

, TFT , , ITO , , , , , , , ,

1 1 TFT ,

2 1 TFT (10) ,

3 1 TFT (10) ,

4 2 A-A 3 B-B ,

5 a d 1 TFT ,

6 e g 5 a d 1 TFT ,

7a 7c 4 ,

8d 8e 7a 7c 4 ,

9a 9c 4 ,

10 2 TFT (50) ,

11 10 TFT ,

12 a d 10 TFT ,

13 e f 12 a d 10 TFT ,

14 13 e f 10 TFT ,

15 , ITO 1 ,

16 ITO 가 ,

17a 17c , 가 ITO 200 ,

18 ITO ,

19 가 ITO , ITO

21a 21b

22a ,

22b 22a B - B

< >

10, 50 : TFT 11 :

12 : 13 : TFT

14 : 15 :

16 : 17 :

18, 18a : 19, 19R, 19G, 19B :

20 : 21 : H

22 : V 23 :

24 : 25 :

26 : 27 :

28 : 29 :

30 : 31R, 31G, 31B :

32 : 33, 54, 58 :

34, 56, 57 : 35, 37 :

36 : 38 :

39, 40 : 51 :

52 : 53 :

55 : 59 :

L :

(TFT) 가 (MIM) 가

22a , 9 - 152625 TFT
 22b 22a B - B

22a (1) (2a) (2b) (2a)
 2a (1) (2b) (2a) (2a)
 (2b) (2a) (2b) 가 (1) (1) (2a)
 (2a) (2b) (2a) (2b) (1) (1) (TFT; 3)가

TFT(3) (2a) TFT(3) (2b) TFT(3)
 (4a) (5) (1) (4a) (4b)

22b (6) (3a), (7a) (8a)
 - Si (8a) (8b) (8a) (n+a)
 (8b) (3b) (3c)
 (3b) 2 (2b) (3c) (1) (3c)
 (4a) (4b) (4a) (3c) ; 9) TFT
 (3), (2a), (2b) (4a) (4a)

(6), (3a) (3a) (7a) ()
 a - Si (8a) (3a) (a - Si) (8a) ()
 (8b) (8a) (8b) (3b) (3c) (n+a - Si)

(3b) (3c) (9) (5) (9)
 ITO , ITO(Indium - tin - oxide) (9)
 (1)
 (5) (9) ITO
 가 ITO

(9)

(cross - talk)

(9)

, ITO

(9)

(6) ITO

ITO

가

2520399

9 - 152625

ITO

180 250

, ITO

, ITO

, ITO

가 가

가

가

ITO

, ITO

가

가

TN(twisted nematic)

IPS(in - plane switching)

TN

가

가

() ITO

TFT

가

가

ITO

, ITO

, ITO

, ITO

, ITO

, ITO

, ITO

가 . 가

ITO

5

가

가 1500

가

ITO

가

가

(1)

1 TFT (10) (17) TFT (10) (17) (2 4).

12) (17) TFT (10) (11) (11) (12) (grid) (11) (12) , TFT(13) , TFT (13)

, TFT(13) , TFT(13) " CF on TFT" (Color Filter on Thin Film Transistor)

(11) (11) 가 (12) TFT (10) (14) , (14) (11) (12) (15) TFT (10) (12)

(11) , TFT (12) , TFT(13) TFT (13) (12) TFT (13) TFT (13) , TFT(13) 13) TFT(13)

2 1 TFT (10) . 3 1 TFT (10)
 . 4 2 A-A 3 B-B

2 4 (16) , ,
 TFT (10) (17) . TFT (10) (17) , (L;
 4)가 (16) .

TFT (10) , (18)가 . (18) (33; 4)
 (19; 2) . (19) , , (19R),
 (19G) (19B) .

TFT (10) (17) , (10 17)
 (20) . TFT (10)
 (H) (21), (14)
 , (V) (22), (15)
 (H) (21) (V) (22) (17) .

(22) (20) , TFT (10) (17) (L)
 (23)가 (23) , TFT (10) (17) (L)가
 (24) .

3 4 , TFT (10) , (25) , , (26)
 (25) (26) , (27) (27) (26)
 (25) , (28) (29) , (27)
 , (27) (27) .

(30) (27), (28), (29) . TFT(13)가

(30) , (18)가 TFT(13)
 (18a) H (21) V (37) . ,
 (18a) , (31R), (31B) (

)

(32) (31) (30) . (33) (3
 2) (33) , ITO .

TFT(13)가 , (29) (33)
 (29) (33) (32) (30)

(34) .

TFT(13) (25) (12) , TFT(13) (28) (11) ,
 (29) (34) (33) . (12) TFT(13)
 (25) 가 , (11) TFT(13) (28) 가 ,
 (33) .

(18) (31) (34) .

(10) (33) TFT (10) , (33) (35) , TFT (17) (37) . TFT (10) (17) (L) , TFT (10) (17) , (10, 17) (36) .

