

(19)
(12)

(KR)
(B1)

(51) 。 Int. Cl. ⁷
G02F 1/133

(45)
(11)
(24)

2003 04 10
10 - 0379287
2003 03 27

(21) 10 - 2000 - 0035052
(22) 2000 06 24

(65) 2001 - 0007523
(43) 2001 01 26

(30) JP - P - 1999 - 00180615 1999 06 25 (JP)
JP - P - 1999 - 00359411 1999 12 17 (JP)

(73) 가 가 5 7 1

(72) 가 가
5 7 1 가 가
5 7 1 가 가
5 7 1 가 가
5 7 1 가 가
가 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)

가 가 , ,
 , ,
 (57) , (74)가 (73) TFT(54)
 (71) (126) (71) (73) (126) 가 ,
 가 .

1

, , , , ,

1 1

2 1 A - A'

3 1 B - B'

4 1 C - C'

5 가 .

6 .

7 .

8 2

9 8 D - D'

10 8 E - E'

11 .

12

. 3

13

14 가 .

15 가 .

16 4

17 5 .

18 17 F - F' .

19 17 G - G' .

20 6 .

21 .

22 .

23 .

24 .

25 .

26 .

27 .

28 .

29 .

30 .

31 7 .

32 .

33 .

34 .

35 8 .

36 .

37 9 .

38 37 H - H' .

39 37 I - I' .

40 37 J - J'

41

42

43

44 10

45 44 K - K'

46 45 L - L'

47

()

11: 1

12: 2

20:

21:

54,141: TFT()

55:

56:

57:

58:

59,142,143,149,172,177:

61:

62:

64: ()

65: TFT

72:

73:

73:

74:

75:

76:

81:

91:

92:

93:

125:

126:

127: 가

135:

171:

175: 가

176:

E1:

가 (Twisted Nematic; "TN")
 가 「 」 (white) , 가 ,
 가 「 」 (black)
 가 , (中間調) , TN (stand up)

6 - 43461

47

(負)

(21)

(homeotropic,

)

2

()

(74)

(81)

2

black)

, TN

2

7 - 199190

()

7 - 230097

2

10 - 20323

10 - 301114

(負)

가

, 2

6 - 43461

TN

가

가

(Thin Film Transister; TFT)

(TFT)

()

가

TFT

,

(

)

가

가

,

가

가

TFT

가

TFT

, TFT

가

6 - 43461

, TFT

(47)

가

7 - 199190

가 ,
가 .

7 - 230097

가

가 ()

DC 가
DC 가

가 .

10 - 20323

7 - 230097

가 .

7 - 230097

10 - 20323

가 ,

가

()

10 - 301114

가

TFT
가 ,

11 - 180615

가

, 1

가 ,

(TFT)

2

가 .

11 - 180615

가

가 ,

()

		1	
가	가		
	가		
		가	가
	2	1	
	3	1	가
	4	3	
	5	1 4	
	6	5	
	7	5	
		가	
가	8	1	
	9	8	
	4 1	(波長板)	4 1
	10	1	4
1		4 1	
	11	1	
	TFT		
	12	1	
	TFT		
	13	11 12	
TFT			
	14	13	TFT

	15	3				가 (窓)
	16	3				가
	17	1				
	18	17				
	19	5				
(正)	20	1	TN			가
	21	20				(自發)
	22	20				(非自發)
	23	1				가
(負)	24	1	()	VA		가
3	25	1	3	1		
2	26	1	3	2		
	27	25				
1	28	1	3	2		
2	29	1	3	1		

30 , 1 3 , 2 , , 3 .

31 , 1 3 , 25 30 , 가 .

32 , 27 , 가 , 가, 1.1 1. 4 .

33 , 32 , 가, 1.2 1.4 .

34 , 33 , 가, 1.3 .

35 , 27 , 가, 20 μ m .

36 , 27 , 가, 40 μ m .

37 , 27 , 가, 20 40 μ m .

38 , 11 12 , 가 , .

39 , 7 가 , 가 가 , 가 가 , .

40 , 7 , 가 , 1 , , 가 , 가 , 가 , 가 .

41 , 1

42 , 41

가

42 가 1

가

가

43 가 1

가

가

1

1 , 1 () , 2
1 A - A' , 3 1 B - B' , 4 1
C - C' , 5 가 , 6 7

(55) , 1 5 , 가 , 1
가 , 1 (11) , (56)

TFT(54), (71), (73) . TFT(54) 가
(73) 가 , () (amorphous silicon)
(127) (72) (62), (61) (71)
. TFT(54) (65) (61, 63) (126), 가
(72) (71) 가 (65)

(126), 가 (127) (61, 65) ,
 가 . (71) (73) , ITO(Indium Tin Oxide)
 가 . (73) TFT(54) (57) (73) TFT(54)
 가 . (55), (57), (58), (72)

2 (12) (81) , 1 (11)
 . (11, 12) (20) . TFT(54) ,
 5 , 가 .

, 5 (71) 가 (72)
 (71) (73) (126) , (71) (81)
 (125) 가 , (72)

, (55) , (56) TFT(54)
 , (57) (73) , (71) , (126)
 , 가 (127) (125) (72) 2 (12) (73) (81) 가 (72)

, (73), (71), (81) 가,
 (71) (73) , (81) (E1) , 3
 , (73)

, (負) VA(Vertical Alignment)
 . 1 (11) 2 (12) (20)((21))
 (E1) , 3 4 , (E1)가 (7
 (73) 3) , (21)가 ()
) , (20) , (21) ,
 ,

VA , (20) , (負) TN ,
 , (homogeneous mode) . TN ,
 , (E1) , 가 , (monomer) 가 ,

(21) 가
 (E1) 가
 가
 (73)
 (20) 4 1
 2
 2

(57) (71) (71)
 (74)가 (126)
 (73) 가 (73) TFT(54)
 (71) 가 (73) (126) 가 (73)

가 가 가

2
 8 2 10 8 E-E'
 1 9 8 D-D'

7))가 ITO (71) 가 ITO (73) TFT(54) (57) (62)
 (73) (126) 가 ITO (71) (73) (71) (74)가 (71)

(73) (74) (71) (71) (74)가
 (top gate structure) 1 (bottom gate structure)

1 8 10 1 5

(71) (74) 1 (71) (73) (71)

(74) (74) (E1)가 (74) (73)
(74) (73) 8 9 (74)
(72) (E1) (74) (收束)

11 (73) 11 8 (71)
(74) (21)가 (71)

가 가 1 (11) 2
(21) 2
가 가 (負) 가

12 1 8 (71) (73) 1
(71) (73) (72) (72)
(72)

12 (對角) 2
(21) (E1) 가
(25) 12 (25)
(25) (21) 12 (25)

가 (25) (white) 가 (black)
(21)가 (21)가 (73)
가 가 (25) 2
가 2
가

延伸)
(廣帶域)4 1 , (25) 가 , (20) 4 1
(73) , (25) (25)
()
, 가 , .4 1 , , .

