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(43)2002 - 0081133  
2002 10 26(21) 10 - 2002 - 0020855  
(22) 2002 04 17

(30) JP - P - 2001 - 00118083 2001 04 17 (JP)

(71) 가 가  
5 7 1(72)  
5 - 7 - 1 가 가  
5 - 7 - 1 가 가  
5 - 7 - 1 가 가  
5 - 7 - 1 가 가  
5 - 7 - 1 가 가

(74)

:

(54)

IPS (24),  
가 (26a 26b), (26), , 가  
(28), TFT(50)가 (11) . (26a 26b) 1  
(299a  
299b) (24) (26a 26b)

7

IPS, , , ,

1

2

3a TFT 가

3b 3a

4 1 (middle tone display)

5 2

6

7

8 7 A - A'

9 7 가

10a 7 1 2

10b 7 (ITO) 10a

11 12 A - A' , B - B' C - C' TFT

12 7 11 TFT

13

14

15 7

16 (ITO)

17

18a	18k				.
19			1		
	.				
20			1	2	
	.				
21a		2	1	2	.
21b	21a			(ITO)	.
22a		3	1	2	.
22b	22a			(ITO)	.
23a		4	1	2	.
23b	23a			(ITO)	.
24a		5	1	2	.
24b	24a			(ITO)	.
25a		6	1	2	.
25b	25a			(ITO)	.
26a		7	1	2	.
26b	26a			(ITO)	.
26c	26a		1	2	.
26d	26a		2		.
27a		8	1	2	.
27b	27a			(ITO)	.
28a		9	1	2	.
28b	28a			(ITO)	.
29a		10	1	2	.
29b	29a			(ITO)	.
29c	29a		1		.

29d	29a	2	.
30a	11	1	2
30b	30a	(ITO)	.
31a	12	1	2
31b	31a	(ITO)	.
32a	13	1	2
32b	32a	(ITO)	.
33a	14	1	2
33b	33a	(ITO)	.

11 : 12 :  
13 : 16, 22 :  
17 : 18 :  
19 : 20, 31 :  
23 : 1 24 :  
26 : 26a, 26b :  
28 : 30a :  
30b : 30c :  
35 : 50 : TFT

, , IPS(In - Plane Switching)

LCD" ) TFT (Thin Film Transistors) ( , " AM

AMLCD (" (director)" )

가 ,

가

TN (Twisted Nematic) 가 IPS (In - Plane Switchin)

가

IPS AMLCD , (view point) (viewing angle) " (rising)" TN

가 ,

가 ,

가 ,

가 ,

(stepper exposure)"

(shot)

가 가

(unevene

ss of division)

, IPS AMLCD 가

IPS 가 JP H07 - 036058 A ( , 1 )

1 IPS TFT , ( , ,

)

IPS 6,069,678 (JP H10 - 186407

2 ) 2 ,

가 ,

가 ,

LCD가 , 가 .

가 (37Z) , 가 , 1 (1Z 20Z)  
(21Z 36S) .

2 21Z . 3a TFT  
(26a) 1 (28) , (35)  
2 (24) (24) TFT , (29) (28)  
(29) (24) (30) (35) (30b)

3b , 3b  
, 21Z (28)( ) (29)  
TFT (holding) , TFT 가 , (21Z)  
, 4 , 5

( (28)) (35) (24) 가  
, , 6

2 ( 2 ) 1 ( 1 )

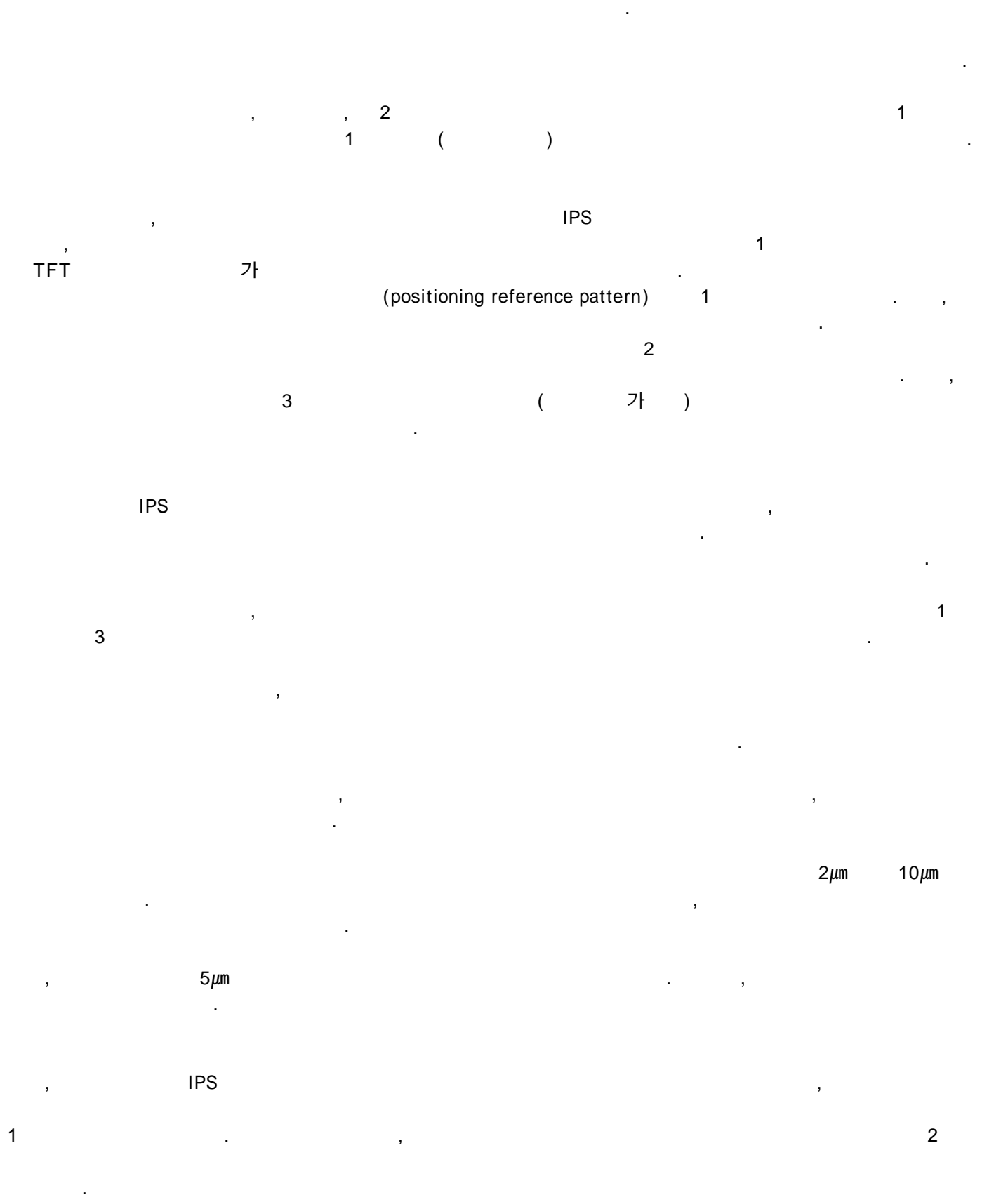
1 (alignment marker) , ,  
1 .

1 2 ,  
1 가 가 .  
2

1 , 1 , 2 (lateral direction) (l  
ongitudinal direction) . , 가 가 .

