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(71) 가 가 가 22 22

(72) 가 3-9-7

(74)

:

(54)

4), (11) (12) , Rp [nm] 1 (1
 . , (13) , Rn [nm] 1 (15)
 (12, 13) (12b, 13b) Rtac [nm] ,
 Rp 1 [nm] 1=135-0.7×Rtac, Rn 1 [nm] 1=Rlc-65-1.4×
 Rtac , Rp Rn , , 1 1 , 90% 110% .
 , 가

1

, , , , 1 ,

1

2

, 가 .

3 , 가 .

4 , .

5 1 1

6 , .

7 , , .

8 가 .

9 , .

10 1 1

11 , , .

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13 2

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< >

11:

12:

12a:

12b:TAC

13:

가 , 1
 2 Rp , 가 , 1
 1 360 [nm]
 Rp
 Rn , 1 Rp Rlc Rtac 2
 가 Rp Rn , 1
 2 Rp Rn , 1
 Rlc , 342 [nm] 378 [nm]
 Rp가, 33.3 [nm] 38.6 [nm]
 Rlc Rp가 Rp 90% 110% 1
 Rn Rp가
 가 Rn , , Rp가
 2 , 2 , 2
 2 , 1
 Rxy [nm] , Rz [nm]
 Rtac [nm] , Rlc [nm]
 =1.05×Rlc-1.9×Rtac Rxy 90% Rxy 110% Rz 110%
 Rz 90%
 2 2 2
 2 2 2
 1 1 2
 Rxy [nm] , Rlc [nm]
 Rtac [nm] , Rxy , Rlc [nm]
 =0.525×Rlc-0.95×Rtac 1 2 Rz 90%
 110% 1 2 Rz 90%
 110%

가
 1 2
 1 2
 가
 1 2
 Rxy Rxy Rtac Rtac 가
 Rz 1 2 Rlc Rtac Rxy
 Rxy Rz Rxy Rz
 1 2 Rxy Rz
 Rz가 Rxy가
 가
 2
 가

[1]

1 8
 (1) 1 (VA) (11) 1 (11)
 (12, 13) (12) (11) 1 (2)
 (13) (11)
 (11) 2 (21a)() TFT(Thin Film Tran
 (11a) (21b) (11b) (11a, 11b)
 () (11c)
 (1) 가 (11b) 가
 (21a) TFT (11a) (11c) (22a)
 (21b) (11b) (11c) (22b)

(21a, 21b) 가 (11a, 11b) (11c) M (11a, 11b) (11a, 11b) (2
 1a, 21b) 가 (3) (11a, 11b) (가)
 가

(11) M (가) ()

4 (23a...) (21a) 가 (21b)
 (23a, 23b) (23b...)

(23b) (23a) (23a, 23b) (21a)
 (21b) 가

(23a) 가 가
 (23a) (23a)

(23a) 가 가 (23a) 가 (23b)
 (23b) 가

(23b) (23b)

(23a... 23b...) C (23a) L23a
 (23b) L23b 가 L2

(23a, 23b) C D1 D4

1 (12, 13) (12a, 13a) (12a, 13a) 1
 (TAC) (12b, 13b) TAC (12b, 13b)

(12, 13) (12) AA12 (13) AA13
 (12, 13) AA12 · AA13 가 D1 D4

, 45

(11) 1 (14) nxp nyp, Rp
 nzp , nxp>nyp=nzp
 dp 1

1
 $R_p = dp \cdot (nxp - nyp)$

AA12 1 (14), SL14가, (11) (12)

(11) 1 (15) , nxn nyn, Rn
 nzn , nxn=nyn>nzn
 dn 2

2

$$R_n = d_n \cdot (n \times n + n_{yn}) / 2 - n_{zn}$$

(11) , (15) (11)

(11) (11) 3 (1) , (21a) (21b) 가 ,

가 (11) 가 .

1 (12, 13) AA12 · AA13 (15) , (11) 가 2 (14) 1 (11)

(, 12) (11) (12) 가 (11) (12)

가 가 가 .

(11) (, D1) , (D1 D4가 (11) (, D2 D4) (11)

가 (11) , (11) 2 (11) (11)

(21a) (21b) 가 (11) (11) 2 (가) , (11) (11)

(, 12) 가 , (12) AA12 (11) (11)

(12) (1) (11) () 가 , 1 (11) (15) , (12) (12)

가 (12) 가 .

