# Exhibit 3

US007573068B2

## (12) United States Patent

#### Shimoda et al.

## (54) TRANSISTOR ARRAY SUBSTRATE AND DISPLAY PANEL

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(73) Assignee: Casio Computer Co., Ltd., Tokyo (JP)

(\*) Notice: Subject to any disclaimer, the term of this

patent is extended or adjusted under 35

U.S.C. 154(b) by 769 days.

(21) Appl. No.: 11/232,368

(22) Filed: **Sep. 21, 2005** 

(65) **Prior Publication Data** 

US 2006/0098521 A1 May 11, 2006

#### (30) Foreign Application Priority Data

Sep. 21, 2004	(JP)	 2004-273532
Sep. 21, 2004	(JP)	 2004-273580
Sep. 16, 2005	(JP)	 2005-269434

(51) Int. Cl. *H01L 33/00 H01L 27/32* 

(2006.01) (2006.01)

(52) **U.S. Cl.** ...... **257/72**; 257/208; 257/E33.055

(56) References Cited

U.S. PATENT DOCUMENTS

6,762,564 B2 7/2004 Noguchi et al.

(10) Patent No.:

US 7,573,068 B2

(45) **Date of Patent:** Aug. 11, 2009

6,864,639 B2 3/2005 Ito

6,933,533 B2 8/2005 Yamazaki et al. 7,317,429 B2 1/2008 Shirasaki et al.

2004/0108978 A1\* 6/2004 Matsueda et al. ............ 345/76

#### FOREIGN PATENT DOCUMENTS

CN 1360350 A 7/2002 JP 8-330600 A 12/1996

#### (Continued)

#### OTHER PUBLICATIONS

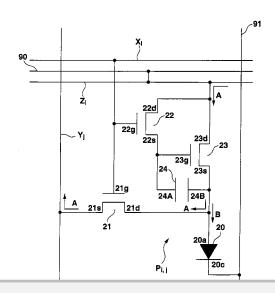
A Japanese Office Action (and English translation thereof) dated Apr. 30, 2008, issued in a counterpart Japanese Application.

Primary Examiner—Davienne Monbleau Assistant Examiner—Shweta Mulcare (74) Attorney, Agent, or Firm—Frishauf, Holtz, Goodman & Chick, P.C.

#### (57) ABSTRACT

A transistor array substrate includes a plurality of driving transistors which are arrayed in a matrix on a substrate. The driving transistor has a gate, a source, a drain, and a gate insulating film inserted between the gate, and the source and drain. A plurality of signal lines are patterned together with the gates of the driving transistors and arrayed to run in a predetermined direction on the substrate. A plurality of supply lines are patterned together with the sources and drains of the driving transistors and arrayed to cross the signal lines via the gate insulating film. The supply line is electrically connected to one of the source and the drain of the driving transistor. A plurality of feed interconnections are formed on the supply lines along the supply lines, respectively.

#### 17 Claims, 27 Drawing Sheets





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	FOREIGN PATE	NT DOCUMENTS	JР JР	2003-330387 A 2004-101948 A	11/2003 4/2004	
JP JP	2000-349298 A 2003-133079 A	12/2000 5/2003	WO	WO 2004/019314 A1	3/2004	
JP	2003-195810 A	7/2003	* cited	* cited by examiner		



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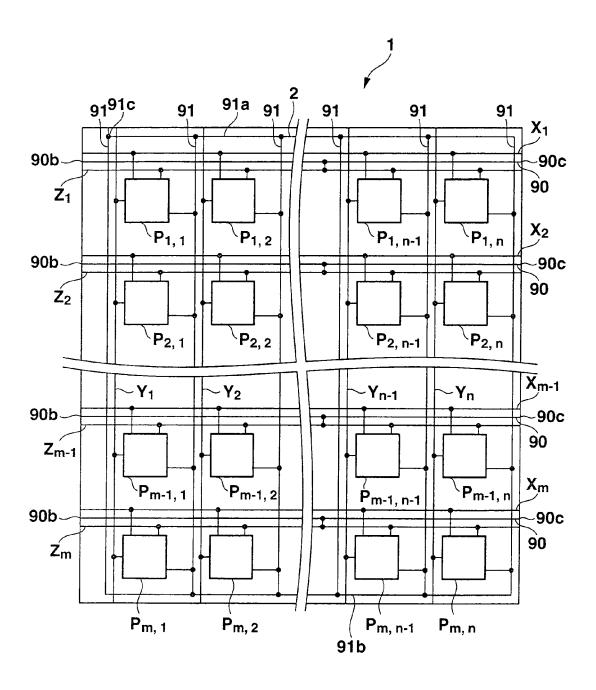


FIG.1

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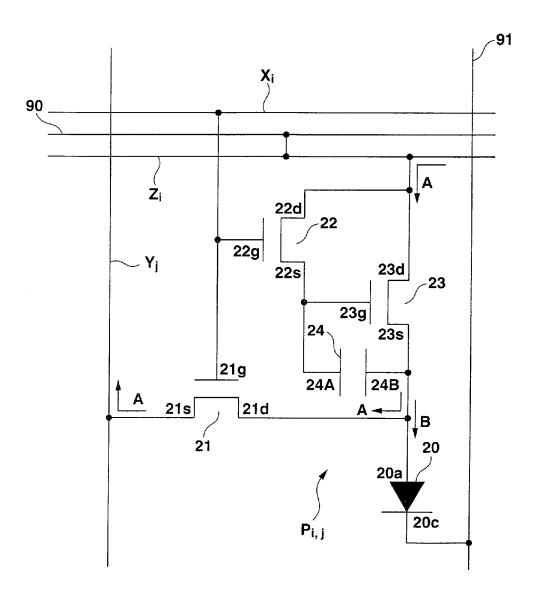


FIG.2

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