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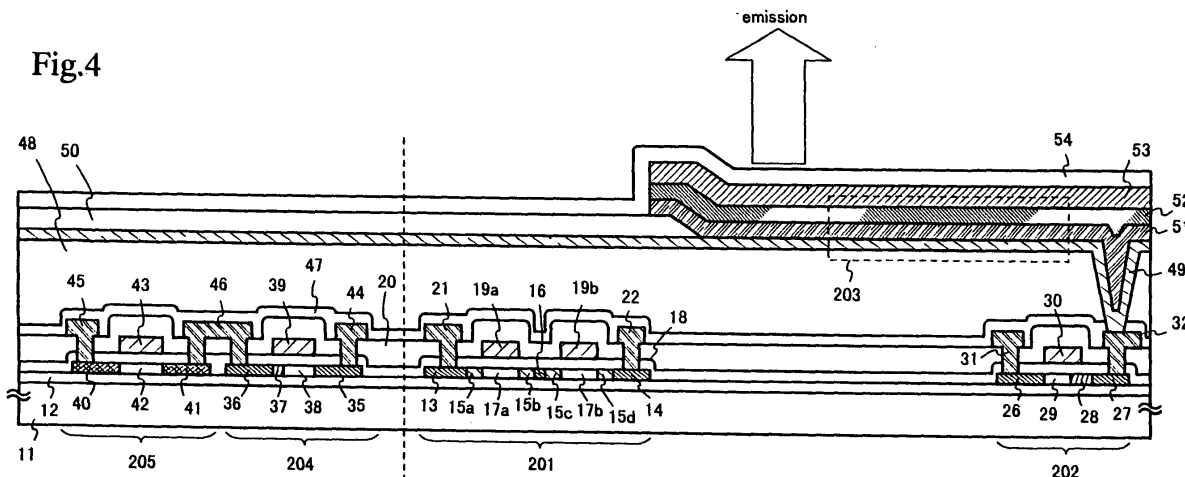
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(54) **Electroluminescent display device and driving method thereof**

(57) An electro luminescence display device comprises first and second pixels. The first pixel comprises a first electro luminescence element, a first electro luminescence driver thin film transistor, and a first switching thin film transistor. The second pixel comprises a second electro luminescence element, a second electro luminescence driver thin film transistor, and a second switching thin film transistor, wherein the first electro luminescence driver thin film transistor comprises a first channel and a first lightly doped drain region, and the first lightly doped

drain region has a first length in the longitudinal direction of the first channel. The second electro luminescence driver thin film transistor comprises a second channel and a second lightly doped drain region and the second lightly doped drain region has a second length in the longitudinal direction of the second channel, wherein the first length is longer than the second length, and wherein a first voltage applied to the first electro luminescence element is higher than a second voltage applied to the second electro luminescence element.

Fig.4





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EP 06 01 5515

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	EP 0 883 191 A (CANON KK) 9 December 1998 (1998-12-09)	2-5,7,8, 10-16, 18-21	INV. G09G3/32
Y	* page 5, line 19 - page 6, line 15; figures 1-3 *	1,6,9,17	
Y	----- JP 11 097705 A (SEMICONDUCTOR ENERGY LAB) 9 April 1999 (1999-04-09) * abstract *	1,6,9,17	
L	-& US 6 255 705 B1 (ZHANG HONGYONG [JP] ET AL) 3 July 2001 (2001-07-03) * column 9, line 18 - column 11, line 54; figures 1A-1E *	1,6,9,17	
A	----- US 5 952 789 A (IPRI ALFRED CHARLES ET AL) 14 September 1999 (1999-09-14) * column 4, line 46 - column 5, line 65; figures 2,3 *	1-21	
A	----- US 5 812 105 A (VAN DE VEN ANTONY PAUL) 22 September 1998 (1998-09-22) * column 4, line 15 - column 4, line 53 * * column 10, line 54 - column 11, line 28; figure 5 * * column 13, line 8 - column 13, line 17 *	1-21	TECHNICAL FIELDS SEARCHED (IPC) G09G H01L H05B
A	----- US 3 909 788 A (KAELIN GEORGE R ET AL) 30 September 1975 (1975-09-30) * column 4, line 25 - column 5, line 34; figures 4,5 *	1-21	
A	----- US 5 652 600 A (KHORMAEI IRANPOUR ET AL) 29 July 1997 (1997-07-29) * column 6, line 49 - column 6, line 56; figures 5,9 * * column 8, line 1 - column 8, line 14; figures 10-13 *	1-21	
	----- -/-		
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 5 November 2007	Examiner Morris, David
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			

9
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European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 01 5515

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 5 598 021 A (SCHOENBORN PHILIPPE ET AL) 28 January 1997 (1997-01-28) * abstract; figures 9,10 * * column 5, line 48 - column 6, line 22 * -----	1-21	
			TECHNICAL FIELDS SEARCHED (IPC)
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 5 November 2007	Examiner Morris, David
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 03/02 (P04C01)

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

EP 06 01 5515

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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05-11-2007

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0883191	A	09-12-1998	US	6175345 B1	16-01-2001
JP 11097705	A	09-04-1999	US	6255705 B1	03-07-2001
US 6255705	B1	03-07-2001	JP	11097705 A	09-04-1999
US 5952789	A	14-09-1999	JP	10319908 A	04-12-1998
US 5812105	A	22-09-1998	NONE		
US 3909788	A	30-09-1975	NONE		
US 5652600	A	29-07-1997	NONE		
US 5598021	A	28-01-1997	US	5663083 A	02-09-1997

专利名称(译)	电致发光显示装置及其驱动方法		
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优先权	1999270091 1999-09-24 JP		
其他公开文献	EP1713054A2 EP1713054B1		
外部链接	Espacenet		

摘要(译)

一种电致发光显示装置，包括：第一像素，包括第一电致发光元件，第一电致发光驱动薄膜晶体管和第一开关薄膜晶体管；第二像素包括第二电致发光元件，第二电致发光驱动薄膜晶体管和第二开关薄膜晶体管，其中第一电致发光驱动薄膜晶体管包括第一沟道和第一轻掺杂漏极区域，第一轻掺杂漏极区域在第一沟道的纵向上具有第一长度，其中第二电致发光驱动薄膜晶体管包括第二沟道和第二轻掺杂漏极区域，第二轻掺杂漏极区域具有第二长度。第二通道的纵向方向，其中第一长度长于第二长度，并且其中施加到第一电致发光元件的第一电压高于施加到第二电致发光元件的第二电压。