1 (14) 1 (14) 1 (15) (11) 1 (15)

(1) , (15) 20

1 (14) 1 (15) 20

가 20 , 가 20

가

1 [nm] , TAC (12b, 13b) , Rtac [nm] , Rp 3

3

$$\alpha = 135 - 0.7 \times Rtac$$

(14) Rp, 1 85% 1 115%

(11) Rlc [nm], Rn 1 [nm]

$$\beta 1 = Rlc - 65 - 1.4 \times Rn$$

(15) Rn, 1 85% 1 115%

Rp · Rn, 1 · 1, 5 A1
(1) 20

Rp 1가, Rn 1, Rp
1 90% 110% 5, A2 Rn 1 90% Rp
110% 가, 가 (1)

(1) a, 1 (1) 가 가
(14) (11) 1 (15)

(11) 3 dlc, 7 (11) Rlc 1 (15) Rp, (12b, 13b)
Rtac

가 (11), 1 (14) TAC (12b, 13b)
(14) 1 (15) 6 (11), (12, 13), 1
(14) TAC (12b · 13b) (1)(1a), (11) (1)
5) (11)

[1]

(11), (11c) n 0.08, () dlc가 3.0 [μm]
, 4.0 [μm] 5.0 [μm], Rlc(=dlc · n)가 240 [nm], 320 [nm]
400 [nm], TAC (12b, 13b), 0 [nm]
, 30 [nm], 50 [nm], 80 [nm] TAC
가, Rp Rn (11) TAC (12b, 13b)
가 7

(1)가, (11)
()가 0 60, 가, 8
60 (12a, 13a) AA12 · AA13, 45 가 () , 가
A13 45 AA12 · A

(14) Rp가 1, 1
1 (15) Rn 1, 3
(1)가

4 .
 , Rlc, TAC Rp Rn 5% 가 , (11) Rp
 Rn 1 1 35% 115% , Rtac가, (60) 가 20
 , (11) Rp Rn Rlc, TAC (12b, 13b) Rtac가 (60)
 , 가 Rp Rn , 7 1 1 90% 110% (1)
 , 6 (1a) , 1 (1)
 , 1 (14) (11) , 1 (15)
 Rlc Rtac가 , (60)
 Rp, Rn , 1 (1) 가 , 가 20 Rp Rn 90% 110% , 1 1
 (1a) 85% 115% , (60) 가 , 가 20 Rp Rn 90% 110% , 1 1
 [2]
 가 , (1b) , 9 (1) (15)
 , 1 (14) (12) , 1 1 (15)
 , (1b) , (14) 1 (15) 20
 , TAC (12b, 13b) Rtac [nm] , Rp
 2 [nm] , 5 ,

5

$$\alpha = 2 = 35 + (Rlc/80 - 4)^2 \times 3.5 + (360 - Rlc) \times Rtac / 850$$

, 1 (14) Rp , 2 85% , 2 115%
 , (11) Rlc [nm] , Rn 2 [nm] ,
 6 ,
 6
 6
 , 1 (15) Rn , 2 85% 2 115%
 , Rp · Rn , 2 · 2 , 10 A1
 , (1b) (1b) 20
 , (1b) Rp 2 , Rn 2 ,

가 , 10 , A2 , Rp
 2 90% 110% , , 가 , 2 90% Rp
 110% , , 가
 (1b) .
 , 9 (1b) , 1 6 , 1 (15)
 (11) 1 (14) , (1b) ,
 (11) , 1 6 , 1 (15)
 (14) , 1 6 , (11) 가 1 1 (15)
 Rp (11) Rlc , 1 (14) (15)
 Rp (1b) , 1 (14) Rp , (1
 1) Rlc .
 TAC , 5 , 1 (14) Rp
 (12b, 13b) Rlc , Rtac 가 (11)
 Rp Rtac , Rlc가 360 [nm] ,
 (11) Rlc 360 [nm] , Rtac
 1 (14) Rp 35.9 [nm] .
 m , Rlc가 324 [nm*] 396 [nm] , Rp가 32.6 [nm] 39.9 [n
 2 85% 115% , Rtac가 , 30 [nm] 80 [nm] 2 85% 115% Rp
 (1b) , 20 Rn
] , , 1 (14) , (11) Rp 32.6 [nm] Rlc 324 [nm] 396 [nm
 Rp가 , TAC (12b, 13b) Rtac가 , (1b)
 , TAC (12b, 13b) , 1 (14)
 , 378 [nm] , Rp 33.3 [nm] Rlc 342 [nm]
 2 90% 110% , Rtac가 , 30 [nm] 80 [nm]
 Rp가 2 90% 110% , A2 (1b), Rn
 Rtac가 , 1 (14) , TAC (12b, 13b)
 [2]
 , 1 가 (11) TAC 가 (12b, 13b) ,
 11 가 , Rp Rn .
 , 9 , 1 (15) (11) 1 (14)
 1 (15) Rn Rp가 2 ,
 (1b)가 , 5 6

