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(21) 10 - 2000 - 0039126 (65) 2001 - 0015252
(22) 2000 07 08 (43) 2001 02 26

(30) 1999 - 196212 1999 07 09 (JP)

가 1179

(74)

10

(54)

가

가

1

1

7

, , , ,

1 TFT

2 1 가

3 1 가

4 , (D)

5 1

6 5

7

8 1 (tDD)

9 6

10 (tDD)

11 7

12 11 (HIZCNT) (PRECNT)

13 11 (PRET, PREN, DECT, DECN)

14 11 (ACKEP, ACKOP, ACKEN, ACKON)

15

16 (D) , 가

17 6 ,

18 6

19 6

20 (Voff) 가

21 1

22 1

23 1 , (A)가 H

24 1 , (B)가 H

25 1

26 1 , (Voff) 가

27 1 , (Voff) 가

28 1 , (Voff) 가

29 1

30 29

31 30

32 29

33 32

34 1

35 29

36

37

38 가

10 : (TFT - LCD)

21, 22, 33 :

30 :

31, 278, 279 :

32 :

35, 36, 37, 403 :

38 :

100 :

110 :

120 :

121, 122 :

123 :

124 :

130 :

131, 132, 134, 135, 141, 142 :

133 :

140 :

151a, 151b :

152 :

153 :

154 :

155 :

156 :

157 :

158a, 158b :

261 :

262, 264 :

263 :

265 :

271 :

272 :

400 :

401 : PORN

402 :

410 :

420 :

430 :

440 :

450:

D : ()

G : ()

ITO1, CX :

ITO2 :

CT :

CL :

TFT :

CLC, Cp1x :

CSTG :

CADD : 가

Cstg :

PM, PA, PB : PMOS

NM, NA, NB : NMOS

, 1

가 가 , 1

1

,

(tDD)

D) 10 20 μ s

1

20 μ s

(tD

(**狹額緣化**)

(MOS)

(tDD)

,

가

(

가

가

가

가

가

()
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1

2

, , (), 1
가 ,

, , 2 1 1
, , 2 1 1

, , 가 가 가 , , 가
가 , , 가

가 1 1

[1]

8

1 , TFT ()

1 (LCM) , (TFT - LCD: 10) (130)가 , , (10) (140), (100)가 .

(100) , , (130), (140)
TCP(Tape Carrier Package)

$$< 1 \quad (10)$$

2 1 (10) 가

$$2 \quad , \quad (10)$$

[TFT(1), TFT(2)] 가 , [TFT(1), TFT(2)]
 [ITO(1)] .

, [ITO(1)] (CLC) 가 . , [ITO(1)] []

3 1 (10) 가

2 , (G) 가 (CADD) , 3
가 , (COM) (CSTG)

가 , , , (G) 가 가 (CADD)
(IT01) 가 , , , 가 가 ,
가 가 .

, 2, 3 가 , 2, 3 , AR

, 2, 3

2, 3 (10), , (D) (130) . (TFT) 가
 , (G) 1 (TFT) (G)
 , (140) .
 < 1 (100)
 1 (100) (110) (120) .
 (110) 1 (LSI), , (R · G · B),
 (130) (140) . (110) (135)
 가 1 (130) , , 1 (133)
 (130) .
 , (110), (130) (CL2)[, , (CL2)] (131) .
 6 , 1 , , (R), (G), (B) 1
 .
 , 1 (130) 1 (130)
 .
 1 (130) 가 2 (130) 2 (130), 1 (130)
 .
 , 가 , (130)
 가 , , , , (130)
 , 1 (110), , 1 (10), (D) (132)
 (130) .
 , (110), (142) 1 (140) 가 , 1
 .
 , (G) (110), (CL3) 가 1 (141) (140) 1 (10)
 .

, (10) (G) (TFT)가 1
 , (10)
 < 1 (120)
 1 (120) , (121), (122), ()
 (123), (124)
 5 (121), (122) (V"0 V"4) , (122) 5 , (V"5 V"9)
 (V"0 V"4) (V"5 V"9) (130)
 , (130) (110) () ; M) (1
 34) (123) [ITO(2)] 가 () (124)
 (TFT) 가 가 ()
 < 1
 , () 가 가 ,
 가 , 가 , /
 , , , , 2가
 , , , ,
 , , , ,
 , [ITO(1)] 가 2 가 ,
 , N ,
 1 , , ,
 4 , (D) , (, [ITO(1)] 가 ,) (130)

, (130) , 4 (D) , [ITO(2)] 가
 (D) , (VCOM) [ITO(2)] 가 (VCOM) (4) , (4

, (130) (D) 가 .
 , (130) , , (D) 4 (D) , ,
 (D) 가 .

, (130) (D) 가 .
 , , , (D) (D) 가 .

ITO(2)] , (TFT) (D) 가 , [가

, [ITO(2)] 가 가 , [ITO(2)]

< 1 130

5 , 1 (130) 1 (LSI)

, (130) 1 (151a) (121) 5 (V"5
 (V"0 V"4) 64 , , (158a)
 (157) . . .

V"9) (151b) (122) 5 (157)
 64 , , (158b) (157)

, (130) (152) (153) , (110) (15
 (CL2) , , (154) (153) , 6 (15

4) . . (154) , (153) , (110) (154)
 (110) (CL2) , , (155) , (110) (CL1) (154)

. . (155) (156) (157)

7 , (130)

, 7 , (278), (279), (271)
(272) , (D), , 1 (Y1) 4
(Y4)

7 , (TG1 TG4) , 6 (2)264 1

, PAD(21, 22) , , 1 (Y1) 4 (Y4)
()

1) , , (279) , (278) (271)
: 30 (272) , () , (27)

(30) , (278) (271)
(TG31) , (279) (272) ()
TG32)

(TG31, TG32) (DECT, DECN) ,
(278) (279) (271) (272)

, (30) , (TG33) (TG34)

(TG33, TG33) , (PRET, PREN) , ,
(271) (272) () , ()
(VHpre) , , (272) () (VLpre)

< (130) (tDD)

8 , 1 (130) (tDD)

, 8a 1 , , 6 (2)264

, 8a , (31) 6 (278) (279)
, (32) 6 (271) (272) , , (33)
7 PAD(20) PAD(21)

9 , 6 (278) (279)

9 , 6 (278) (279) , 가 MO
S MOS 가 (TRP2, TRP3)

, , , (130)
(278) (279) (13)
0) MOS

,	(278)	(279)	.
,	(278)	(279)	(271)
(272) 가	,	(271)	(272) 가
,	(278)	(279)	(271),
(272))	,	(271)
,	8b	,	(VLCH)
(, , ,		(D)	
(tDD))	.
10 ,		(130)	(tDD)
,	10a , 1	,	(2)264
,	10a ,	(31) 7	(278)
,	(32) 7	PAD(20)	(272) ,
7		PAD(21)	(33)
가	,		(279)
(279)	(271)	(272)	(278)
		(TG31)	(TG32) 가
(272)	(TG31, TG32)		(271)
,	(278)	(279)	(278)
,	,	가	.
,		(271)	(272)
Hpre)		(VLpre)	(D)
(VHpre)		(VLpre)	(V)
			.
(278)	(271)	(272)	(D)
,			,
(278) CH)	(279)	(271)	(272) ,
,	,	,	(VL
10b	,	,	
가	,	,	.
,			.
,		1	.
,			.
(VLpre)	,	(D)	.
(VLCH)	,	,	.
	가		.
,			.
,			.
(VHpre)	,	(D)	.
(VLCH)	,	,	.
	가		.

