph [0090] * * paragraph [0116] - paragraph [0121] * -----	1,4-7	
A	EP 1 220 191 A2 (SAMSUNG SDI CO LTD [KR]) 3 July 2002 (2002-07-03) * paragraph [0039] * * figure 7 * -----	2,9,17,19	
			TECHNICAL FIELDS SEARCHED (IPC)
			G09G
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 16 April 2007	Examiner Petitpierre, Olivier
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			

1
EPO FORM 1503 03.82 (P04C01)

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

EP 04 09 0270

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.

16-04-2007

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6229506	B1	08-05-2001	NONE	

US 2003067424	A1	10-04-2003	CN 1412854 A	23-04-2003
			JP 2003122301 A	25-04-2003
			KR 20030030846 A	18-04-2003
			TW 556349 B	01-10-2003

EP 1220191	A2	03-07-2002	CN 1361510 A	31-07-2002
			JP 2002215096 A	31-07-2002
			KR 20020056353 A	10-07-2002
			US 2002118150 A1	29-08-2002

能够通过自补偿阈值电压实现高灰度表示的有机发光装置中的像素电路及其驱动方法。像素电路包括用于响应于施加的驱动电流而发光的电致发光元件。第一晶体管响应于当前扫描线信号传递数据信号电压。第二晶体管响应于数据信号电压产生驱动电流以驱动电致发光元件。第三晶体管响应于电流扫描信号以二极管的形式连接第二晶体管，以自补偿第二晶体管的阈值电压。电容器存储传送到第二晶体管的数据信号电压。第四晶体管响应于当前的发光信号将电源电压传送到第二晶体管。第五晶体管响应于当前的发光信号提供从第二晶体管提供的用于电致发光元件的驱动电流。