(11) , TAC (12b, 13b)(Rtac=30, 50, 80 [nm
)) , (14) Rp 35 49 [nm] , (11)
 가 3.0 [μm] 4.0 [μm] , , (11) Rlc가 240 [nm] 320 [nm]
) (Rtac 가 가 (11) 가 5.0 [μm
 가 Rlc가 400 [nm]) Rp Rtac

(11) Rlc 360 [nm] Rtac가 ,
 가 Rp가

Rn Rlc, Rp Rn 5% 가 , (11) Rp
 TAC 2 2 85% 115% , Rtac가 (60) 가 20

(11) Rp Rn Rlc, TAC (12b, 13b) Rtac가 (60)
 가 , 11 2 2 90% 110% , (1b)

(11) Rlc 324 [nm] 396 [nm] , 1 (14)
 Rp 32.6 [nm] 39.9 [nm] Rtac가 ,
 (1b) Rlc가 342 [nm] 378 [nm] 가 20 ,
 nm] Rp가 33.3 [nm] 38.6 [nm]
 (1b) , 11

[3]

(14) 1 (1c) , 1 (1) , 1
 () (16) (15) , 12 , (11) (12) , 2

2 (16) nx2 ny2, nz2 , nx2>ny2>n
 z2 Rxy Rz ,
 d2 , 7 8

$$R_{xy} = d2 \cdot (nx^2 - ny^2) \quad 7$$

$$R_z = d2 \cdot (nx^2 + ny^2) / 2 - nz^2 \quad 8$$

AA12 , 2 (16) SL16 , (11) (12)

가 (11) , (11)
 가 2 (16) , 2 (16)

(1c) , 20
(16)

TAC (12b, 13b) Rtac [nm] , Rxy
3 [nm] , 9

$$\alpha_3 = 85 - 0.09 \times Rlc - Rtac / 20$$

(16) Rxy , 3 85% 3 115%

(11) Rlc [nm] , Rz 3 [nm] ,
10

$$\beta_3 = 1.05 \times Rlc - 1.9 \times Rtac$$

(16) Rz , 3 85% 3 115%

c) Rxy · Rz , 3 · 3 , 13 A1 (1
20
Rxy 3 가 , 13 Rz 3 , Rxy
3 90% 110% , 3 90%
110% 가 , 가
(1c) 가

14 (1d) , 12 2 (16) 2 (16a 16b) 2
(16a, 16b) (11) , 2 (16a, 1
6b) 1 2
AA12 (16a) , SL16a가, (11) (12)
(13) AA13 가 , 2 (16b) SL16b , (11)
Rxya Rxyb , 2 (16) Rxy (16a, 16b) , 2 (16a, 16
b) 가 가 Rza · Rzb , 2 (16) Rz

TAC (12b, 13b) Rtac [nm] , Rxya
Rxyb 4 [nm] , 11

$$\alpha_4 = 42.5 - 0.045 \times Rlc - Rtac / 40$$

, 2 (16a, 16b) Rxya · Rxyb , 4 85% 4 115%

(11) Rlc [nm] , Rza · Rzb 4 [nm]
12

12

$$\beta 4 = 0.525 \times Rlc - 0.95 \times Rzac$$

, 2 (16a, 16b) Rza · Rzb , 4 85% 4 115%

(1c) 가 , 20
(1d)

(1c) 가 , Rxya · Rxyb 4 가 ,
Rza · Rzb 4 90% 110%
Rxya · Rxyb , 4 90% 110% 가
Rza · Rzb , 4 90% 110% 가
가 (1d)

[3]

15 , 1 가 (11) TAC (12b, 13b) Rxy Rz ,
12 , (11) (12, 13) (Rxy가 (12)) 2 (16)
(16) , 2 (16) Rz가 3 , 2 (16)
1c)가 , 1 , 9 10 (

) , (11) , TAC (12b, 13b) (Rzac=30, 50, 80 [nm
, 2 (16) Rxy 45 65 [nm] , Rzac
, TAC (12b, 13b)

xy Rz가 Rlc, Rxy Rz 5% , (11) R
TAC (12b, 13b) Rzac가 가 ,
3 3 85% 115% , (60) 가 20

(11) Rxy Rz가 Rlc, TAC (12b, 13b) Rzac가
가 , 15 3 3 90% 110% , (60)
(1c)

14 (1d) , 2 (16) 2
Rlc Rzac가 (60)
Rxya · Rxyb, Rza · Rzb가, 12 (1c)
1d) , (1c) Rxya · Rxyb Rza · Rzb가,
4 4 85% 115% , (60) 가 20 90% 110%