, , 10b , (D) , (VLCL)
 , (tDD) 8 , , 6 - 337400 , 10 - 187100
 , , , , ,
 , , , , , (278)
 (279) , MOS , , , , (279) , , , , (tDD)
 78) , , , , ,
 , , , , ,
 < (30)
 11 , 7 (30)
 11 (HIZCNT) (TG1 TG4) 가 (CL1) High
 ACKEP, ACKOP, ACKEN, ACKON (CL2) 8 (HIZCNT) H .
 (, , H) , (271) (272)
 (HIZCNT) (271, 272) (D)
 , (HIZCNT) 가 H , (ACKEP, ACKOP) Low (, , L
) , , (ACKEN, ACKON) H .
 , (TG1 TG4) 가 .
 11 (PRECNT) (TG31 TG34) 가 (HIZCNT)
 (PRET, PREN, DECT, DECN) (CL1) L (PRECNT) .
 (CL2) 4 H .
 (DECT) (PREN) H L , , (DECN)
 (PRET) L H .
 , (TG31, TG32) 가 , , (tD1) ,
 (TG33, TG34) 가 .
 , (PREN) (DECT) L H , , (PRET) (DE
 CN) H L .
 , (TG33, TG34) 가 가 , , (tD2) ,
 (TG31, TG24) 가 .

12 , 11 (HIZCNT) (PRECNT)

12 , D (F30) (CL2) (CL1) , D (F30) (F38) , NAND (NAND31) , D (F30) , NAND (NAND31) , (CL1) H , (CL2) 8 , L

NAND (NAND31) (INV) , 11 (HIZCNT)가

, D (F34) D (F34) (F39) H , D (F39) (F39) (CL1) , D (F39) (CL1) H , (CL2) 4 H

, D (F39) L 가 , 11 (PRECNT)가

13 , 11 (PRET, PREN, DECT, DECN)

13 , (PRECNT) , (36) (tD1) (P) RECNT) NAND (NAND32) (PRET)가 , , (PRET) (INV) (PREN)가

, (INV) (/PRECNT) , (37) tD2 , , (DECN) (DECN) NAND (NAND33) (DECT)가 (INV)

14 , 11 (ACKEP, ACKOP, ACKEN, ACKON)

, 14 , LS1 LS4

14 , NAND (NAND1) NOR (NOR1) (M)가, NAND (NAND2) NOR (NOR2) (M)가

, NAND (NAND1, NAND2) (HIZCNT)가, NOR (NOR1, NOR2) (INV) (HIZCNT)가

1 , NAND (NAND1, NAND2) NOR (NOR1, NOR2) ,

(TG1 TG4) .

[1]

HIZCNTT	M	NOR1	NAND2	NAND1	NOR2	TG1	TG2	TG3	TG4
H	*	L	H	H	L	OFF	OFF	OFF	OFF
L	H	L	H	L	H	OFF	OFF	ON	ON
L	H	L	H	L	ON	ON	OFF	OFF	OFF

1 , (HIZCNT) 가 H , NAND (NAND1, NAND2) H , N
 OR (NOR1, NOR2) L , (TG1 TG4) 가 .

, 1 , (HIZCNT) 가 L , (M) H L
 NAND (NAND1, NAND2) 가 H L , NOR (NOR1, NOR2) 가 H
 L .

, (TG1)
 (TG4) 가 . , (TG3)

5V, 5 10V , , (272) 0 5V ,
 (271) 5 10V .

, , (TG1) 가 (TG4) 가 . ,
 (TG1) MOS 10V 가 .

, , (TG1 TG4) MOS . 10V
 MOS 가 . 10V

<

15

, 15 , (278), (279), (271)
 (272) , , (D), , 1 (Y1) 4
 (Y4)

15 , (38) , (3) 8) 1 , (VH1pre), 2 , (VH2pre)
 (271) 가 .

가 (272) , (38) , 1
 (VL1pre) 2 , (VL1pre) , (272) 가 .

<

, (271) , (272) , (VHpre) 64
 (VLpre)

64

MOS	(Vth),	MOS	/	(W/L)	가
,	20	,	(OP)가	(Voff)	
,	(Vin)	(Vout)	(Vin= Vout)	,	(OP)가
(Voff)	,	(Vin)	(Vout)	,	(Vout)
(Vin)	(Voff)	가	(Vout=Vin+Voff)	.	
,	20	,	(Voff)	가	, 20, ROP
,	(Voff)	,	,	, VOS	(Voff)
,	(6	272)	(5	157)	(6 271)
,		,		,	(D)
,		,			가
,		,			
21	(130)		(272)		
,	22	(130)		(271)	
21		(272)		18	
(1)	18	,	PMOS	(PM51)	() (+)
(-)			(NA1, NB1)	,	(PM52)
(+)	(-)			(NA2, NB2)	,
(NM65)		PMOS	(PM51)	(2)	NMOS
(PM52)				(NA3, NB3)	,
(NM63, NM64)		PMOS		(PM51)	NMOS
(PM52)				(NA4, NB4)가	PMOS
				가	
(2)	(2)	NMOS	(NM1)	NMOS	(NM1)
,	PMOS	(PM4), NMOS	(NM2)	NMOS	(NM3)
					가
,	NMOS	(NM1)	,	(D)	(+)
가			,	(D)	(D)
(,).
22		(271)	,	, 19	
(1)	21		(272)	가	, 19
A1	PA4, PB1 PB4)가	가	.		(P)

(2) (1) PMOS (PM1) PMOS (PM1)
 , PMOS (PM3), PMOS (PM2) NMOS (NM4) 가

, NMOS (NM4) , (D) (D) (+) (D)
 가 (), .

, (NA1 NA4, PA1 PA4) (A)가 가 , ,
 (NB1 NB4, PB1 PB4) (B)가 가 .

21 (272) (A)가 H , (B)가 L 24
 23 , , (A)가 L , (B)가 H

, 23, 24 , 23, 24

, 23, 24 , , NMOS (NM1) NMOS (NM1)
 , PMOS (PM1), NMOS (NM2) NMOS (NM3)

23, 24 (272) , (Vin) 가
 MOS , (Vout) MOS

, 23 (272) , 1 (Vout) (Vin)
 (Voff) 가

1
 $V_{out} = V_{in} + V_{off}$

, 24 (272) , 2 (Vout) (Vin)
 (Voff)

2
 $V_{out} = V_{in} - V_{off}$

25 (130)

25 , Voff (271) Voff
 (272) (272) (D) , (271)

, VH (271) 가 (271) (271)
 (272) , VL (272) 가 (272)

53), , (130) (152), (1
 , (400), (410), (420),
 (430), (440), (450)가 .
 30 , 29 (400) , 31 , 30
 (400)
 (F1) 2 (400) (CL1) , , (CL1) , 31 , D
 (CL1) 4 (HCL1) , , (HCL1) D (F2) 2 ,
 , (400) , (FLMN)가 .
 , (FLMN)
 (FLMN) (INV) (FLMIP) .
 (FLMIP) , 31 , D (F3) 2 (HCL1) ,
 (HCL1) D (F4) 2 , (FLMN)가 4 (QFLM) ,
 , (QCL1) (QFLM) , (EXOR1) , (EXOR1)
 (CHOPA)가 , (CHOPA) (INV) (CHOPB)가 .
 (CHOPA, CHOPB) (A) (B)가 .
 , (A) (B) 2 2
 , (A) (B) 2 , (CHOPA) (INV) (FLMN) 4
 (QFLM) (CHOPA) , (CHOPA) (INV) (CHOPB)
 , 30 (400) , D (F1, F2)
 (EXOR1) .
 , (400) , D (F1, F2) (FLMN)
 , D (F3, F4) PORN (401) (PORN)
 PORN (401) (402) (402)
 (403) .
 (VDD) 1 (120) DC/DC () ,
 (VDD) .
 , PORN (401) (PORN) L
 , D (F3, F4)
 <
 , , (FLMN)

30) , 가 , (FSTENBP) L ,
(450) (, SFTn) , (1)

, 가 , (FSTENBP) H , (130) . (450)

, (450) , , 35 가 .

35 (450) , SFTn , D (F21) Q
 , , (INV) SFTn+3 , D (F2)
 2) Q .

