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(A)(51) 。 Int. Cl. ⁷
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(43)2002 - 0077008
2002 10 11(21) 10 - 2001 - 0052828
(22) 2001 08 30

(30) JP - P - 2001 - 00094550 2001 03 29 (JP)

(71) 가 가
가 4 6

(72) 1 5 - 1 가 가

1 5 - 1 가 가

1 5 - 1 가 가

(74)

:

(54)

, 1 , 2 , 1 , 2 가 ,
.

1

, , , ,

1	1	.
2	.	
3 (a), (b)	1	.
4	1	.
5 (a), (b)	1	.
6	1	.
7 (a), (b)	.	
8	.	
9	.	
10	3	.
11	4	.
12	5	.
13 (a), (b)	6	.
14 (a), (b)	7	.
15 (a), (b)	8	.
16 (a), (b)	8	
.		
17 (a), (b)	9	.
18 (a), (b)	10	.
19 (a), (b)	11	.
20	12	.
21	13	.
22	14	.

1, 2 :

3 :

4 :

6a, 6b :

7 :

8 :

11 :

12 :

가 (TN) , TN 가

(In - Plane Switching: IPS) 가 63 - 21907 , USP 4345249 , WO91/109
36 , 6 - 160878

IPS (,)가 가 IPS TN ,

2 IPS
(1) , (1) (2) , (1) (2) (12) , (1)
, 가 (3) (4) , (1) (6a, 6b) , (6b)
[, (7)] , (2) (8) (7) ,
(1), (2) , (11)
(3) (4) ,

IPS 2 (13) (3) (4) 가
(1)

가 , IPS
가

9 - 297299

(retardation) $d_{\text{eff}} \cdot n_{\text{eff}} \cdot 250\text{nm}$
 (, d_{eff} : , n_{eff} :
). (retardation)

[1] 1 , 1 2 , 1 2 ,

1 2 , 1 2 .

[2] 1 , 1 2 , 1 2 ,

가, 1 2 1 , 1 2
 1 2 1 .

1 2 ,

1 1 , 2 2 가

[3] 1 2 1

1 , 1
 , 2 1 .

2 , 1 가 ,

2 2 2 1 , 1 1 , 1
 2 2 2 , 1 2 1
 2 , .

1, 2 가 ,
가 1 2
.

[5] , 1 , 1 , 1 , 2 1
2 , 1 1 1 , 2
 , 1 1 1
 , 1 1 , 2 2
 .

1 1 1 1 1
1 가 , , 2 , 2
2 가 , 2 , 2 , 2
2 가 .

1 1 , 1 , 2 , 1 1
2 가 .

IPS

IPS	(T)	1	.
-----	-----	---	---

1

$$T = T_0 \cdot \sin^2(2\Phi) \cdot \sin^2((\pi \cdot d_{\text{eff}} \cdot \Delta n_{\text{eff}}) / \lambda)$$

$$(\tau_0, \tau_1, \tau_2, \tau_3, \tau_4, \tau_5, \tau_6, \tau_7, \tau_8, \tau_9, \tau_{10}, \tau_{11}, \tau_{12}, \tau_{13}, \tau_{14}, \tau_{15}, \tau_{16}, \tau_{17}, \tau_{18}, \tau_{19}, \tau_{20}, \tau_{21}, \tau_{22}, \tau_{23}, \tau_{24}, \tau_{25}, \tau_{26}, \tau_{27}, \tau_{28}, \tau_{29}, \tau_{30}, \tau_{31}, \tau_{32}, \tau_{33}, \tau_{34}, \tau_{35}, \tau_{36}, \tau_{37}, \tau_{38}, \tau_{39}, \tau_{40}, \tau_{41}, \tau_{42}, \tau_{43}, \tau_{44}, \tau_{45}, \tau_{46}, \tau_{47}, \tau_{48}, \tau_{49}, \tau_{50}, \tau_{51}, \tau_{52}, \tau_{53}, \tau_{54}, \tau_{55}, \tau_{56}, \tau_{57}, \tau_{58}, \tau_{59}, \tau_{60}, \tau_{61}, \tau_{62}, \tau_{63}, \tau_{64}, \tau_{65}, \tau_{66}, \tau_{67}, \tau_{68}, \tau_{69}, \tau_{70}, \tau_{71}, \tau_{72}, \tau_{73}, \tau_{74}, \tau_{75}, \tau_{76}, \tau_{77}, \tau_{78}, \tau_{79}, \tau_{80}, \tau_{81}, \tau_{82}, \tau_{83}, \tau_{84}, \tau_{85}, \tau_{86}, \tau_{87}, \tau_{88}, \tau_{89}, \tau_{90}, \tau_{91}, \tau_{92}, \tau_{93}, \tau_{94}, \tau_{95}, \tau_{96}, \tau_{97}, \tau_{98}, \tau_{99}).$$

$d_{\text{eff}} \propto n_{\text{eff}}^2$ 가
 $d_{\text{eff}} \propto n_{\text{eff}}$ 가

가

가 d_{eff} 가 , 가

d_{eff} 가 .