가 (laterally) 1

2 1 가 .  
가 ,



IPS  
2  
가  
가  
1  
(main surface)  
가  
가

(capacitive load)

IPS  
가  
TFT  
TFT  
가  
가



.

IPS 가 TFT ,  
가 가

.

2

IPS

가 IPS , TFT / ( )

IPS 가 2 $\mu$ m 10 $\mu$ m

IPS 가 5 $\mu$ m

IPS TFT ,

IPS

7 8 , IPS AMLCD(20) (11) , (12)  
(11) (12) (13) .  
(12) (16) , (16)  
(17) , (17) (18) (17)  
(18) (19) . ,  
가 (13) , (15)  
(16) . (18) (R), (G), (B)

(28) (11) (22) , (22) (30c)  
 1 , 1 1 (23) , 1  
 (23) (land shaped) , TFT(50) (30b) (30  
 a) (24) 2 , 2 1 (  
 25a) , 1 (25a) 2 2 (25b) 2 (2  
 5b) (26) (27) .

(24) (35)( ) (24) 1 (23)  
(35) 2 .  
, (11) (12) (13) 가  
(13) .

(31)                    (21)                    (11)                    (12)                    .                    (13)

가 7                    (27)                    (26)                    10                    30 °

(homogeneously)                    (rubbing)                    (11)                    (12)

(31 20)                    (13)                    .                    .

(13) 가 ( )가 (11) (12) (seal)( )가 (13) .

(17) , (24) , 가 (26) , (24) 가 .

7 , (11) , 가 (24) , 가 (26a, 26b) (26) , 가 (28) , TFT(50)가 .

TFT(50) (30c), (30a) (30b) (28) (24) (30c), (30a) (30b) (280, (24) (27) .

(26) (27) (comb configuration) 가 , (comb teeth) (24) (26) (27) . (26) (27) .

7 (26) (39a) (26b) .

10a 10b 7 (26) (27) .

11 (10) TFT 7 A - A' B - B' C - C' .

11 2 (25) 1 (25a) 2 (25b) 2 . 2 (25) , 1 2 2

2 2 .

11 7 , (26b 26a) 1 .

(24) (26a 26b) (299a 299b)가 (26a 26b) .

7 (29b) TFT(50) (20b) (27) 2 (35) .

IPS AMLCD(10) , (24) (26) (27) (16 22) 가 , (26) (27) (10) , (26) " " 10b . (27) ITO(Indium Tin Oxide) , .

2 AMLCD(10) , TFT(50) (30b) 1 (23)  
 2 (35) 10a 11 2 (25)

10a (35) 1 (26b) 1  
 (35a) , 1 (26a) 2  
 (35b) (24) 3 (35c)  
 2 (25) (27) 1 (35a) 2 (3

5b) 1, 2 3 "I"

(35) 1, 2 3 (35a, 35b 35c) 2  
 1 (23) . 17 , TFT(50) (30a)  
 (30c) 2 TFT (30b) (35)  
 (35) , (35)  
 , 가 , 가

, (35) 10 (27)  
 11 1 10a (35) 2  
 (26a 26) (23) 1

11 , TFT(50) 1 (26)  
 , 가 ,

7 8 (26) (24)  
 (28) (24) (24) 1  
 3 , L(COM) (26) L(D) L(COM)&  
 gt; L(D)가 , L(D) L(COM) . 7 (24) (28)  
 (step portions) , (26)  
 (24)

, (24) (17) (26)  
 (26) (26) (27) ,  
 (170 (24) (24) 14  
 , L(BM) (17) L(D)> L(BM) , L(BM) L(D)

(17) (24) , (24) (2  
 6) (bulging portions) ,

, (17) 6 $\mu$ m , (17)  
 6 $\mu$ m (17) 6 $\mu$ m , (24)  
 가 , 가

, (26) (10) 11  
(39a) (26) ITO 가 .

, (260 (10)  
, (26) 가 가 .

, AMLCD(10) (26) (24)  
, (26) (24) . , (24)  
(27) , . ,  
(26) (27) , ( )

(12) (17) (17) (24)  
, (24) , (24) (26) (12) (17)  
, , (27) (26) DC (26)

, (28) 1 (26a)  
(26a 26b)가 (39a) (26) , (26a  
26b) 가 ,

7 , (26) (24) (28)  
(24) (26) (28)  
(26) (24) , (24) (27)  
, (28)

, (26a 26b)가 (28) 1 ,  
(26a 26b) 가 가 ,  
(17) 가 .

15 15 , (28) (28)  
(17) , (28) (27)

AMLCD(10) (26) ITO ,  
(10) 가 , 가

ITO 100 / , ITO (26) 가  
(redundancy) 가 .

8 , 2 (25) (26) (24) 2  
(25) d d/ (24)  
(26) .

(17) , (24) 가 , (17) (17) , (10) . (17) , AMLCD(10) , (26) (27) 2 (25) . (26) (27) , (26) ( 27) , 가 . , AMLCD(10) , (24) (26) ITO (10) . , (26) , , 가 . 16 , (26) (27) 2 (25) ITO (31) 2 (25) (26) (27) 50 100nm . (27) (pin hole; 51) , (13) (26) (27) (51) (52) (13) (eluted). (52) (13) (elution) . , (13) , (13) (52) 가 , . IPS (52) . , (31) (27) (26) .

TN(Twisted Nematic)	STN(Super Twisted Nematic)
(26)	, ITO
(31)	(27)
6)	, ITO
	(10)
	(27)
	(2)

AMLCD(10) (26) , (24) (26) (24) 1.5 $\mu$ m .  
 (10) 2 (25) 1 2 $\mu$ m . , 2  
 (25) .  
 , 11 , 2 (25) 1 1  
 2 .

interface) , TFT ( , TFT , 1

가 1 .

[ 1]

					가
(1)	SiNx	1 - 3 $\mu$ m	6.4	CVD	
	SiNx /SiOx	1 $\mu$ m/0.5 $\mu$ m	6.4/4.0	CVD/	
		1 - 2 $\mu$ m	4.5	&	
	SiNx/	0.15 $\mu$ m/1 - 2 $\mu$ m	6.4/4.5	CVD/ &	
(2) /	SiNx /	0.15 $\mu$ m /1 - 2 $\mu$ m	6.4/3.3	CVD/	/SiNx
	SiNx/	0.15 $\mu$ m/1 - 2 $\mu$ m	6.4/ -	CVD/	/SiNx
(3)	BCB(	1 - 2 $\mu$ m	4.5	&	
		1 - 2 $\mu$ m	3.8	&	
		1 - 2 $\mu$ m	-	&	

1 , 2 (25) , SiNx( ) , (polysilazane film),

2 (25) , BCB( ) , (siloxane film)

, 2 1 2 , 1 2

, 1 , 2 (25) 0.1 1.0 $\mu$ m 0.15 $\mu$ m ,

, 1 .

가 (26) , (26) (10)

, (26a) (26b) (26a 26b) 가 ,

(10) TFT(50)가 , 17 (39b) (30a) (26b) (26) (27) (39a)

, (39a 39b) (26) (26a 26b)  
 , (26) .  
 , (10) 18a 18k .  
 , 2 (25) , 12 A - A'  
 , B - B' C - C' TFT ,  
 .  
 (299a 299b) (24)  
 (26a 26b) .  
 , 2 가 , ,  
 가  
 (299a 299b) .  
 가 , 가 (lateral direction)  
 1 , 가 가  
 , (299a 299b)가 , 1 2  
 .  
 (299a 299b) 가 ,  
 DC .  
 , ,  
 .  
 1  
 1 , 2 (25) .  
 18a etching) , (30c) (26a 26b) (dry  
 (22) 1  
 (26b) 18a 18k , (26a)가  
 .  
 (22) , ,  
 , ,  
 .