, D (F21) D (F22) Q (EXOR2)
(EXOR2) (CL2) 4

8

$$, \quad 21 \quad \quad \quad (272) \quad , \quad , \quad , \quad (1)$$

가 , 22 (271) , (2)

, (1) , (2) 64 , (

36

$$, \quad 36 \quad , \quad 1 \quad , \quad , \quad 7 \quad (30) \quad 6$$

(2)264

$$, \quad 36 \quad , \quad (31) \quad 6 \quad (278) \quad (279) \\ , \quad (32) \quad 6 \quad (271) \quad (272) \quad .$$

, (1) (2) , 「0」, 「1」

， 36 「1」 NAND (NAND41)
， ， (D) (2)

， 「1」， NAND (NAND41) L ， L
 (INV31) H ， PMOS (PM31) 가 ， PMOS (PM31)
 가 ， (D) (2) .

가 , 「0」 , NOR (NOR41) H , H
 (INV32) L , NMOS (NM31) 가 , NMOS (N
 M31) 가 , (D) (1) .

, (INV31, INV32) (1) (2) .

, (INV31, INV32) 「0」 , 「1」
 (D) 가 .

, NOR (NOR42) 「1」 AND (AND41) , , OR 「0」
 (TG41) , AND (AND41) NOR (NOR42) (D) (OR41)
 (32) .

, 36 , 64 , 「0」 , 「1」
 , , , (D) 가 .

36 , , 「1」 「0」
 (TG41) 가 , (32) 가 .

, , (232) 가 18 , 37
 가 .

37 「0」 NOR (NOR51) 「1」 AND (AND51) , , NOR (NOR51)
 NOR (NOR52) PMOS (PM11) AND (AND51) NMOS (MM11)
 가 .

「0」 37 「1」 「0」 , NOR (NOR52) 가 「1」 ,
 (2) 가 , PMOS (PM11) 가 (32) (32) (1) 가 가 .

, , 「1」 「0」 , NOR (NOR52) 가 「1」 ,
 , NMOS (NMI1) 가 (32) (32) (1) 가 가 .

, , , 가 .

38 , 가 .

2 3 , , , [ITO(2)]
 가 TFT (CT), (CT) (VCOM)
 (CL) .

, (Cpix) (PX) (CT) 가 , (PX)
 (CT) (Cstg) .

, , , 1 , 1 , [ITO(1)] [ITO(2)] 가 ,

가 가

가 (tDD)

(2) , 가 가 (tDD)

(57)

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13.

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가

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14.

15.

16.

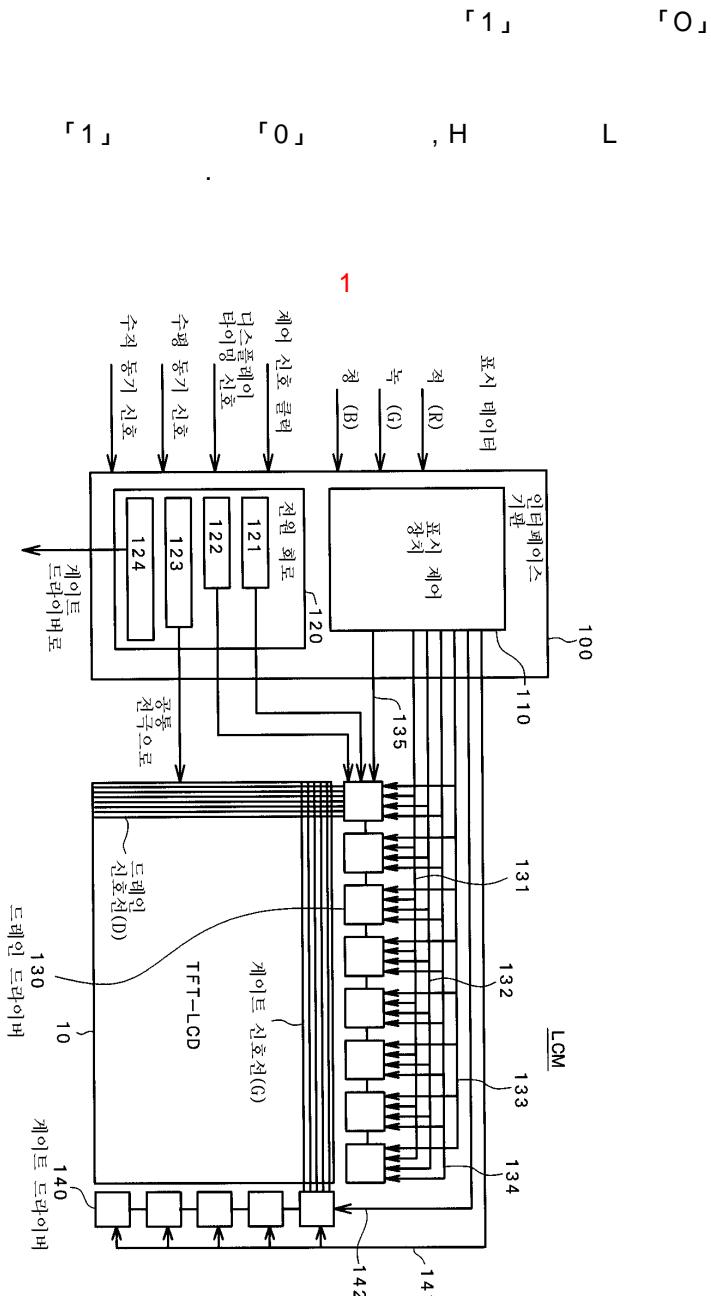
17.

18.

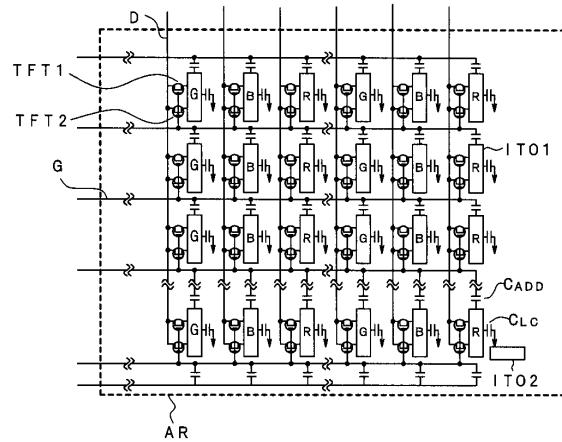
19.

20.