(17) (37) (17) (38) . (38), (33) (L)가 .

, TFT (10) (17) , , TFT (10) (17) , TFT (10) (39) , (17) (40) . (17) , TFT (10)

5 a d 6 e g 1 TFT
 . 5 a d 6 e g 2 A - A , 3 B - B
 2 C - C . 6 e g 5 a d

5 a d 6 e g , , 가 0.7mm , (alkalifree glass)
 (10a) . (10a) , Cr, Mo, Cr/Mo , Mo/Al
 100 300nm .
 (25), () V () .

, CVD(chemical vapor deposition) , (SiN_x)
 (26) 300 500nm . , (a - Si) 150 300nm
 , (P) (n⁺ a - Si) 30 50nm . ,
 (27) .

Cr, Mo, Cr/Mo , Mo/Al 100 400nm
 . (25), (29), ()
 H .

CVD , (SiN_x) (30) 100 200nm
 (5a) .

, (18) (18a)가
 (18) (18a) 1 3μm , 3
 (OD) 1 × 10¹⁰ / .

, (31R) , (31B) (31R) 1.0 1.5μm (5c) .
 () .

, 2.0 3.5μm (32)
 가 .

, (30) (34)
 (30) () , H (21) (30) V (34)
 .

, SF₆, CF₄, CHF₃ 가 가 , 가
 , 가 , ,
 (5d) .

nm, (32) (34) (29), ITO 10 120
 (33) H (21) V ()
 (33) H (21) (41),
 V () (6e).

TFT (10), 30 60nm (35),
 가 (20) TFT (10) ()
 6f).

TFT (10), (17) 가 0.7mm,
 80 150nm ITO 20 40 /
 (17) (36) (36),
 30 60nm (37) 가 .

, TFT (10) (17) (20) ()
 (L) (23) TFT (10) (17)
 , TFT (10) (23) UV (24)
 (17)
 , TFT (10) (17) , TFT (10) (17) , TFT
 (10) (39), (17)
 (40)

7a 7c 8d 8e 4
 . 7a 7c 8d 8e 3 B - B . 8d 8e 7a 7c

7a 7c 8d 8e (10a) (10a),
 (26) (29) (30) (29)
 (7a).

, (31B) (29) (30)
 (7b). (32) (32)
 (7c).

, (30) (29) (34)
 (8d).

, (32) (34) (29), ITO (33) ()
 8e). (29) (33) (34)

9a 9c 4 . 9a 9c

9a (26) (30) H (21) (10a) (26) (9a) (10a) H (21)가 CVD (21)가 (30) H (21) (34) (9b) H (21) (34) (30) ITO (41) (9c) (41) (34) H (21) (41) (33) ITO 00 170 /Ar) 1% 240 가 0.5% , TFT (10) 가 0.2% , TFT (10) 가 1 (O₂) , 200 (2) 10 10 2 () TFT (50) TFT (50) (11) (11) (12) TFT (13) (11) (12) (12) (51) (12) (51) (51) 가 (52) , 10 TFT (50) (52) TFT (50) (51) TFT (13) (53)가 (52) (52) (51) TFT (13) (53)가 11 10 TFT (11) (12) TFT (50) 11 (11) (54) (55) TFT(13) (25) (12) TFT(13) (29) (56) (54) (51) (57) (55) (28) (11) TFT(13) (12) (25) 가 (11) (28) 가 (54) 12 a d, 13 e f 14 10 TFT

12 a d, 13 e f 14 , 11 A - A , 11 B - B
 11 C - C , A - A TFT
 , B - B , C - C
 (ITO - COM) . 13 e f 12 a d
 , 14 13 e f .

12 a d, 13 e f 14 , , (10a) . (10a) ,
 Cr, Mo, Cr/Al , Mo/Al 100 300nm (10a) ,
 . (25), () , (51)
 () (12a) .

, CVD , (SiN_x) (26) 300 500nm
 , (a - Si) 150 300nm , ()
 P) (n⁺ a - Si) 30 50nm . ,
 (27) (12b) .

Cr, Mo, Cr/Al/Cr , Mo/Al/Mo 100 400nm
 . (28), (29),
 (58), (58) (11) ()가 ()
 12c) .

CVD , (SiN_x) (30) 100 200nm
 (12d) .
 , 2.0 3.5μm (59)
 가 (13e) .

(29) , (30) (56) (34) , (30)
 () (30) (26) (51) (57)
 () . , 1
 (13f) .

, (56 57) (59) , ITO .
 () , (54), (55)
 (59) . , (55) (11) (54) (58)
 (59) (14) .

, (54) (56) (28) , (55)
 (57) (51) 가 .

ITO , TFT (50) , 1 , T
 FT (50) 가 100 170 가 . , 가 ,
 (O₂/Ar) 1% 0.5% , 0.2%
 . , 200 240 .