(26a 26b) (299a 299b)  $2\mu\text{m}$  가  $5\mu\text{m}$  (24) (26a 26b)  
 .  
 , (200a 299b)  $2\mu\text{m}$   $20\mu\text{m}$   
 .  
 18b (22) , (SiO<sub>2</sub>) (SiNx) 1 (23) (299a 29)  
 9b) . (30c) , (26a 26b)  
 , 18c , a - Si (32) n+a - Si (33) 1  
 (23) .  
 , 18d , (32 33)  
 TFT .  
 (32 33) , , (30c) ( (26a 26b) 1 (matching marker) .  
 가 (299a 299b)가 (30c) (26a 26b) , , 19 , (3  
 2 33) 가 가 (26b) (29) (W2) (299a 299b) . ,  
 가 (W1) , 가 가 (W1 (W  
 (29) 가 가 (29) (W2) (W1 (W  
 W2) 가 가 (28) 가 (29) 가 (29) (29)  
 3) (W4) (W3 W4) 가 ,  $2\mu\text{m}$  ,  $2\mu\text{m}$  ,  $10\mu\text{m}$   
 . 가  $5\mu\text{m}$  . 가  $2\mu\text{m}$  ,  $10\mu\text{m}$   
 가 .  $5\mu\text{m}$  , 가 , 가 , 20  $40\mu\text{m}$ 가  
 .  
 , (299a 299b)  $2\mu\text{m}$   $20\mu\text{m}$  ,  
 .  
 가 1 , ,  
 가 , 1  
 .

, 2 , TFT(50) (30c) (30b) , (24) , 18e (35) .  
 18e , 2 , TFT(50) (30a) (30b) , (24) (35) , 18d , (30c) (26a 26b) 1 .  
 , 20 가  
 가 , (26b) , 가  
 1 (299a 299b) (W1) 가 2 가  
 (30a) (30b) (W2) 가  
 (30a) (30b) 가  
 (W1 W2) 가  
 (28) (W3) (28) 가  
 (30a) (30b) (W4) 가  
 (W3 W4) .  
 , 18f , (30a) (30b)  
 n+ a - Si (33) a - Si (32) (30a) (30b)  
 TFT(50) .  
 , 18g , 2 (25) 1 (25a) .  
 , 18h , 2 (25) 2 (25b)  
 1 (25a) .  
 , 18i , (25b) , 1 (23)  
 (39a) (30b) (39b), (23)  
 (26b) .  
 2 (25) 2 (25b)  
 1 2 (39a 39b) 1 .  
 , 18j , 2 (25) 1 (25a) 1  
 (29b) (39a) (39b)  
 (SiO<sub>2</sub>) (SiNx) 1 (23)  
 (26a 26b) (39a) .  
 2 (25) 1 (25a) 1  
 2 (39a 39b) 1 2

, ITO (46) (39a 39b) (26) (27) ITO (46) 18k . ,

ITO (46) 2 (26) (24) ,

ITO 가 .

2 가 ,

가 ,

2

21a 21b 2 , 7 1 2  
7 ITO 10a 10b 1  
2 1 2 , 1  
(26a) , 1

1 (26) (299a 299b)가 (24)  
, 2 1 (299a) 5 $\mu$ m 5 $\mu$ m (299a) 21  
2

가 .

3

22a 22b 3 , 7 1 2  
7 ITO 10a 10b 1  
3 1 3 , 1  
(26a) , 1

1 (26) (299a 299b)가 (24)  
, 3 , 22a , (299a) (24)  
(299c) (299a) .

2 가

가 ,

4

23a 23b 4 1 2 ITO  
 21a 21b 2 4 (26a)  
 2 2  
 2 (299a) (26) (299a)가 4 23a  
 , (299a) (R), (G) (B) R  
 2 가  
 , 가  
 , (299a) B G , R, G B 가  
 , (299a)가  
 2  
 , 가  
 5  
 24a 4b 5 1 2 ITO  
 10a 10b 1 5 (26a)  
 1 1  
 1 24a 24b (26) (299a 299b)가 (24)  
 , 5 , (299a 299b)가 (35)  
 2 가  
 , 가  
 6  
 25a 25b 6 1 2 ITO  
 10a 10b 1 6  
 1  
 6 s; 300a 300b) 1 (floating film  
 가 (24)  
 1  
 2 가  
 , 가  
 7

26a 26b 7 , 1 2 ITO  
10a 10b 1 . 7  
1 .  
7 , 1 (300)  
(24) , 가  
1 .  
26a 1 ( 26c) 2  
( 26d) .  
2 가  
, , .  
가  
8  
27a 27b 8 , 1 2 ITO  
10a 10b 1 . 8  
1 .  
8 , 27a (26a) (301)  
가 , (24) (299a 299b)가 1 .  
(301) 2 . 8 , 5 $\mu$ m  
5 $\mu$ m .  
2 가  
, ,  
가 .  
9  
28a 28b 9 , 1 2 ITO  
27a 27b 8 . 9  
8 . 9 ,  
(26a) 8 , 8  
. , 8  
. ,  
8 , (301)가 (26a) (24) ,  
28a 9 (24) (301a 301b)가 .  
8 , , 2 $\mu$ m 5 $\mu$ m  
. ,  
2 가  
, ,  
가 ,  
. ,

10

29a 29b 10 , 1 2 ITO  
 27a 27b 8 10  
 8 (26a)

10 , (301c)가 (24) (39b) (26a) (26a)  
 , (301)가 (24) (26a) 8  
 29a 1 ( 29c) 2  
 ( 29d) , (301c)  
 (301c) 8 , (301c) 20 $\mu$ m  
 8 $\mu$ m

2 가  
 , (301c) ,  
 가

11

30a 30b 11 , 7 1 2  
 7 ITO 10a 10b 1 11  
 11 가 (26a) 1 11  
 1

1 (299a 299b)가 (26a) , 11 30a  
 가 (26b) (299d 299e) 2 $\mu$ m 20 $\mu$ m  
 가 ,  
 가

12

31a 31b 12 , 1 2 ITO  
 28a 28b 9 12  
 9 가 , 가 9  
 9

8, (301)가 (24) (26a) , 12  
 , 31a (24) (26b) (301d 301e)가  
 . 2 $\mu$ m 5 $\mu$ m .  
 2 가  
 , , 가  
 .

13  
 32a 32b 13 , 7 1 2  
 7 ITO 10a 10b 1 13 가  
 . 13 1  
 1 .

1 (24) (26a) 가 , 13  
 32a (28) (28a)가 (26b)  
 (301f)가 .  
 (28a) 5 $\mu$ m 5 $\mu$ m 가 5 $\mu$ m 5 $\mu$ m 가 . (28a)  
 (28) (26a 26b)가 ,  
 (301f) .  
 2 가  
 , (28a) (301f) ,  
 가 .

14  
 33a 33b 14 , 1 2 ITO  
 32a 32b 13 14 가 14  
 13 . 13  
 .

