



(11) **EP 1 233 400 A3**

(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:
21.10.2009 Bulletin 2009/43

(51) Int Cl.:
G09G 3/36^(2006.01) G09G 5/12^(2006.01)

(43) Date of publication A2:
21.08.2002 Bulletin 2002/34

(21) Application number: **02002092.1**

(22) Date of filing: **12.02.2002**

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

- **Cheon, Man-Bok**
Yongin-city,
Kyungki-do (KR)
- **Kwon, Su-Hyun**
Yongin-city,
Kyungki-do (KR)

(30) Priority: **15.02.2001 KR 2001007453**

(71) Applicant: **SAMSUNG ELECTRONICS CO., LTD.**
Suwon,
Kyunggi-do (KR)

(74) Representative: **Modiano, Micaela Nadia**
Modiano Josif Pisanty & Staub Ltd
Thierschstrasse 11
80538 München (DE)

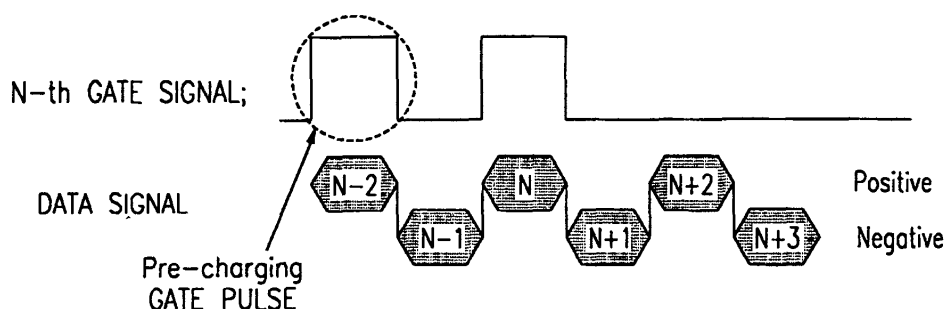
(72) Inventors:
• **Lee, Seung-Woo**
Keumcheon-ku,
Seoul (KR)

(54) **Method and device for driving a LCD display**

(57) Disclosed are an LCD capable of realizing a pre-charging method even in the random data-enable mode, and an apparatus and method for driving the same. In the LCD driving apparatus, a timing controller outputs a vertical sync start signal based on a data-enable signal having an irregular output interval to control the output of the image data. A gate driver sequentially applies both first and second gate-on voltages to a same gate line

based on the vertical sync start signal. The first gate-on voltage is to drive a previous line being most adjacent to and having the same polarity as the current line, and the second gate-on voltage is to drive the current line. An LCD panel is firstly charged with the first gate-on voltage supplied from the gate driver, and secondly charged with the second gate-on voltage, so that it can display analog image data received from the data driver during the second charging.

FIG. 1



EP 1 233 400 A3



EUROPEAN SEARCH REPORT

Application Number
EP 02 00 2092

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 5 648 793 A (CHEN YEN-CHEN [TW]) 15 July 1997 (1997-07-15) * column 3; figure 5 *	1-2,7-8	INV. G09G3/36 G09G5/12
A	EP 0 562 728 A2 (IBM [US]) 29 September 1993 (1993-09-29) * column 1 *	1-2,7-8	
A	US 5 828 368 A (JUNG TAE-BO [KR]) 27 October 1998 (1998-10-27) * figure 8 * * column 2, line 43 - line 53 * * column 3, line 5 - line 15 *	1-19	
A	GB 2 071 372 A (WESTERN ELECTRIC CO) 16 September 1981 (1981-09-16) * page 1, line 1 - line 79 *	1-19	
			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
The Hague		14 September 2009	Husselin, Stephane
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 02 00 2092

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.

14-09-2009

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5648793	A	15-07-1997	NONE	

EP 0562728	A2	29-09-1993	DE 69319475 D1	13-08-1998
			DE 69319475 T2	11-03-1999
			GB 2265733 A	06-10-1993
			JP 2053215 C	10-05-1996
			JP 6083301 A	25-03-1994
			JP 7092653 B	09-10-1995
			US 5404446 A	04-04-1995

US 5828368	A	27-10-1998	JP 4040712 B2	30-01-2008
			JP 9198014 A	31-07-1997

GB 2071372	A	16-09-1981	CA 1150366 A1	19-07-1983
			DE 3107232 A1	24-12-1981
			JP 1059779 B	19-12-1989
			JP 1574591 C	20-08-1990
			JP 56136057 A	23-10-1981
			NL 8101028 A	01-10-1981
			SE 447770 B	08-12-1986
			SE 8101174 A	05-09-1981
			US 4327411 A	27-04-1982

专利名称(译)	用于驱动LCD显示器的方法和设备		
公开(公告)号	EP1233400A3	公开(公告)日	2009-10-21
申请号	EP2002002092	申请日	2002-02-12
[标]申请(专利权)人(译)	三星电子株式会社		
申请(专利权)人(译)	SAMSUNG ELECTRONICS CO. , LTD.		
当前申请(专利权)人(译)	三星DISPLAY CO. , LTD.		
[标]发明人	LEE SEUNG WOO CHEON MAN BOK KWON SU HYUN		
发明人	LEE, SEUNG-WOO CHEON, MAN-BOK KWON, SU-HYUN		
IPC分类号	G09G3/36 G09G5/12 G02F1/133 G09G3/20		
CPC分类号	G09G3/3677 G09G2310/0251 G09G2320/0252 G09G2340/16		
优先权	1020010007453 2001-02-15 KR		
其他公开文献	EP1233400B1 EP1233400A2		
外部链接	Espacenet		

摘要(译)

公开了一种即使在随机数据使能模式下也能够实现预充电方法的LCD，以及用于驱动该方法的装置和方法。在LCD驱动装置中，定时控制器基于具有不规则输出间隔的数据使能信号输出垂直同步开始信号，以控制图像数据的输出。栅极驱动器基于垂直同步开始信号顺序地将第一和第二栅极导通电压施加到同一栅极线。第一栅极导通电压用于驱动与电流线最接近并具有相同极性的前一条线，并且第二栅极导通电压用于驱动电流线。LCD面板首先用从栅极驱动器提供的第一栅极导通电压充电，然后用第二栅极导通电压充电，以便它可以在第二次充电期间显示从数据驱动器接收的模拟图像数据。

FIG. 1