, 가 , ,
가 .

(負) , (20) , 1 , 가 ,
() , 가 ,
가 가 , ,2
가 .

가 , 6 (b) , 6 7 1
(73) (71) (71) (73) , 7 (c)
(74) . , (71)

가 100 μ m x 300 μ m . 6 6 ,
20 가 가 .
, , 1 .

3
3 , 3 (1 2
) , 14 가 . ,
1 , .

, 가 , 13 14 , (71)
26) , 14 (71) (73) , (1
(135) , 1 (62)
(63) . ,

가 , (72) (71) (61) , (135) , (7

1) 가 , , 1 가 . , 13 14 , 1 5 , 6 7 1 가 . , 6 (b) 7 (c) , CVD (63) (64) 15 , (71) (72) TFT(141) , TFT(141) (55) (55) (72) (71) (71) , 1 4 16 , 4 (1 2) , 1 , 16 (11) (91) (93) (71) (73) (71) (75) (72) , 1 , 16 , 1 5 , 가 . , 6 (b) 7 (c) , (64) , (56), (58), (57) (75) , TFT(54) (65) , (93) , R, G, B (9) 1) (92) (71), (62), (73) (73) (57) , (71) (75) , (73) (75) 3 (71) (73) (62) 가 (63) , 1

5

17 , 5 , 18 17
F - F' , 19 17 G - G' ,
TFT

5) (57) (58) , 17 19 , TFT(54) , (5

1 , 17 19 , 1 5

가 . , 6 (a) 7 (c) , 1 (11) ,
(56), (58), (57), (73)
TFT(54)
(62) , ITO (71)
(71) , (73) (74)
ITO (61) (72)

10 , TFT(54) 가 , 19
2 가 .
(71) (73) (62) (71) (72)
(61) (63) , 3 (71)
가 .
, 1

6

20 , 6
, 21 22 ,
, 23

(71) (73) , 20 (a) (h)
가 가 .
21 (i) (n), 22 (o) (r) 23 (s) (y)
(71) (73) (射影) , (73) (71)
(74)

, (73), (71) (74) (71) 가
, 21

(i) (n) (71), (73), (71) (, 23)
(s) (y) (71) (73)
(71, 73) 가 가

21 (i) (71) (71) 1 (73)
(71) 3 (76)

21 (j) (71) (71) 2 (73)
(71) 2 (76)

21 (k) (71) (71) 3 (73)
(71) 1 (76)

21 (l) (71) (71) 2 (73)
(71) 1 (76)

21 (m) (71) (71) 1 (73)
(71) 2 (76)

21 (n) (71) (71) 2 (73)
(71) 3 (76)

21 (i) (n) : 가 100µm x 300µm
(s) (y)

23 (s) 21 (i) (i) (i) (73) (o) (o)
(o) 2 (o) 2
(73) (s) (73)

(71) 가 (o) (71) 가 (71) (73)
(i), (l) (j) 23 (w) (k) 23 (t) (l) 23 (u)
(i), (l) (j) 23 (y) (n) 23 (x)

23 (t) (o) 5 (73)

23 (u) (l) , 4 (l) (73)
(p) (p) 2
(l), (p) (l) 2 (73)
3 (l) 4 (l) (l) (

23 (v) , (l) (m) . 4 (m) (73)
 (q) . 2 (p) (q)
 , 23 (v) (p) (q)
 , (q) (73) , (p)
 (i n) 가 .

23 (w) , (j) (j) , 4
 (j) (73) (r) (r) 3
 3) 2 (j), (r) , (j) 2 (7
 , 4 (r)
 . 23 (w) (j) (r) 4
 가 (r) 3 , ,

23 (x) , 2 (k) 2 (n) (k)
 (上底) (73) (k)
 (斜邊) (n) , (k) (73)
 (71) 「Y」 「Y」 (73)
 (73)

23 (y) , (i), (l), (j) 3 . 23
 (y) , (i) (l) (73)
)가 , (j) (l) (i) (
 (i) (j) (73) .
 (71) (73), (74) 45°
 135° .

23 (s) (y) , 가 .
 , 가 . 2

23 (s) (y) , 24 30 . , 24
 27, 29 , 2 45° . 28, 30 , 2 1

1

0°

(s) (y) (73) (74)
 (71)
 (w) (w) (j) (j) 90° (r) 가
 「+」 (73) 4
 , 1
 7
 7 , 6 23 (w) ((81) (71) (73) 가
 6) , (71) (72) 가 (127) (71) (73) (12) (72) (81) , ((125) (125)) + ((126)) + (가 (127)) } / ((126))
 (125) (125) (比誘電率) (軸)
 26) (126) (71) (1 (71, 73) (71) (73) 가 , 1 (73) CVD (71) 가 200nm 6.4

[1]

[μm^2]	(126)[fF]	가 (127)[fF]	(125)[fF]	(+ +)/
16800	4763	164	312	1.1
8400	2381	164	312	1.2
5600	1587	164	312	1.3
4200	1190	164	312	1.4

, 1

TFT - LCD(Liquid Crysta1 Device)

1 1.1, 1.2, 1.3, 1.4, 31, 32, 33 34 . 31 34 , 가 T

T - LCD , , , , TF
 20 μ m 40 μ m 40 μ m 20 μ m
 , 1
 9
 37 , 9 , 38 37
 H - H' , 39 37 I - I' , TFT
 , 1
 , 37 39 , (73) TFT(54)
 (57) (126)
 (73) (171) , (171) , (61)
 (73) (71) 가, (73) (65) (172)
 , 37 , (171) (73)
 , 39 , (171) , (73)
 , (73) (126) , (126) 가
 , (73) (73) 가
 (73) (71) , (71) (71) (171) , (71) (7
 3) (172) , (71) (71) 가
 , 가 (127) ,
 (71) (177) , (176) (72) 가 (175),
 가 (127) , (72) (55)
 , 가 (175) (72) (56)
 , 가 (71) 가
 , 가 (127) 가
 가 , (65) 가 (127) , (61)
 가 (127) , 2 가 (127)
 , (61) (65)
 가