•

$$1 \leq \frac{d_{\text{eff}}}{n_{\text{eff}}} \leq 2$$

$$n_{\text{eff}} = \cos \theta \cdot n \quad (1)$$

IPS
n_{eff} n

n_{eff}

n_{eff} 가 1

IPS

가 n_{eff} 가

가

가

가 , 가 , 가 , 가

가

Vol. 54, No.1, 93 100 (2000)

가

1

가

가

9 - 244046

가

가

가

가

가

1

1 3 (a), (b) 4 3 (a), (b) 3 (b) (1)
 (41) , 3 (a) 3 (b) A - A' , 4 (1)

3 (a), (b) (1) , (2) , (1) (2)
 (12) , (41) , (41) 1 (4) 2 (5)
 5) , 1 (4) 2 (5) (3)

, 4 1 (4) 1 (32) , 2 (5)
 2 (33) , 1 (32) 2 (33)
 (36) , (3) (34) ,
 (31) , (36) , 1 (32) 2 (33)
 (34) (31) (37) (1) (31)
 (21) , 1 (32) (21) , 1 (4)
 1 (22a) , 2 (33) , (21) , 2
 (5) 2 (22b) , (21) 1 (22a)
 (41) , (21) 1 (22a) , (21) 1 (22a)
 1 TFT(24a) , (21) 1 (22b)
 , (21) 2 (22b) 2 TFT(24b) , 1 TFT(24a)
 1 (4) , 2 TFT(24b) 2 (5) , (3)
 4)

, 3 (a), (b) , (1) (3) 1 (4) 2 (5)
 (6) , (6) (7) , (2) (8) (7) ,
 (1) (2) (11)

(1) 1 (4) (3) 2 (5) 4 μ m ,
 ITO(Indium - Tin - Oxide) 1 (4) 2 (5) (3) 1 (4) ,
 10 μ m ,
 2 ITO 가

(1) , (1) (2)
 가 , 9 - 244046
 가

(1) (2) 가 0.7mm . 1 TFT (24a) 2 TFT (24b) (23)
가 , 가
가 . ,
. .

1 (4) (3) (6a, 6b, 6c)
, 0.2 μ m, 0.8 μ m, 0.8 μ m . (7) 가 80nm ,
(rubbing) 가 . 1 (4) 15 .

(1) (2) 4 μ m (beads)가 ,
0.0947 , 10.5 .

(11) 가 (crossed nicols) ,
. ,
, ,
가 .

1 , . 1 3 (a) (13) . 2
(13) 가 IPS
. , IPS ,
, .

(3) 1 (4) 2 (5)
(3) 1 (4) 2 (5)
5 (a) (3) 1 (4) 2 (5) , 0.0
:1.0:0.5 가 , 5 (b) (3) 1
(4) 2 (5) 0.0:1.0:0.3
5 (a) 5 (b)가 . , 5 (b)가 5 (a)
, .

1 (4) (3) 2 (5)
, .

(3) 1 (4) 2 (5) . 2
(5) (3) 1 (4) , 가 ,
(3) 1 (4) ,
, (36) 2 . ,
, .

, , , , ,
가 , (3) 1 (4) 2 (5)
, , , , ,
, .

(1) , (1) (2)
가 ,
(3) 1 (4) 2 (5)
, , 6
가 ,

[]

7 (a), (b) 8 . 7 (a), (b) ,
8 7 (b) (1) (41)
, 7 (a) 7 (b) A - A' , 8 (1)
.

7 (a), (b) (1) , (2) , (1) (2)
(12) , (41) , (41) (4) , (4)
(3) .

, 8 (4) (32) , (3)
(34) , (31) , (32) (34)
(31) (37) . (1) (31)
(21) , (32) , (21) , (4)
(22) , (21) (22) (41) , (21)
(22) , (21) (22) TFT(24)
, TFT(24) (4) , (34) (3)

, 7 (a), (b)가 (1) (3) (4) , (6)
(7) , (2) (8) (7) , (1) (2)
(11) .

(1) (4) (3) 4 μ m ,
(4) (3) 10 μ m .

(1) (2) 가 0.7mm . TFT(24) (23)
(4) (3) (6a, 6b) ,
0.2 μ m, 0.8 μ m . (7) 80nm , 가
1 (4) 15 .

(1) (2) 4 μ m 가 ,
0.0947 , 10.5 .

(11) 가 ,

1 .