1 3 (11) 2 4 , 16 17
4 , 4 가 가 .
16 (21a) (24)가 , 4 (23a, 23b) (23a)
가 (21a) (21a) , 가 (24)
(24) (24) 가 가 가
(24) , 가 가 (P1, P2, P3 P
4) 2 4 (11) 가 가 , 4 D1 D4 .
, 40 , 1mm ,
(21a) 1 (24) , (21a) (24) 가 .
, 17 (21a) , (11b) (21b) Y ((25)
(25) (11b) 가 가 (25) 가 , (11b) 가
(11b) 가 가 (11b) (25) 가
4 (25) , 2 4 (11) 가 가 .
(11) 4 가 가 , 18 19 ,
18 , 16 (24) , (26)가
가 (26) (26) (26) ,
(11) 가 (26) (26) (26) ,
(26) (24) 가 , (24) 가 (21a)
19 , 16 (24) , (21a) (27) (27)
, 가 가 (21a) (27) , 가 (27)
(27) (27) , 가 (21a) 가 ,
(27) , (27) 가
, 가 가 , () 가 .
a) (27) (26) 가 , (21
() , 가 가 .
(21a) (21b) (23a) ,

1 2.

Rp가

Rn

1 3.

1 4.

5.

2

2

1

1

1

1

1

2

1

1

2

1

n [nm],
m]

Rp [nm],
Rtac [nm],

2

R
Rlc [n

Rp [nm] = 135 - 0.7 × Rtac,

Rn [nm] = Rlc - 65 - 1.4 × Rtac

90% Rp 110% 90% 110% Rn

5 6.

Rp가

Rn

5 7.

5 8.

9.

$$R_p \text{ [nm]} = 35 + (R_{lc}/80 - 4)^2 \times 3.5 + (360 - R_{lc}) \times R_{tac}/850,$$

$$R_n \text{ [nm]} = R_{lc} - 1.9 \times R_{tac}$$

Rp [nm], Rtac [nm], Rlc [nm]

90% Rp 90% 110% Rn

10.

Rlc, 342 [nm] 378 [nm]
 Rp가, 33.3 [nm] 38.6 [nm]

11.

Rp가 Rn

12.

13.

14.

),
 Rxy [nm] ,
 Rtac [nm] ,
 Rz [nm]
 Rlc [nm]

Rxy [nm] = 85 - 0.09 × Rlc - Rtac / 20,
 Rz [nm] = 1.05 × Rlc - 1.9 × Rtac

14 15. Rxy , 90% 110% , Rz ,
 110%

14 16. Rxy가 , Rz가

14 17.

14 18.

2
 2
 , 2 1
 , 2 2
 , 1 2

[nm] ,
 Rxy [nm] ,
 Rtac [nm] ,
 Rz [nm]
 Rlc [nm]

Rxy [nm] = 42.5 - 0.045 × Rlc - Rtac / 40,
 Rz [nm] = 0.525 × Rlc - 0.95 × Rtac

1 2 Rxy , 90% 110% ,
 1 2 Rz , 90% 110%

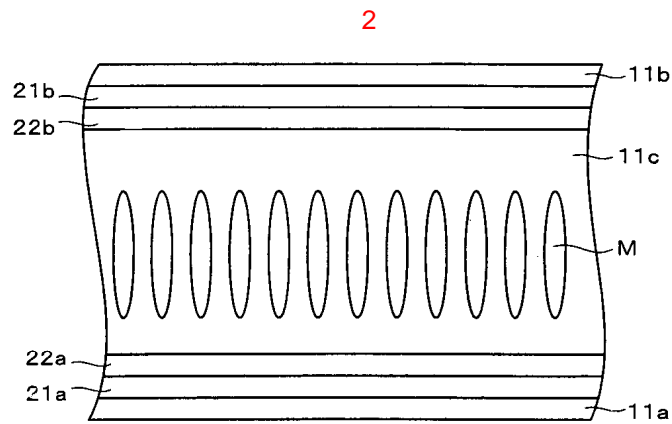
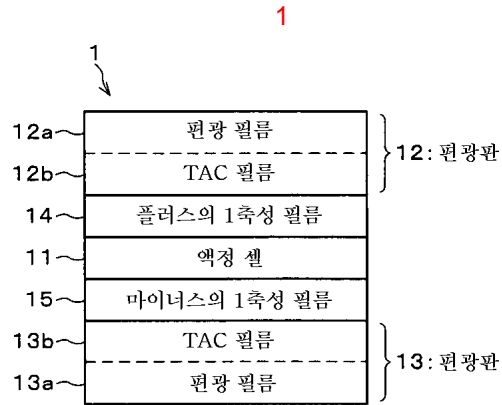
19.