TFT (L) (24) , 1 (18), (50) , (31) (17) TFT (10) (37) TFT (50) (20) 가 (17) (23) , (23) .

가 0.2% , TFT , 1 가 2 , ITO , TFT 가 100 170 가 (O₂/Ar) 1% , 200 240 0.5% , (O₂/Ar)

15 , ITO 1 , TFT (10) 가 ITO , 가 50 , 100 , 150 , 200 40% , 100 5%가 , 150 (zero) .

가 가 가 가 가

16 , ITO 가 , 16 , ITO (O₂/Ar)가 0% 2.5% , 가 . 0.5% 65 / , 1% 80 / 1.5 % 110 / , (3) 가 0.5% 8 / , 1% 23 / 1.5% 39 / 가 .

17a 17c , 가 ITO 200 , ITO (O₂/Ar)가 0.05% 0.8% , 17a 17c 가 .

18 ITO , ITO 2 (aqua regia) . 18 , 가 200 , 100 , 150 170 , ITO . ITO 가 가 , ITO 170 .

19 가 ITO , ITO , 19 , ITO , 2 , , 가 150 , , 가 240 , 가 250 , .

가 240 , ITO
200 240 , 가 200 230

20 1 , (1)
가 0 1000 , 20
가 1500 ,
가 3000 ,
가 1500 가 , 가 1000

(TEM)

가

21a 21b

21a , ITO , Cr 가 , 21b
가 , ITO , Cr
가 , ITO/Cr

1. 100 170

2. , 가 가 가 가 가 , ,

3. 가 1% ,
200 240

ITO , Cr Cr

Cr (F) Cr , Cr CF₄, CF₆ 가 Cr 가

Cr 가 , ITO/Cr

가

ITO 가 , 가 ITO
 ,가 가 가 , 가 ITO
 100 170 가 , 가
 1% , ITO 200 240

가 , ITO
 , ITO

TN IPS

FT TFT TFT T T
 TFT (a-Si)TFT TFT TFT
 MIM (p-Si)TFT

가 , 가
 100 170 , 가
 1% ,

ITO , ITO
 , ITO

가 가

(57)

1.

, ,
, ,
,
, 100 170 .

2.

1 , 가 가

3.

1 , 가 가

4.

1 , 가 ,가

5.

1 , .

6.

1 , , ITO
, .

7.

, ,
, ,
,
가 가 1% ;

8.

7 , 200 240 .

9.

7 , .
10.

7 , , ITO
, .
11.

, ,
, ,
, ,
, ,
12.

11 , .
13.

11 , , ITO
, .
14.

;

;

;

;

가

15.
14 , .

16.
14 , ITO , .

17.

;

;

;

;

,

;

,

가

,

,

가 1500

.

18.

17

,

.

19.

17

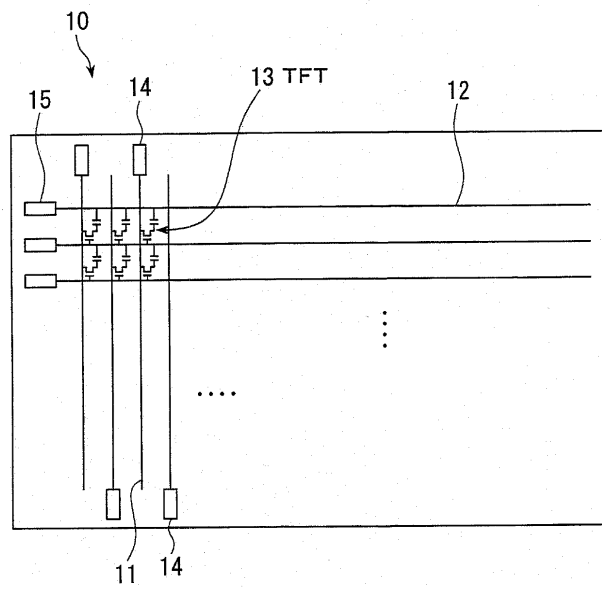
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ITO