13 (28a)가 (28) (301f)가 (26b) ,  
 14 (28b)가 (28) . (28b) 5 $\mu$ m 5 $\mu$ m  
 .  
 2 가  
 , (28a) ,  
 가  
 . 가  
 , 가  
 , ( )  
 , 가  
 , 3

R ,  
 , G B  
 , R, G B 가 , 가  
 , 가 가 ,

,  
 ,

, 가  
 IPS

가  
 IPS , 가 가

(57)

1.

IPS ,

1 , 1  
 ;

1 1 1 ;

1  
 ;

1 ,  
 2 ;

2 2 ;

2 , 3  
 ;

1 2 ;

1 2 ,

1  
 ;



,  
 2 1  
 ,  
 1 2  
 2 IPS  
 .  
 2.  
 1 ,  
 ;  
 ;  
 IPS  
 .  
 3.  
 1 ,  
 IPS  
 .  
 4.  
 1 ,  
 ,  
 가 ,  
 IPS  
 .  
 5.  
 2 ,  
 IPS  
 .  
 6.  
 2 ,  
 2 $\mu$ m 10 $\mu$ m IPS  
 .

7.

2

,

5 $\mu$ m

IPS

8.

1

,

1

2

IPS

9.

8

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2

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1

(principal surface)

가

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,

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IPS

10.

1

,

IPS

.

11.

10 ,

IPS

12.

10 ,

IPS

13.

10 ,

1

IPS

14.

1 IPS

IPS

1

1Z	20Z	19Z	18Z	17Z	16Z
2Z	21Z	22Z	23Z	24Z	15Z
3Z	25Z	26Z	27Z	28Z	14Z
4Z	29Z	30Z	31Z	32Z	13Z
5Z	33Z	34Z	35Z	36Z	12Z
6Z	7Z	8Z	9Z	10Z	11Z

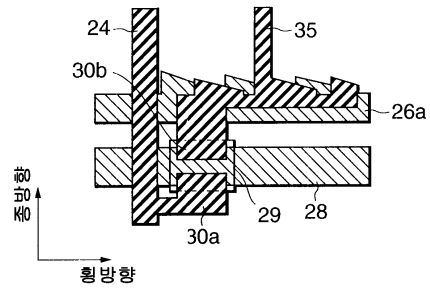
37Z

2

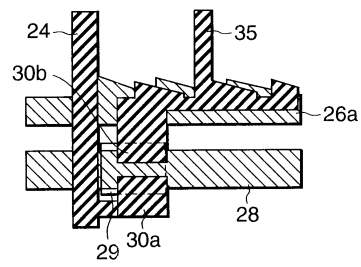
1Z	20Z	19Z	18Z	17Z	16Z
2Z	21Z	22Z	23Z	24Z	15Z
3Z	25Z	26Z	27Z	28Z	14Z
4Z	29Z	30Z	31Z	32Z	13Z
5Z	33Z	34Z	35Z	36Z	12Z
6Z	7Z	8Z	9Z	10Z	11Z