18 ,
Rxy가 ,

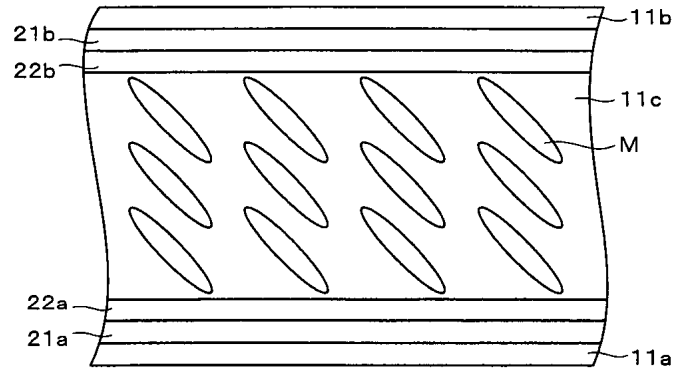
Rz가

20.
18 ,

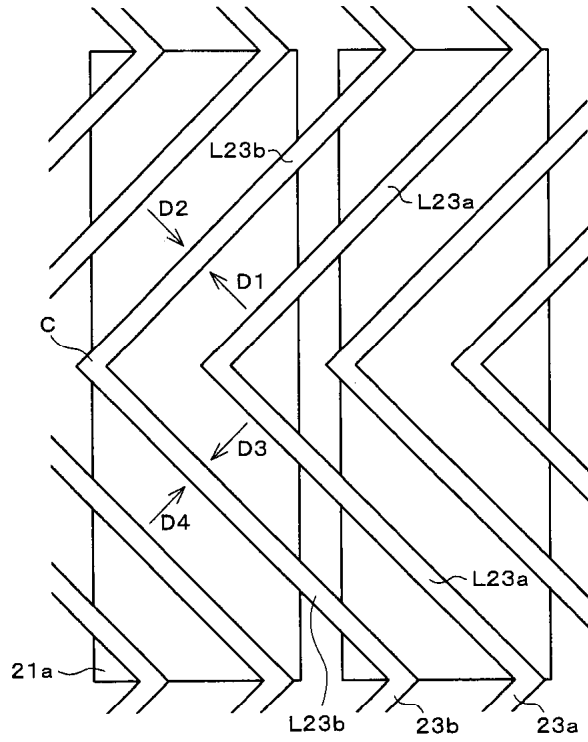
21.
18 ,



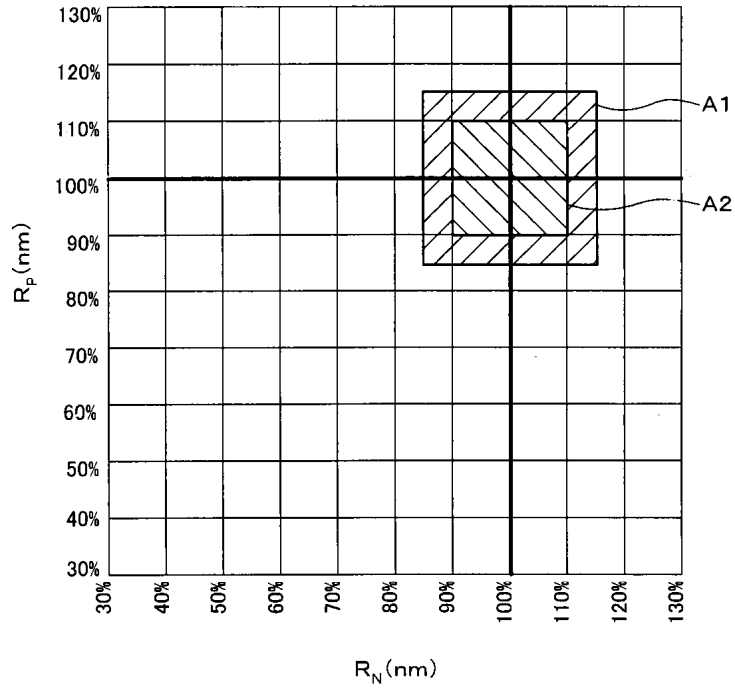
3



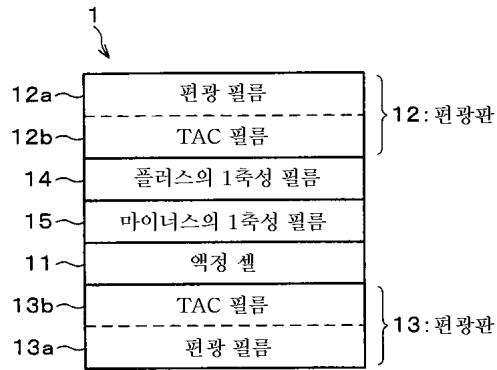
4



5

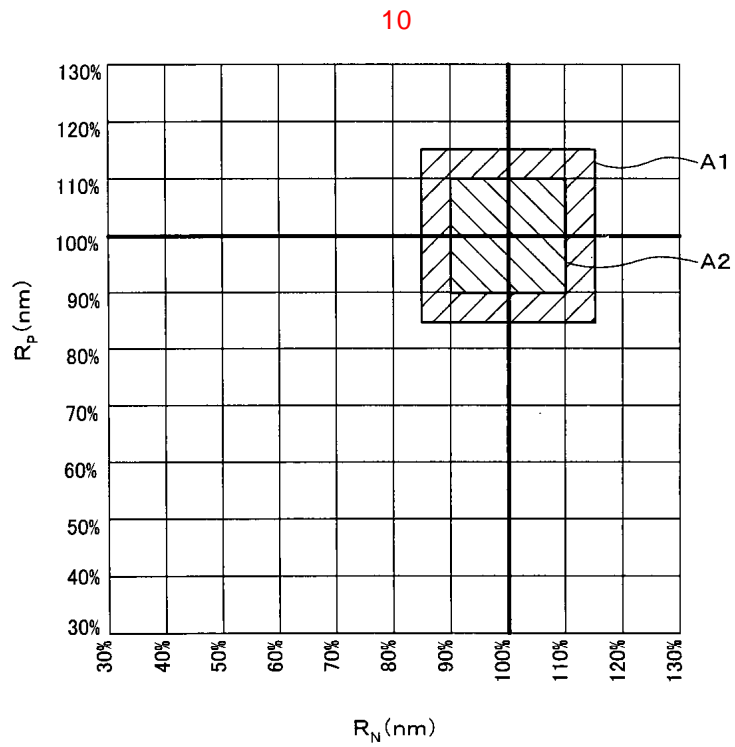
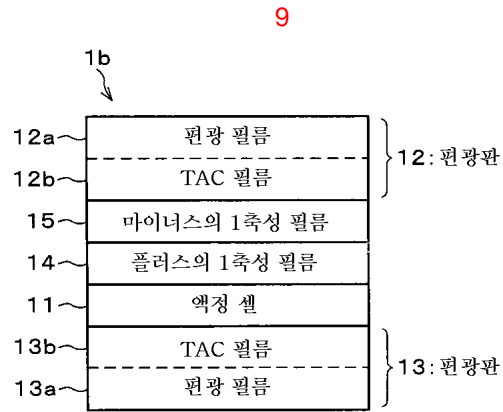
