

2003 - 0006407
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• •

4

, , ,

1 1 ,

2 1 ,

3 1

,

4 3 - ' ,

5 2 ,

6 2 ,

7 2

,

8 7 - ' ,

9 450nm 600nm $\Delta n \cdot d$,

10 9 550nm ,

11 $\Delta n = 0.08$ R, G, B ,

12a 12c R, G, B V - T ,

13 (single - domain) (multi - domain) V - T ,

14 (yellow) () (blue)
(color shift) ,

15 (/) ,

16 ,

17 (color property) .

(color filter)

가

(fringe field)

(vertically aligned: VA)

가
(color shift)
h)

(white)가

(yellowis

가 가 R , G , B , B R G

R , B R G $0.2 \pm 0.15\mu\text{m}$, B ,
R , G 가 ,
R - G < G - B

, 1 2 , 1 2
, 2
, 2 가 2
가

, , 가 , , 가
가

, 가 $0.2 \pm 0.15\mu\text{m}$

1 1 , 2 1
, 3 1
, 4 3 -
, 1 4 1

(10) 가 (20)
(30) (30) (20)
(30) 1 4 (31, 32, 33, 34)
1 (31) (30)
(33) 1 (31) 가
(32, 33) (20, 21)
1 (31) (21)
(40) (50) (P) N
(50) (61, 62) (61, 62)
(70, 71, 72) (71) (40) (71) (72)
(80) (81) (72) (81) 가 (80) (70)
(80) (90)

(90) ITO(indium tin oxide) IZO(indium zinc oxide)

, (90) 1 3 (91, 92, 93) (94, 95, 96)
 . 1 (91) (20) (70)
 가 (" " .)
 81) (72) . 2 3 (92, 93)
 가 . 2 (92) 1 (91) 1 2 (94, 9
 6) , 3 (93) 2 (92) 3 (95)
 1 (91) 2 (92) 2 (32) 2 (92) 3 (93)
 3 (33) , 1 (31) 4 (34) (90) (70)
 . 1 (91)
 , 2 3 (92, 93) 1
 4 (31, 34) 1 (91) 1 4 (31, 34)
 (30) (20) 3 (93) , (30), (31, 32, 33, 34)
 (35, 36) 가 가 가

, 가 가
 가

, 2 4 , 1

(100) / (200)가
 (R), (G), (B) (310, 320, 330)가
 , R, G, B (310, 320, 330) 가 R (310) 가 가 ,
 G (320) 가 , B (330)가 가
 (310, 320, 330) (600) (310, 32
 0, 330) (600) (400)
 . (400) (410, 420, 430) , (410, 420, 430) 1
 3 (410, 420, 430) . 1 (410) , 2
 (420) 3 (430) 3 (410, 420, 430)
 , (410, 420, 430)

, 3 4 , 1

1 2 , (900)
 , (11, 101) (10, 100)
 1 가

(10, 100) (90) (91, 92, 93)
 (400) 1 3 (410, 420, 430)가
 . , (90) (91, 92, 93)
 (70) (70) (20) , 45 °
 (70) (20) (90) (91, 92, 93)

(70) (20) (30) (31, 32, 33, 34)
 , (91, 92, 93) (30, 31, 32, 33, 34)
 , (90) (90) $3\mu\text{m}$
 . (30, 31, 32, 33, 34) (70) (70)
 (20) (91, 92, 93) (70) (20)
 가 , (70)
 (20) 가 .

, (900) (400) (91) , R, G, B
 (310, 320, 330) 가 (400) (90) R, G, B
 . , R, G, B . R (R) 가 , G
 (G) , B (B) 가 . , R G
 B $0.2 \pm 0.15\mu\text{m}$, R (Δd_1) G B (Δd_z)
 가 , $\Delta d_1 < \Delta d_2$, R, G, B (color shift) .

2 .

5 2 , 6 2
 , 7 2
 , 8 7 - ' .

, 5 8 2 .

0) (10) 가 (20) , (20) (3 (30)
 , (20) (21) 가 , (30)
 가 , 가 가
 . (20) 1 2 가 (33, 31) , 2 가
 (31) 가 3 가 (32) .

(20) (30, 33, 31, 32) (40) .

50) (40) (50) . ((21) .

(50) n n+ ((21) .