37Z

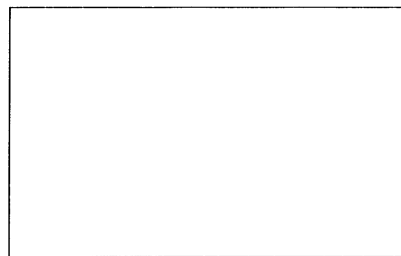
3a



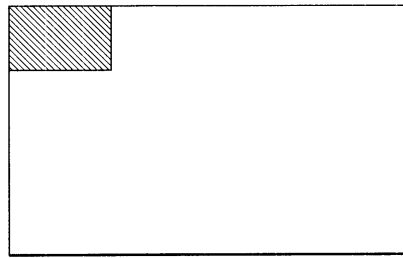
3b



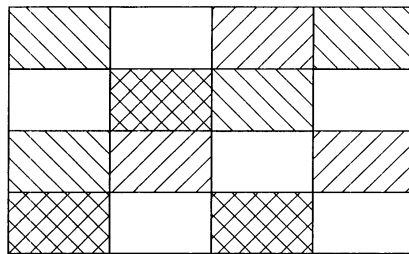
4



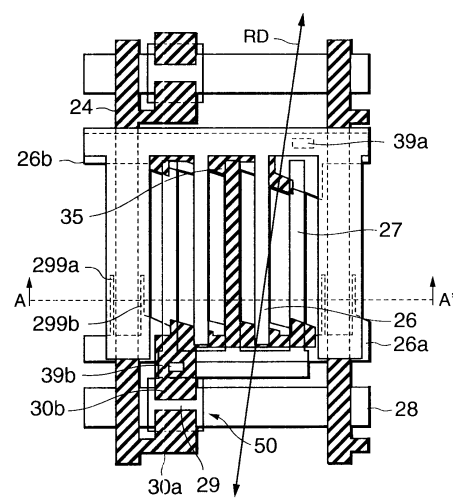
5



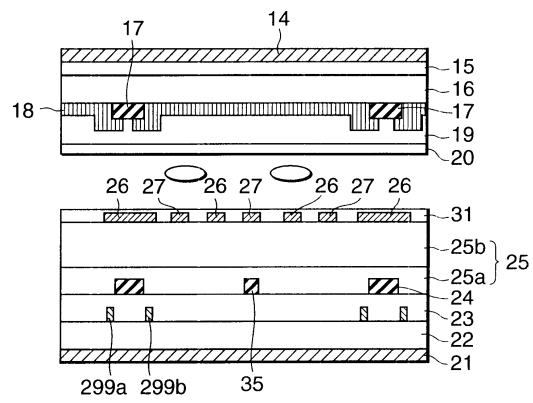
6



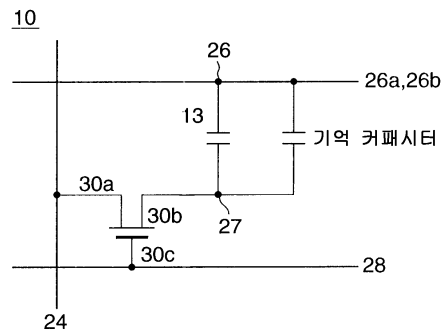
7



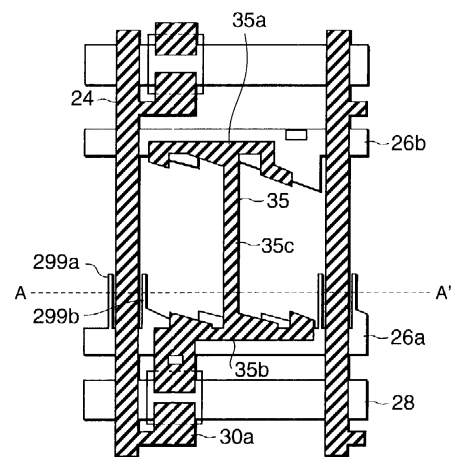
8



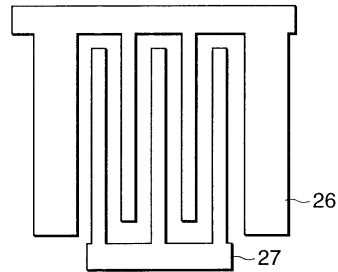
9



10a

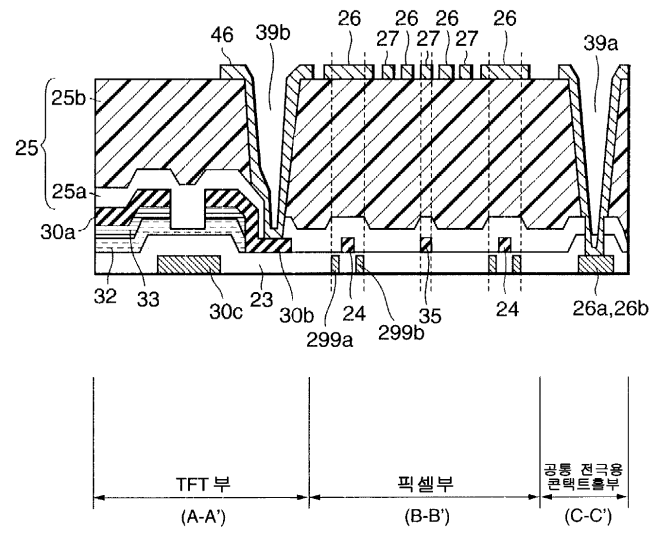


10b

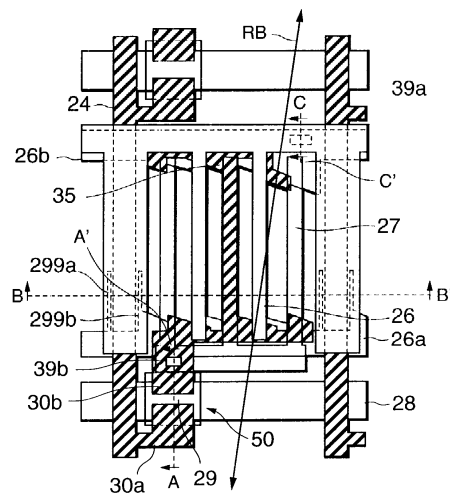




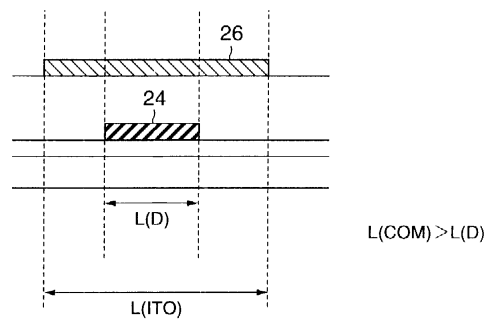
11



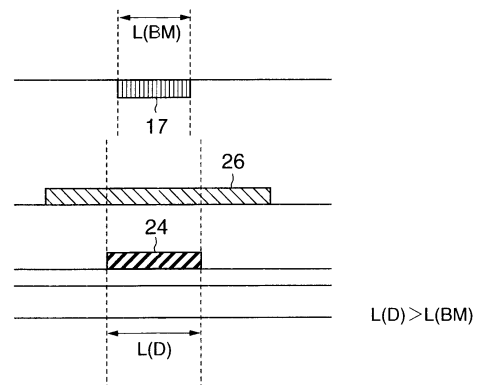
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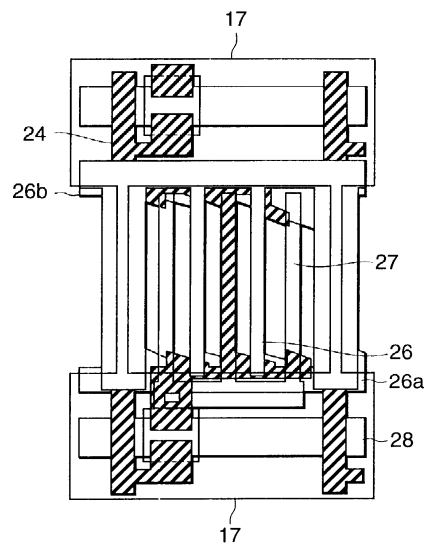
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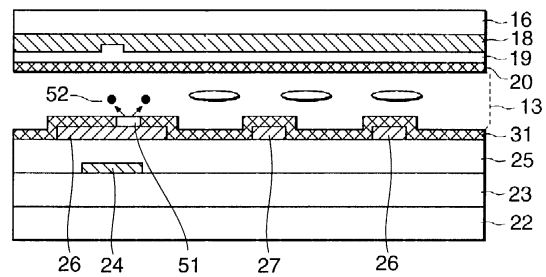
14



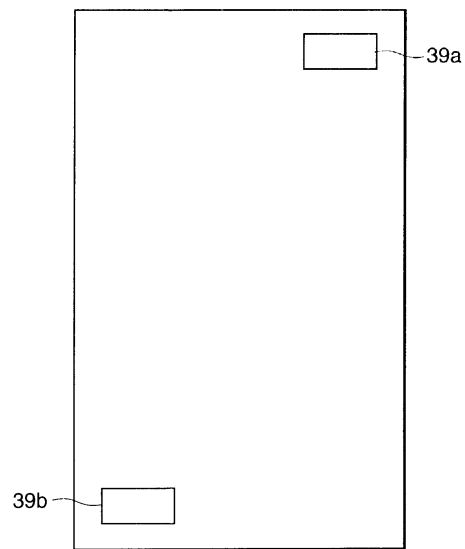
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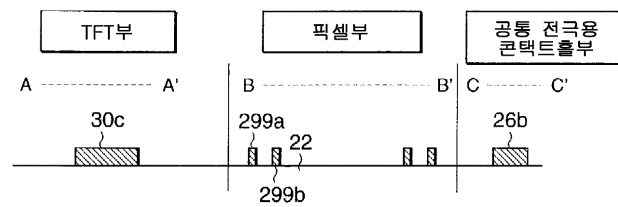
16



