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(24) 2002 10 30

(21) 10 - 2000 - 0009342 (65) 2000 - 0058198
(22) 2000 02 25 (43) 2000 09 25

(30) 11 - 048327 1999 02 25 (JP)

(73) 가 가 1 1 1

(72) 2 - 2 - 12 202

(74)

:

(54)

가 , ,
가 ,
.

[illegible]

*

10 : 31 3N :

14 : 15 :

가 (

RGB) 1 RGB

2 , 2 1 RGB

C) , DAC 2 RGB

D/A (DA

가

(I_{bias})

가

(current mirror circuit)

가

TFT 3000 가

가 300 가

(

MOS 가 , MOS

(V_t) 가

가 300

가

가

■

가

가

가

1

(10),

(12),

(13)

(LCD)(10)

(11),

가

(14),

(14)

(15)

(12)

가

(RGB)

(22),

RGB

(21),

(22)

가

(23),

(23)

1 -

-

RGB

D/A

(DACs)

(24),

DACs

(24)

RGB

(14)

(11)

(25)

RGB

가

(11)

3

1

1 -

(N)

(31 3N) 가

(31 3N)

2

(25)

1

(12)

3

(31 3N)

(MR1 MRN)

(M1

MN) 가

(MR1 MRN M1 MN) MOS

[illegible]

$$I_d \propto \sum k (V_{GS} - V_t + \Delta V_i)^2$$

3

$$I_d \propto \sum_i k [(V_{GS} - V_t)^2 + 2(V_{GS} - V_t)\Delta V_i + \Delta V_i^2]$$

, ΔV_i V_t .

$$\sum_i \Delta V_i \quad \text{가} \quad \text{가} \quad 0 \quad \text{가} \quad . \quad \sum_i \Delta V_i^2 \quad \sum_i \Delta (V_{GS} - V_t)^2$$

4

$$I_d \propto \sum_i k (V_{GS} - V_t)^2$$

, (I_d) . , (I_b) .
 (I_b)

5

$$I_b \propto k (V_{GS} - V_t + \Delta V_{Rj})^2$$

.

MOS , (I_b)

6

$$I_b \propto \sum_j^M k [(V_{GS} - V_t + \Delta V_{Rj})^2]$$

7

$$I_b \propto \sum_j^M k (V_{GS} - V_t)^2 + \sum k (V_t - V_{GS}) \Delta V_{Rj} + \sum_j k \Delta V_{Rj}^2$$

, V_{Rj} (MRj) .

7 2 V_{Rj} 0 가 $\sum_j \Delta V_{Rj}^2$ 0 $\sum_j (V_{GS} - V_t)^2$ 가 .
 I_b $(V_{GS} - V_t)^2$, V_{GS} V_t 가 가 .
 I_b 가 V_{GS} 가 .

IC 2, 1 (25) (31 3N) (12)가, (31 3N) (12)가
 가
 2 6
 1 (MR1 MRN) (31 3N) (N)가
 300 (MR1 MRN) 가
 6 (MR1 MR(N/L)) ,
 (N) (41 4N) L(L 1 L=2) N/L (MR1 MR(N/L))
 L (41, 43, ..., 4N)
 1 (MR1 MR(N/L)) I_{bias} 가 (Vss)
 (MR1 MR(N/L)) 1 N/L
 7 3 (51 5N) - (51 5N) M(M 1)
 (N) P(P P ≤ M)
 7 M=2 P=1 (51, 53, ..., 5(N - 1)) -
 (MR1, MR2..., MR(N/2)) I_{bias} 가
 (52, ..., 5N) - (M1 MN) (MD1, ..., MD(N/2)) (Vss)
 가
 9a N 8a
 8b N 8a
 (8b)
 2 (Vss)(8b)
 9b 7 (MR1)
 (M1)

8c (8a) , 8a -
 (Vss)(8c) ,
 9c (MD1) 7 (M2) 가 -
 6 (42) (MR) (M) 9a
 (BL)
 10 5 (MR1,MR2) (N) (61 6N)
 2 (MR1, MR2) (Vss)
 I_{bias} 가 (BL)
 (61 6N) (MR1, MR2) (M1 MN)
 2
 (61 6N)가 1 - (MR1, M
 R2) 가
 11 6
 (MR2,MR3) (71,...,7i,7(i+1),...,7N) (7i) (7(i+1))
 (MR1,MR4) 2 (71,7N)
 (MR1,MR2,MR3,MR4) I_{bias} 가
 (BL) (Vss)
 12 (Rf)
 (Mp1, Mp2), (Mp4)
 (Mn1, Mn2) (Mp3, Mn3)
 N - MOS Mpx P - MOS , Mnx
 (Rf) (CL) (Mn3, Mp3) (OUT)
 (pole) (phase lag) (lead)
 1 가 가 , , - 180 °