(73) , (73) , ITO , Cr
 , 가 , 가 ,
 , 41 43 ,
 , 41 (a) , 1 (11) ,
 (171) , 41 (b) , (55), (72),
 (61) , (61) , 2 ,
 (64) , CVD (island) TFT(54)
 , 42 (c) , (56), (58), (57), (73), 가 (175)
 , 42 (d) , CVD (65) (61)
 , (172, 177) , 43 , ITO ,
 (71) (176) , ITO (71) (176)
 , 가
 , 5 SPR 1 (11) ,
 , 가 , 가
 409 , 2 (12) 가 1 (11) 2 (12) 10 - 232
 , 1 가
 , 1
 10
 44 , 10 , 45 44
 K - K' , 46 44 L - L'
 , 1 ,
 , TFT

3 , , 44 46 , 15
 , TFT(141) , (55) , TFT(141)가
 가 143 , TFT(141) , 가 142 , TFT(54)
 55) 가 143 (71) , (71) , (72) (72)
 (72) (71) , (71)

, (71) , (74) , (73) 가
 (74) , (65)
 , (73) 가 가 , (65) , (73)
 가 가 가 , (65)
 가 , (65)
 , 가

TFT , MIM(Meta1 Insulator Meta1)
 (NASA) () ITO
 가 , ,
 가 .

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

(57)

1.

가

가 , 가

1

가 ,

가 ,

가

2.

1 ,

3.

1 , 가

4.

3 ,

5.

1 4 , 가

6.

5 ,

7.

5 , 가

8.

1 , 가

9.

8 , , 4 1 가 , 4 1

10.

1 , 4 1 가 , 4 1

11.

1 , (bottom gate) TFT

12.

1 , (top gate) TFT

13.

11 12 , TFT

14.

13 , TFT

15.

3 , 가

16.

3 , 가 가

17.

1 , ,

18.

17 ,

19.

5 ,

20.

N 1 , 가 (positive) (twist) T

21.

20 ,

22.

20 ,

23.

1 , 가 (positive)
(homogeneous)

24.

1 , 가 (negative) (homeotropic,
) VA

25.

1 3 , 4 ,
4 1 , 3

26.

1 3 , 4 ,
4 2 , 2

27.

25 , 4 가

28.

1 3 , 3
, 3 2 , 1

29.

1 3 , 3
, 3 1 , 2

30.

1 3 , 5 3
 , 5 2 , 3

31.

1 3 , 2
 25 30 , 2

32.

27 , 가 가
 (rate)가 1.1 1.4

33.

32 , 가 1.2 1.4

34.

33 , 가 1.3 가

35.

27 , 가 가 20 μ m

36.

27 , 가 가 40 μ m

37.

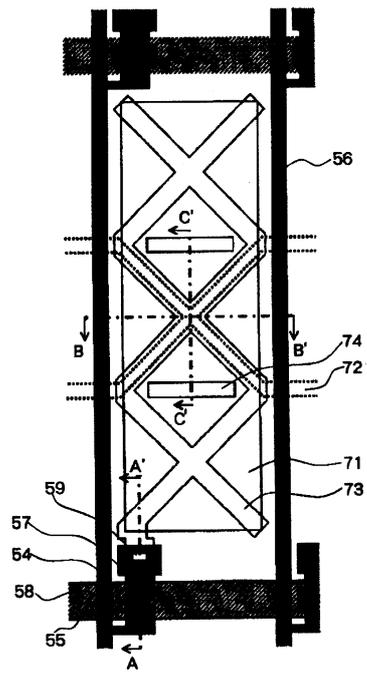
27 , 가 가 20 40 μ m

38.

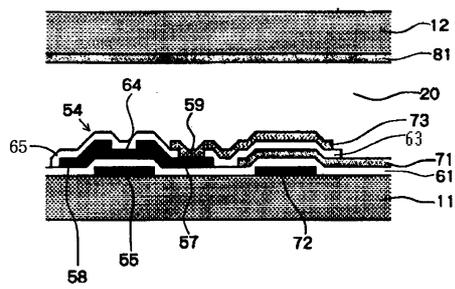
11 12 ,
 가 가

39.

