

(19)
(12)

(KR)
(A)

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G02F 1/133

(11)
(43)

2001 - 0113486
2001 12 28

(21) 10 - 2001 - 0033359
(22) 2001 06 14

(30) 2000 - 181692 2000 06 16 (JP)

(71) 가 가
가 가
가 4 6

(72) 931

(74) 가 2 20 - 11

(74)

:

(54)

(())(DL) () (HADL, VADL)
가 (PBP - L, PBN - L) 2 가 (PBP, PBN)

1 .
2 1 1 .
3 2 .
4 2 1 .
5 3 1 .
6 4 1 .
7 4 .
8 4 .
9 4 .
10 8 .
11 8 .
12 8 .
13 .
14 .
15 .
16 .

< >

PIX : RAX : X

RAY : Y SEL :

HADL, VADL : DL : ()

VCOM - L : () VCOM 가

PBP - L, PBN - L : CTL :

D: PWU :

가 가

가

가

(TFT)
() 가

(TRFT)

가 가

가

가

14

(TFT)

14

()
, LC

가

가

가

가

15

4 - 33309

3

NMOS (111), PMOS (111)
PMOS (111)
NMOS (111)

2) (112), (121, 122)
PMOS () (Vd) (112)

NMOS (Vg) (111)
(122)

M) PMOS (DM) (122) (121) (D)
(112)

NMOS (111) (Vg)가 " 0" 가 " 1" 가
PMOS (112) (Vg)가 " 1" 가 " 0" 가
(122) (Vg)가 " 0" (Vd) (121)
가 (Vg)가 " 1" (Vd)

(122) 가 .

16 8 - 194205 2(b) (3) (4)
 (21, 22, 23, 24) (22, 23)
 () 가 24
 (3) (4)
 (4) (21)

9 - 113867 , 9 - 212140, 6 - 102530 , 8 - 286170,
 11 - 65489 11 - 75144 가 .
 가 가

가 .

2

가

(Electroluminescence)

2

가

가

가

() 1 ()

/

가 ,

,

가 .

, 가 .

1

X (Random Access) (X)(RAX) (PIX) X-Y 2 (Y)(RAY)

(X)(RAX) (SEL) Y

(X)(RAX) (HADL) (Y)(RAY) (VADL)

(HADL), (SEL) (DL) (PIX)가 (P

IX) (VADL), (DL) (VCOM) 가 (VCOM-L) (VCOM) 가 (VCON-P)가

(VOM) 가 (VON-P) 2 (PBP, PBN) 가

(PBP-P, PBN-P)가 , 가 (PBP-P, PBN-P) (PBP-L, PBN-L)

(CTL) X (X, Y) (Y) (R, G,

B) (X, Y, D) (X)(RAX), (Y)(RAX),

(D)

(VOCM) (PBP, PBN) (CTL) (PWU)

2 1 1 (LC)

(HADL1, VADL) (DL) 가 (DL1)

가 (LC) 가

(VCOM) 가 . (VOCM - L) 가 . , (VOM) (LC) 가 .
 (PVP, PBN) (PBP - L, PBN - L) 가 .

(HADL) (HADL1) (VADL) 가
 2 NMOS (VADSW 1, HADSW 1)가 가 .
 (NLTF1) (N8)) p (PLTF1) n
 (N9)) 1 . , .
 1 p (PLTF1) n (NLTF1)
 p (PLTR1) n (NLTR1) 2 .
 2 p (PLTR1) n (NLTR1)
 p (PPVS1) n (NPVS1) 3 .
 2 p (PLTR1) n (NLTR1)
 (N8)) 1 (N8)) .
 1 2 n (NLTF1, NLTR1)
 (N6)) (PBN) .
 , 1 2 p (PLTRF, PLTR1)
 (N4))가 1 2 n (N6)) (P
 BP) .

3 p (PPVS1) n (NPVS1)
 (N10)) (N6, N10)) (N6)) (VCOM) .
 3 2 가
 () (DL1) 가 ()

HADSW1)가 가 (HADL1, VADL1) (High) 가 2 (VADSW1,
 (DL1)) (DL1) (N8)

2 (1)t1 (VADSW1, HADSW1) NMOS 가 가
 (DL1) (N8) .

(2) (t1) (N8) 가 (LOW) (N8)
 3 (PBP, PBN) PBP가 (NLTF
 +V), PBN (-V) 2 p (PLTF1) n (NLTF
 1) p (PLTR1) n (NLTR1) 가
 (N8)가 가 p (PLTF1)가 , n (

NLTF1)가 가 (N9) (PBN) . ,

(N9) 가 (NLTR1) 가 PLTR1 , NLTR1 p 가 (PLTR1) n
 (PBP) 가 (N8)가 (DL1) NMOS (N8) (VADSW1, HADSW1)가
) 가 (N8)가 (DL1) (t1) ()

(3) (N8) 3 p (PPVS1) n
 (NPVS1) (N8) 3 p
 (PPVS1)가 , n (NPVS1)가 가 (LC)
 (PBP)

t1 t3 (PBN) (-V) 가 (-V)가
 (VCOM) (~((+V) + (-V)/2) 가 가 .

(4) t1 t3 (PBP, PBN) (2) (3)
 가 .

(5) t4 (PBP, PNP) (PBP) (+V)
 (-V) (PBN) (-V) (+V) .

(6) p (N8) 가 1
 (N9) (PLTF1) n (NLTF1) NLTF1가
 (PBN) .
 , (PBN) 가 (-V) (+V) (N9)
 (-V) (+V) .

(7) (N9)가 (+V)가 2 p (PLTR1) n
 (NLTR1) PLTR1 가 NLTR1 (N) (N)
 8) n (NLTR1) (PBN) 가 .
 (+V) (N8) (+V) 3
 p (PPVS1) n (NPVS1) PPVS1가 , NPVS1

(LC) () (PBN) (PBN)
 (+V) (+V)가 . (VCOM) (~((+V) + (-V)
 /2) 가 가 .
 (VCOM) (3) 가 가
 가 가

- (8) 3 t7 (PBP, PNP) (PBP)
 (- V) (+V) , PBN (+V) (- V) (2),
 (3) 가 .
- (9) 2 t9 NMOS (VADSW1, HADSW1)가 가 (N8)가
 (DL1) (DL1) (- V) (N8)
 (- V) 1 p (PLTF1) n (N
 LTF1) 가 PLTF1 , NLTF1 .
- F2) n PBP (+V), PBN (- V)가 p (PLT
 (NLTF1) (N9) (PBP) (+V)가 .
 (N9)가 (+V) 2 p (PLTR1) n
 (NLTR1) 가 PLTR1 NLTR1 .
 (N8) (PBN)
 (PBN) (- V)가 (N8) (- V)가 NMOS
 (VADSW1M HADSW1)가 가 (- V) .
- (10) (N8)가 (- V) 3 p (PPVS1) n
 (NPVS1) 가 (PPVS1) (NPVS1) 가
 (LC) () (VCOM) (VCOM)
 (VCOM) 가 가 .
- (11) t12 (PBP, PNP) PBP (+
 V) (- V) PBN (- V) (+V) (N8)
 (- V) 1 p (PLTF1) n
 (NLTF1) 가 PLTF1 , NLTF1 (- V)가 .
- N9 (- V) 2 p (PLTR1) n
 (NLTR1) 가 PLTR 1 NLTR 1
 (N8) (PBP) (PBP) (- V)
 (N8) (- V)가 (- V) 가 .
- (12) (N8) (- V) 3 p (PPVS1) n
 (NPVS1) 가 PPVS1 NPVS1 가 (L
 C) () (VCOM) (VCOM)
 (VOCM) 가 가 .
- (13)
 () .
- (14) (6) (11) 가 N8 N8 N9
 N9 가 N8 N9
 (p (PLTF1) n (NLTF1) 1
 p (PLTR1) n (NLTR1) 2
) N9 (6)
 N9가 가 N9 (- V) 2 (PLTR1)

(6) (+V) NLTR1 (-V)가 , N8 (PBP) (-V)가 N8 (+V) (-V)가
가

(15) N8 N9 2 N9가 2 (PLTR1, NLTR1)
N8 1 (PLTF1, NLTF1)
3 (PPVS1, NPVS1) NMOS (HADSW1)
가 N8

(14) 4 ~ 6

4 2 1 2
(, 2 2 1)

2 p (PLTR1) n (NLTR1)
N8 1 p (PLTF1) n (NLTF1)
(N8') (RFB)

N8 NMOS (VADSW2, HADSW2) (DL2,
PBP, PBN, VADL, HADL2) 가

N8' 가
(RFB)

2 가 (14) N9
(PLTR1) (NLTR1) 가 N9
(RFB) N8 가 (6),(1)
1) (N8) 가

5 3 1 4
2 p (PLTR2) n (NLTR2)
(N8) 1 p (PLTF2) n (NLTF2)
(N8') nMOS (NFBSW) nMOS (NFBSW)
(PBP)