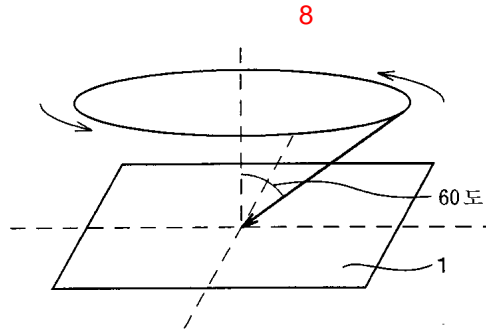


6



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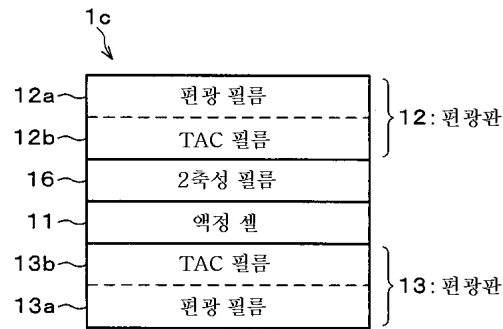
액정 셀의 두께 [μm]	R_{TAC} [nm]	R_p [nm]	R_n [nm]
3.0	0	137	173
	30	109	138
	50	93	110
	80	74	62
4.0	0	137	260
	30	109	225
	50	93	197
	80	74	149
5.0	0	137	348
	30	109	313
	50	93	284
	80	74	236