(70, 71, 72) (70) (40)
 (70) ,
 가 가 ,

가 (70) 가 (70)

(70) (30) (20) (70)

(30)

(70) (80)

(80) (20) (70)

ITO(indium tin oxide) IZO(indium zinc oxide) (90) (90)

(81) (72) (90) (90)

가 2 2 (99)가 1 (98)가 가

2 (99) 3 (90) 1 (98)

2 3 가

(33) , 2 (99) 3 가 (32)

, 8 10

(100) (200)가 (200) (R), (G), (B)

(310, 320, 330)가 , R, G, B (310, 320, 330) B (320) R

G 가 (310, 320, 330) (600) B

(600) ITO IZO (400) (310, 320, 330)

400) 8 가 3 (410) 4 5 (420, 430)가 3 (410, 420, 430)

10) 가 4 5 (420, 430)가 5 (430)

3 (410) 4 5 (420, 430)

4 (420) 3 (410) 4 5 (420, 430)

4 5 (420, 430)

9 10 2

2 (10) (100)

(90) (400) 가 가 가 (10)

(100)

, 가 R (900) (400) (91) B (330)

가 R G (310, 320) (400) (90) (R)

B R G (G) , B , B R (B) R

G (G) , $\Delta d_{\varepsilon} = 0.2 \pm 0.15 \mu\text{m}$, B R G 0.2 \pm 0.15 μm (color shif

t)

(10) (100)

3 (410) (90) 4 (420) (90)

5 (430) (90) 2 (90)

1 (98) 3 (410) 2

4 5 (420, 430) 4

20 ± 5 μm가 (B) (A)

가 (B) (A)

60% 90

% 가

(90) (98, 99, 410, 420, 430)

48%

가

(410, 420, 430) (200) 가

3 (410) (90) 4

(420) (90)

(200) 가

3 4 (410, 420)

(30)

2

R, G, B

9 450nm 600nm $\lambda \cdot d$

9 550nm 0.27nm 0.47nm $\lambda \cdot d$

가 $\lambda \cdot d$

9 10 TN VA

(nomalize)

9 (VA) TN(twisted nematic) $\lambda \cdot d$

450nm 600nm 가 $\lambda \cdot d$ 가 가

가 450nm 600nm

(T) TN

$$T = 1 - \frac{\sin^2\left(\frac{\pi}{2} \sqrt{1+u^2}\right)}{1+u^2}, \quad u = \frac{2d\lambda n}{\lambda}$$

, VA

$$T = \sin^2\left(\frac{\pi}{2}u\right), \quad u = \frac{2d_{\Delta n}}{\lambda}$$

1 2 , T u 가 , u $d_{\Delta n}$ 가 가 $d_{\Delta n}$. , T $d_{\Delta n}$ () , T

9 , TN VA VA 가 TN TN VA 가

10 가 가 (yellowish)

R, G, B Δn 2 T가

$$d = k \left(\frac{1}{k} \right)$$

가 Δn 0.08 $\Delta n = 0.08$, 2 T가 $1 = \frac{2d_{\Delta n}}{\lambda}$, u가 1 $k = \frac{1}{0.16}$. k 3 $1 = 2k_{\Delta n} = 2k \times 0.08$, $u = 1$

4

$$d = \frac{\lambda}{0.16}$$

. R, G, B 0.65 μm , 0.55 μm , 0.45 μm R, G, B (d) 4.06 μm , 3.44 μm , 2.81 μm 가

11 Δn 0.08 R, G, B

R, G, B (d) 가 R, G, B R B (d)
 가 1.25 μ m ,
 .
 가 .
 12a 12c R, G, B V - T .
 12a 12c , VT 가 가 B,
 . 4.0 μ m 가 VT 가
 가
 , VA PVA(patterned vertically aligned)
 가
 μ m·d 가 VT 가 VA TN 가
 .
 13 (single - domain) (multi - domain) V - T ,
 , 가 VT 가 , PVA
 가 1.25 μ m .
 14 (yellow) () (blue)
 (color shift) , 15 ()
 /) , 16 .
 14 15 , (B) (R) (G)
 0.2~0.3 μ m B 가 가
 PVA .
 17 (color property) .
 17 , 가 1.25 가 가
 , B R G 0.2 \pm 0.15 μ m
 가 .
 , B R G 0.2 \pm 0.15 μ m
 , 1 G R B 가
 R, G, B 12a 12c B
 .
 가 .