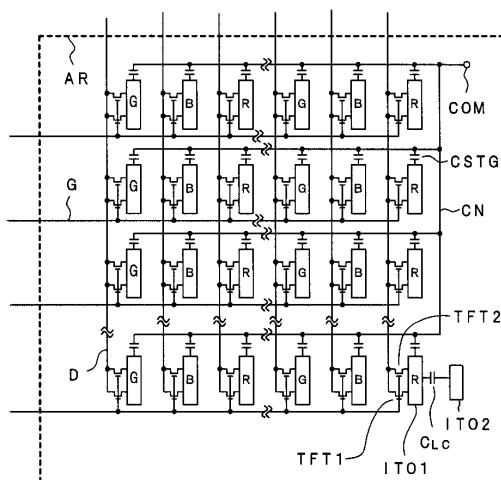
19



2

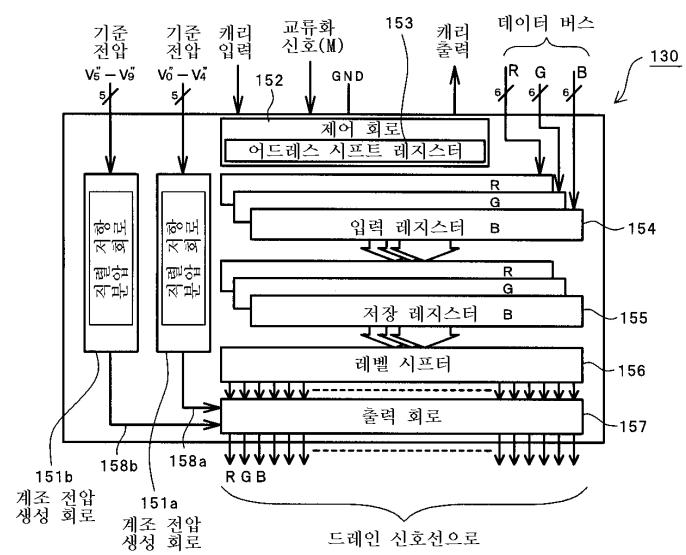


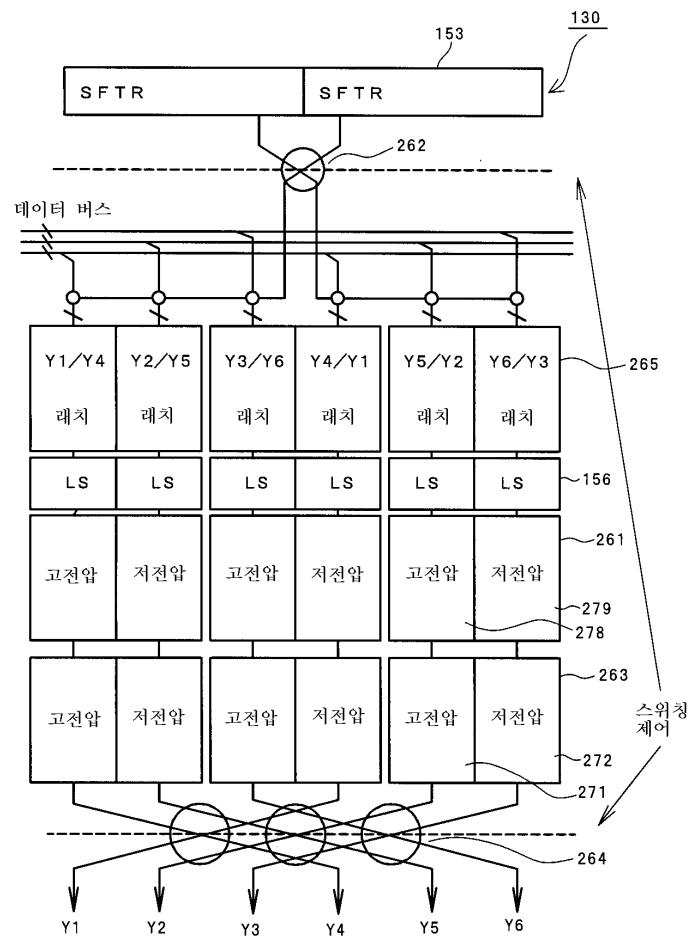
3



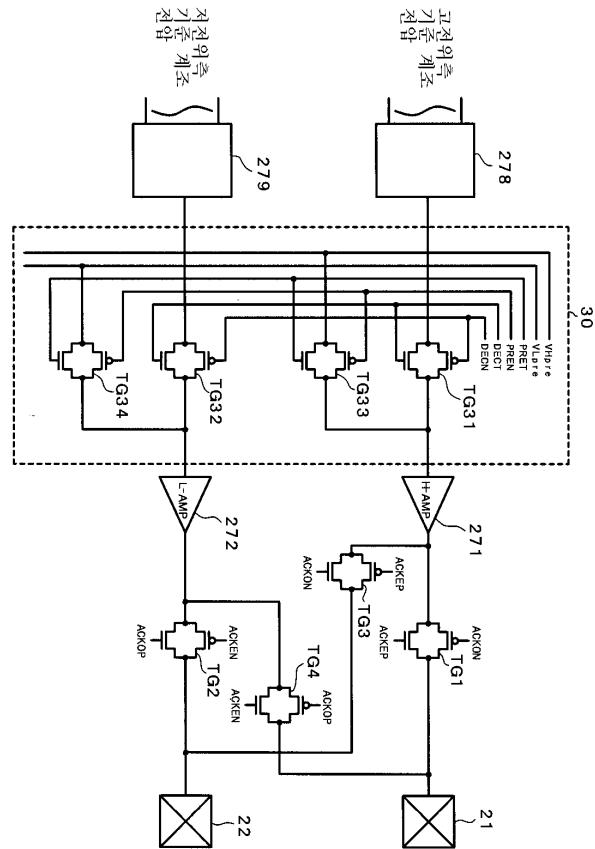
홀수 프레임

짝수 프레임

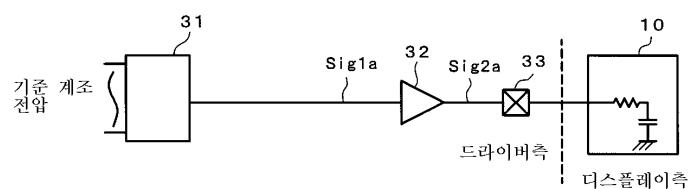




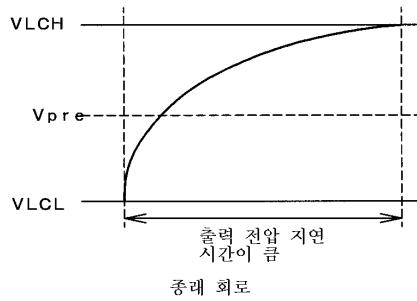
7



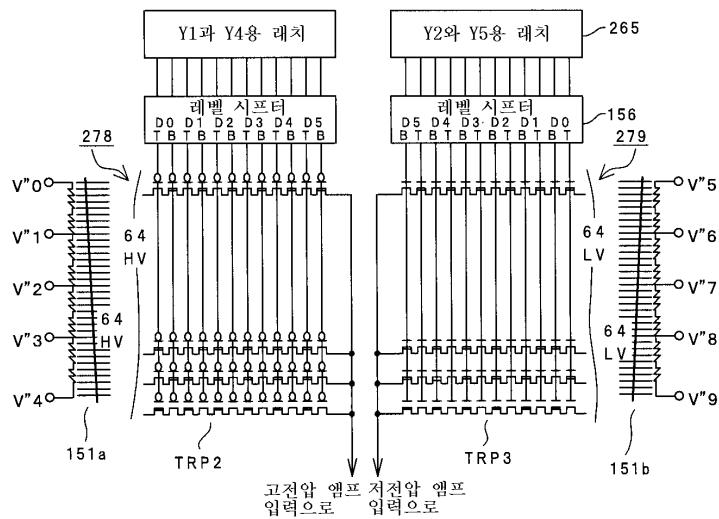
8a



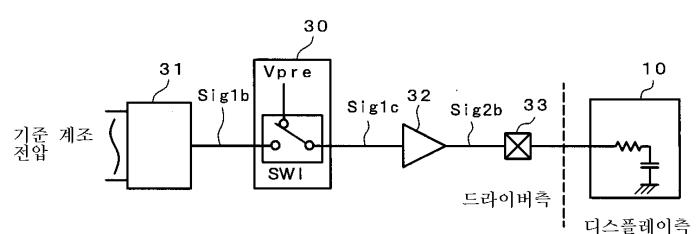
8b



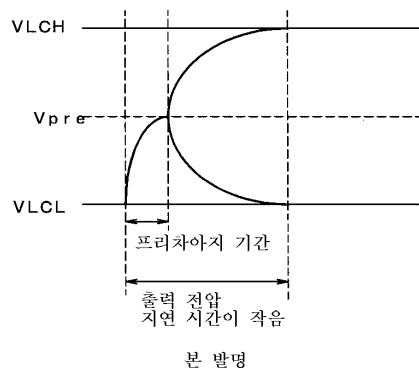
9



10a

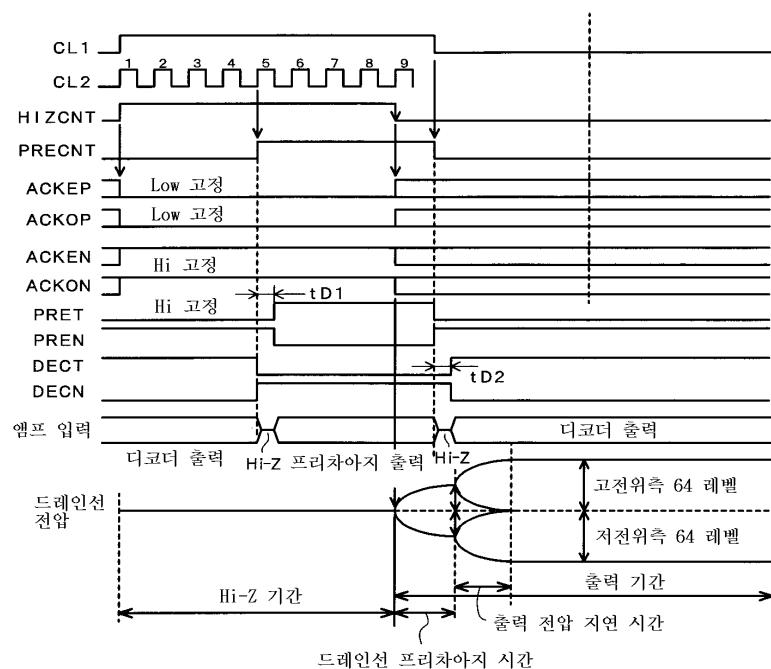


10b



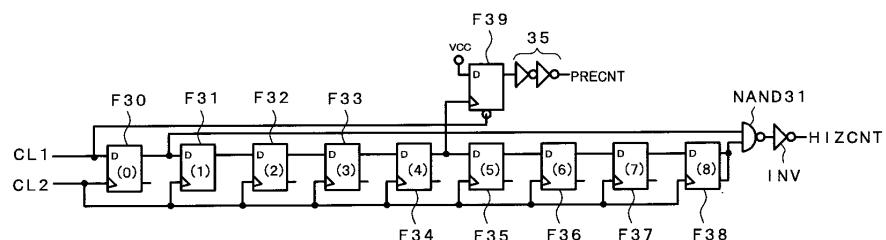
본 발명

11

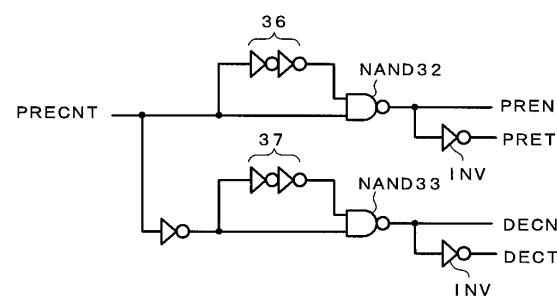


드레인선 프리차아지 시간