(NLTR2, PLTF2, NLTF2)가 (2 1) PLTR2
(NFBSW)가 가 , p n NMOS
(PLTR2, NLTR2) (N8') (6),(11) 2
(N8) (14) (PLTF2, NLTF2)

0 A: cell - A B:cell - B " 0" . 1 A: cell - A " 1"
 B:cell - B " 0" . 2 A: cell - A " 0" B:cell - B " 1" . 3
 A: cell - A B:cell - B " 1" . A: cell - A (1S) B:cell - B
 2 2S가 .
 가 " 1" 가
 0 0, 1 1S, 2 2S, 3 3S .
 가가 .
 10 8 . 1 3 (A: cell - A B:cel
 I - B C:cell - C) (MR, MR2, MR3) .
 XL YL XL () ,YL () ,DL1 A
 (,) DL2 B ,DL3 C . CLC .
 1 (C:cell - C/ B:cell - B/ A: cell - A)=3/2/1 . A: cell - A B:cell - B
 C:cell - C 1 (bit) (MR1, MR2, MR3) .
 1 (MR1, MR2, MR3) " 1" , " 0" 2 . (XL, YL)
 (DL1, DL2) .
 (XL, YL) (DL1, DL2, DL3)
 (MR1, MR2, MR3) .
 11 8 . 12 8 . 2 A: cell - A B:cell - B C:cell - C
 0 7 8 .
 0 A: cell - A B:cell - B C:cell - C " 0" . 1 A: ce A: ce
 II - A " 1" B:cell - B C:cell - C " 0" . 2 A: cell - A " 0" B:c
 ell - B " 1" , C:cell - C " 0" .
 3 A: cell - A B:cell - B " 1" , C:cell - C " 0" . 4
 A: cell - A B:cell - B " 0" , C:cell - C " 1" . 5 A: cell - A " 1"
 1" , B:cell - B " 0" , C:cell - C " 1" . 6 A: cell - A " 0" , B
 :cell - B " 1" , C:cell - C " 1" . 7 A: cell - A B:cell - B C:cell - C
 " 1" .
 A: cell - A 1S B:cell - B 2 2S, C:cell - C A: cell - A 3
 3S가 .
 가 " 1" 가
 0 0, 1 1S, 2 2S, 3 3S, 4
 4S, 5 5S, 6 6S, 7 7S .
 가가 .

, 1 2 3 1 가

가 가 .

7 10 FRC FRC
 7 10 (RAY) (X (RAY,
 SEL) Y (RAY))

FRC
 가 , FRC

FRC
 가 가 가

1 3 , ..., n 1 4 n² 1 2 , 8

13
 (MN) (PDA) (LCD) (HOST) (BAT) (INV) (KB)
 (MN) (L2) (PTP)가 가 (DP)

가 (MN) (L2) (PTP)가 가 (MN) (L1)

(DP) (LCD) (MN) (L1)

가 가 가 (MN) (L1)

가 가 가 (MN)가 가 (LCD) (MN)

(DP) (PNH)가 (PN)

(KB) (PN)
 가 (PNL)

(PDA)
 가

, 13

(PTP)
(LCD 2)

(LCD2)

가 .

13

가 .

가 .

가

가 .

(57)

1.

가

2.

가

3.

가

가

4.

3 ,

5.

3 ,

6.

2 , 2

가

가

2

가

p , n

1

1

p , n

1

2

p , n

2

p , n

1

2

3

p , n

2

p , n

1

1

2

n

1

2

p

1

2

n

3 n

.

7.

6 ,

2 p , n , 1

.

8.

6 ,

2 2 p , n p , n 1

2

p , n

1

n ,

n 1 2 p

n 가 가 1 2

p

.

9.

6 ,

2 2 p , n p , n 1

2

p , n

1

n ,

n 1 2 p

1

2

p

n 가 , 1 2

p

.

10.

6 ,

11.

6 ,

2
2

2
2

12.

6 ,

3 p n
p n

2
2

3

p 1/2

13.

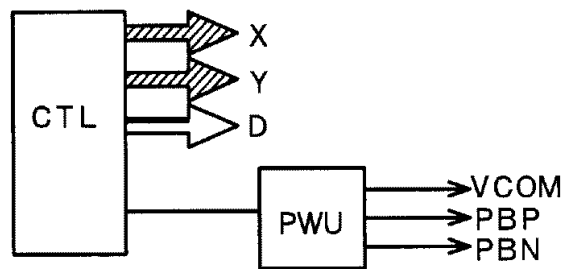
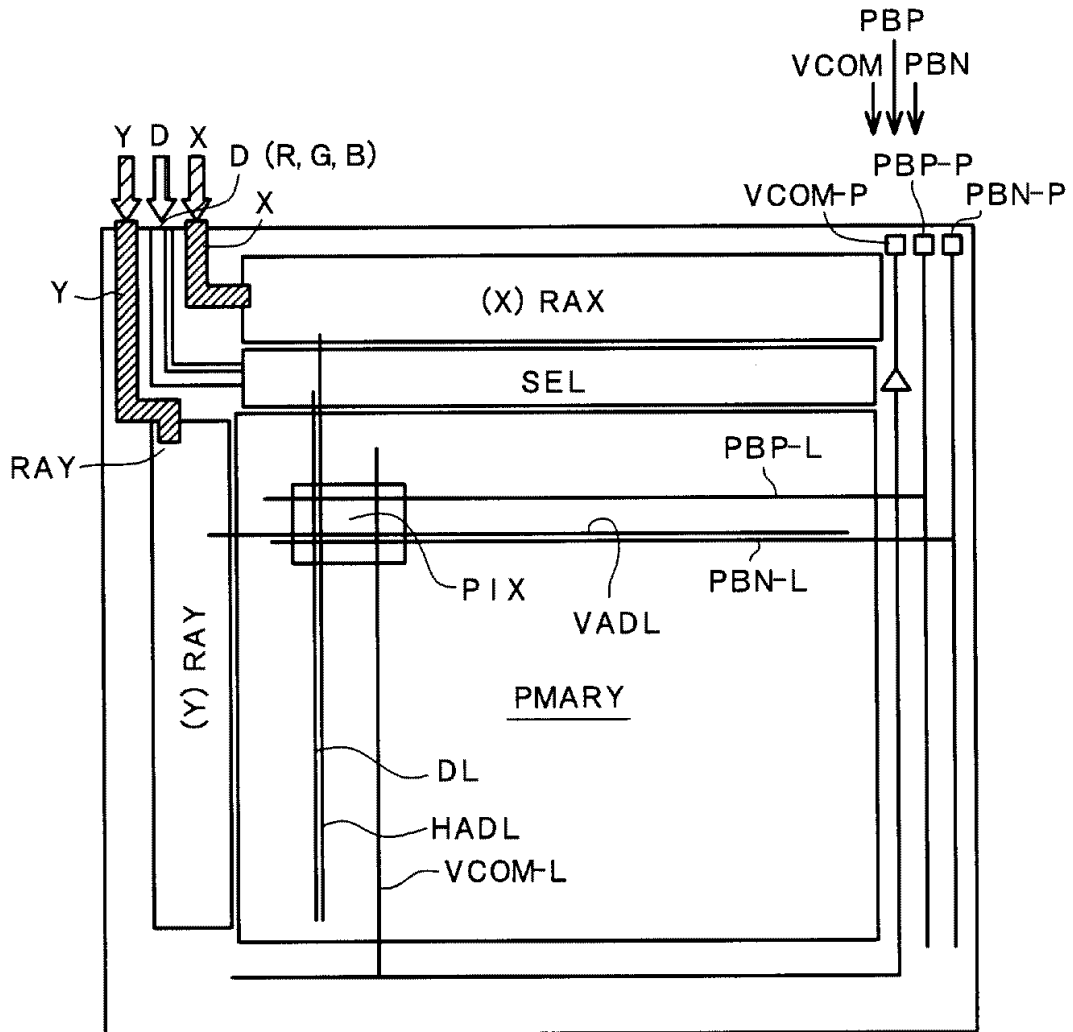
6 ,