(Cf)

(Cf)

USSN 09/128,414

12 (i=1,2,...,N) (Mp5) (lb1) (Mi)
(Mp3,Mp4)

13 12 (follower) 12
(Mn3,Mp3) (IN -)
(CL)
(slew rate) (Mp3) 가 가
(Mp3)

3) 13 가 (Mp
(Mn4, Mp6) (Mp7)
(ON) (IL) (Mp3)
(Mp5) (Mp3)
가

(Mp6) (Mp7) (Mn4,Mp6) (Mp5)
(Mp7) (IL) (Mp5)

(Mn4)가 (2) (Mn1) W/L(W MOS
(Mp4) (W/L) 0.6 가 (Mp6) (W/L) (2)

IN+ IN- 가
IN- (Mn1) (Mn1) IN+
가 (Mp6) 가 (Mp4) 1/2
(OFF) (IL) (Mp6) 0.6 (Mn4) (Mp7)
(Mp5) 가

IN+ IN- 가 (IN (IN
(IN -) 가 (Mn1) (Mn1) (Mp4)
0.6 가 (Mp6) 가 (Mp4) (M
(Mp4) (Mp6) 0.6 (Mp
(IL) 가 (Mp7)
(Mp5) 가 (Mp5) 가 (Mp
4) 가

(3) , 13 가
(3) (Mp3) , 가 가 .

12 13 - (Mp5) (lb1) (Mp3, Mp4)
(lb1) Mi(i=1,2, ...,
N) . 13 (IL) .

14 6 (120 - 1 120 - N) 1 (120 - 1 120
- N) 가 . , (12)
2 (25) , 14
(120 - 1 120 - N) (M1 MN),
(M1 MN) (MF1 MFN) (120 - 1 120 - N)
(M1 MN) (MF1 MFN) , (MF1
MFN) (MB1, MB2) .

(MF1 MFN) I_{bias} (MB1, MB2)
(A1) , (MB2)
(M1 MN) (MF1 MFN)
가 .

N) , $M_i(i=1 \sim N)$, $M_{Fi}(i=1 \sim N)$
가 . $M_i(i=1 \sim N)$ W/L 1/N . (Mi) / (, W/L)
(Mi) (Mi) (MF1) (MF1)
, I_{fi} (Mi) I_i 1/N . (MF1)
(MF1) 가 가 , (Mi) (li) .

(MF1) (MB2) (I_{bias})
(I_{bias})가 (MF1) , (MB2)
가 . (MF1) 가 (Mi)
(MF1) 가 , (Al) , (MF1)
(I_{bias}) , (I_{bias})가 (MF1)
, (MB2) . (MF1)
(Mi) (MF1)
(Al) . (MF1) (I_{bias}) .

N) , (120 - 1 120 -
(120 - 1 120 - N) (N) N (MF)
(MF1 MFN) (120 - 1 120 - N) (MF1 MFN)가
(M1 MN) .

가 (MF1 MFN) I_{bias} / N 가 (MF1 MFN) 가 .
 (MF1 MFN) (Vt) ΔV_{Fi} , (M1 MN)
 ΔV_i , ΔV_{Fi} ,
 , 가 .
 (MFi) :

8

$$I_d \propto \sum_i k (V_{GS} - V_t + \Delta V_{Fi})^2$$

9

$$I_d \propto \sum_i k ((V_{GS} - V_t + \Delta V_{Fi})^2 + 2 (V_{GS} - V_t) \Delta V_{Fi} + \Delta V_{Fi}^2)$$

$\sum_i 2K(V_{GS} - V_t) \Delta V_{Fi}$ 가 가 $\sum_i \Delta V_{Fi}^2$ 가 $\sum_i (V_{GS} - V_t)^2$, 9 :

$$I_d \propto \sum_i k (V_{GS} - V_t)^2$$

(MF1 MFN) I_d , (ΔV_{Fi}) 가
 VGS가 $V_{Fi} = 0$ (M1 MN)
 (I_{bias}) 가 , (120 - 1 120 - N)
 (120 - 1 120 - N) 가 (I_{bias}) 가 (120
 - 1 120 - N) 가 . , 가
 . , (120 - 1 120 - N)
 . , (120 - 1 120 - N)
 , 1 (120 - 1 120 - N)
 , 2 (25)
 (12)