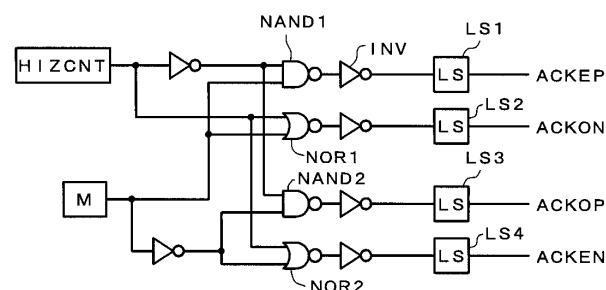
12



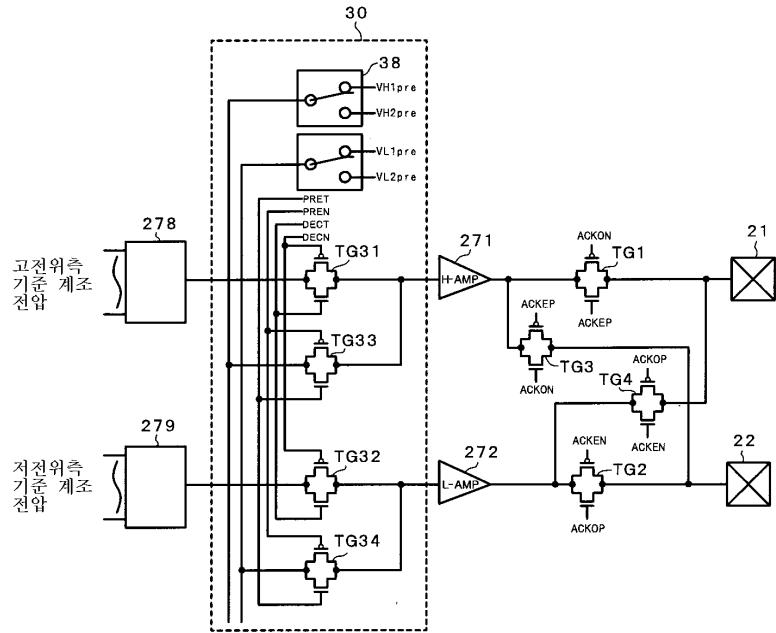
13



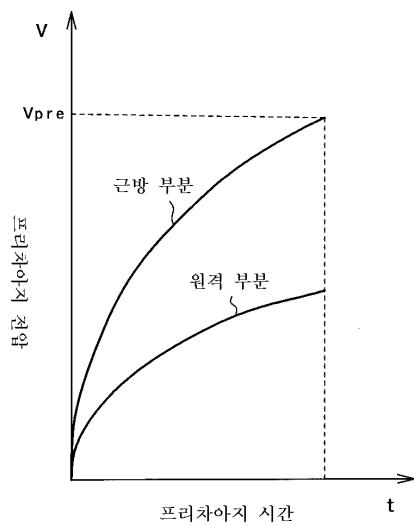
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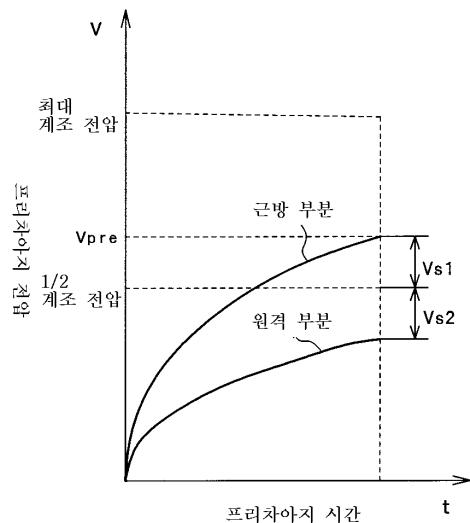
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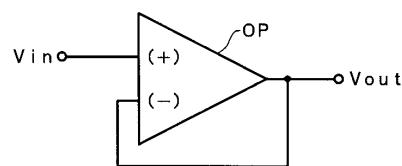
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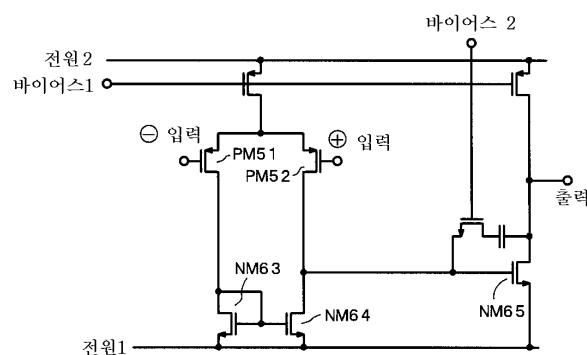
16b



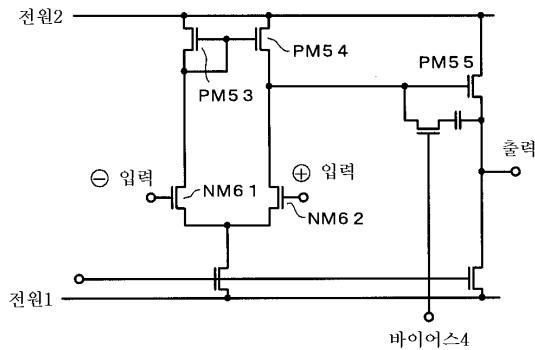
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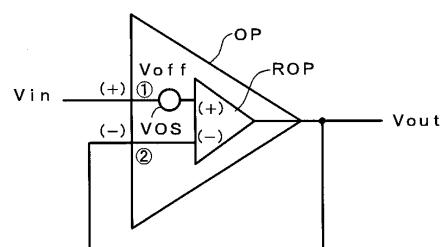
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19