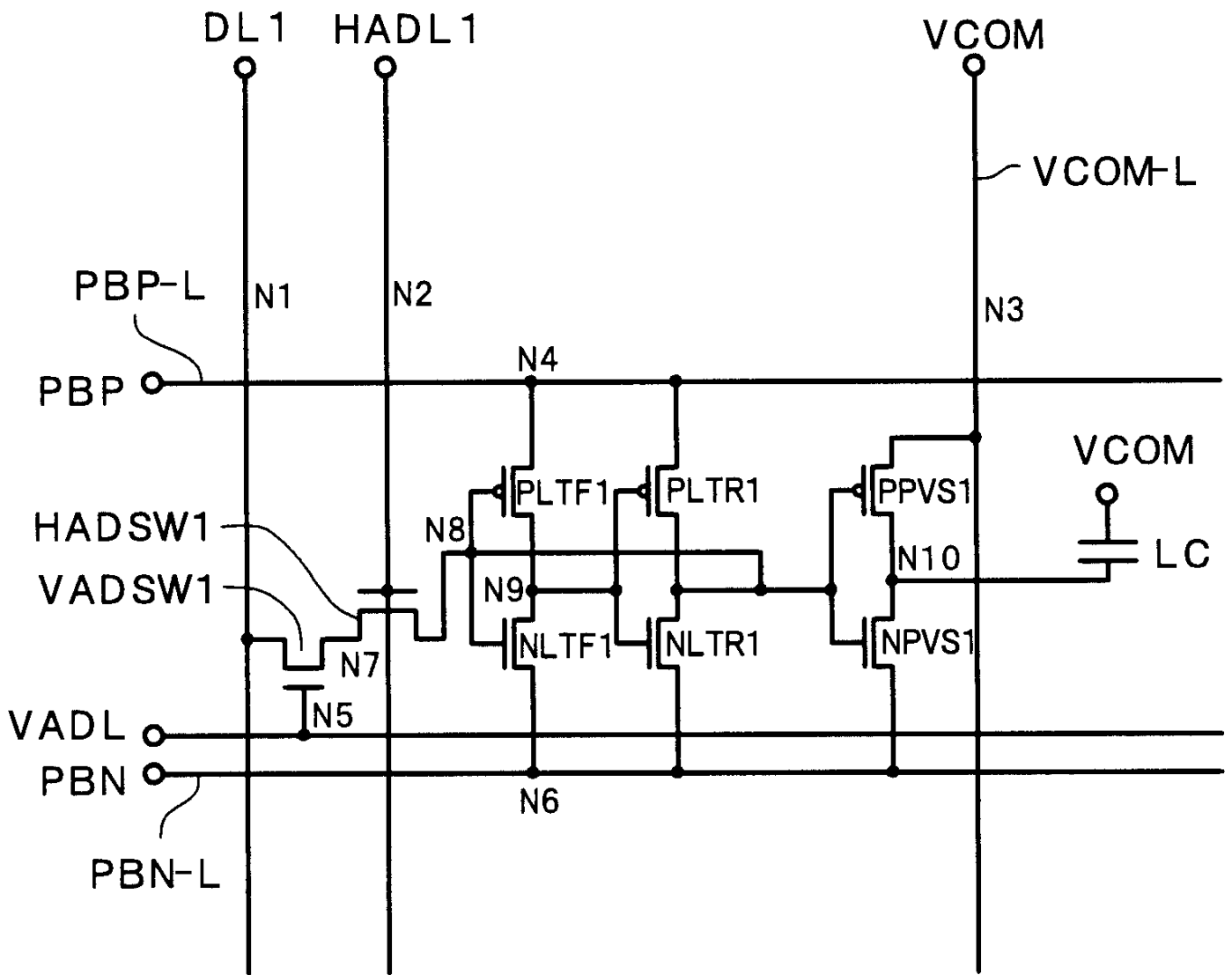
3 n p n
, p

2
2

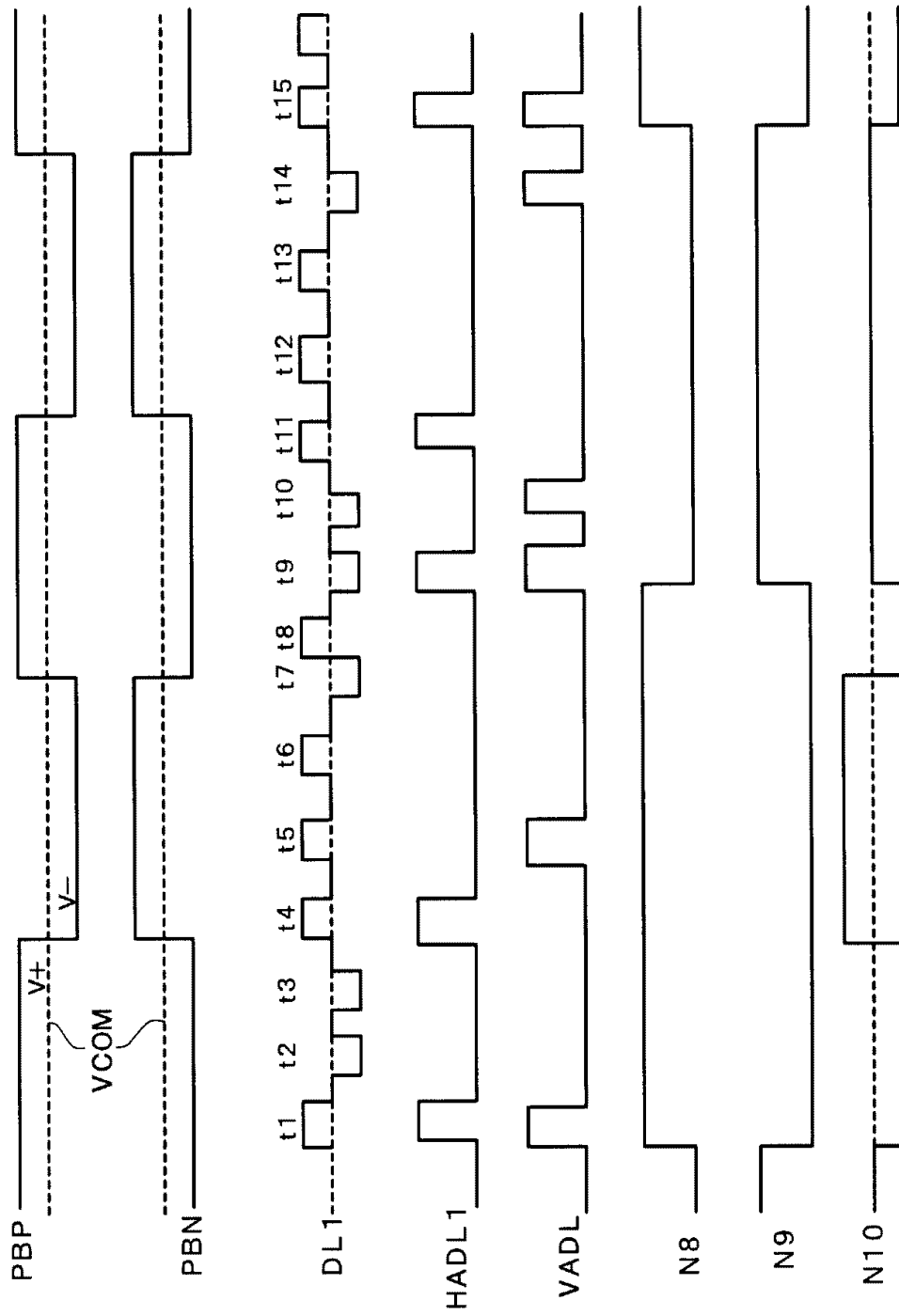
3 n 1/2

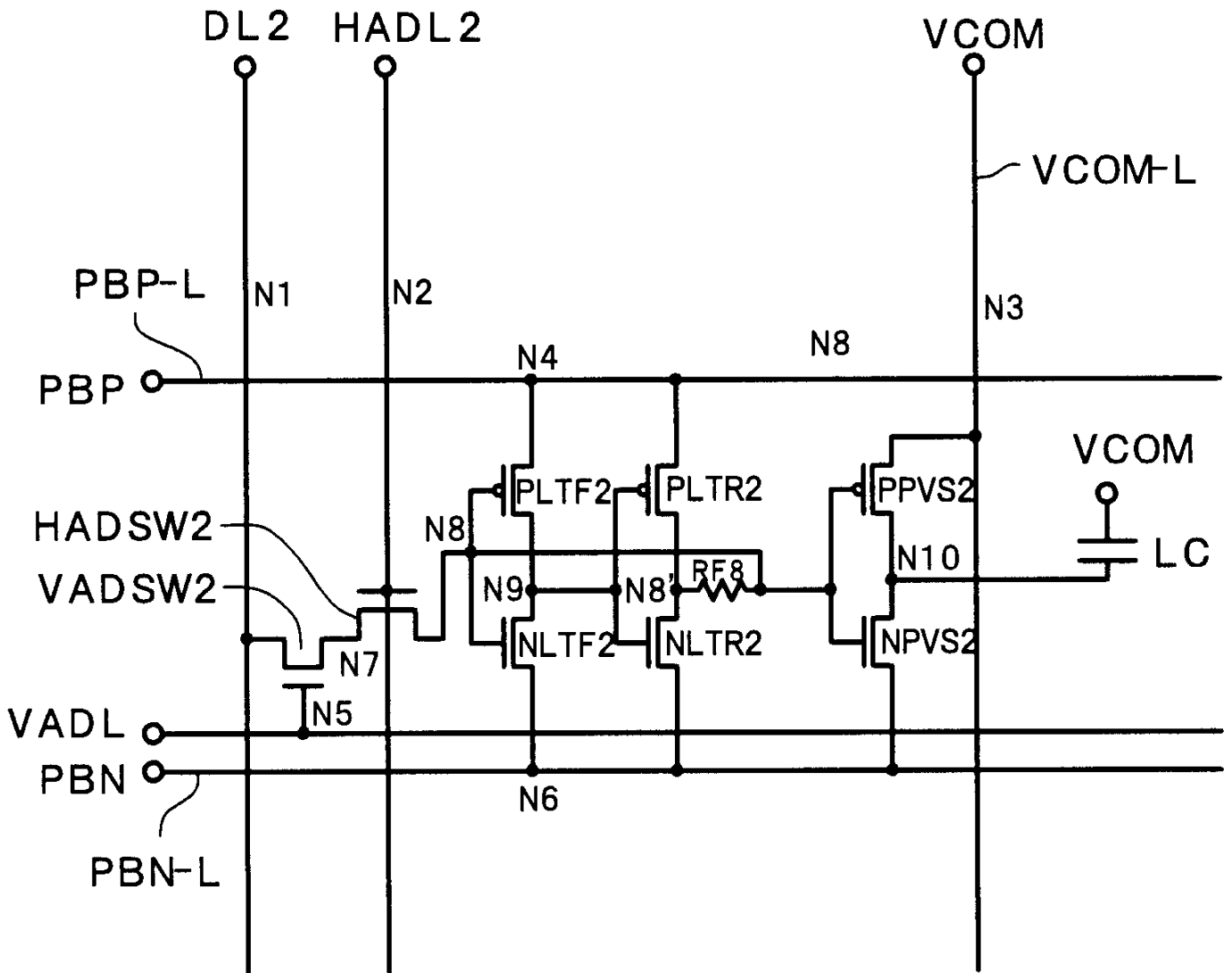