, B R G

.

(57)

1.

1 ,

1 1 ,

1 1 2 ,

1 2 1 가

,

1 , 2 ,

1 2 ,

2 , ,

2 2 가 ,

가 가 1 2
1 2

,

R , , 가 R , G , B , B
G 가

2.

1 ,

B R G $0.2 \pm 0.15\mu\text{m}$.

3.

1 ,

B , R , G 가 ,

R - G < G - B

.

4.

1 ,

1 2

5.

4 ,

1 2

6.

4 ,

2

2

2

가

7.

,

,

가

,

,

,

가

,

가

.

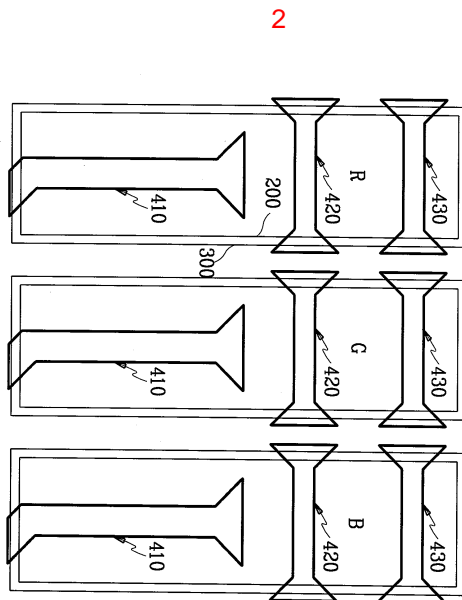
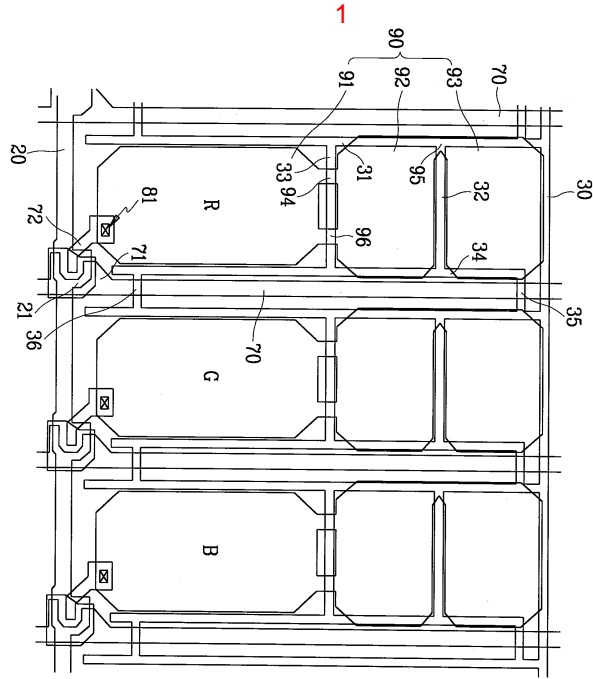
8.