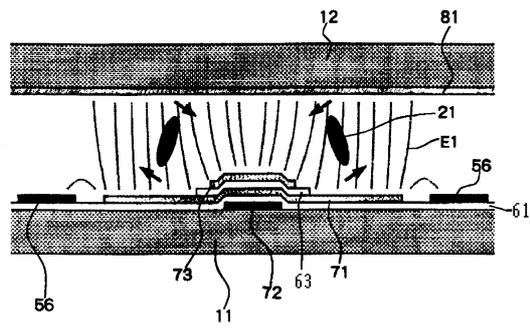
1



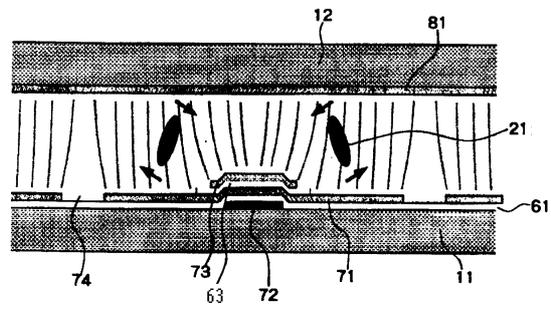
2



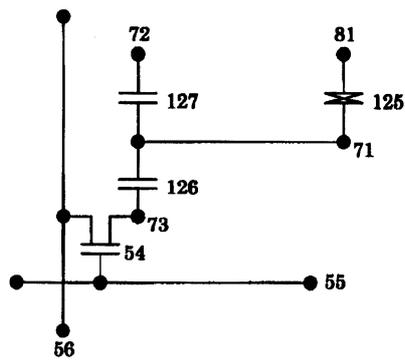
3



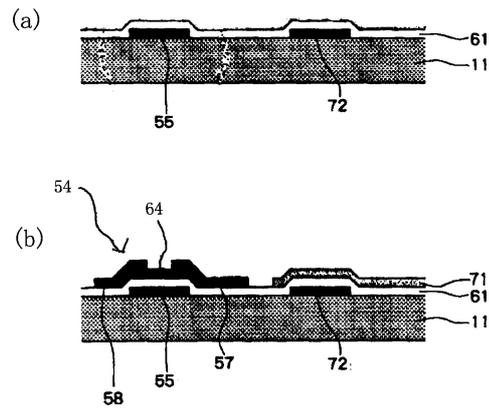
4



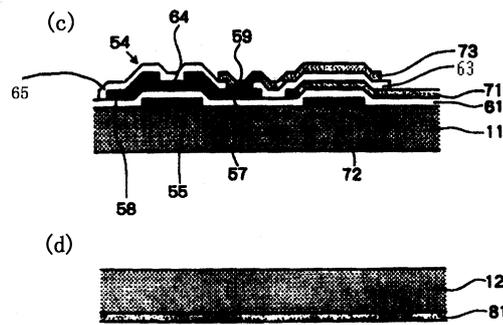
5



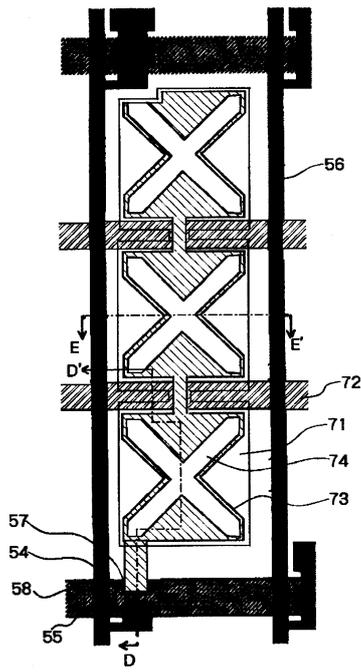
6



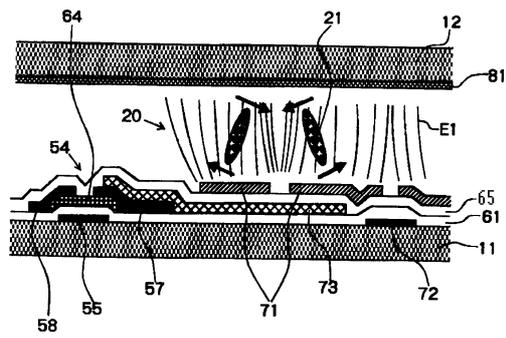
7



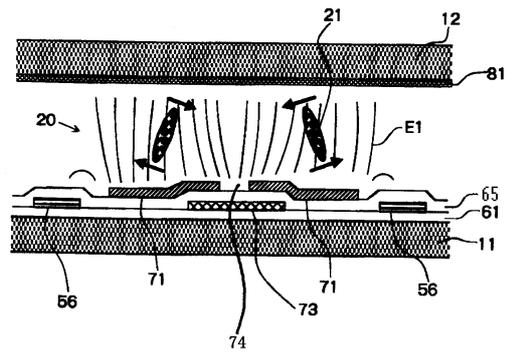
8



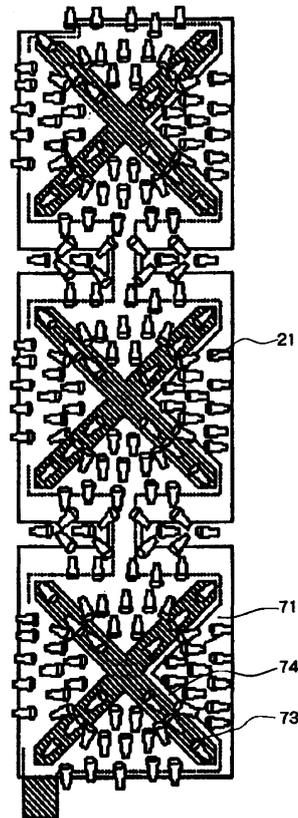
9



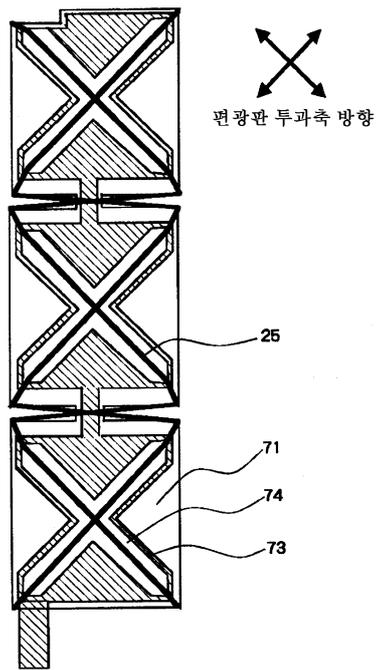
10



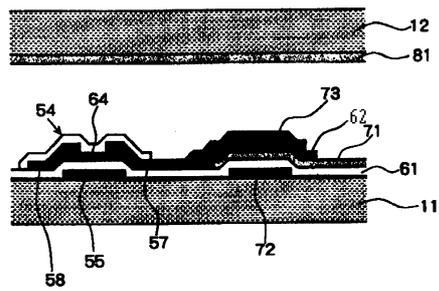
11



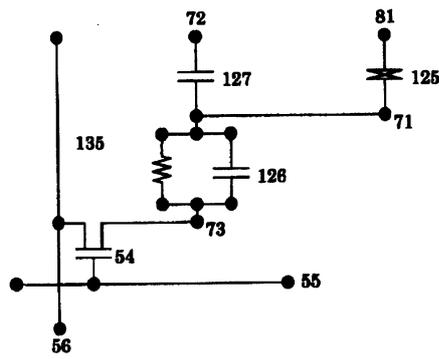