1

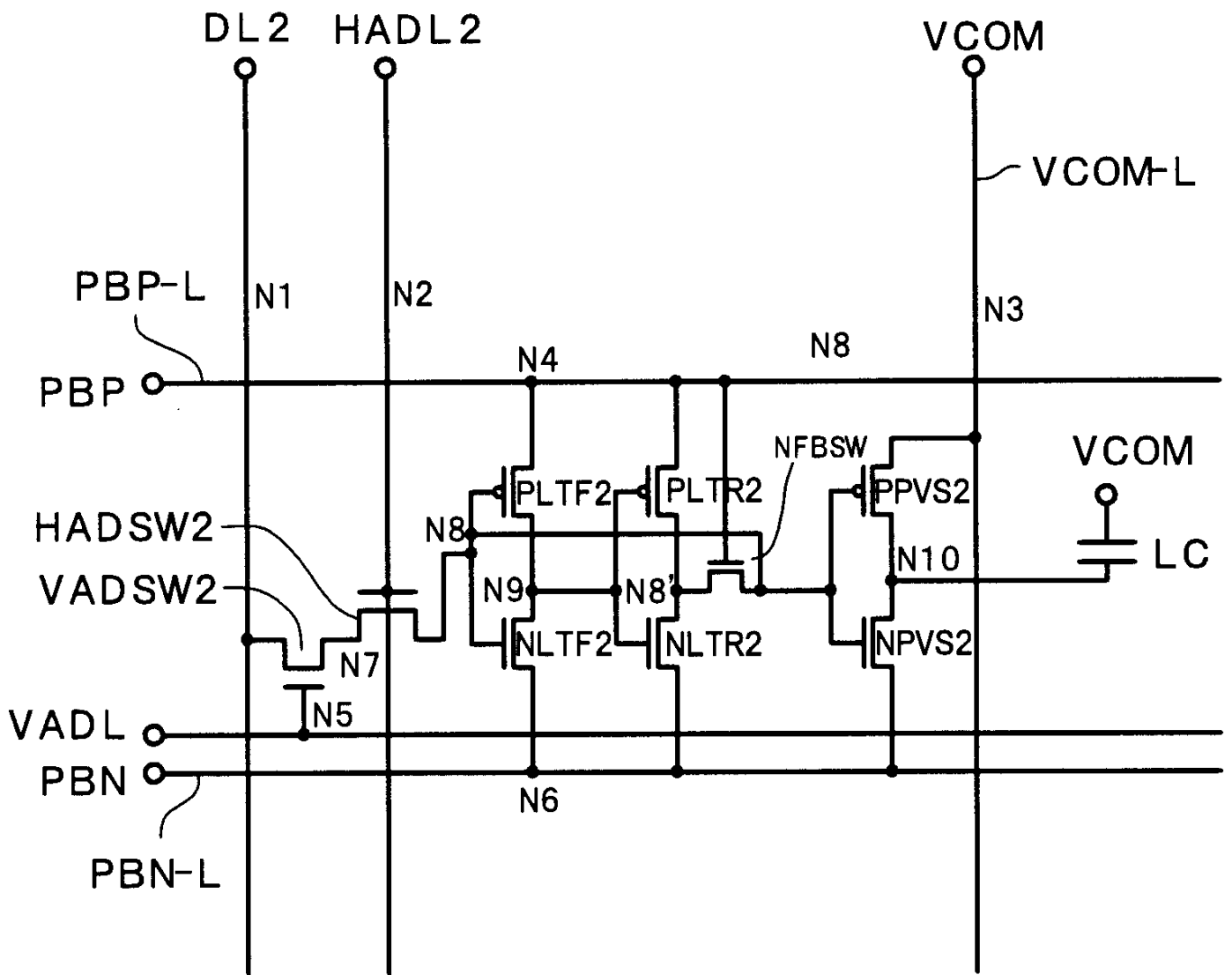


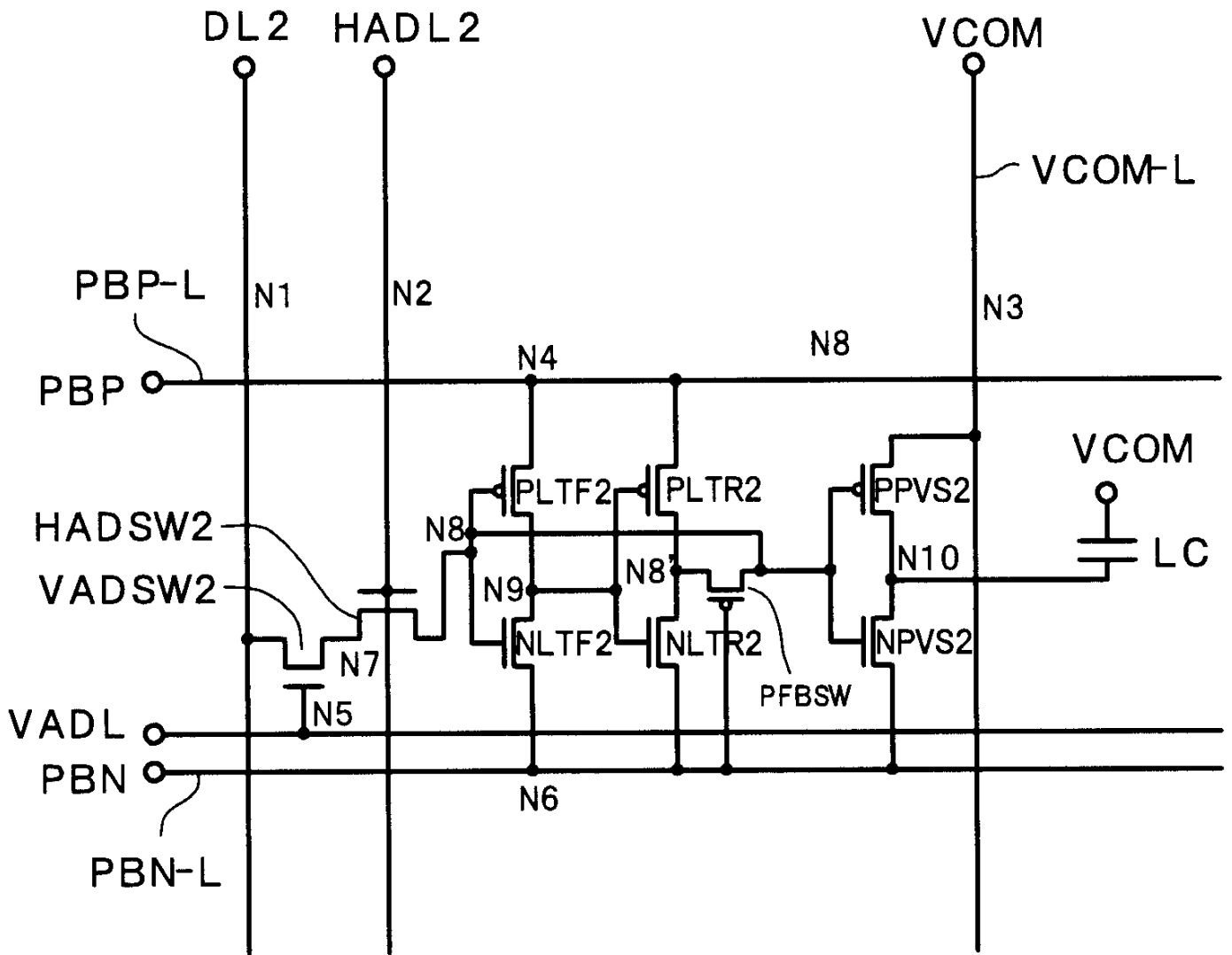


3



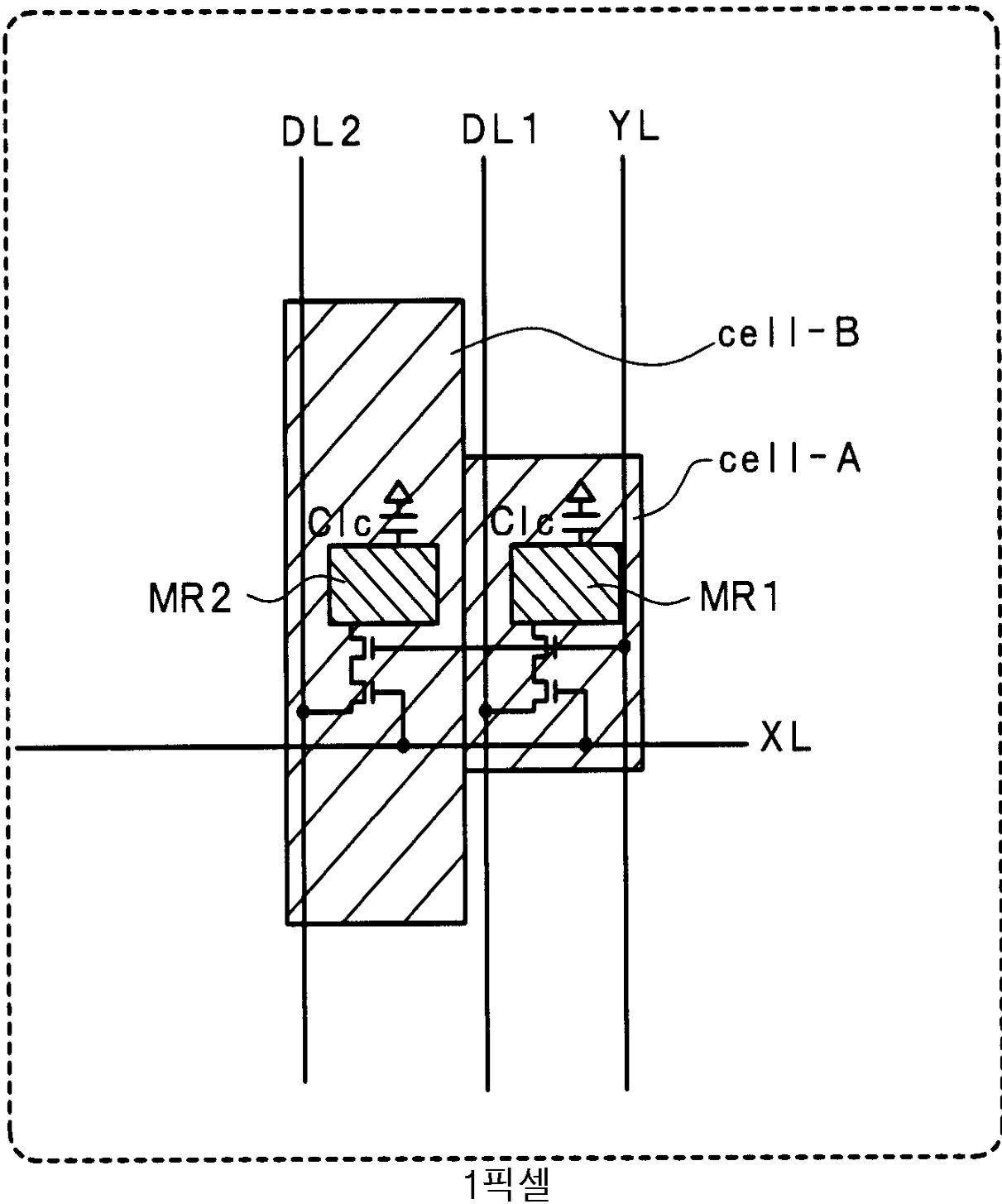