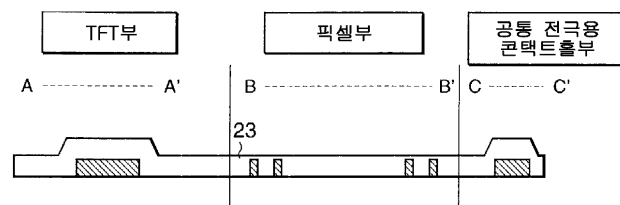
17



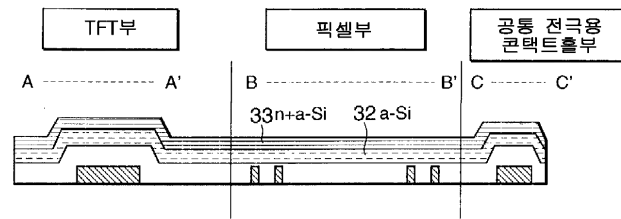
18a



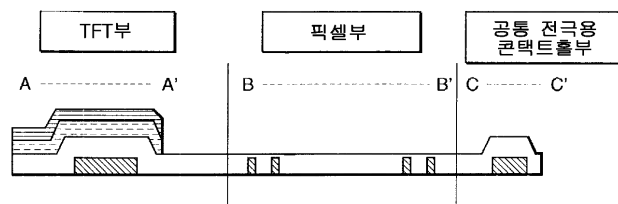
18b



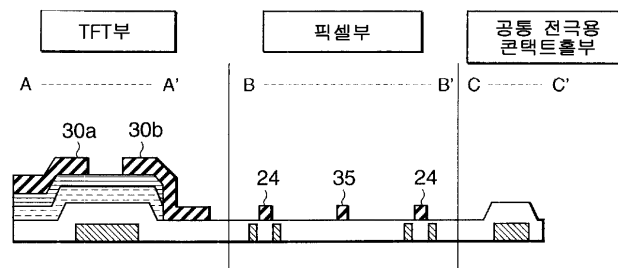
18c



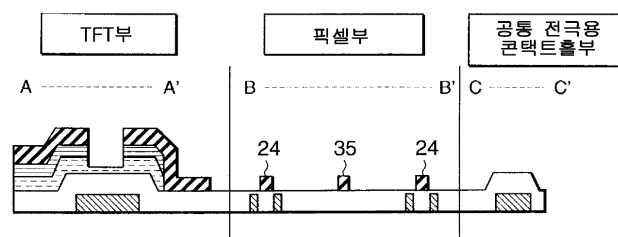
18d



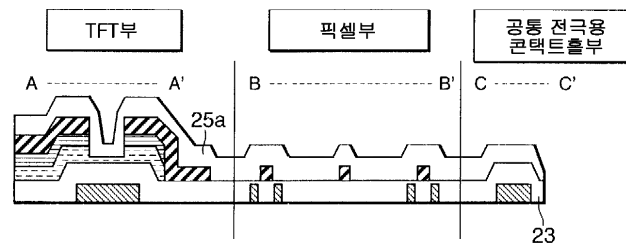
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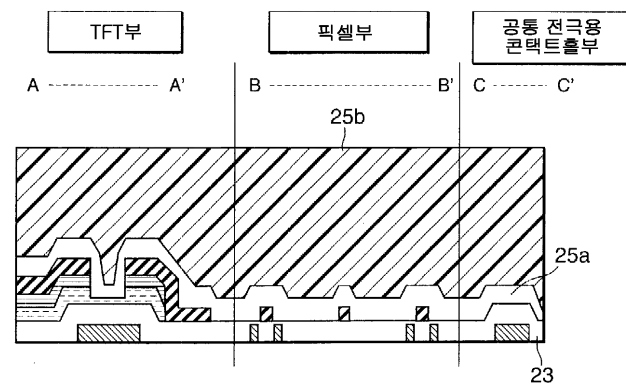
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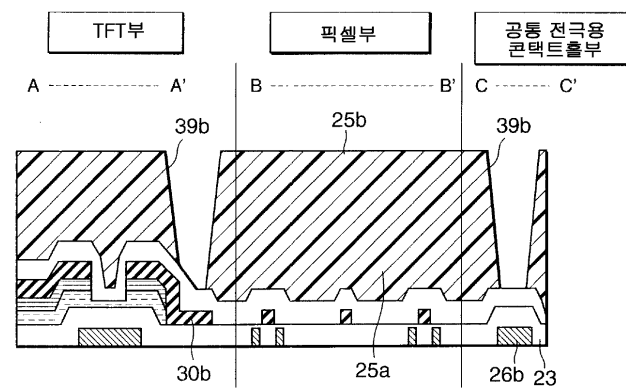
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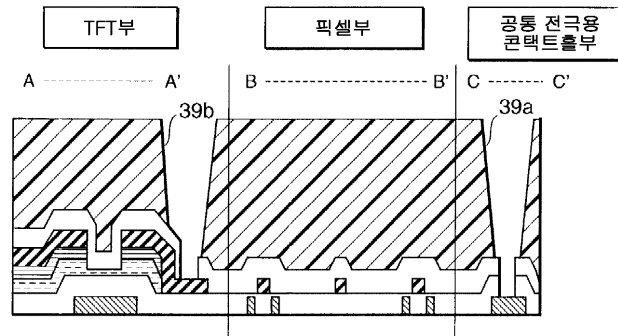
18h



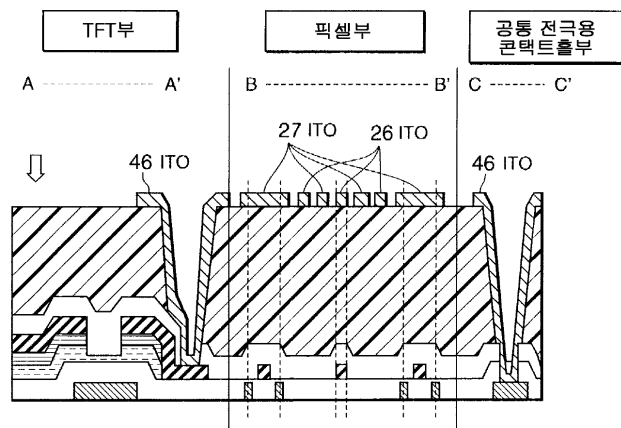
18i



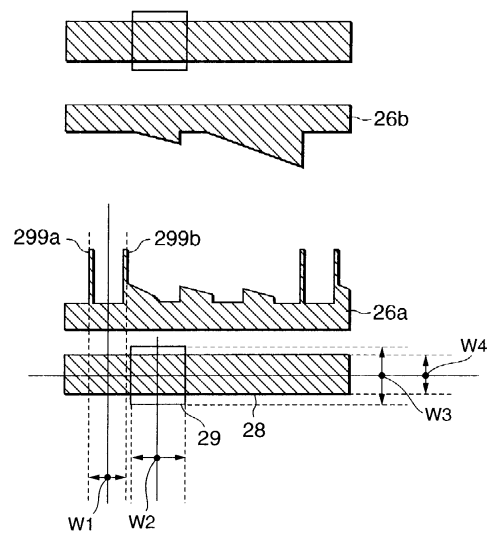
18j



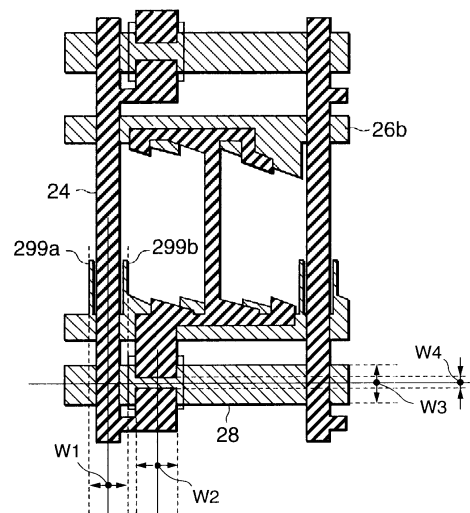
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19

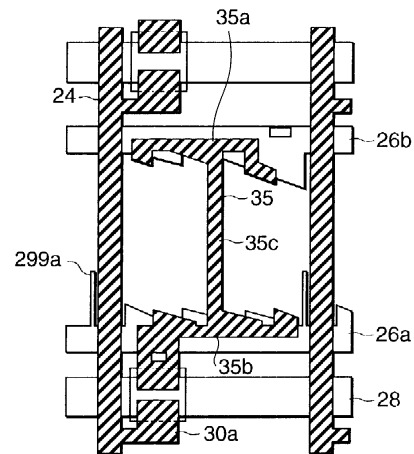


20

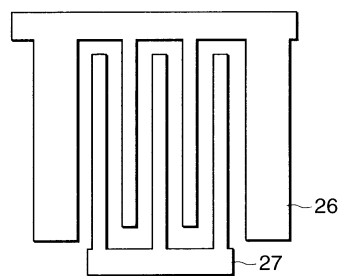




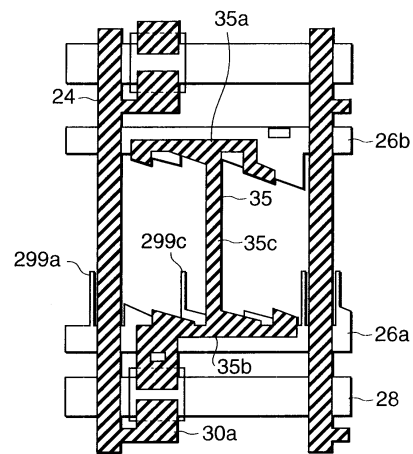
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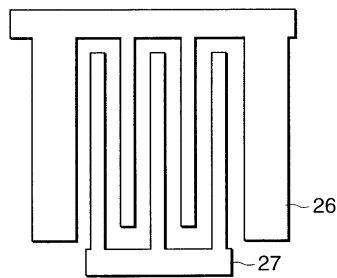
21b