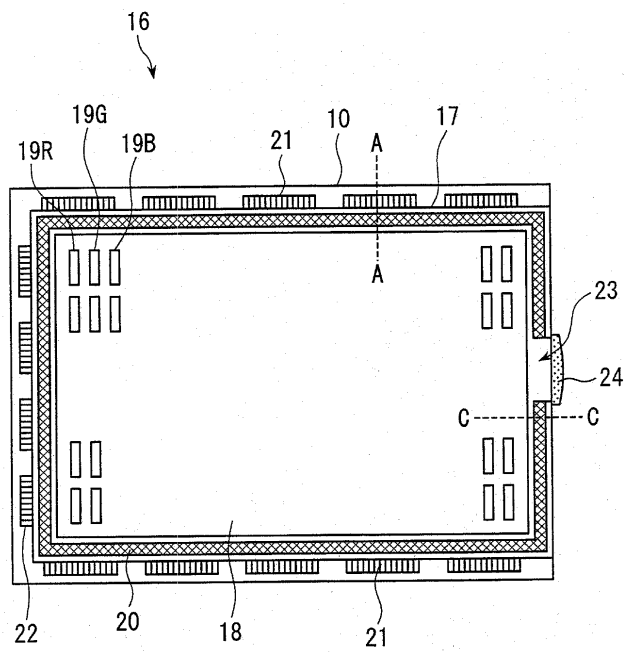
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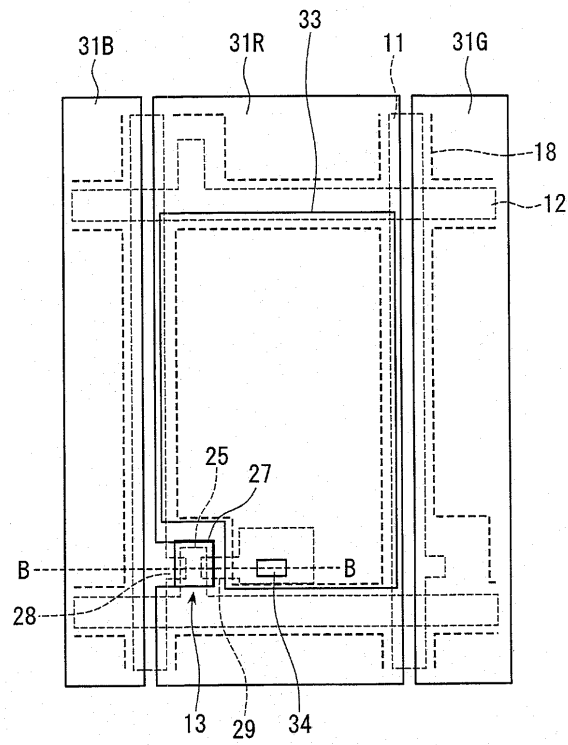
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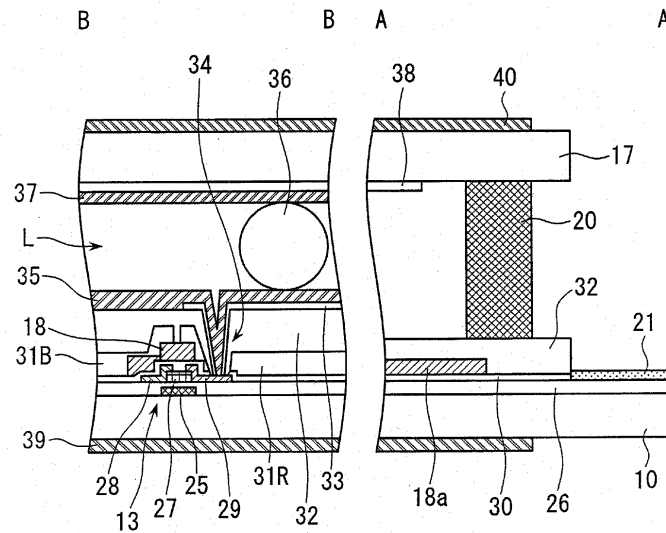
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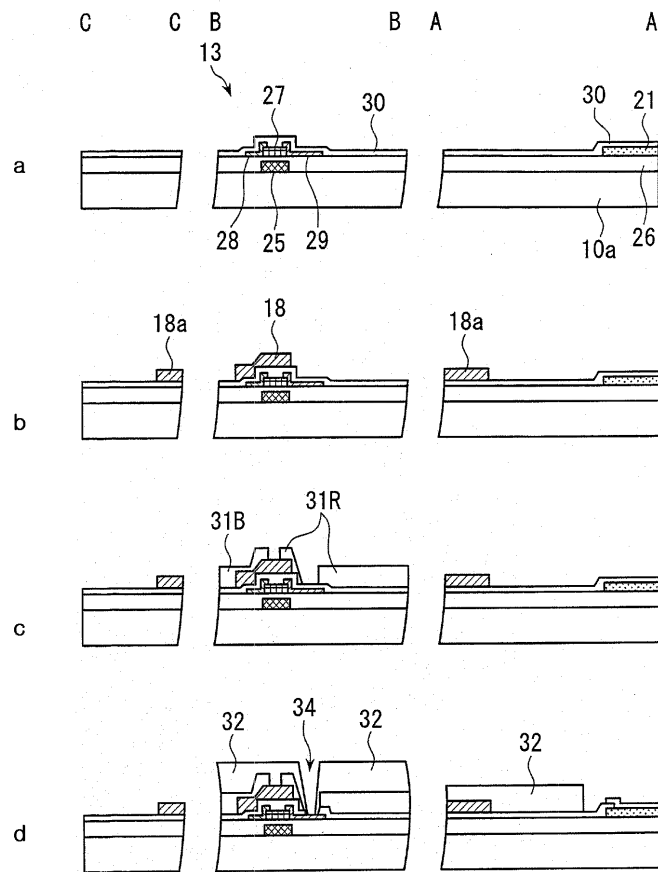