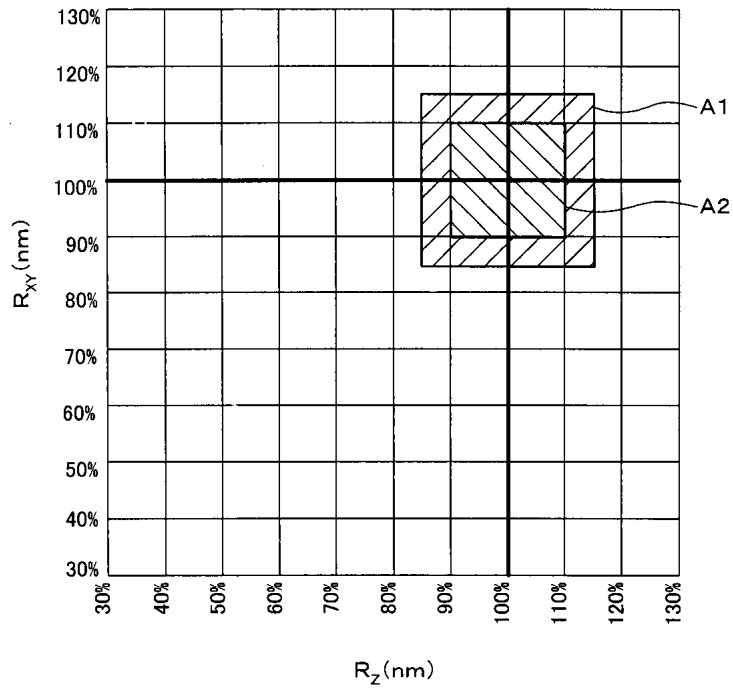
11

액정 셀의 두께 [μm]	R_{TAC} [nm]	R_p [nm]	R_n [nm]
3.0	0	38	243
	30	41	181
	50	43	140
	80	49	77
4.0	0	35	331
	30	36	270
	50	36	230
	80	38	169
4.5 ($R_{lc}=360[\text{nm}]$)	0	37	371
	30	36	311
	50	36	271
	80	37	211
5.0	0	39	417
	30	37	358
	50	36	318
	80	35	259

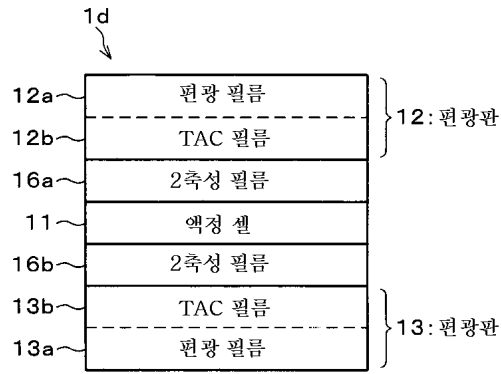
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13



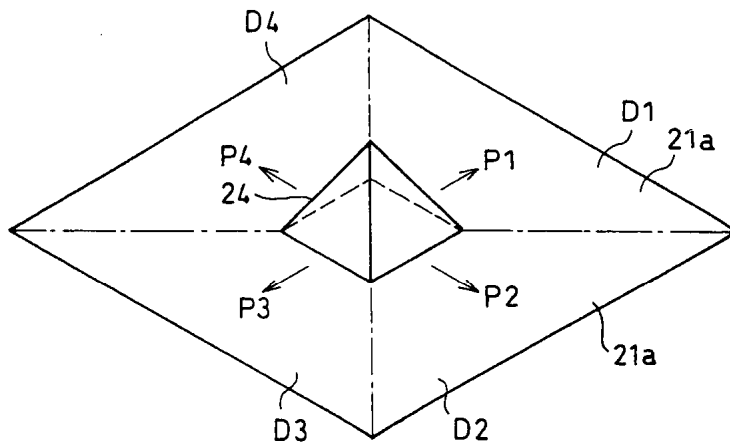
14



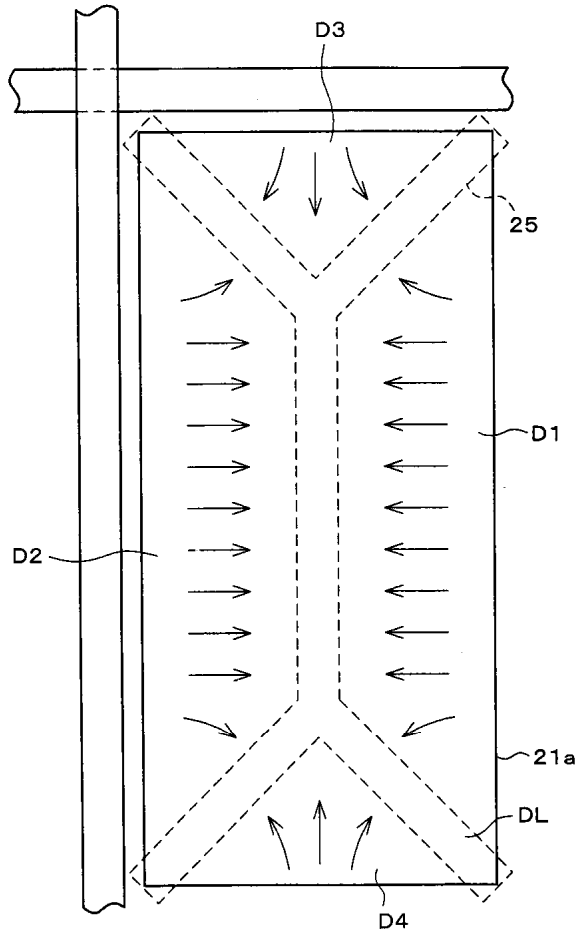
15

액정 셀의 두께 [μm]	R_{TAC} [nm]	R_p [nm]	R_n [nm]
3.0	0	65	250
	30	63	194
	50	62	156
	80	62	98
4.0	0	55	337
	30	53	280
	50	52	240
	80	51	183
5.0	0	50	425
	30	48	367
	50	47	328
	80	45	271