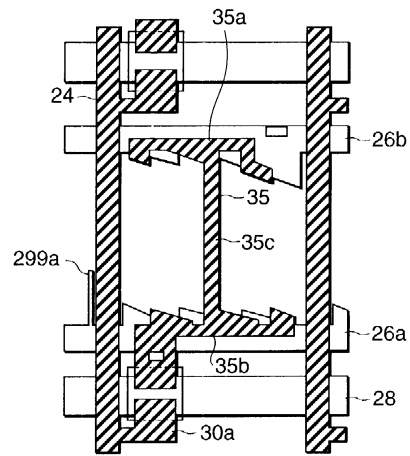
22a



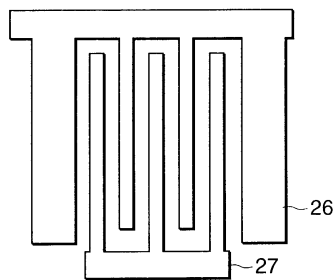
22b



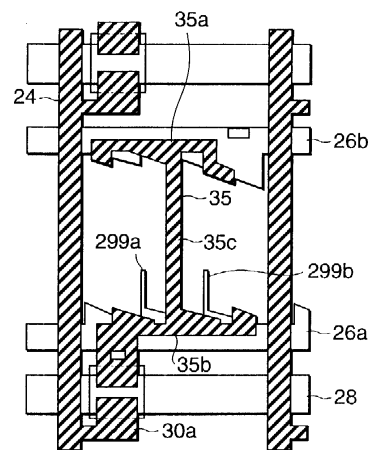
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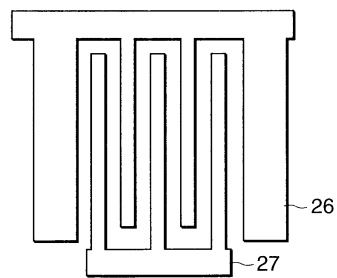
23b