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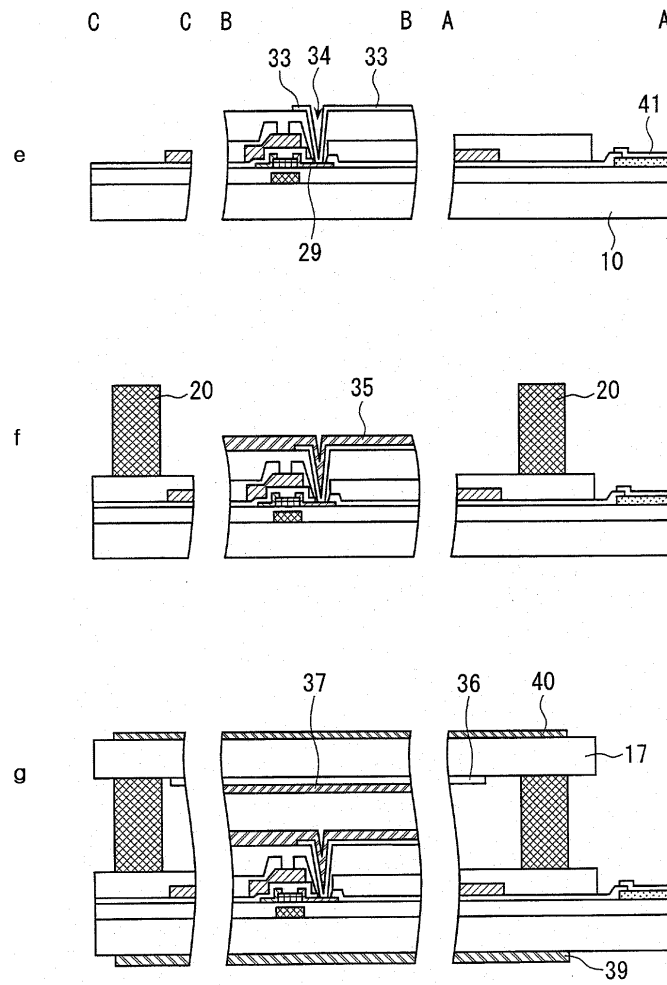
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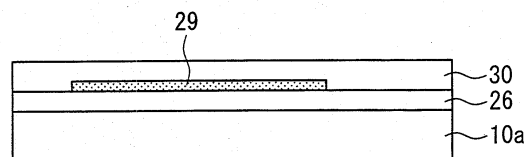
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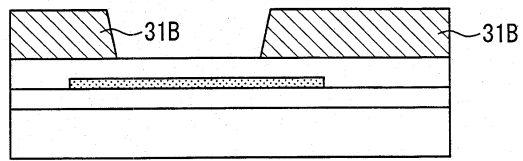
6