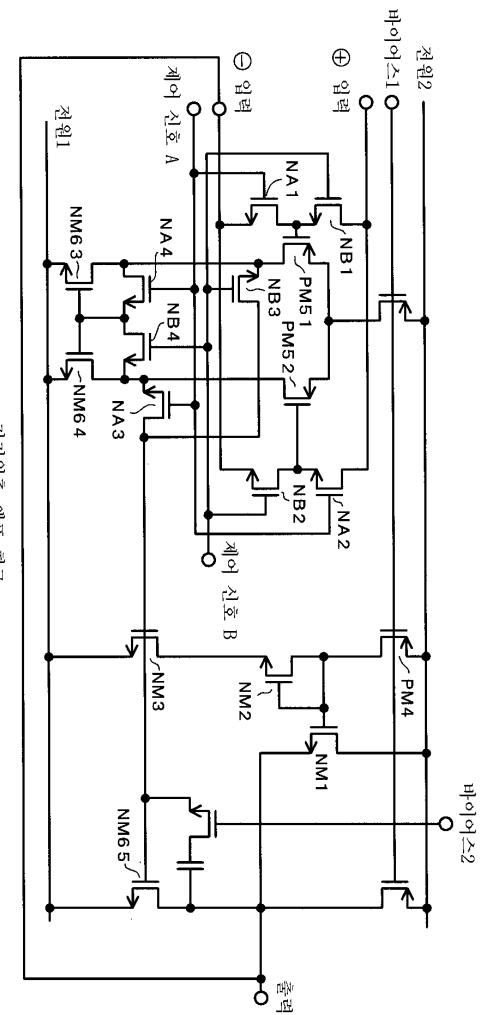
20



$$V_{out} = V_{in} \text{ (옵셋 전압이 없는 경우)}$$

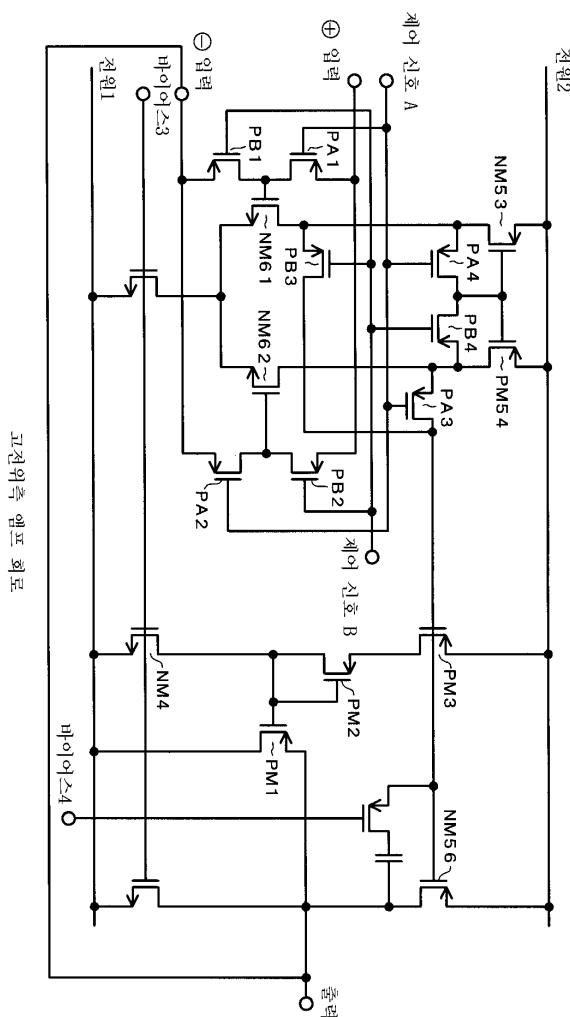
$$V_{out} = V_{in} + V_{off} \text{ (옵셋 전압이 있는 경우)}$$

21

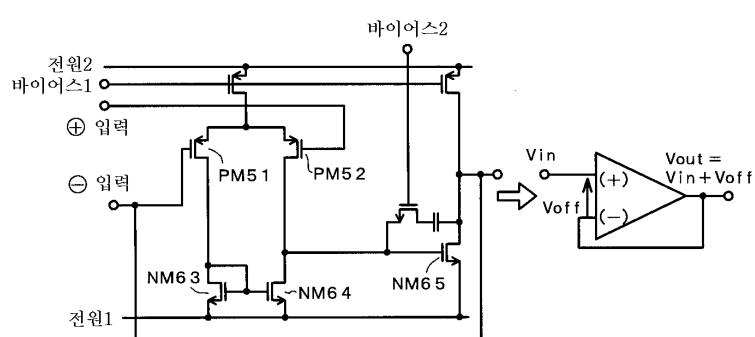


자진위축 앱프 회로

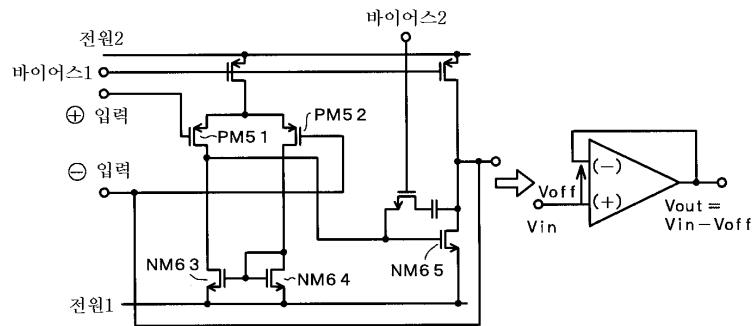
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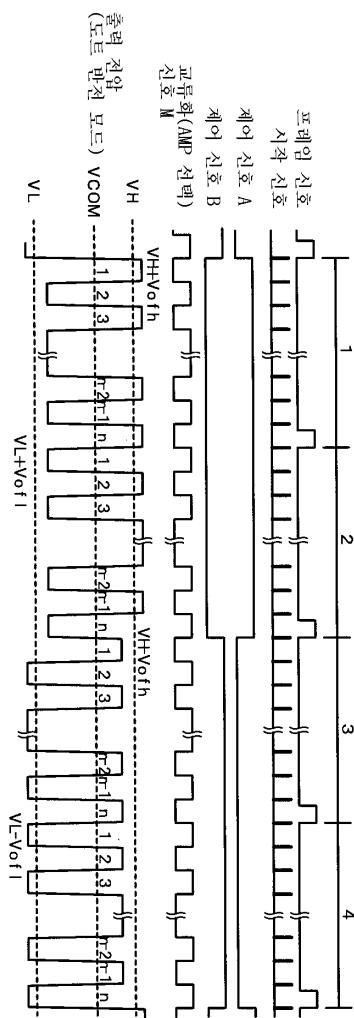
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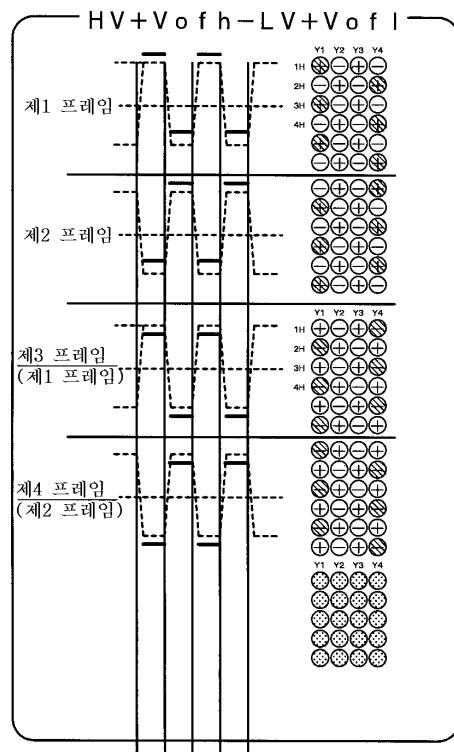