, (1) 2 7 (a) 3 (a) (2)
 (5) (6c) 1 .
 , 2 (5) ,
 , 가 9 ,
 2
 ITO 2 (3) 1 (4) 2 (5)
 1
 2 (3) 1 (4) 2 (5) 1
 . 1 , E_2/E_x (3) 1
 . 1 (13)
 (4) 1 (3) 1 (4) E_2/E_x 가 , , 3가
 (3) 1 (4) E_2/E_x 가 ,
 E_2/E_x 가 , E_2/E_x 가 .
 , (3) 1 (4) 2 (5) 1 , 1
 , 1 가
 .
 3
 , (3) 1 3 10 2 (5) (3)
 (4) 1
 .
 2 (5) , ,
 .
 , 2 (5) 1 (4) , .
 4
 (3) 4 3 11 2 (5)
 3
 , 3 , 2 (5) (3)
 가 , 가 .
 [5]
 (3) 5 12 (5) ITO 2 (5)
 , 2 3

, 3 가 .

6

6 13 (a), (b) . 13 (b) (1) (41)
 , 13 (a) 13 (b) A - A' .

6 13 (a), (b) (1)

1

13 (b) 1 (4) 1 (5)
 2 , 1 (4) 1 , 2 (5) 2

, 13 (a) 1 (4) 2 (5) .

, 1 (4) 2 (5) 1 (22a) 2 (22b) , (3)
 (21) .

, 1

.

7

7 14 (a), (b) . 14 (b) (1) (41)
 , 14 (a) 14 (b) A - A' .

(4) 1 (4) 7 (3) 14 (a), (b) 2 (5) (3) 1 (6c)
 1

, 1 , 가 ,

, (3) 1 (4) 2 (5) 가 ITO

,

8

8 15 (a), (b) . 15 (b) (1) (41)
 , 15 (a) 15 (b) A - A' .

(4) 2 (5) 8 15 (a), (b) (3) 1
 , ITO . 1 (4) 2 (5)

1 .

(3) 1 (4) 2 (5) ,
 , (3) 1 (4) 2 (5)
 16 (a), (b) . 16 (a) (3) 1 (4) 2

(5) , 0.0:1.0:1.0
(3) 1 (4) 2 (5) , 0.0:1.0:0.6
. , 16 (a) 16 (b)가 . , .

(3) 1 (4) 2 (5) , , .

. 2 (3) 1 (4) 2 (5) , , 가 , , . , 1 (4) 2 (5) (36) 2 (5) 가 . , .

9
9 17 (a), (b) . 17 (b) (1) (41)
, 17 (a) 17 (b) A - A ' .

8 9 17 (a), (b) (1)

17 (b) 1 (4) 1 2 , 2 (5) 2 (5)
2 , 1 (4) 2 (5) 1 (22a) 2 (22b) , (3)
(21) . , 8 .

10
10 18 (a), (b) . 18 (b) (1) (41)
, 18 (a) 18 (b) A - A ' .

(5) 1 (4) 2 10 18 (a), (b) (3) (6c)
8 (5) , (3) (3) 2
, 8 , 가 , .

TFT, (3) 1 (4) 2 (5) 7 (1)

(3) 1 (4) 2 (5) 가 ITO

11

11 19 (a), (b) 19 (b) (1) (41)
19 (a) 19 (b) A - A'

11 19 (a), (b) (1)

10

19 (b) 1 (4) 1 2 (5) 2 (5)
2 1 (4) 1 2 (5) 2

19 (a) 1 (4) 2 (5)

1 (4) 2 (5) 1 (22a) 2 (22b) (3)
(21)

10

12

12 20 (3) (2)
1 (4) 2 (5) 7

(1) (2) (1)
2) (1) (2) 가
가

(3) 1 (4)
2 (5) $(x_1 + x_2)/2 : x_1 : x_2$ 1 (4) 2 (5) (4)
 $x_1 - x_2$ ($x_1 : 1$ (4) $x_2 : 2$ (5)). 가
1 (4) 2 (5)
(36) 1 (4) 2 (5)
(3) 1 (4) 2 (5)
 $x_1 : x_1 : x_2$

13

(9)가 13 21 2 (5) 가 $2\mu\text{m}$
12

, 12 (13),

, (9)

[14]

(9) 14 22 2 (5)

(9) (9')가 13

(9')가 , 가 ,

(9) (9')가

(3) , ,

IPS , 가 ,

(4) IPS 가 가 2 (5) 1

(3) , 2 (5) 1 (4)

2 7 , 2 (5) 가 1

(4) 가 (3) , IPS 가 가 (4) (

3) , 3 5 가 2 (5) , 2 (5)

IPS 1 (4) (3)

가 , 8 11

IPS 가 2 (5) 1

가 , 12 14 1 (4)

2 (5) (3) 1 (4) IPS 2 (5) 가

1 2 , 가

가

(57)

1.

1 , 1 2 , 1 2 ,
 , 1 2 , 1 2
 .

2.

1 , 1 2 , 1 2 ,
 ,
 가, 1 1 2 , 1
 2 1 2
 .

3.