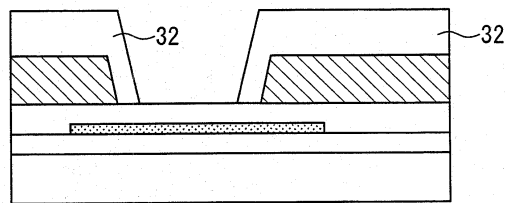
7a



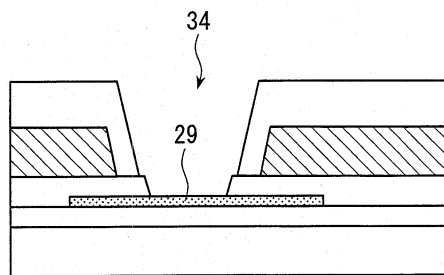
7b



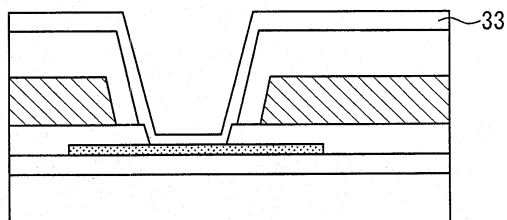
7c



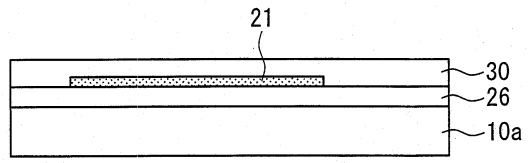
8d



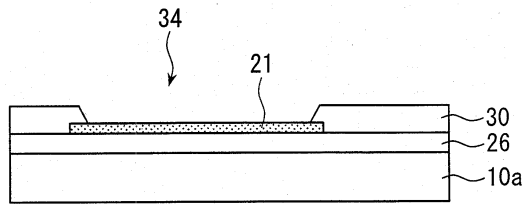
8e



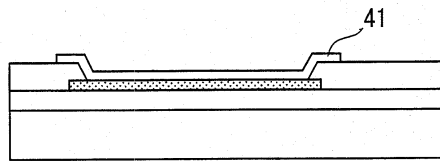
9a



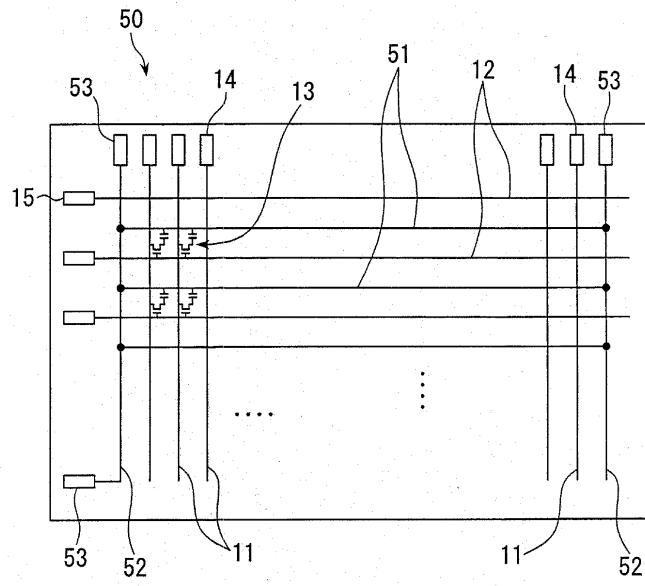
9b



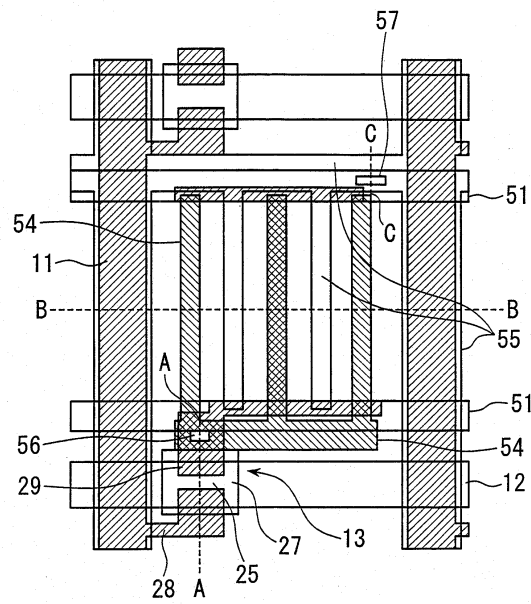
9c

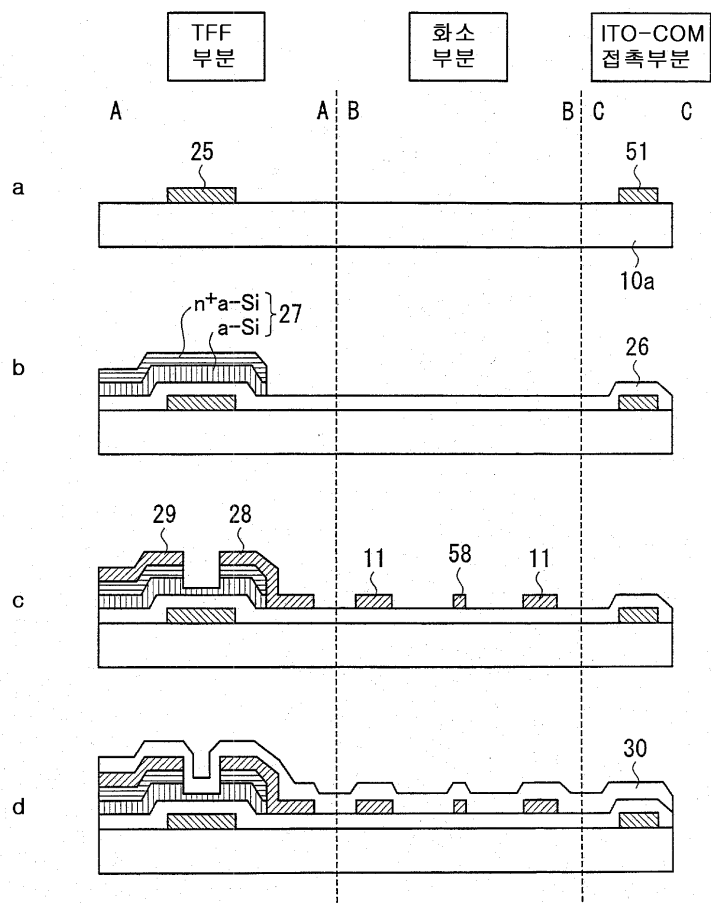