7 ,

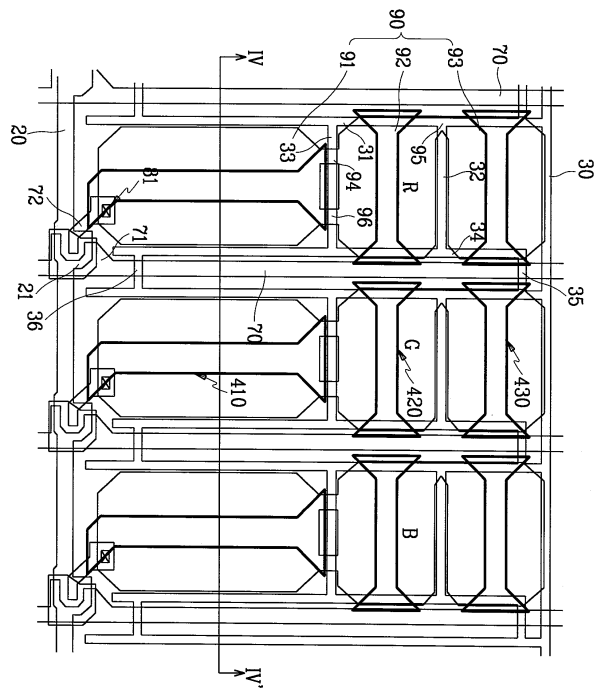
가

$0.2 \pm 0.15 \mu\text{m}$

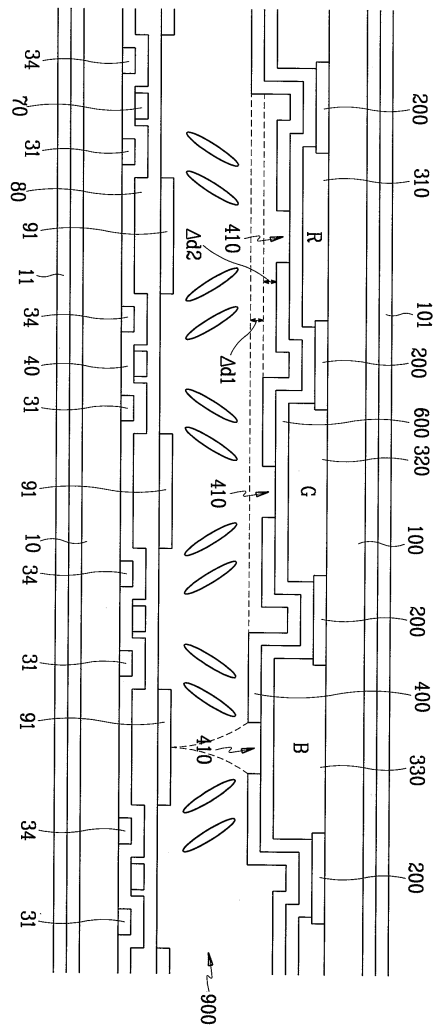
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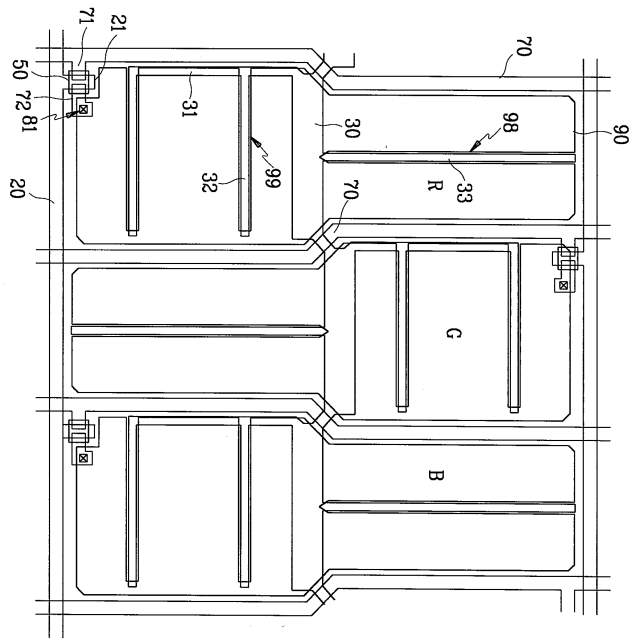
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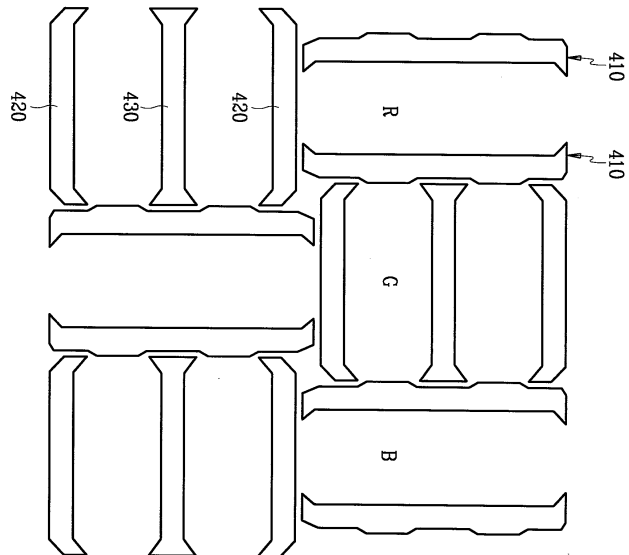
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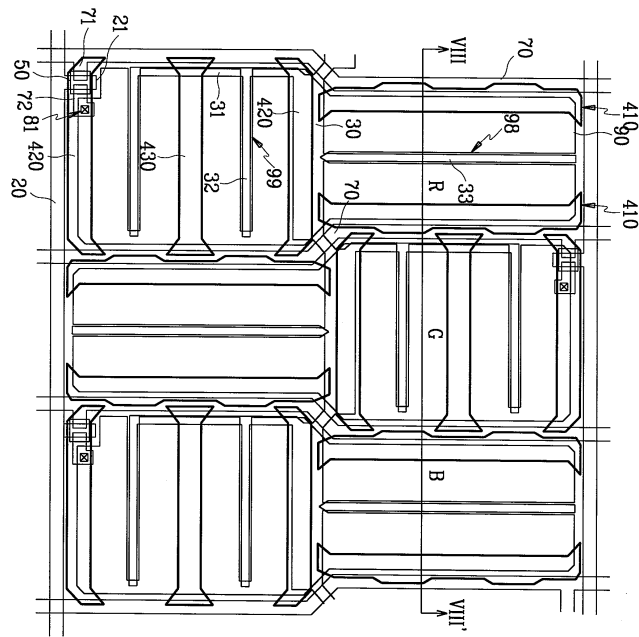