15 14 (AI)가 (MA1) (IB1)
 7 .
 16 8 . , 14 ((AI) (AI) (MA10), (MA10) ((IB2) (MA10), (MA11), (IB2) (MA11) , (MA10) (IB2)

(folding)/ (MA12), (MA13) (M1 MN) (MF1 MFN)

(M1 MN) (MA10,MA12)가 (MA13) 가 IB2 = 2I_{bias} 가

(AI) (MA10) (IB2) (MA11 MA12) (MF1 MFN) I_{bias} /N (MF1 MFN) I_{bias} (MB2) (AI) (MA10) (IB2) I_{bias} 가

I_{bias} (IB2) (AI) (MA10) (MF1 MFN) I_{bias} (MB2) (MF1 MFN) (AI) (MA10) (I_{bias}) I_{bias} 가

(MF)가 (N) 가 300 (MFi; i=1 N) 가 N/L(L (MFi) L

17 L=2 9

18 10 (MFi; i=1 N) (Mi; i=1 N) (AI) (MA13 - 1 (MFi) (124 - 1~124 - N)

19 11 (MF1 MF2) (MF1,MF2) (M1 MN) 2 (MA12 - 1 MA13 - 2) 12 (AI) (126 - 1 126 - N) 2

21 (AI) 13 (MB1) (MB1) (MB2) (MB1, MB2) 가

22 14 21 (AI) 가

(MA21), (MA22) (MA22,MA23), (128 - 1 128 - N) (M1
MN) (MF1 MFN) (MA24)
(MB1) (MB3)
(MB4) (MB2) (MB1)

(MA21) W/L (MB1) W/L 2 가 , I_{bias}^2
가 (MA21) (MB3,MB4,MA22,MA23) 가
(MA24) 가 (M1 MN) 가
(MA23) 가 (AI) (MA22) 가
(MB1) (MB3)
(MF1 MFN) (MB1,MB2)
(I_{bias})
(MA21) (MA23) (MA22)
 I_{bias} (MA22) (M
A24) (MA24) (MF1 MFN)
 I_{bias} 가 (MF1 MFN)
(MB1,MB2) (I_{bias})
(MA21) (MA23)
(MA22) I_{bias} (MA22)
(MA24) I_{bias} 가 (MA24) 가
(MF1 MFN) I_{bias} 가
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, 가
가

가 , 가 , 가

(57)

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2.

1

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 $L(L - 1)$

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3.

1

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M

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 $P(P - P \leq M)$

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4.

1

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2

2

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5.

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6.

5

 $L(L - 1)$

7.

5

 $P(P - P \leq M)$

M

8.

5

 $2 \quad 2$

9.

;

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;

10.

9

(follower)

11.

9

12.

11

M(M 1)

13.

9

L(L 1

14.

9

2

2

15.

9

2

2

16.

17.

16 ,

18.

16 ,

19.

18 ,

$$M(M \quad 1 \quad)$$

20.

16 ,

$$L(L \quad 1)$$

21.