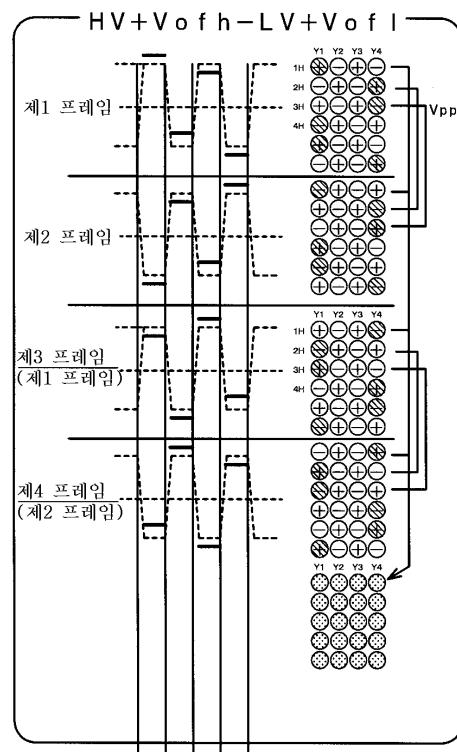
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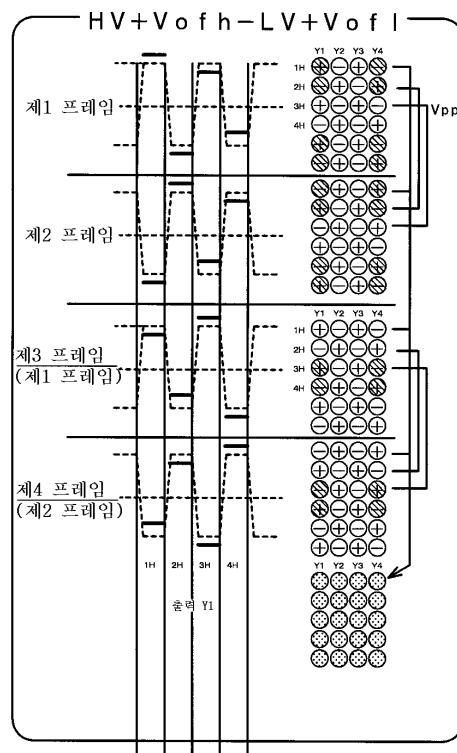


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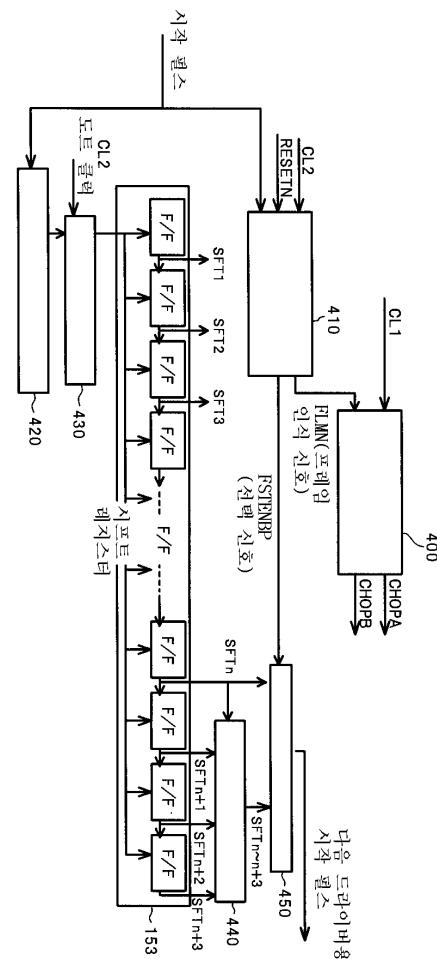




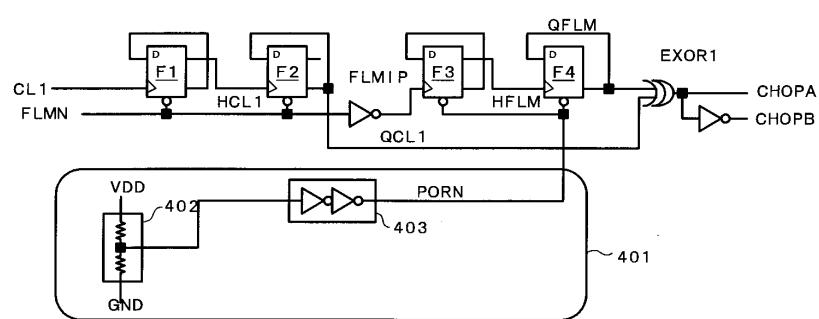




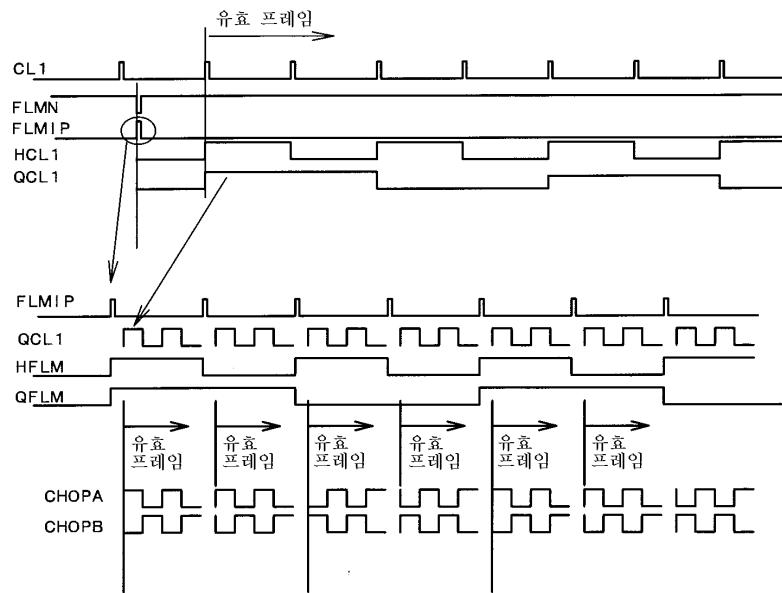
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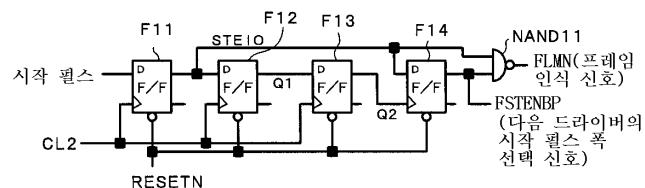
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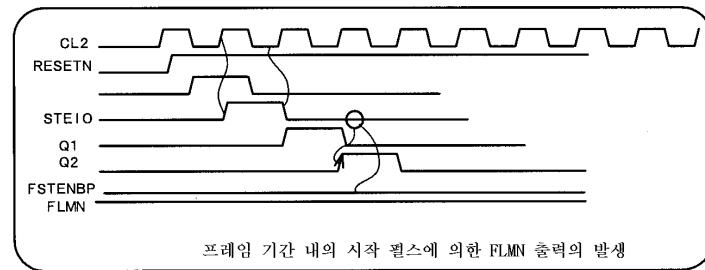
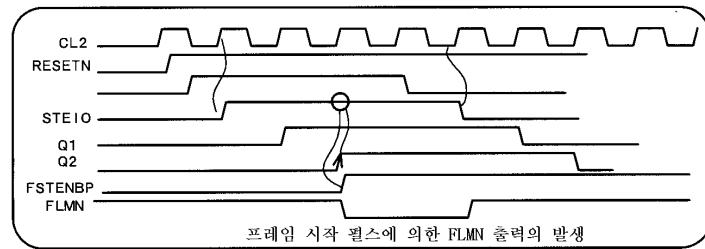
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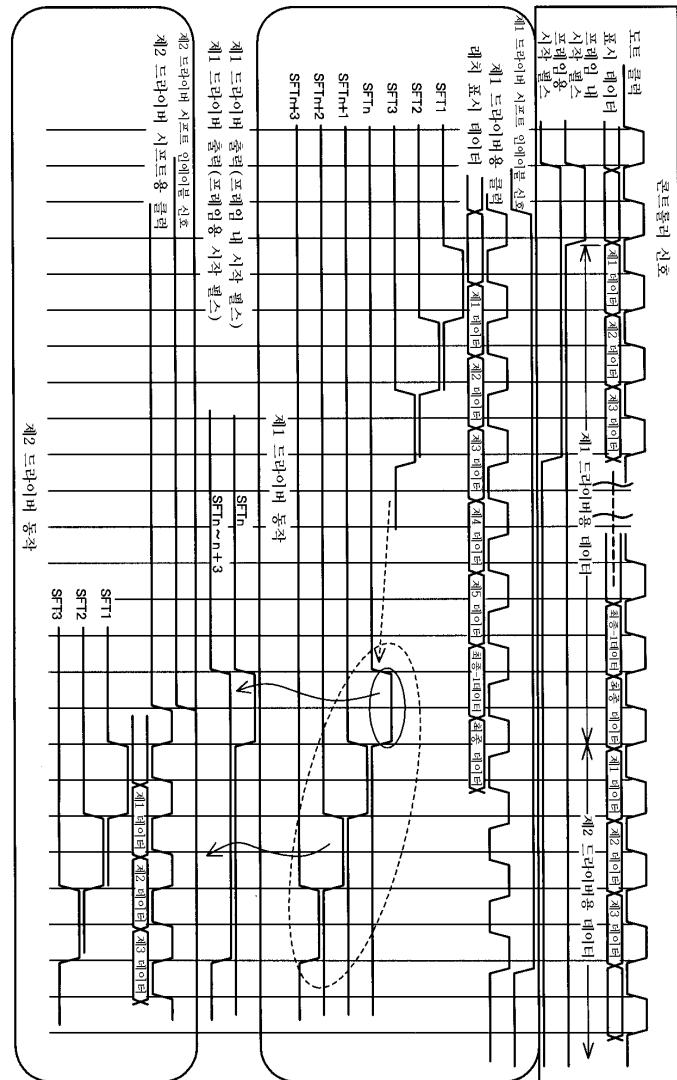