12



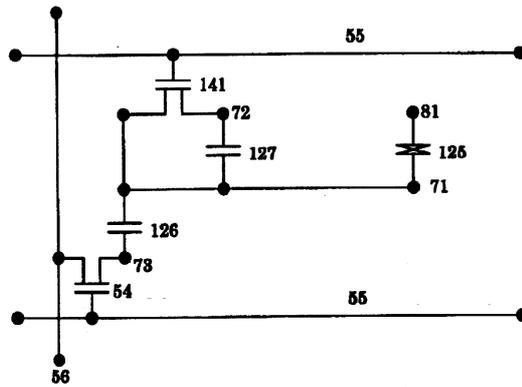
13



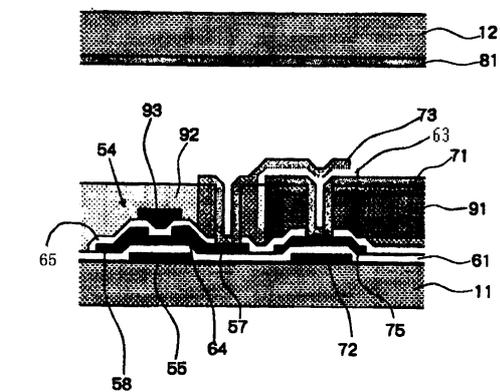
14



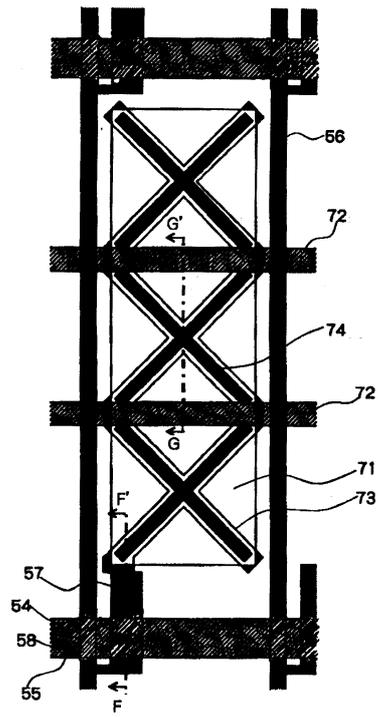
15



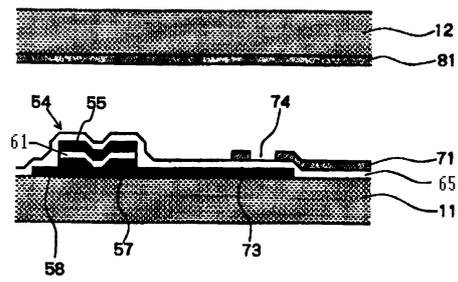
16



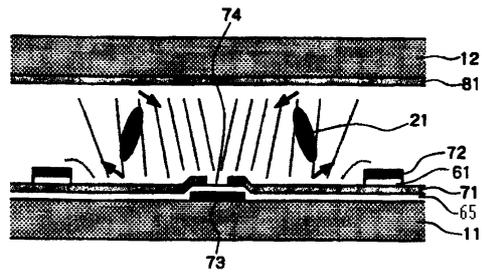
17



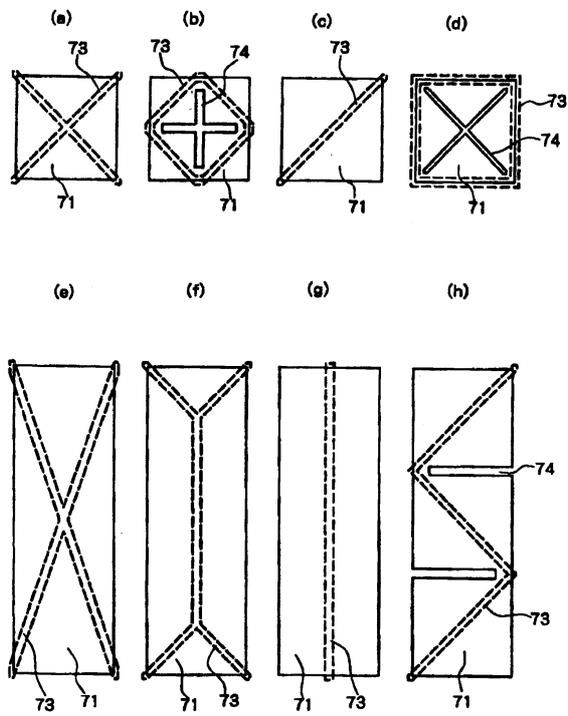
18



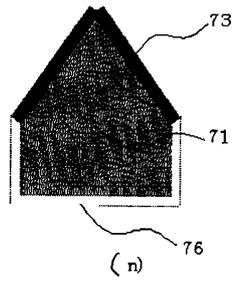
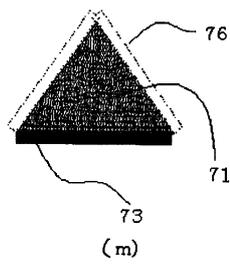
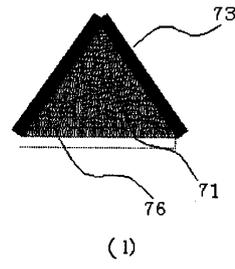
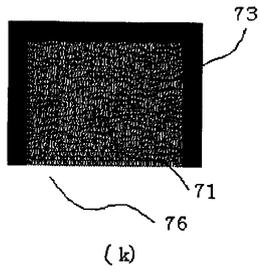
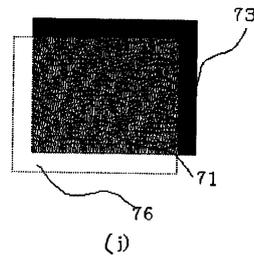
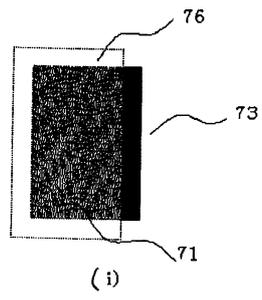
19