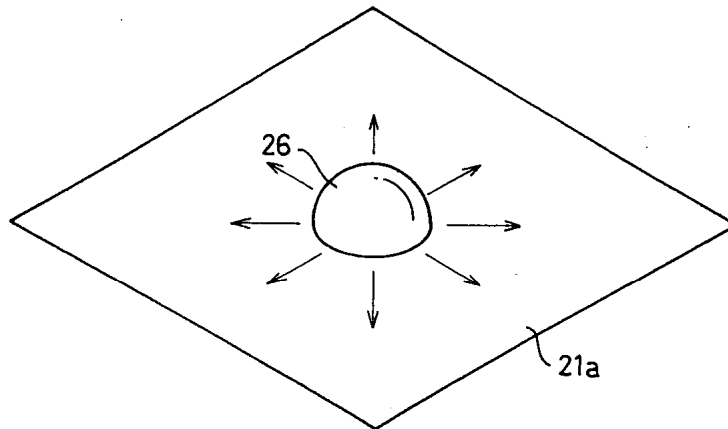
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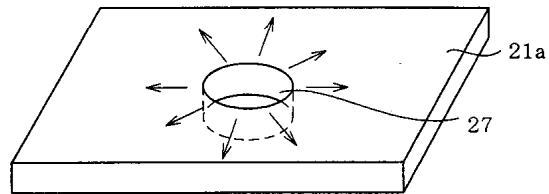
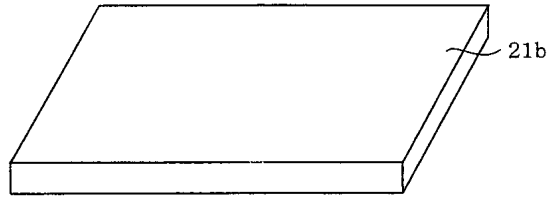
17



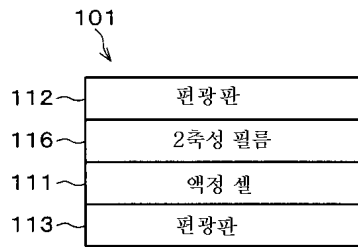
18



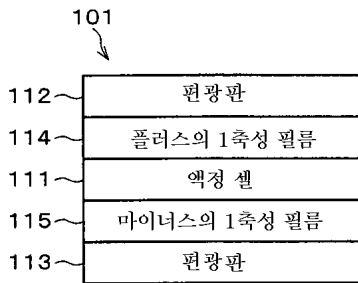
19



20



21



专利名称(译)	液晶显示器		
公开(公告)号	KR1020030074299A	公开(公告)日	2003-09-19
申请号	KR1020030014290	申请日	2003-03-07
[标]申请(专利权)人(译)	夏普株式会社		
申请(专利权)人(译)	夏普株式会社		
当前申请(专利权)人(译)	夏普株式会社		
[标]发明人	MIYACHI KOICHI		
发明人	MIYACHI,KOICHI		
IPC分类号	G02F1/1335 G02F1/139 G02F1/1337 G02B5/30 G02F1/13363		
CPC分类号	G02F1/133634 G02F1/1393		
代理人(译)	CHU, 晟敏		
优先权	2002064472 2002-03-08 JP		
其他公开文献	KR100497441B1		
外部链接	Espacenet		

摘要(译)

在垂直取向模式下，在液晶单元11和偏振板12之间设置具有 R_p (nm) 的面内方向的延迟的正单轴膜14，液晶单元11和偏振板13，设置在厚度方向上的延迟为 R_n [nm]的负单轴膜15。 R_{tac} [nm]是每个偏振器12和13的三乙酰纤维素膜12b和13b的厚度方向上的延迟，并且与 R_p 相关的参数 1 [nm]是 $\alpha_1 = 135 - 0.7 \times R_{tac}$ ，当 $\alpha_1 = R_{lc} - 65 - 1.4 \times R_{tac}$ 时， R_p 和 R_n 分别基于 α_1 和 α_1 设定为大于90%且小于110%的值。这使得可以可靠地提供垂直配向模式的液晶显示装置，其能够在倾斜方向上观看时保持高对比度。

1 指数方面 液晶显示器，延迟器，液晶盒，偏振片，单轴膜，对比剂