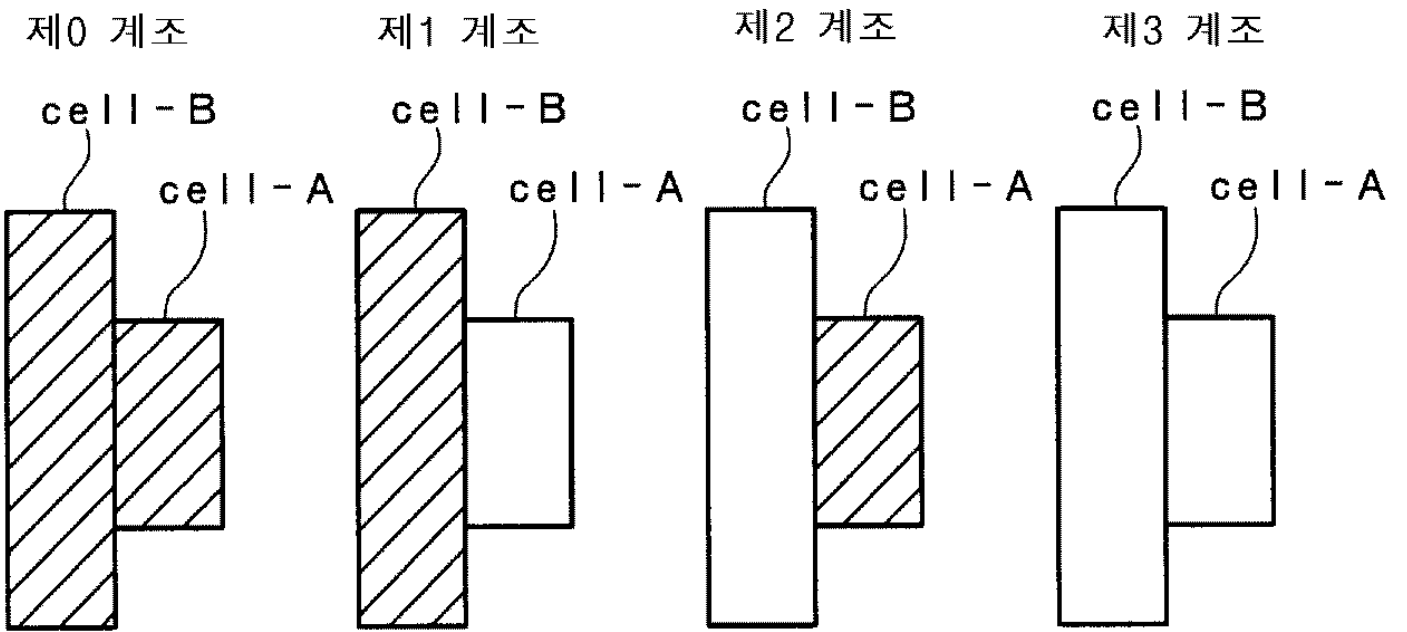


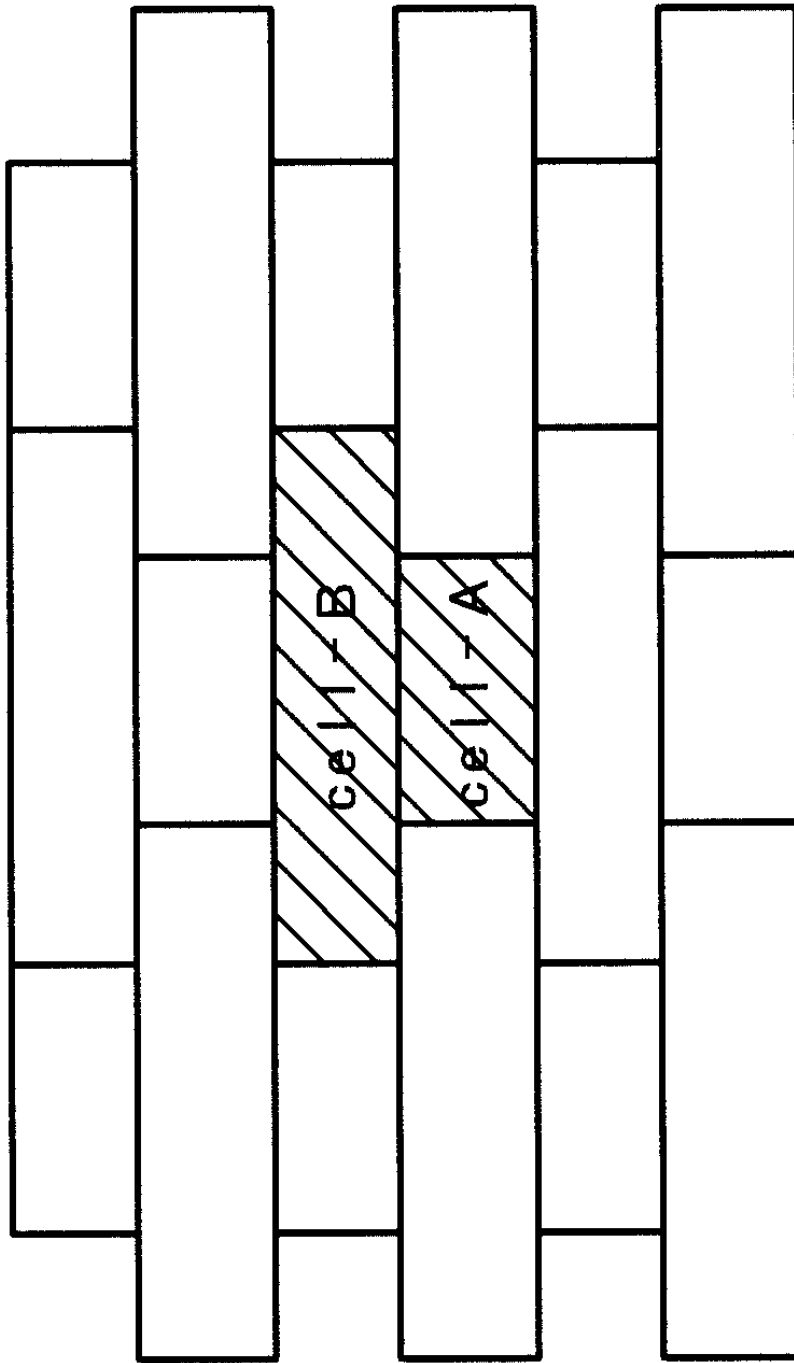
7

셀크기 : (cell-B) / (cell-A) = 2 / 1