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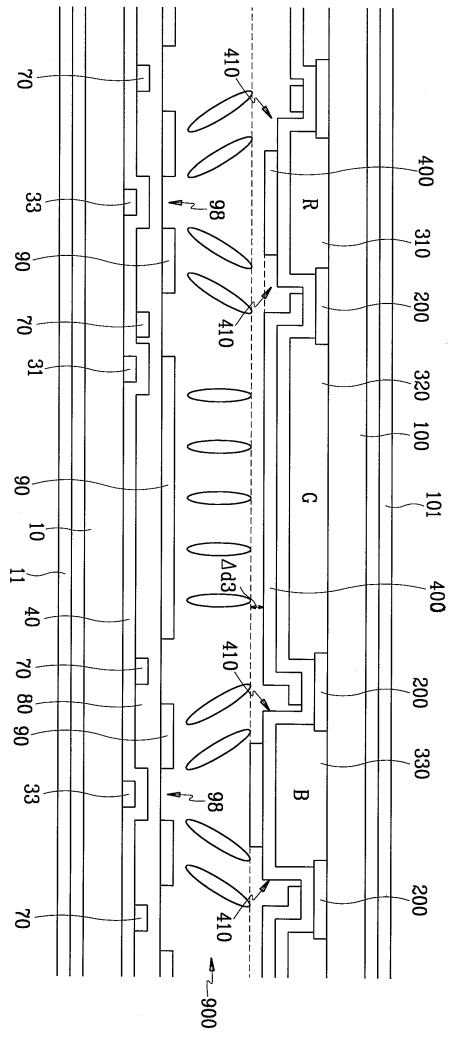
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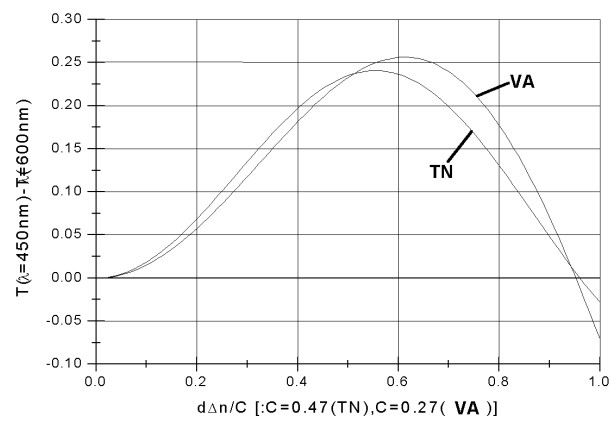
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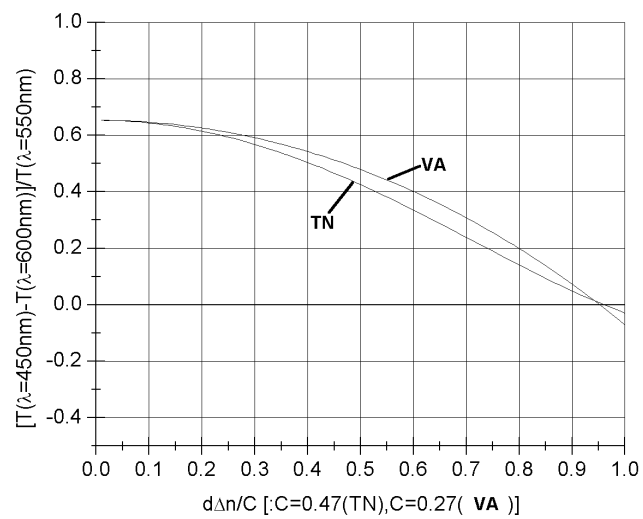