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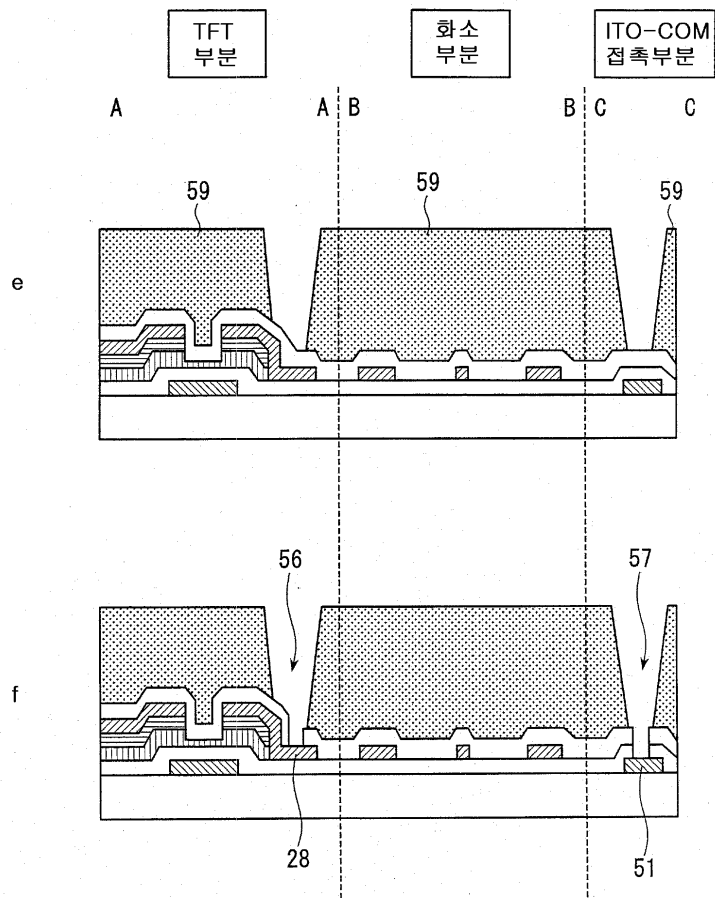


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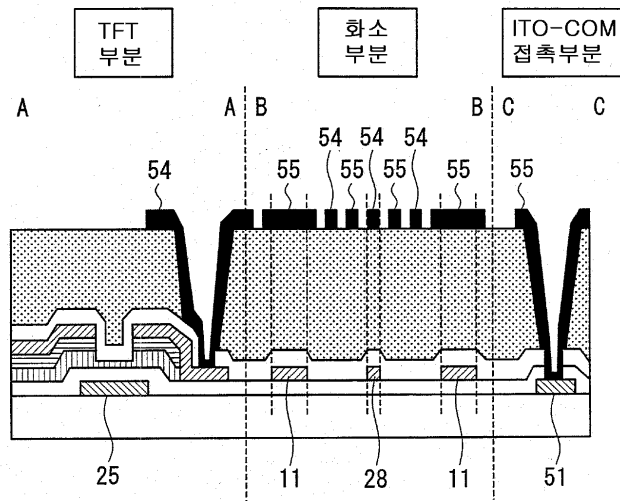




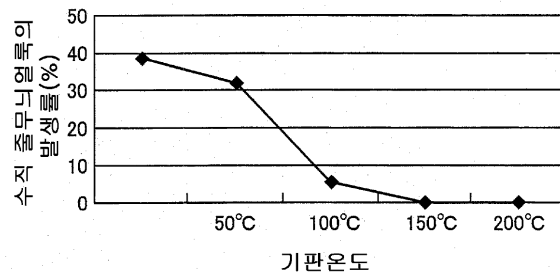
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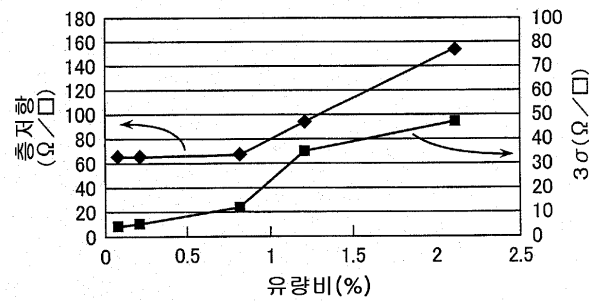
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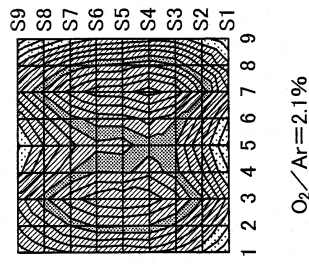
15