1 2 ,
 1 2 , ,
 .

4.

1 2 ,
 1 1 1 , 2 2
 , 1 2 가
 .

5.

1 2 ,
 1 2 1
 .

6.

5 ,
 1 , 1
 ,
 2 1 .

7.

5 ,

1 , 1
 ,

2 가 1
 .

8.

7 ,

2 ,

2 2 1
 .

9.

7 ,

2 ,

2 2 1
 .

10.

5 ,

1 , 1
 ,

2 1 , 2 2 1
 , 2 1
 .

11.

5 ,

1 2 , 1 2
 ,

1 2 .

12.

5 ,

1 2 , 1 2 ,

가 1 2

.

13.

5 ,

1 2 , 1 2 ,

2 1 , 2 1 , 1 2

.

14.

6 ,

1 1 , 1 ,

2 2 2 2 , 1 1 ,

.

15.

14 ,

1 2 1 2 ,

.

16.

1 2 ,

1 2 1 , 2

.

17.

16 ,

1 2 , 1 2 ,

1 2 .

18.

16 , , 가 $1.5\mu\text{m}$ 가 .

19.

18 , , 50%
가 .

20.

6 ,
1 가 1 , 2
가 1 .

21.

7 ,
1 가 2 1 가 , 2
가 2 1 .

22.

11 ,
1 가 1 가 , 2
가 1 .

23.

17 ,
1 가 1 2 가 ,
가 1 2 .

24.

1 2 ,
.

25.

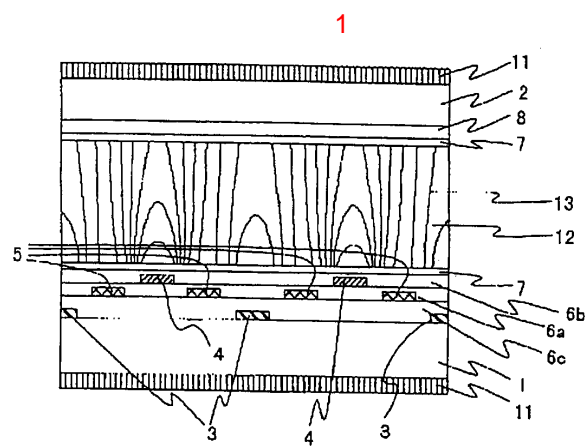
1 2 ,
 1 , 1 1 , 1
 1 1 1 , 2 2 ,
 1 1 , 2 2 ,
 .

26.

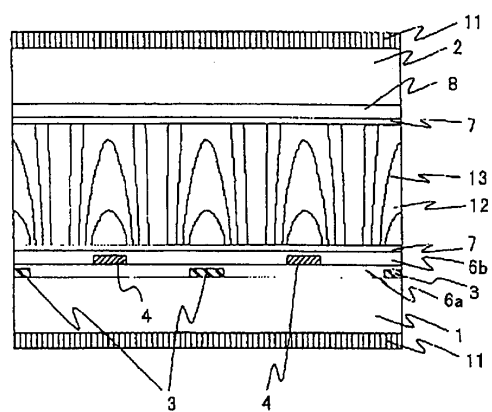
25 ,
 1 1 가 , 1 , 1 1
 2 2 , 2 2 가 ,
 .

27.

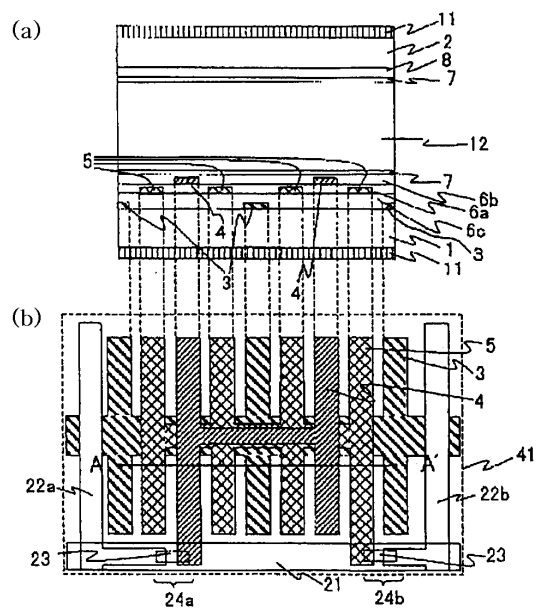
25 ,
 1 1 , 1 , 2 , 1 1
 2 가 .