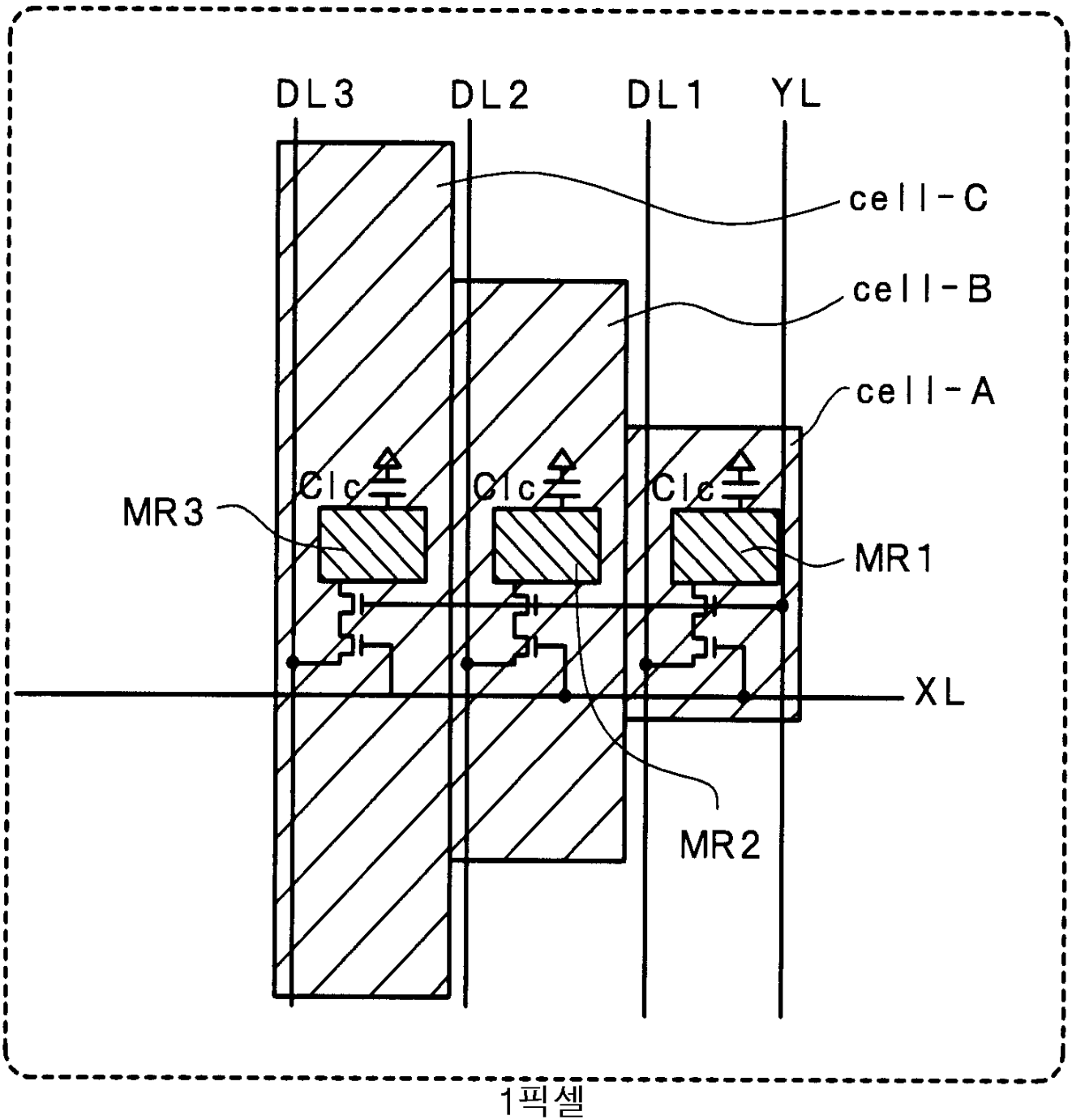


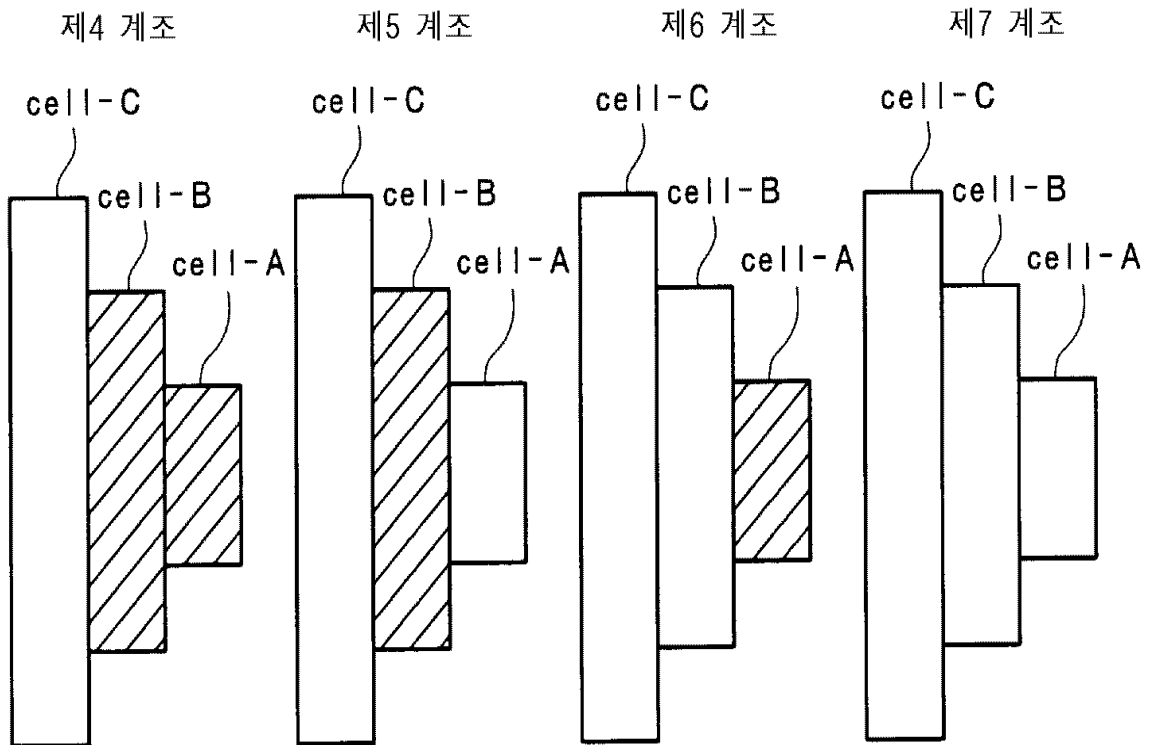
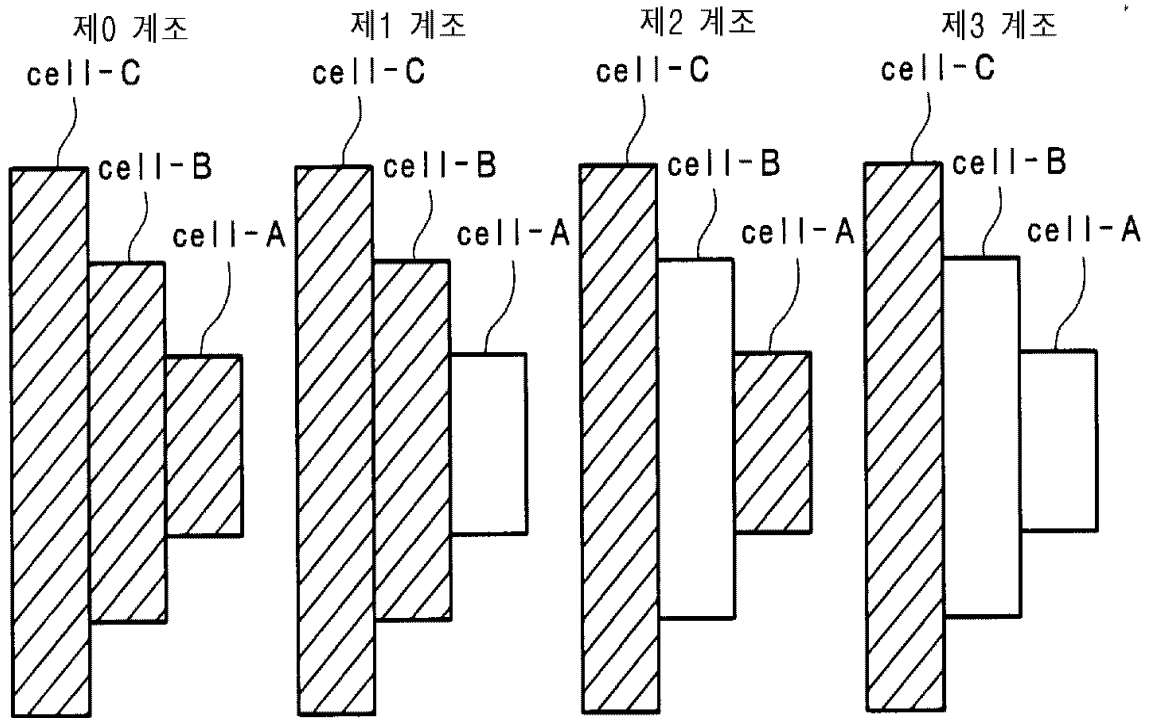
8