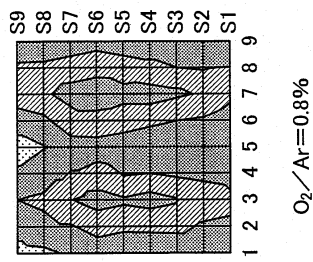
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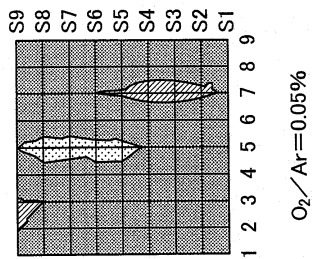
17a



17b



17c



18

| | | | | |
|----------|-------|-------|-------|-------|
| 기판온도 | 100°C | 150°C | 170°C | 200°C |
| ITO 예칭깊이 | ○ | ○ | ○ | × |

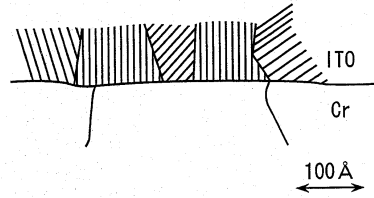
19

| | | | | | |
|-----------|-------|-------|-------|-------|-------|
| 어닐온도 | 150°C | 200°C | 230°C | 240°C | 250°C |
| ITO 선폭균일성 | × | ○ | ○ | ○ | ○ |
| 유기절연판의 도색 | ○ | ○ | ○ | △ | × |

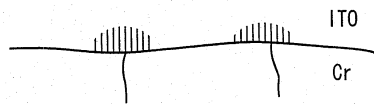
20

| | | | | |
|-----------|----|-----|-------|-----|
| 접촉저항의 차 | 0Ω | 1KΩ | 1.5KΩ | 3KΩ |
| 수직 줄무늬 얼룩 | ○ | ○ | △ | × |

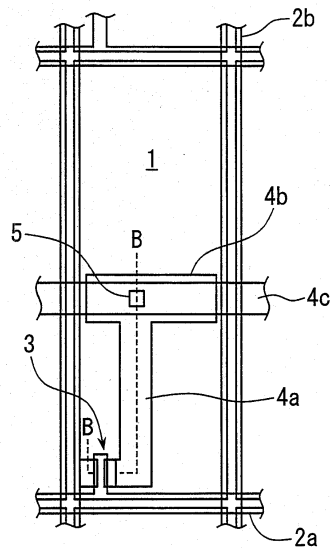
21a



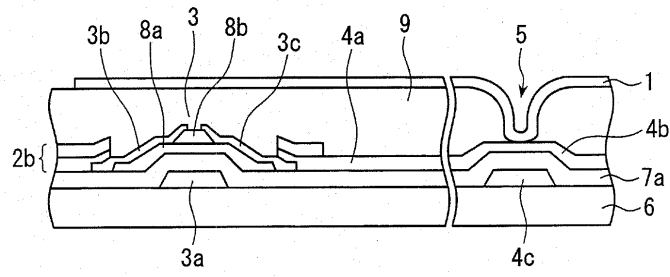
21b



22a



22b



| | | | |
|----------------|---|---------|------------|
| 专利名称(译) | 一种液晶显示装置，其在通过涂布形成的层间绝缘膜上具有透明导电膜 | | |
| 公开(公告)号 | KR1020020077162A | 公开(公告)日 | 2002-10-11 |
| 申请号 | KR1020020016837 | 申请日 | 2002-03-27 |
| [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 | KIMURA SHIGERU 기무라시게루 MAEDA AKITOSHI 마에다아키토시 DOI SATOSHI 도이사토시 ISHINO TAKAYUKI 이시노다카유키 | | |
| 发明人 | 기무라시게루 마에다아키토시 도이사토시 이시노다카유키 | | |
| IPC分类号 | G02F1/1333 G02F1/1368 G02F1/1343 G02F1/1362 G09F9/30 C23C14/08 G09F9/00 | | |
| CPC分类号 | G02F1/136227 G02F1/13439 | | |
| 代理人(译) | JO, EUI JE | | |
| 优先权 | 2001096263 2001-03-29 JP | | |
| 其他公开文献 | KR100455744B1 | | |
| 外部链接 | Espacenet | | |

摘要(译)

液晶显示器具有布置为盖子的总线，与总线连接的开关元件和连接到开关元件的像素电极，同时布置在形成有涂层的层间绝缘膜上。在制造液晶显示器时，当在其上涂有透明导电膜并形成的层间绝缘膜上形成时，基板温度控制在100~170℃。并且在透明导电膜中是未烧制状态，当在层间绝缘膜上形成氧气流量比小于1%并且在沉积之后进行退火时。并且，接触孔部分中的下层金属膜上的ITO膜具有晶体。此外，当蚀刻层间绝缘膜上的ITO膜时，不会产生蚀刻残留物。而且，可以均匀地降低下层金属膜和ITO膜之间的恒定电阻。它可以摆脱显示器的缺陷。液晶显示器， TFT基板，透明导电膜，ITO膜，氧气流量比，蚀刻残留物，恒定电阻，晶体，有机绝缘膜，串扰，等。