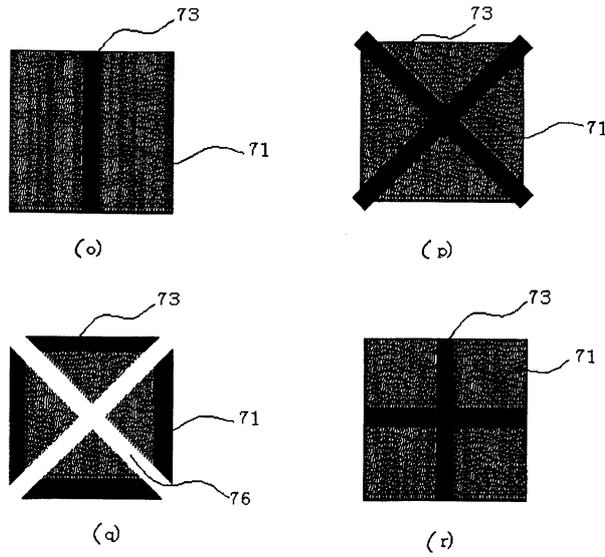
20



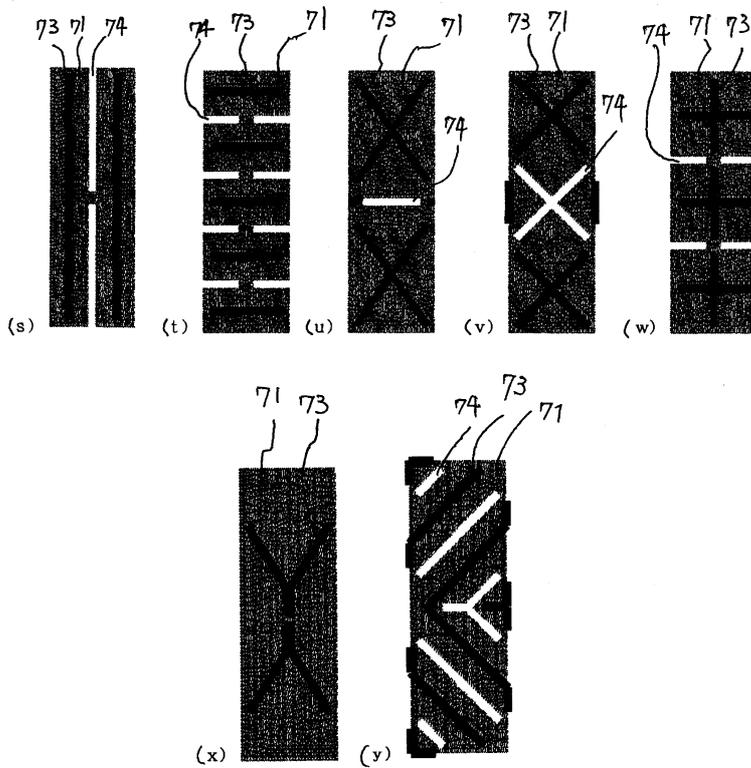
21



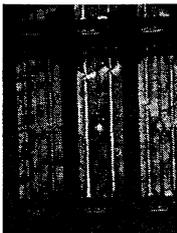
22



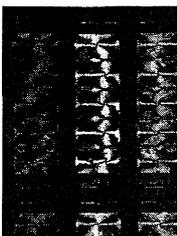
23



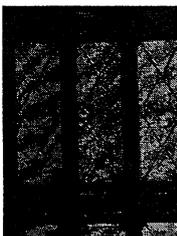
24



25



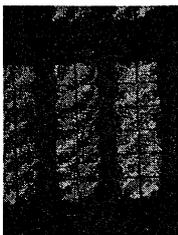
26



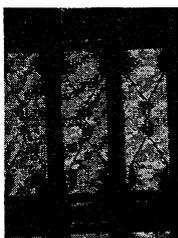
27



28



29



30



31



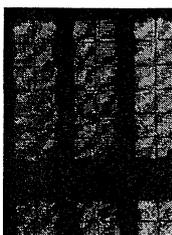
32



33

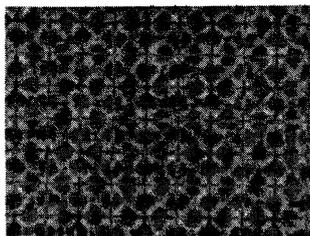


34

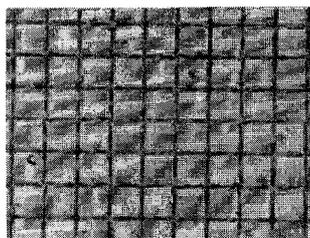


35

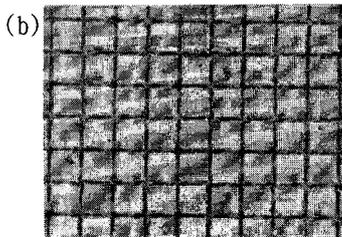
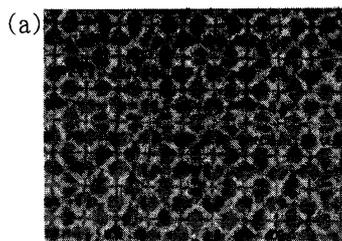
(a)



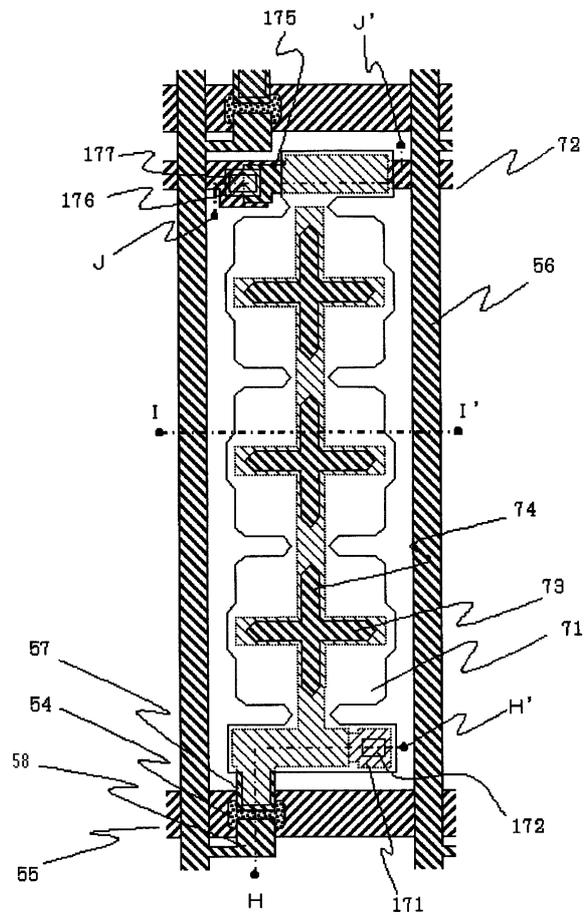
(b)