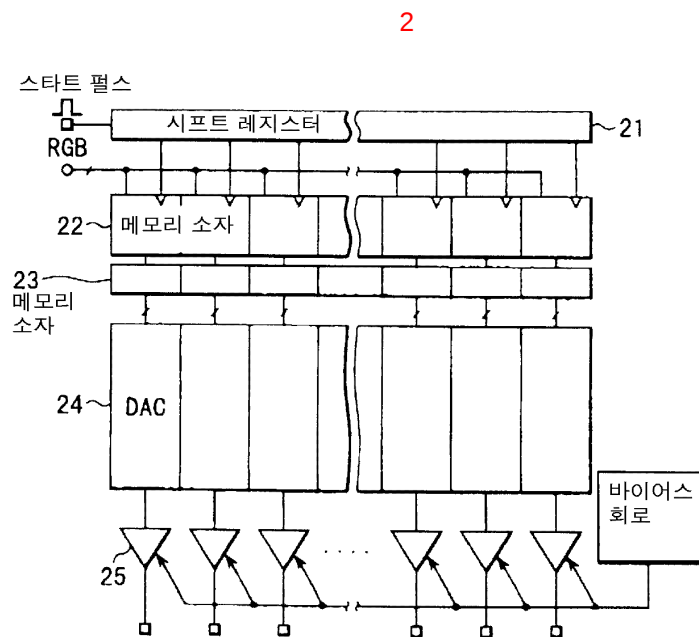
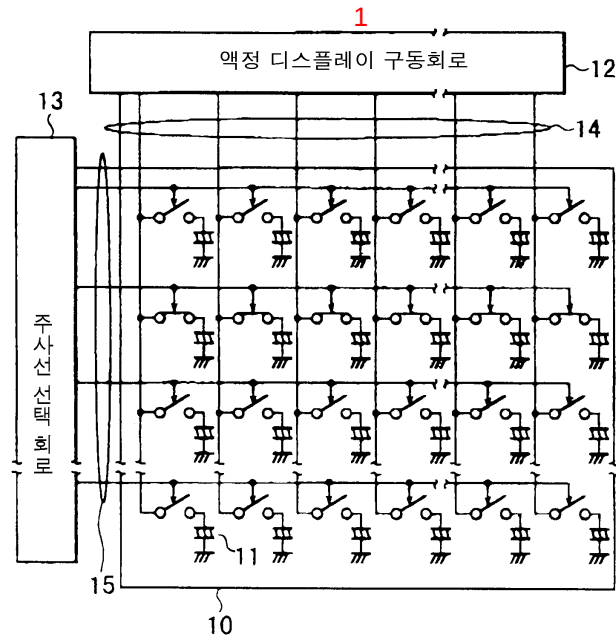
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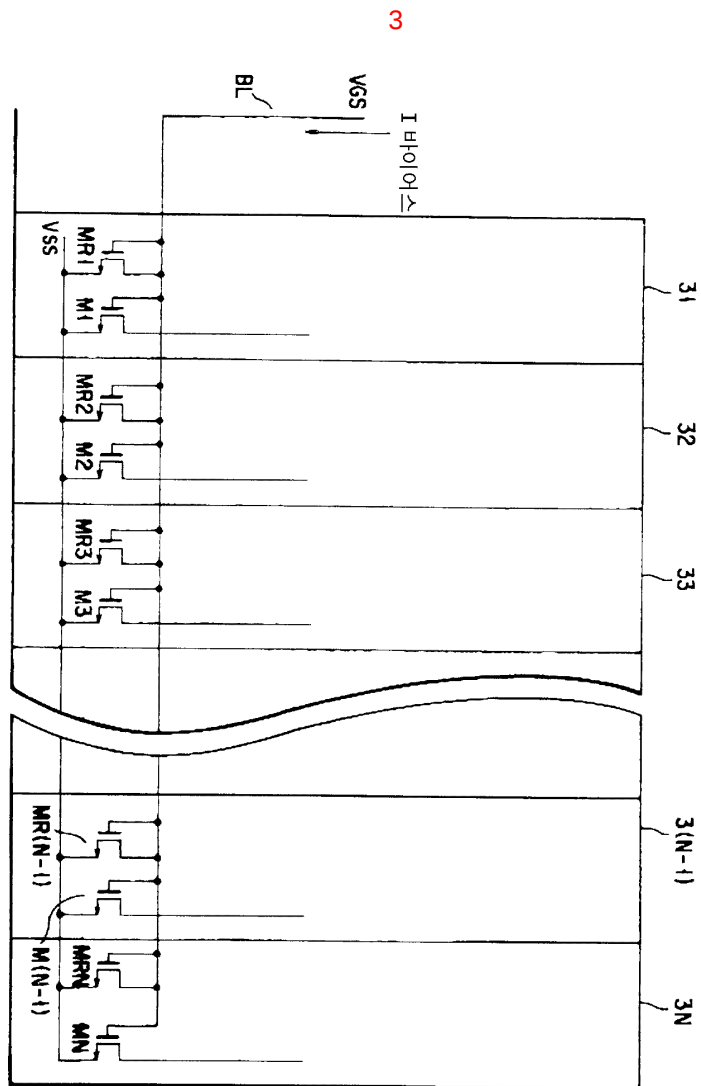
$$2 \quad 2$$

22.