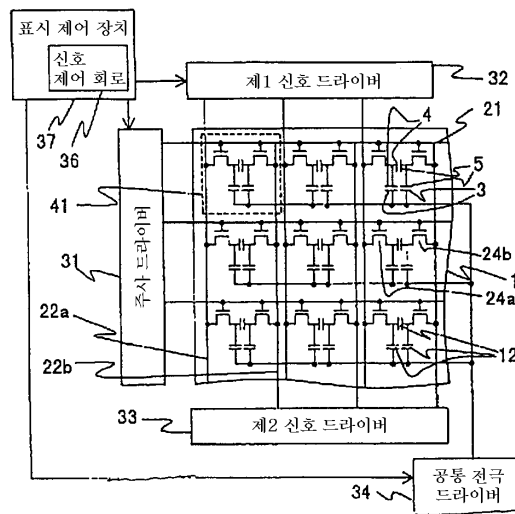
2



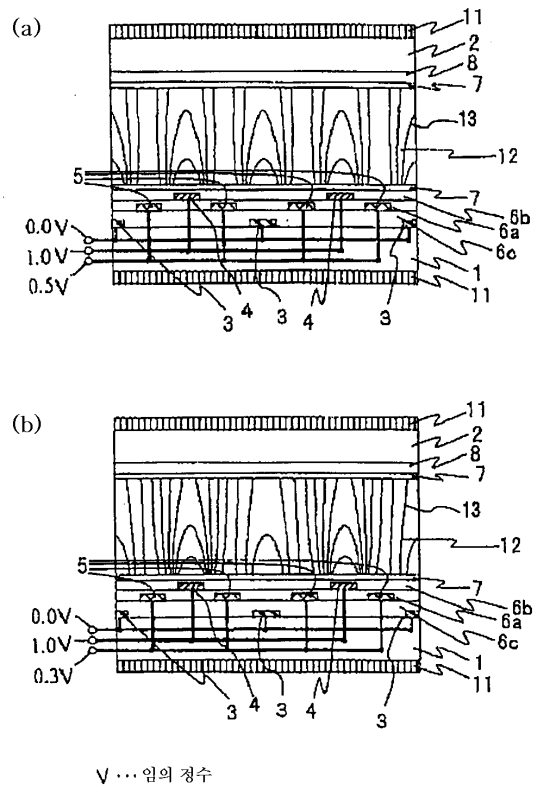
3



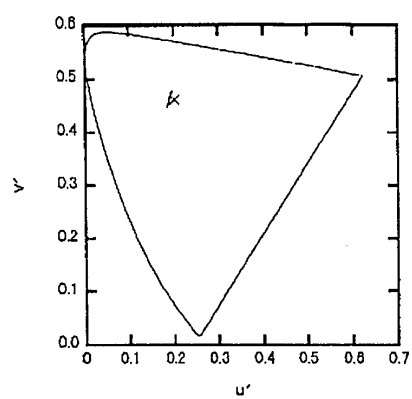
4



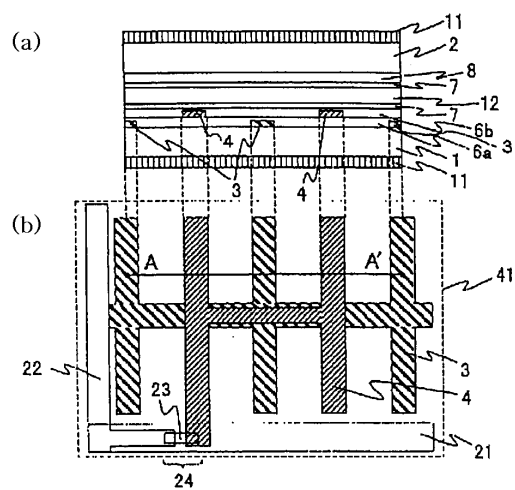
5



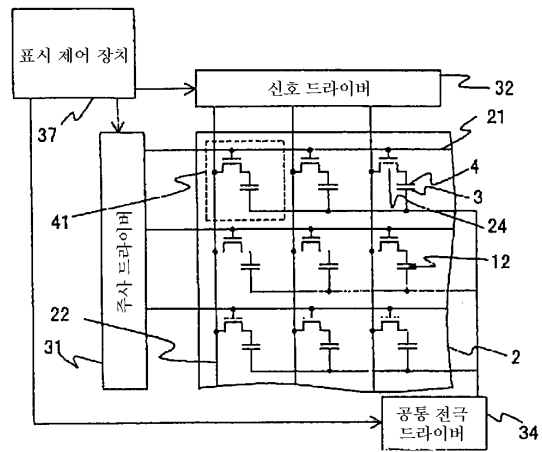
6



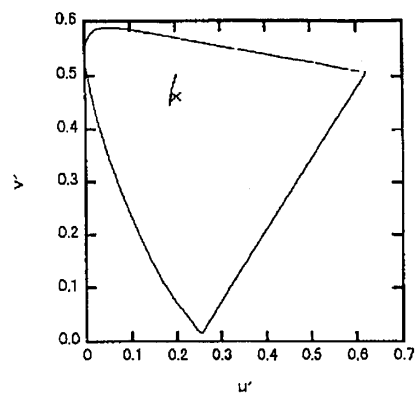
7



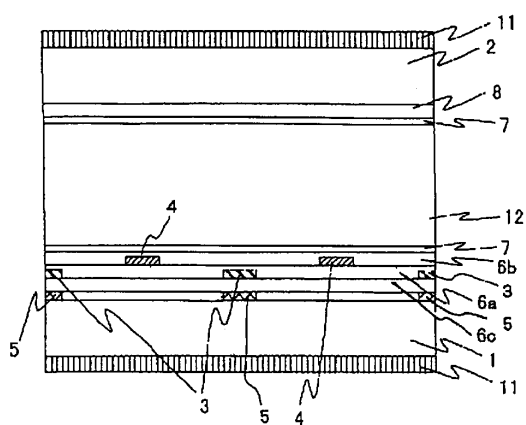
8



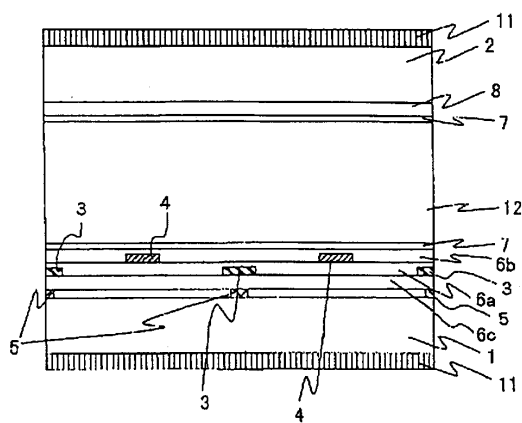
9