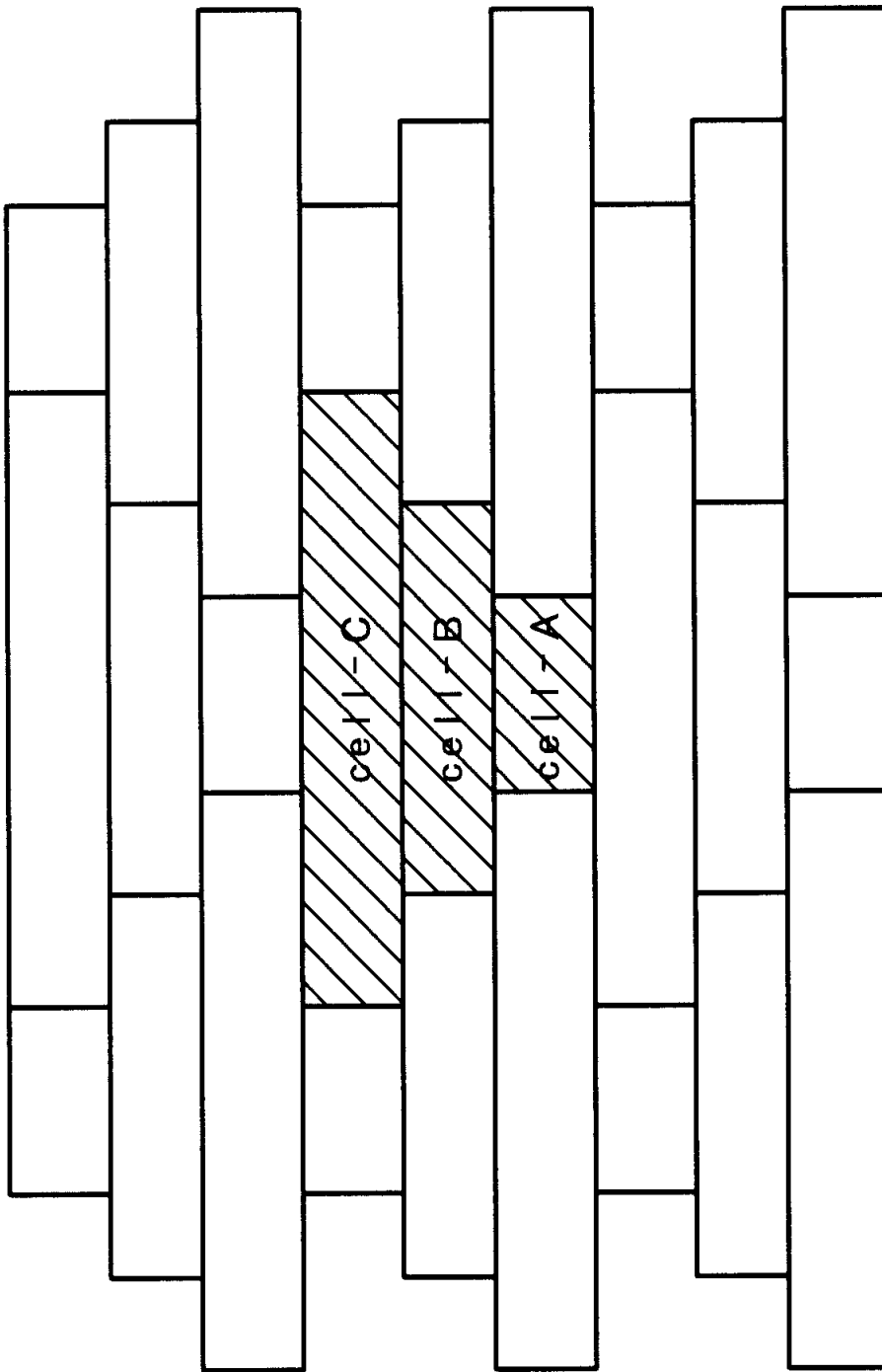


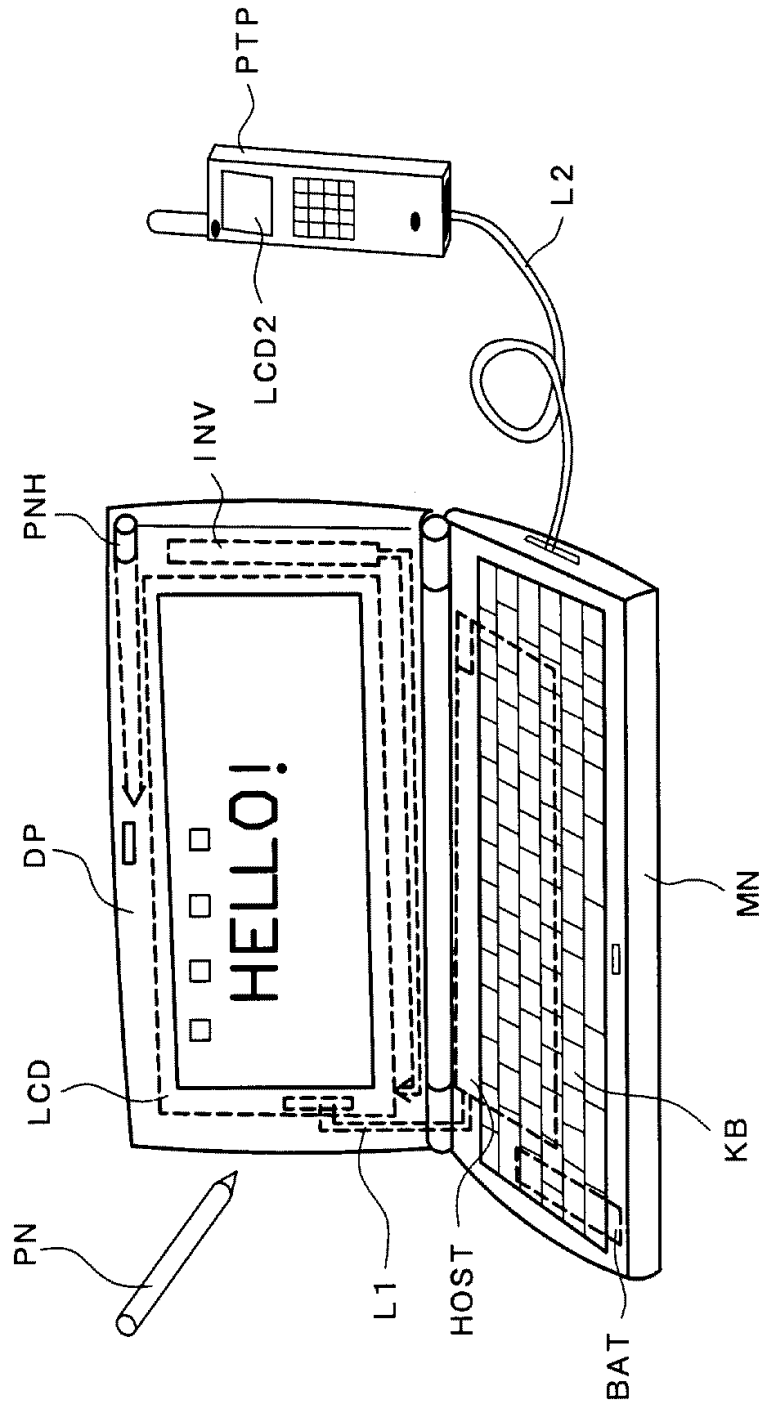


셀크기 : (cell - C) / (cell - B) / (cell - A) = 4 / 2 / 1

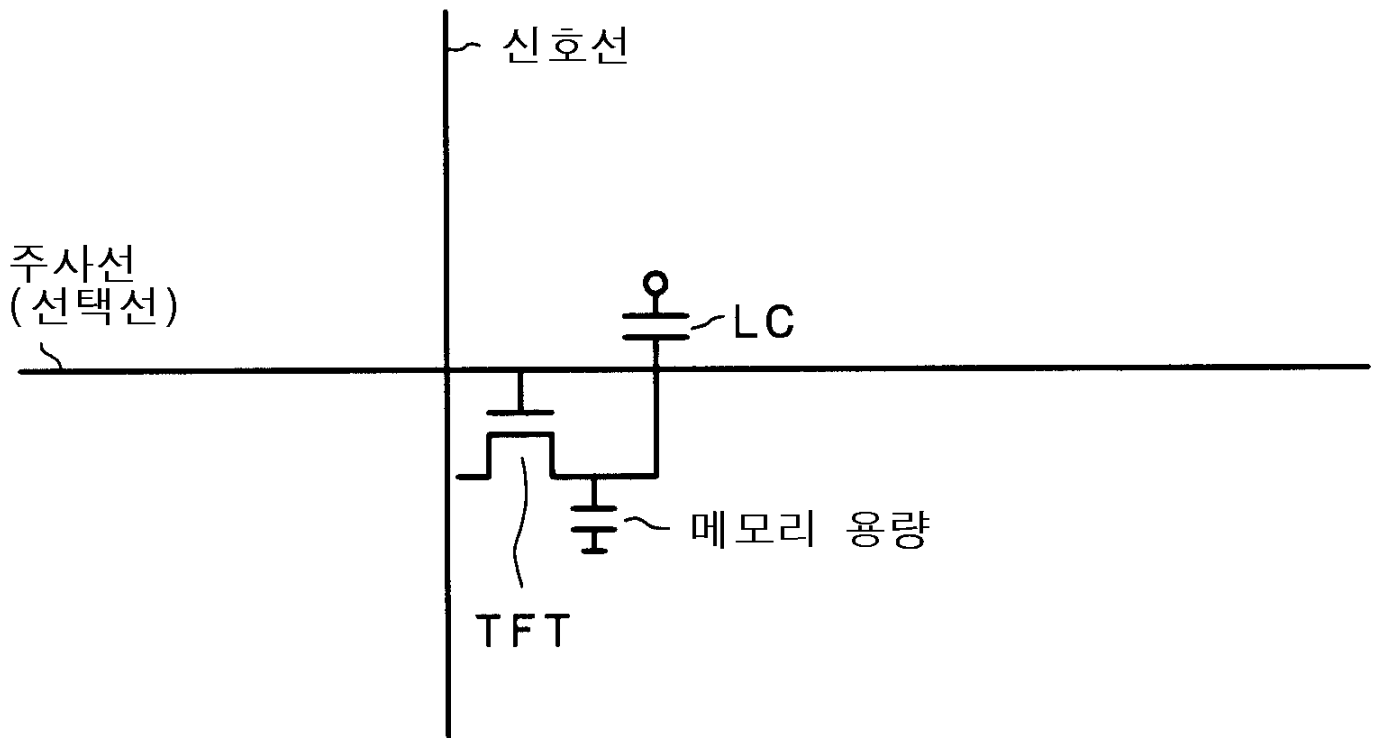




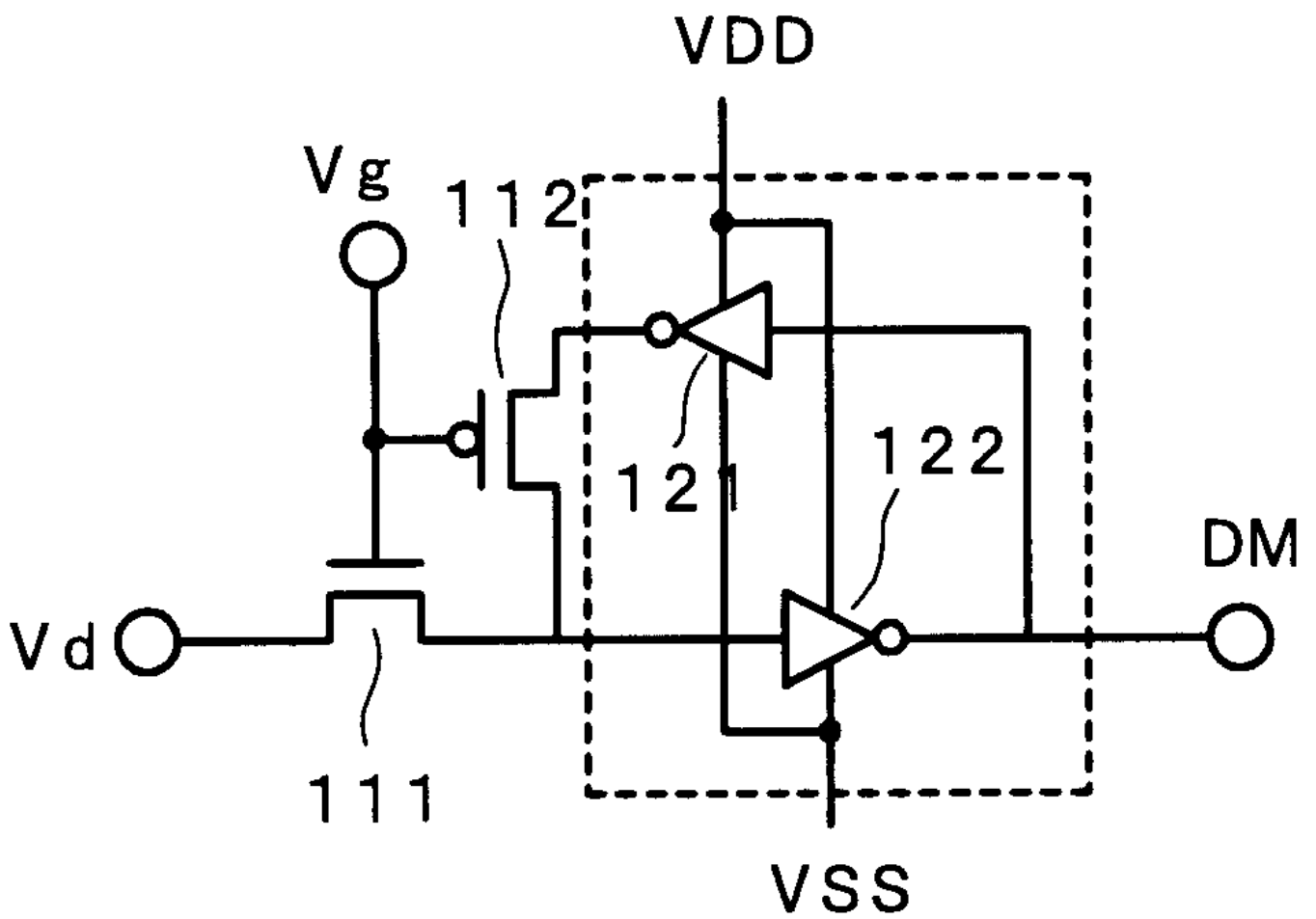




14



15



专利名称(译)	有源矩阵型显示装置和液晶显示装置		
公开(公告)号	KR1020010113486A	公开(公告)日	2001-12-28
申请号	KR1020010033359	申请日	2001-06-14
[标]申请(专利权)人(译)	日立HITACHI SEISAKUSHODBA		
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发明人	미야자와토시오 사토우토모히코		
IPC分类号	G02F1/136 G02F1/133 G02F1/1368 G09F9/30 G09G3/20 G09G3/30 G09G3/36		
CPC分类号	G09G3/2074 G09G3/3614 G09G3/3659 G09G2300/0857		
代理人(译)	李钟IL		
优先权	2000181692 2000-06-16 JP		
其他公开文献	KR100447415B1		
外部链接	Espacenet		

摘要(译)

本发明提供了一种有源矩阵型显示装置，该有源矩阵型显示装置通过具有等同于静态存储电路的图像存储电路而无需使用两个电压，从而以最少的配线数实现了具有高数值孔径和高清晰度的多灰度级图像显示，即，高电压和低电压。在多条扫描线（选择信号线）和多条信号线（数据线（视频信号线））彼此相交的部分处布置像素，每个像素包括像素电极，选择像素的开关元件。设置有像素电极和存储要写入像素电极的数据的存储电路，并且提供了将交流电压施加到存储电路的电源线。