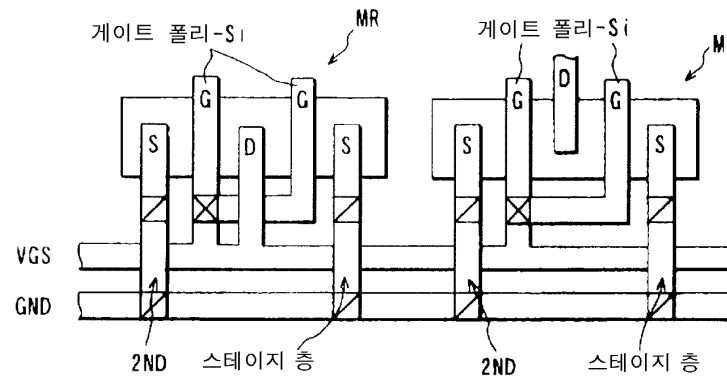
16 ,

$$2 \quad 2$$

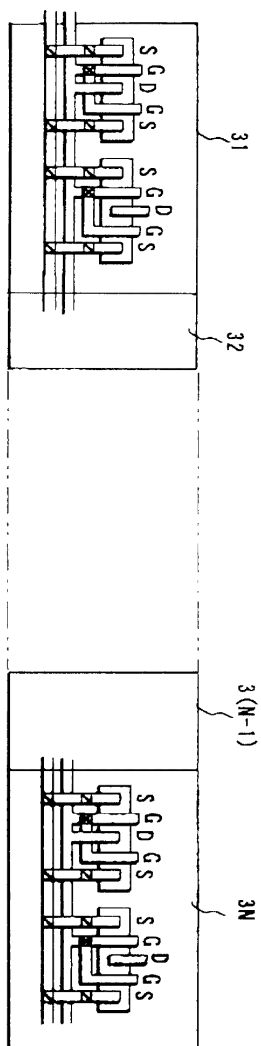


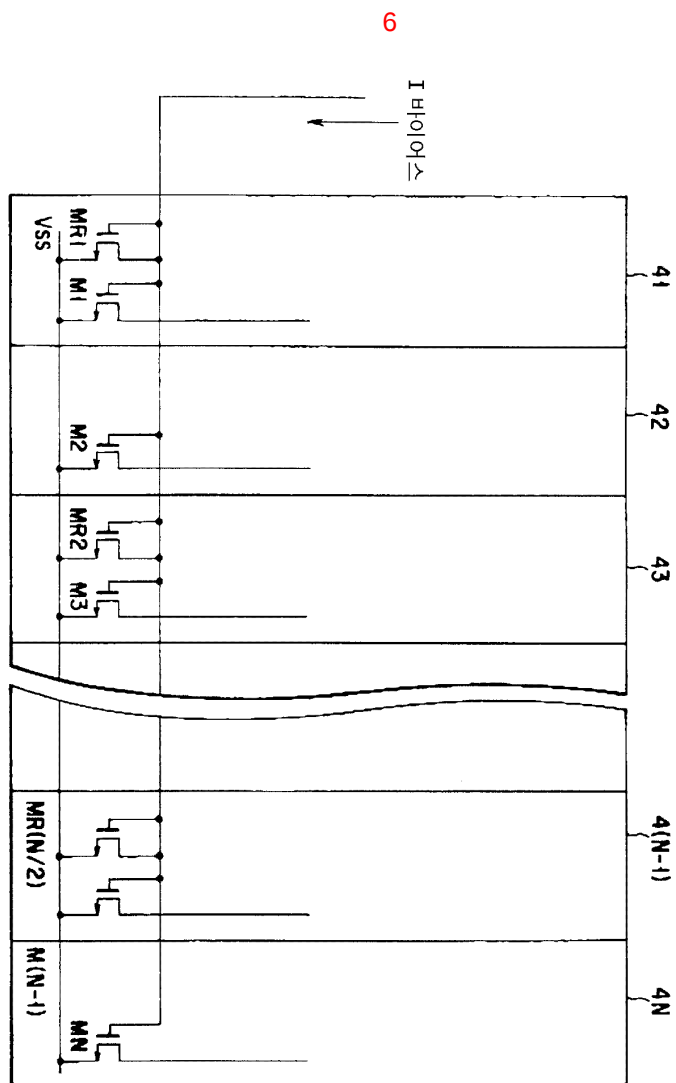


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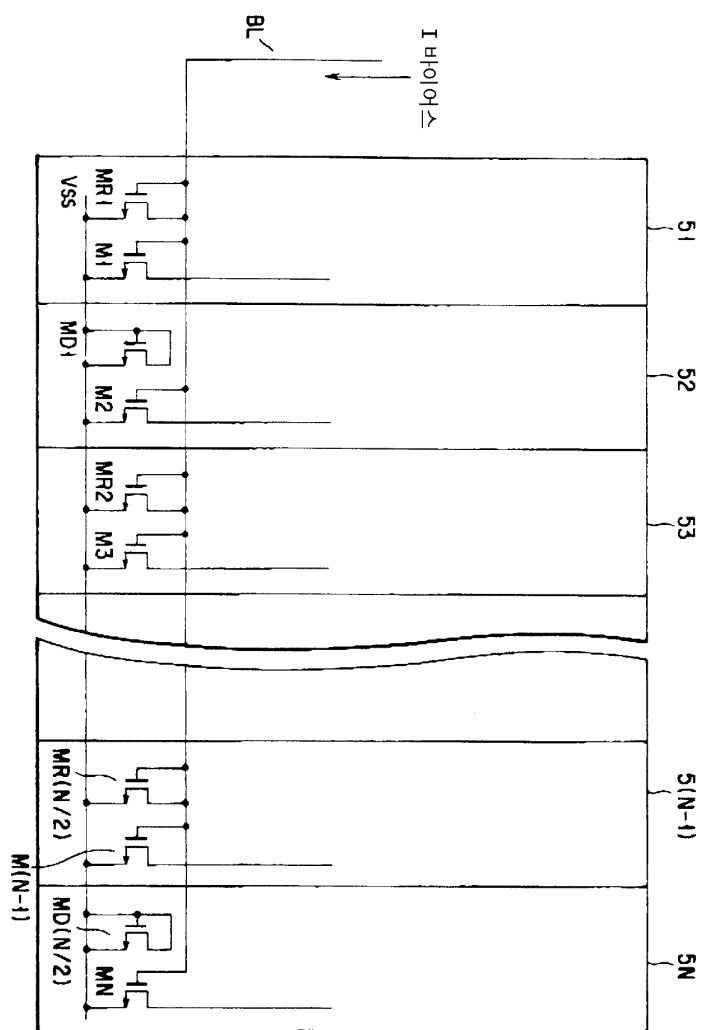


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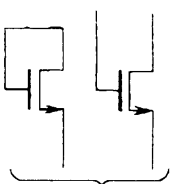




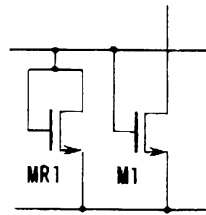
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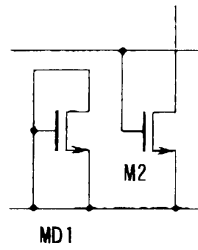
8a