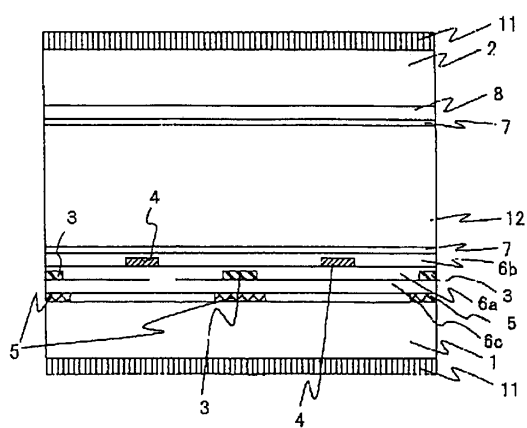
10



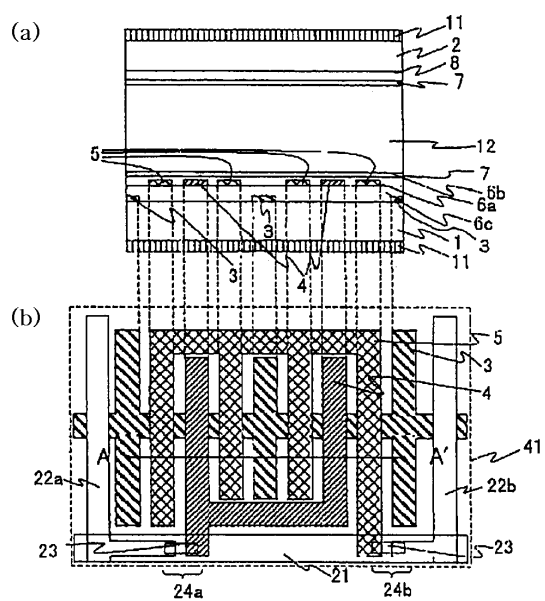
11



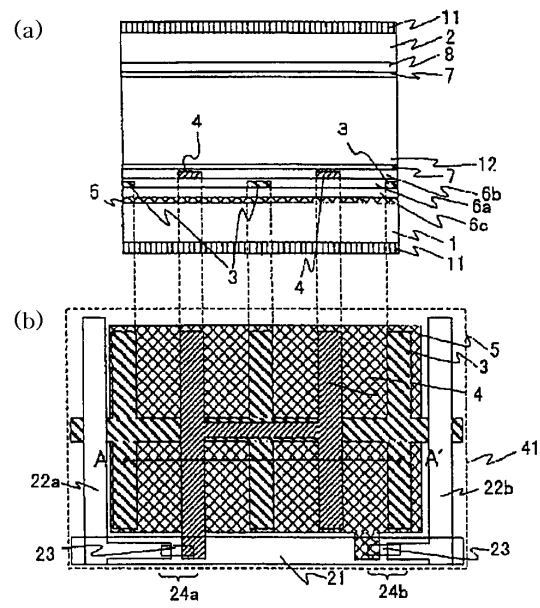
12



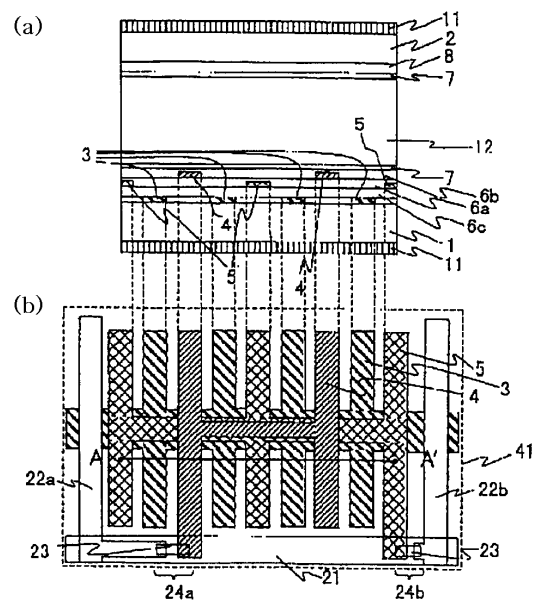
13



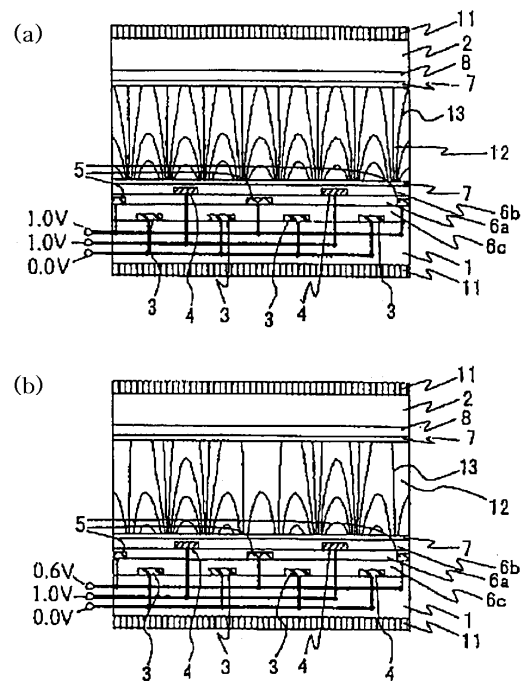
14



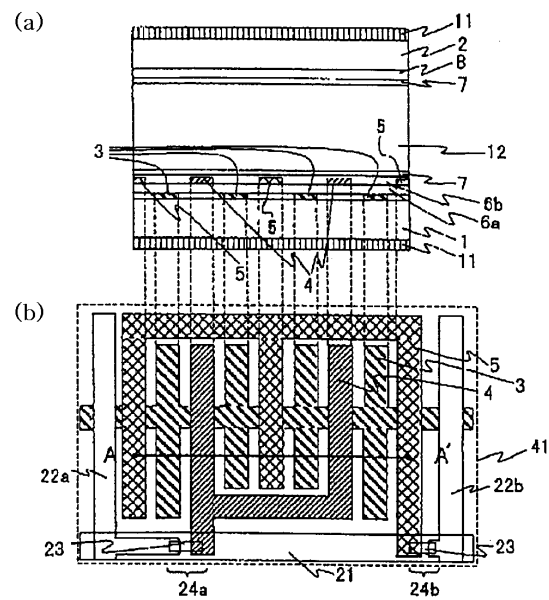
15



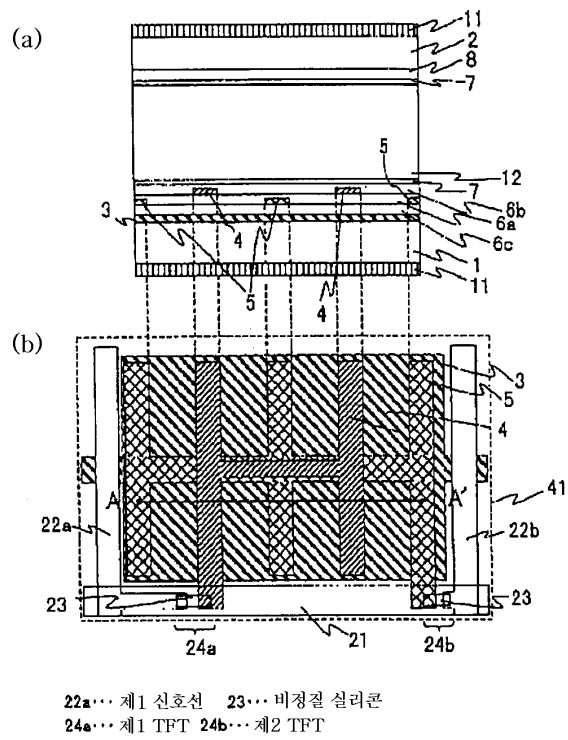
16



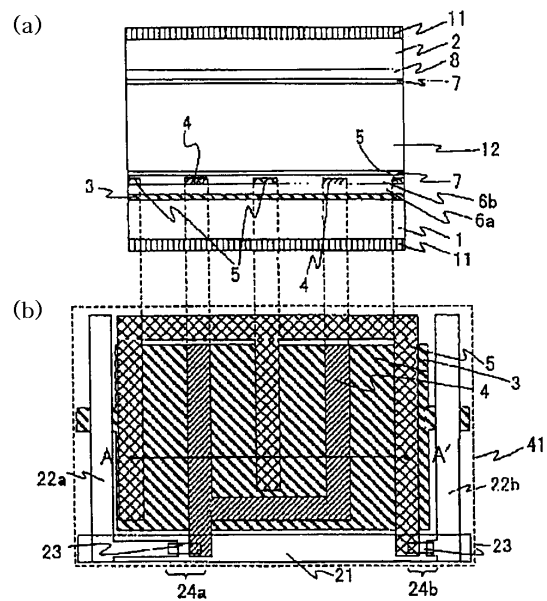
17