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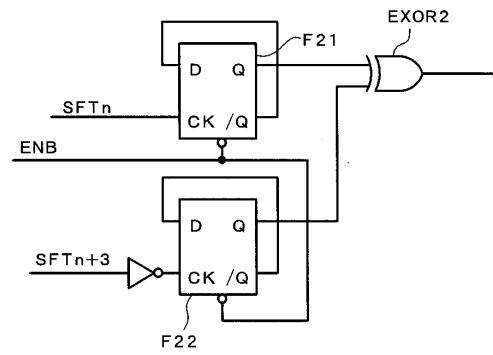


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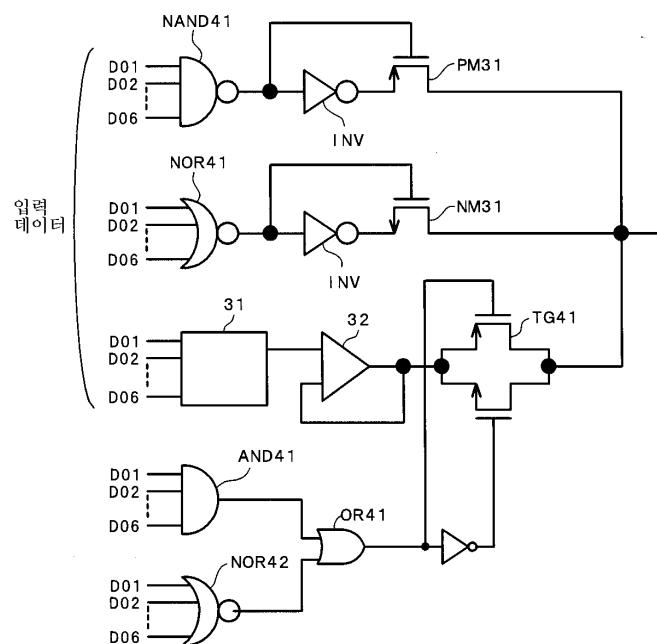




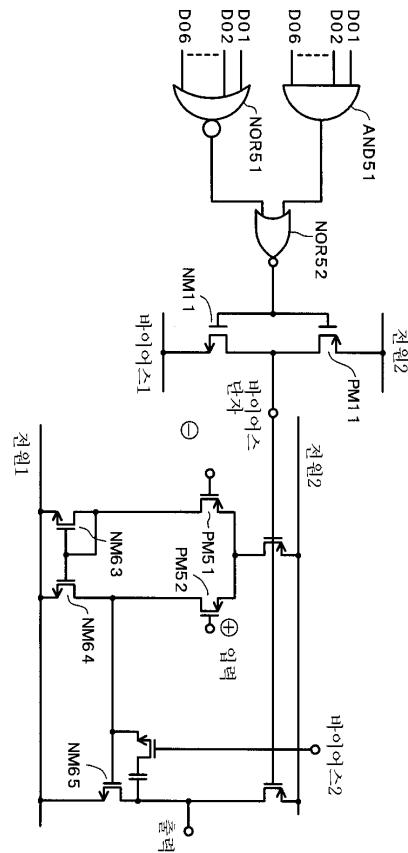
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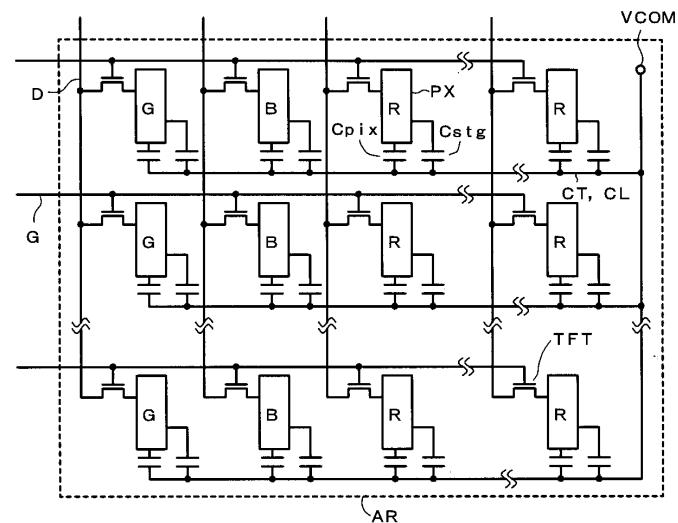
36



37



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专利名称(译)	液晶显示器		
公开(公告)号	KR100343922B1	公开(公告)日	2002-07-20
申请号	KR1020000039126	申请日	2000-07-08
[标]申请(专利权)人(译)	日立HITACHI SEISAKUSHODBA 日立器件工程株式会社		
申请(专利权)人(译)	株式会社日立制作所 히타치디바이스엔지니어링가부시키가이샤		
当前申请(专利权)人(译)	株式会社日立制作所 히타치디바이스엔지니어링가부시키가이샤		
[标]发明人	ITOU SHIGERU 이또우시게루 KATAOKA NOBORU 가따오까노보루 OGURA AKIRA 오구라아끼라		
发明人	이또우시게루 가따오까노보루 오구라아끼라		
IPC分类号	G09G3/36		
代理人(译)	CHANG, SOO KIL		
优先权	1999196212 1999-07-09 JP		
其他公开文献	KR1020010015252A		

摘要(译)

通过液晶显示装置，能够实现液晶显示装置的大屏幕，能够实现高速操作，提高显示在液晶显示装置上的显示画面的显示品质。半导体集成电路器件是包括图像信号线驱动装置的液晶显示器，该图像信号线驱动装置提供与液晶显示器件的每个图像信号线中的显示数据相对应的灰度电压，它包括液晶显示器件，并且至少一个半导体集成电路器件包括多灰度电压选择装置，用于选择与多个灰度电压之间输入的显示数据相对应的灰度电压和与输入的显示数据相对应的灰度电压，多个AMP电路输出它放大的每个图像信号线。多个和每个灰度级电压选择装置，以及安装在每个AMP电路之间的预充电控制电路。液晶显示装置，灰度电压，蜂鸣电荷，大屏幕，图像信号。