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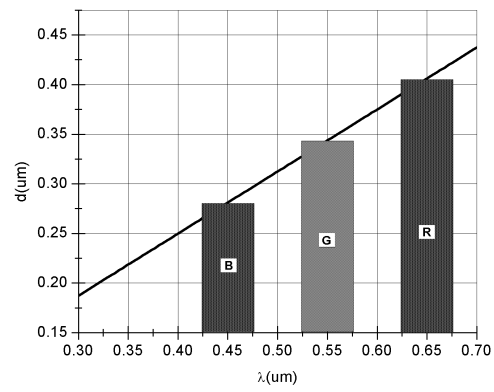
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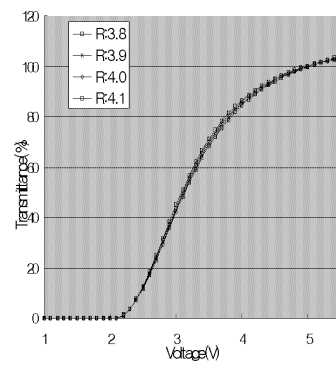
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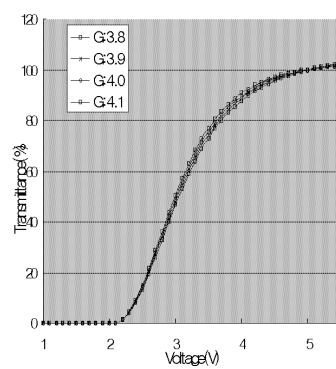
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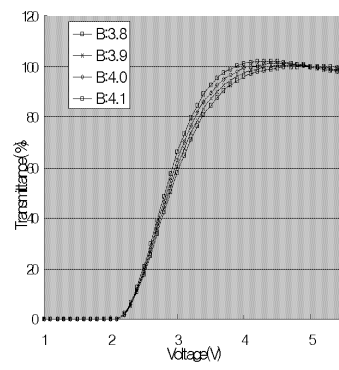
12a