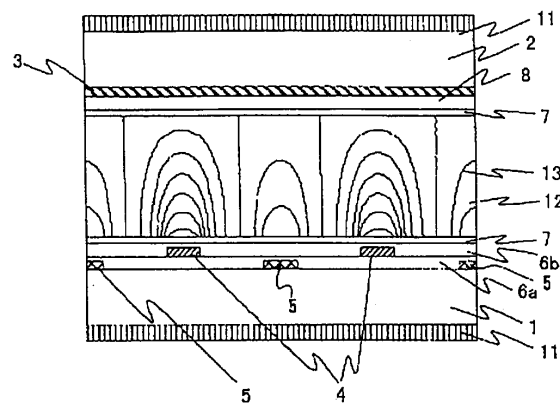
18



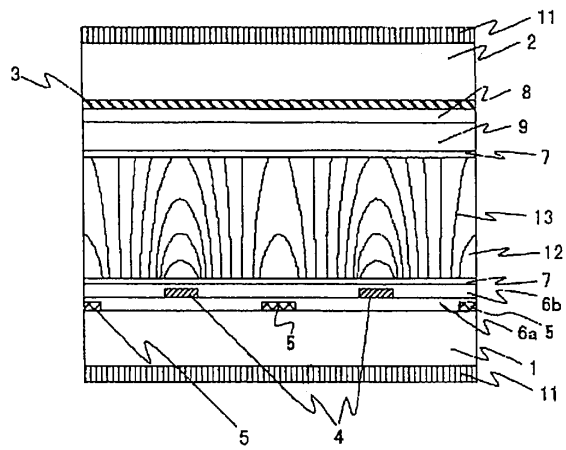
19



20

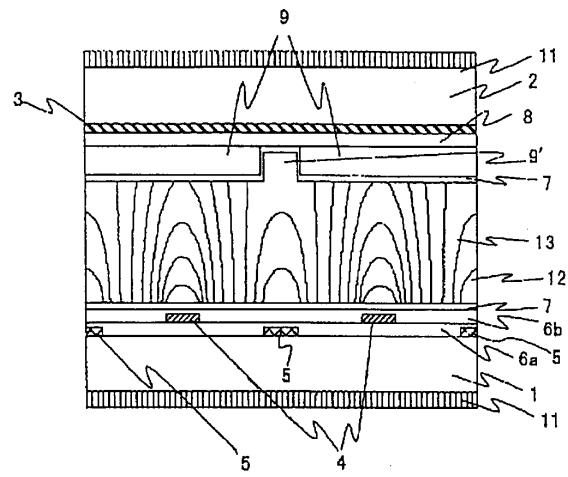


21



8... 유전체

22



9' ...오목부

专利名称(译)	液晶显示器		
公开(公告)号	KR1020020077008A	公开(公告)日	2002-10-11
申请号	KR1020010052828	申请日	2001-08-30
[标]申请(专利权)人(译)	日立HITACHI SEISAKUSHODBA		
申请(专利权)人(译)	株式会社日立制作所		
当前申请(专利权)人(译)	株式会社日立制作所		
[标]发明人	AOYAMA TETSUYA 아오야마데쓰야 KOMURA SHINICHI 고무라신이찌 UTSUMI YUKA 우쓰미유카		
发明人	아오야마데쓰야 고무라신이찌 우쓰미유카		
IPC分类号	G02F1/133 G02F1/1343		
CPC分类号	G02F1/134363		
代理人(译)	CHANG, SOO KIL		
优先权	2001094550 2001-03-29 JP		
其他公开文献	KR100404292B1		
外部链接	Espacenet		

摘要(译)

一种液晶显示装置，包括：基板；与基板相对设置的基板；夹在基板和基板之间的液晶层；以及用于形成显示部分的多个像素，第一像素电极和第二像素电极对应于像素，并且提供对应于第一像素电极和第二像素电极的公共电极。1 指数方面 像素电极，液晶显示器，信号驱动器，彩色滤光片，偏光片 - 1 -