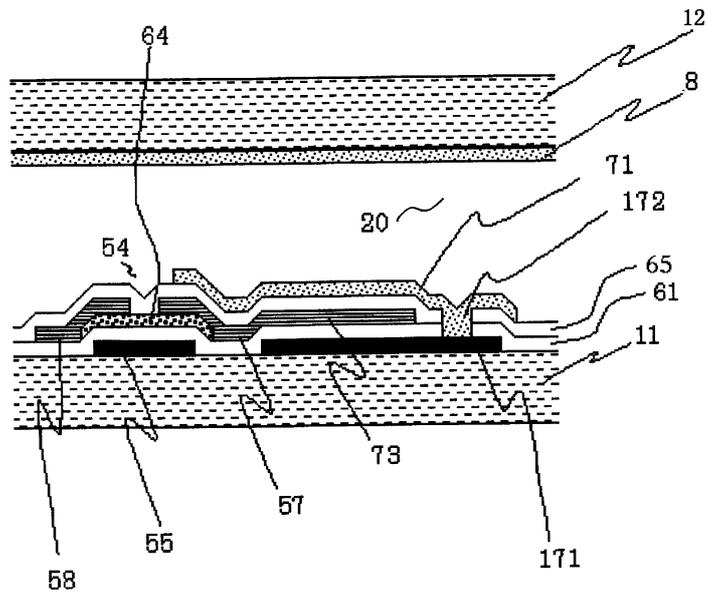
36



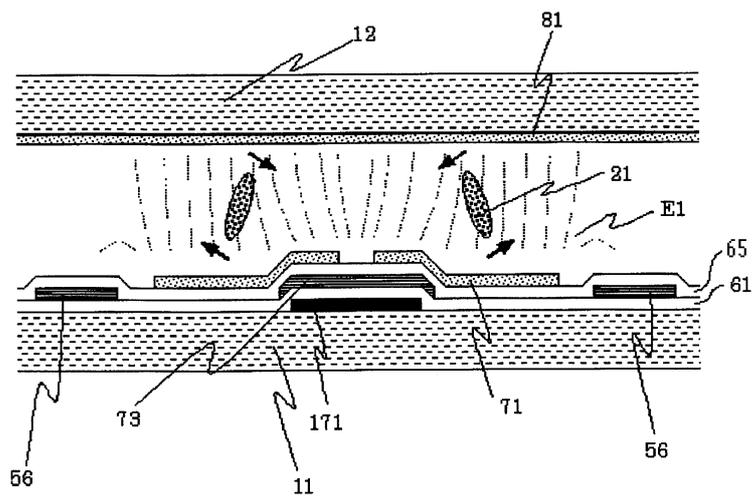
37



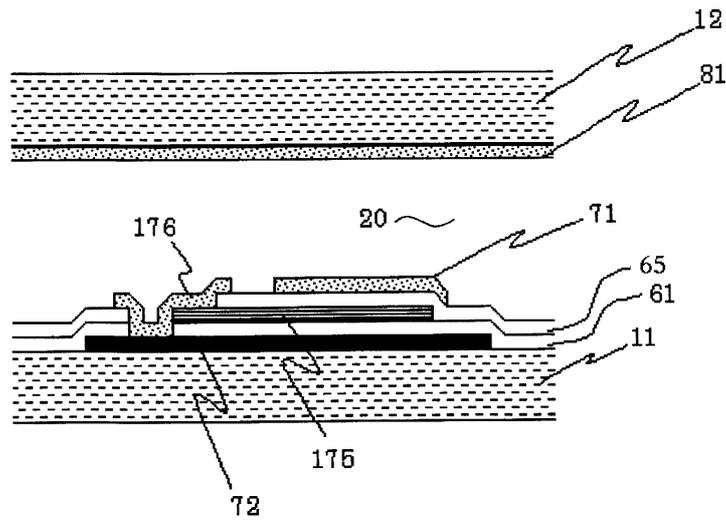
38



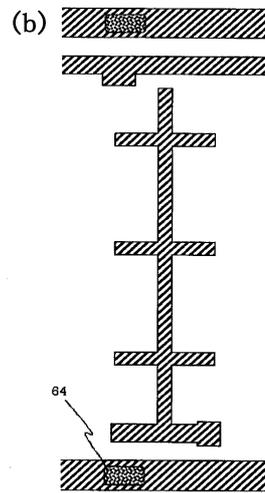
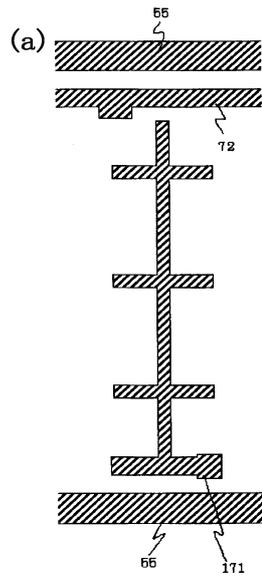
39



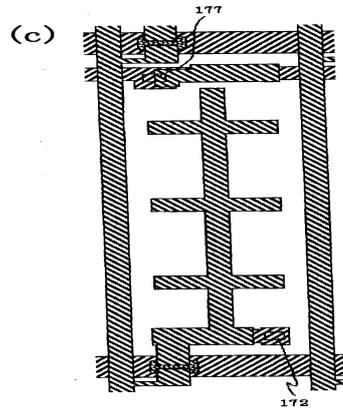
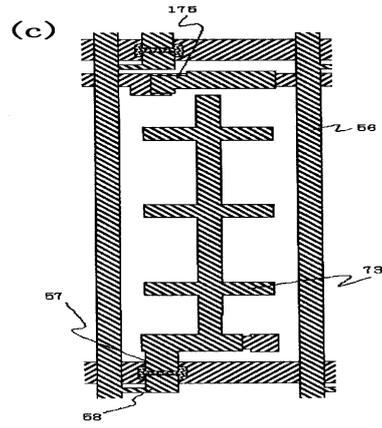
40