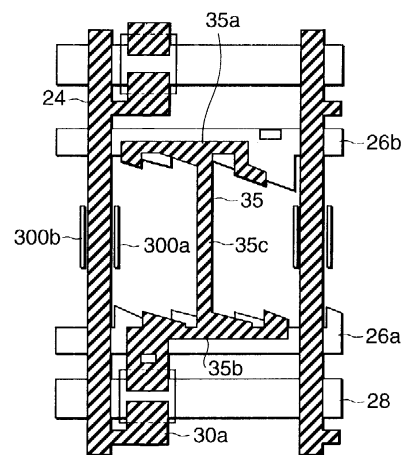
24a



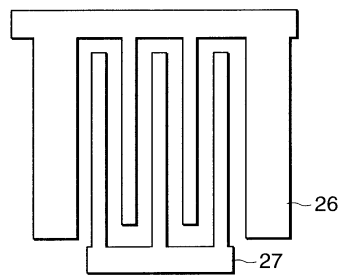
24b



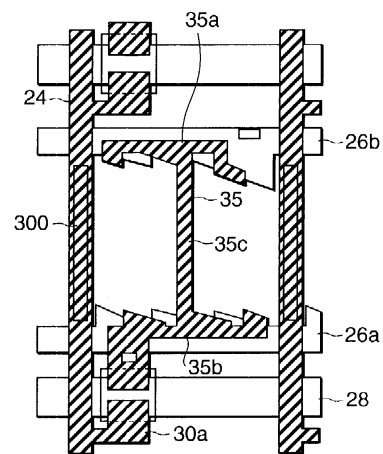
25a



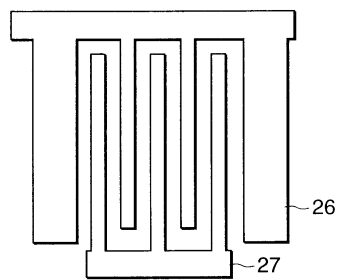
25b



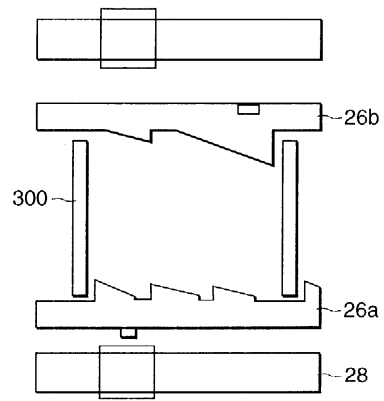
26a



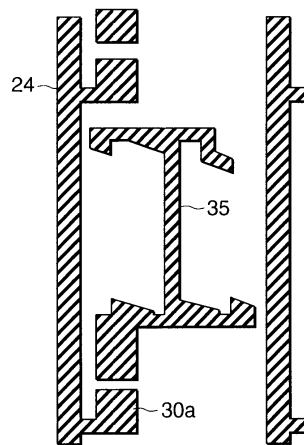
26b



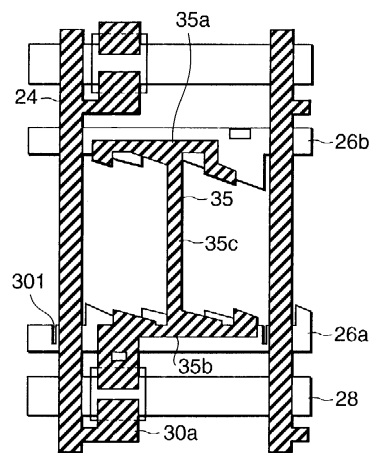
26c



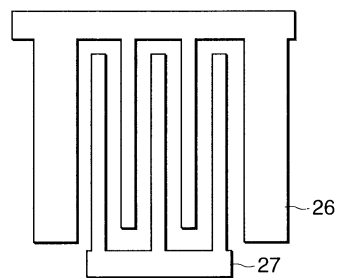
26d



27a

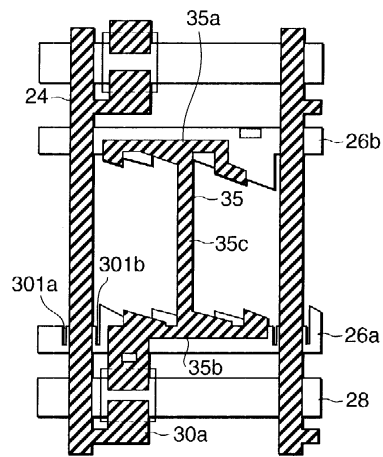


27b

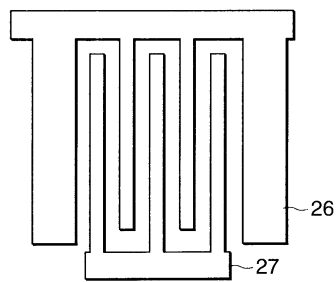




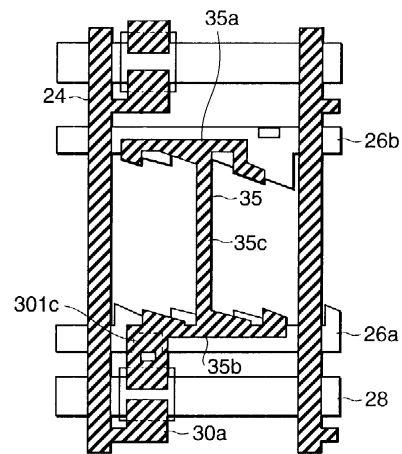
28a



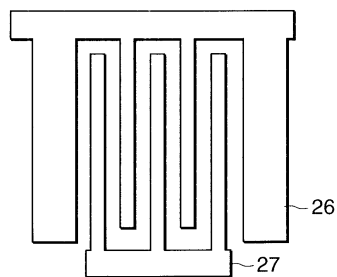
28b



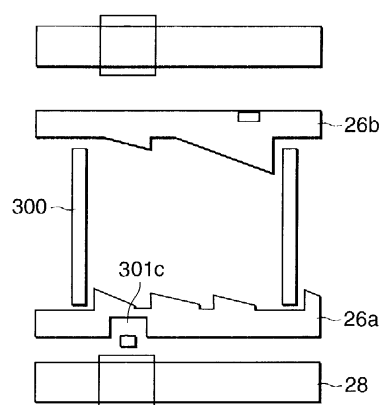
29a



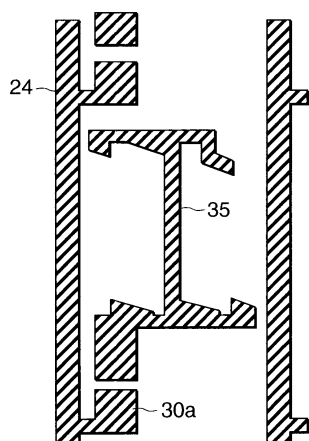
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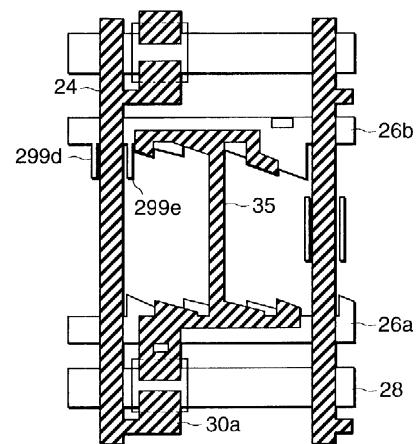
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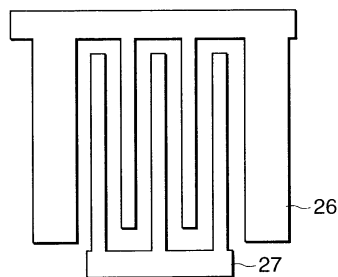
29d



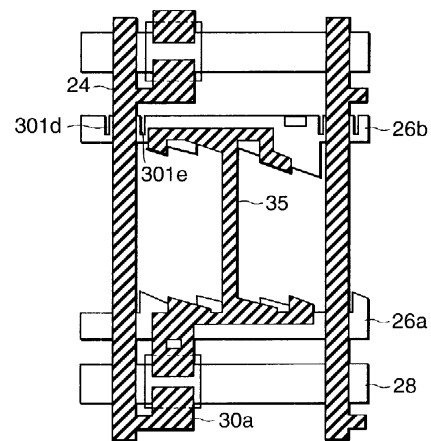
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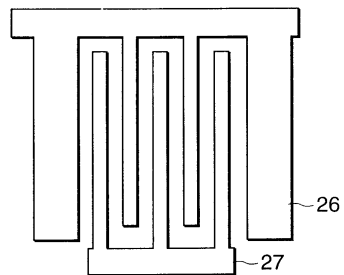
30b



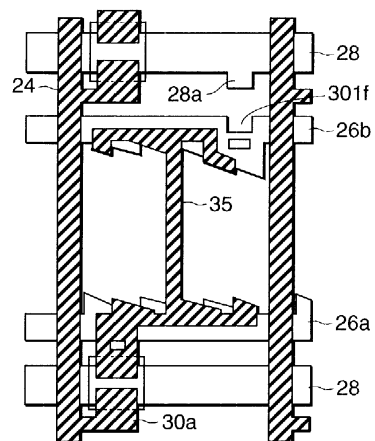
31a



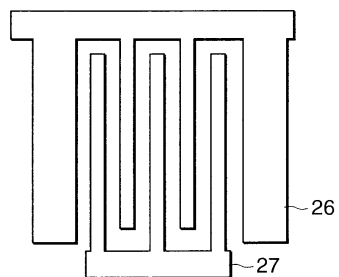
31b



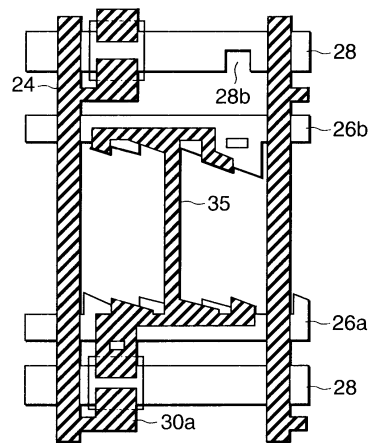
32a



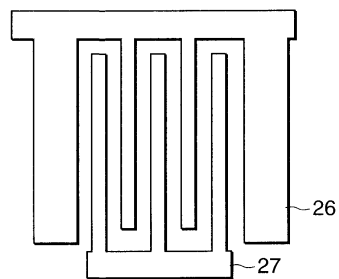
32b



33a



33b



专利名称(译)	有源矩阵型液晶显示装置及其制造方法		
公开(公告)号	<a href="#">KR1020020081133A</a>	公开(公告)日	2002-10-26
申请号	KR1020020020855	申请日	2002-04-17
[标]申请(专利权)人(译)	NEC液晶技术株式会社		
申请(专利权)人(译)	日元号技术可否让这个夏		
当前申请(专利权)人(译)	日元号技术可否让这个夏		
[标]发明人	MATSUMOTO KIMIKAZU 마츠모토키미카즈 HANNUKI TAKAHISA 한누키타카히사 KOIKE MASASHI 코이케마사시 NISHIDA SHINICHI 니시다신이치 ITAKURA KUNIMASA 이타쿠라쿠니마사		
发明人	마츠모토키미카즈 한누키타카히사 코이케마사시 니시다신이치 이타쿠라쿠니마사		
IPC分类号	G02F1/1368 G02F1/1343 G09F9/30 H01L21/336 G02F1/1335 H01L29/786 H01L21/027		
CPC分类号	G02F1/134363		
优先权	2001118083 2001-04-17 JP		
其他公开文献	KR100563699B1		
外部链接	<a href="#">Espacenet</a>		

# 摘要(译)

在IPS模式有源矩阵型液晶显示装置中，提供数据信号的数据线24，施加有参考电压的公共电极布线部分26a和26b，公共电极26，在有源元件基板11上设置电极，向其提供扫描信号的扫描线28和TFT 50。公共电极布线部分26a和26b使用第一金属层形成，平行于扫描线延伸，并且在其周边部分连接到公共电极电位。突出部分299a和299b形成在公共电极布线部分26a和26b中的至少一个上，以便位于稍后要形成的数据线24的两侧。显示装置的显示不均匀性降低并且孔径比得到改善。 - 1 - 7 指数方面 IPS，有源，矩阵，液晶，