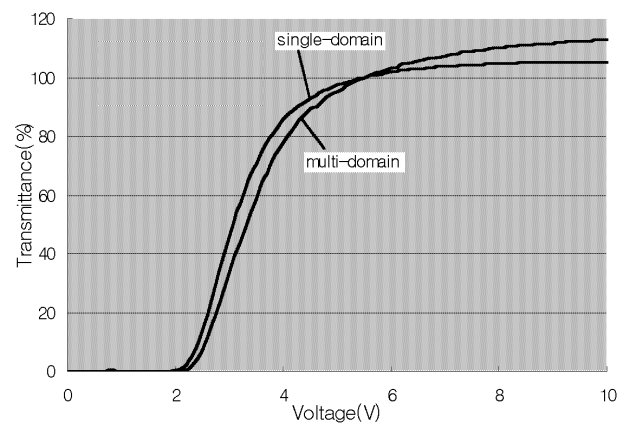
12b



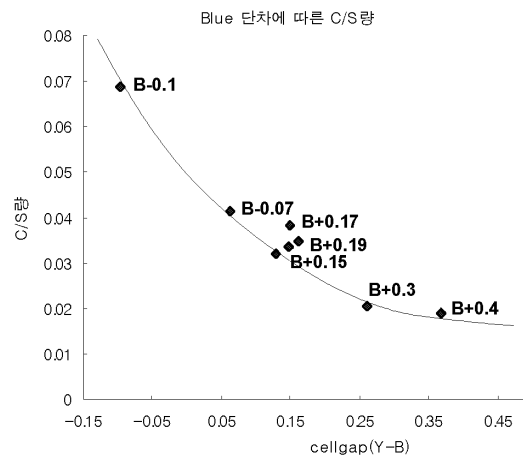
12c



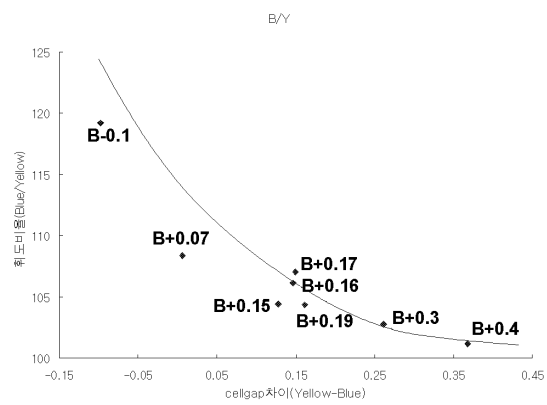
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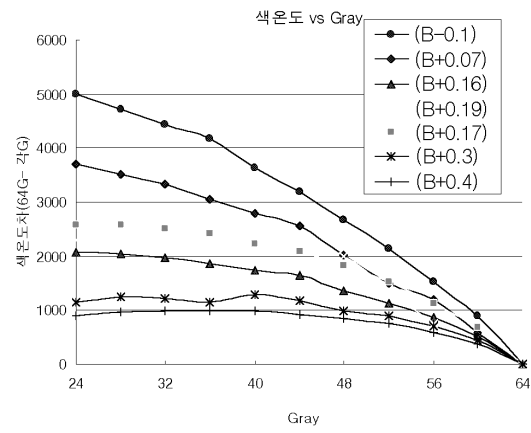
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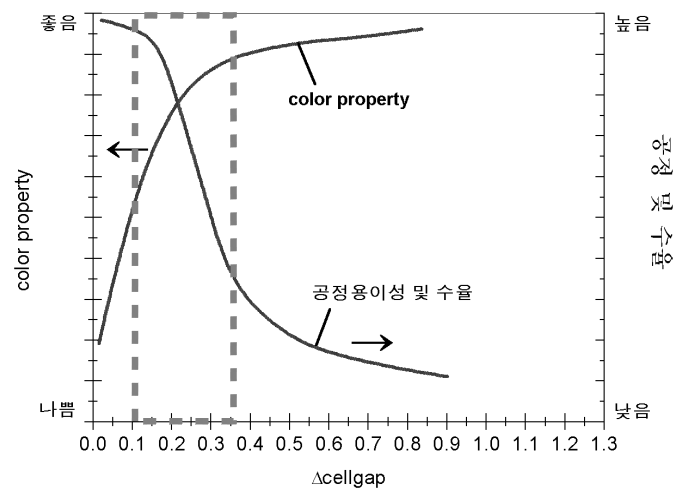
15



16



17



专利名称(译)	垂直取向的液晶显示装置和用于其的滤色器基板		
公开(公告)号	KR1020030006407A	公开(公告)日	2003-01-23
申请号	KR1020010042123	申请日	2001-07-12
[标]申请(专利权)人(译)	三星电子株式会社		
申请(专利权)人(译)	三星电子有限公司		
当前申请(专利权)人(译)	三星电子有限公司		
[标]发明人	SONG JANGKUN 송장근 KIM KYEONGHYEON 김경현 LYU JAEJIN 유재진 LEE SEUNGHEE 이승희 PARK SEUNGBEOM 박승범 CHOI YONGWOO 최용우		
发明人	송장근 김경현 유재진 이승희 박승범 최용우		
IPC分类号	G02F1/1335 G02F1/139 G02F1/1362 G02F1/1337 G09F9/30 G02F1/1333 G09F9/35 G02F1/1343		
CPC分类号	G02F1/133707 G02F1/136213 G02F1/134336 G02F2201/121 G02F1/1393		
其他公开文献	KR100759978B1		
外部链接	Espacenet		

摘要(译)

在栅极布线中具有孔图案的像素电极和由数据线限定的像素区域由栅极布线形成，数据线和薄膜晶体管形成在下板中。黑色矩阵形成在上板中。在黑矩阵所限定的像素区域中形成硅，铁锈和蓝色滤色器。并且外涂膜覆盖滤色器。形成在外涂膜上具有孔图案的公共电极。下板和上板彼此面对。在这些基板之间注入液晶材料。这里，与红色或绿色滤光器相比，蓝色滤光器的厚度薄。与红色或绿色滤光器下部的液晶单元间隙相比，蓝色滤光器下部的液晶单元间隙更大。以这种方式，在下侧之间减少了色移，并且可以实现具有优异图像质量的灰度和液晶显示器。液晶显示器，单元间隙，滤色器，色移。