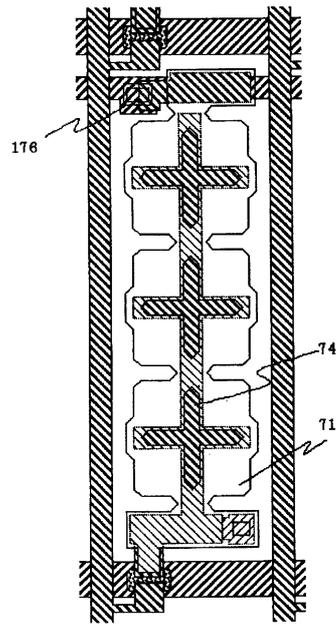
41



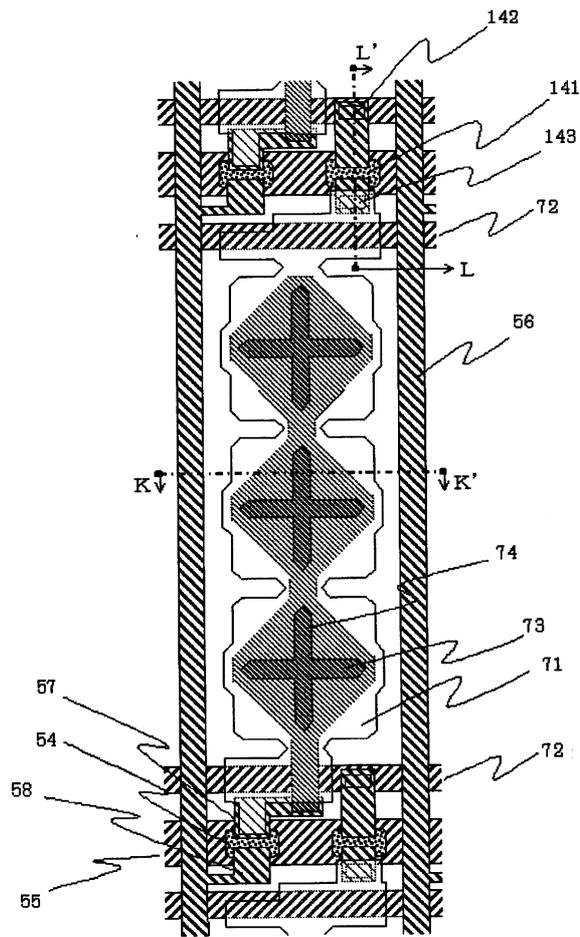
42



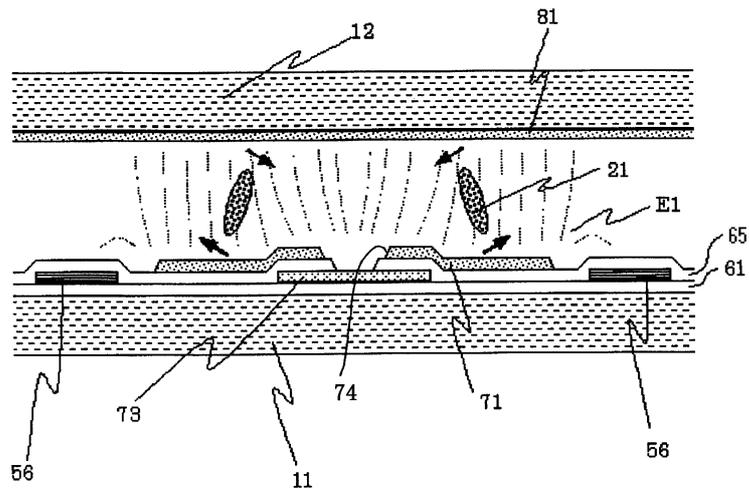
43



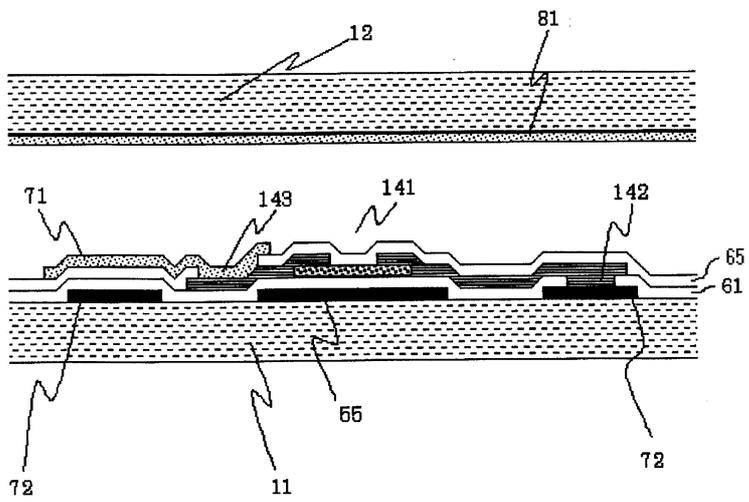
44



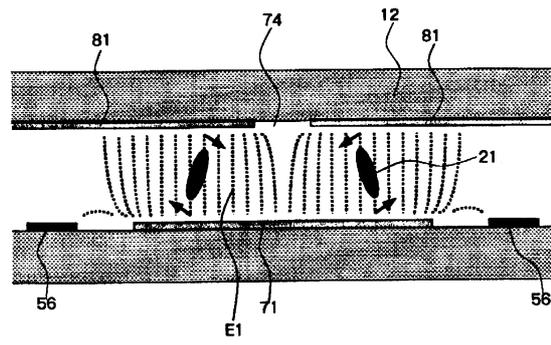
45



46



47



专利名称(译)	多域液晶显示器		
公开(公告)号	KR100379287B1	公开(公告)日	2003-04-10
申请号	KR1020000035052	申请日	2000-06-24
申请(专利权)人(译)	日本地方自己兴趣可否来.)		
当前申请(专利权)人(译)	日本地方自己兴趣可否来.)		
[标]发明人	SUZUKI TERUAKI 스투키테루아키 SUZUKI MASAYOSHI 스투키마사요시 ISHII TOSHIYA 이시이토시아 HAYAMA HIROSHI 하야마히로시 KANOHI HIROSHI 가노우히로시 IKEDA NAOYASU 이케다나오야스 TAKATORI KENICHI 다카토리켄이치 NOSE TAKASHI 노세다카시 WATANABE TAKAHIKO 와타나베다카히코		
发明人	스투키테루아키 스투키마사요시 이시이토시아 하야마히로시 가노우히로시 이케다나오야스 다카토리켄이치 노세다카시 와타나베다카히코		
IPC分类号	G02F1/133 G02F1/1333 G02F1/1343		
CPC分类号	G02F1/133707 G02F1/134336 G02F1/1393 G02F2001/134354		
代理人(译)	用最甜		
优先权	1999180615 1999-06-25 JP 1999359411 1999-12-17 JP		
其他公开文献	KR1020010007523A		
外部链接	Espacenet		

摘要(译)

- 1 - 本发明的一个目的是提供一种具有高对比度和优异视觉特性的多畴液晶显示器件，而不会增加诸如公共电极的微制造工艺或需要高键合技术的复杂工艺。为了解决这个问题，连接到源极端子57并具有开口74的像素电极71具有与控制电极73的耦合电容126，并且通过电容器126施加信号电压的分压。[1 指数方面 控制电极，开关元件，源极端子，像素电极，控制电极，

[표 1] 중첩부 면적과 재어전극 전압계수의 관계

중첩부 면적(㎍)	결합응량(126)(fT) ①	부기응량(127)(fT) ②	백경응량(125)(fT) ③	재어전극 전압계수(①+②+③)(fT)
1600	4763	164	312	1.1
8400	2381	164	312	1.2
5600	1587	164	312	1.3
4200	1190	164	312	1.4