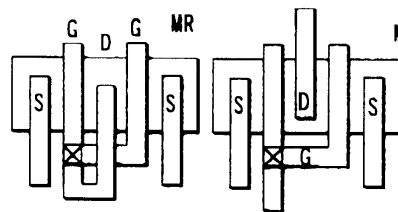
8b



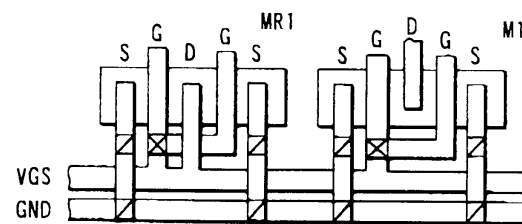
8c



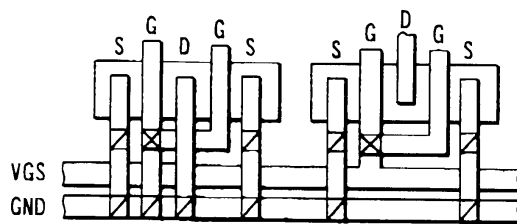
9a



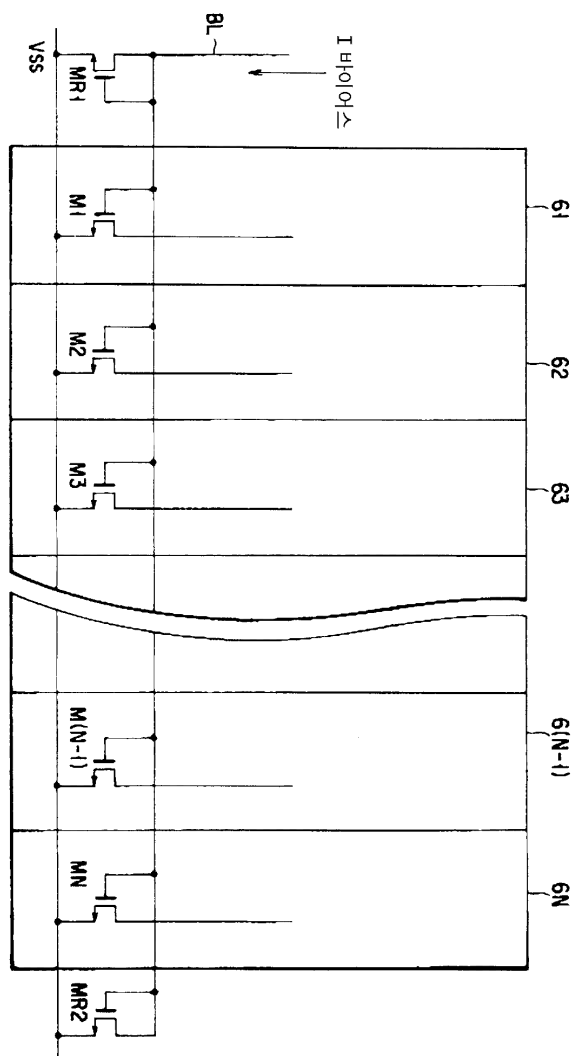
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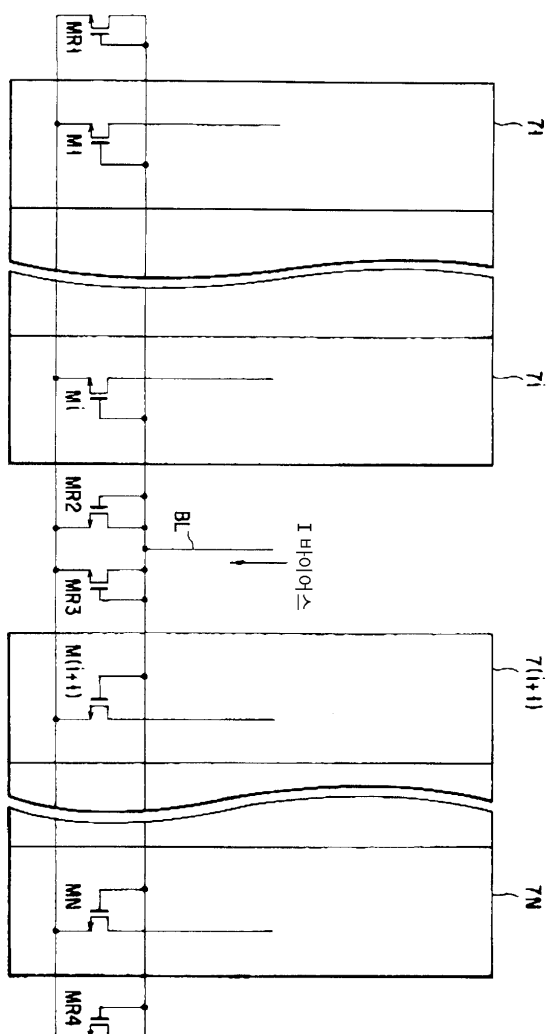
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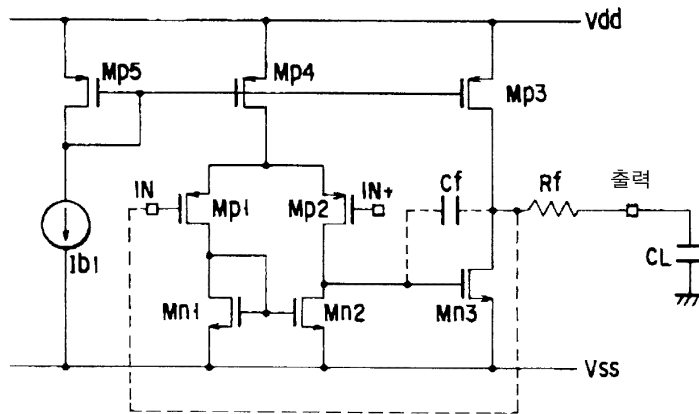
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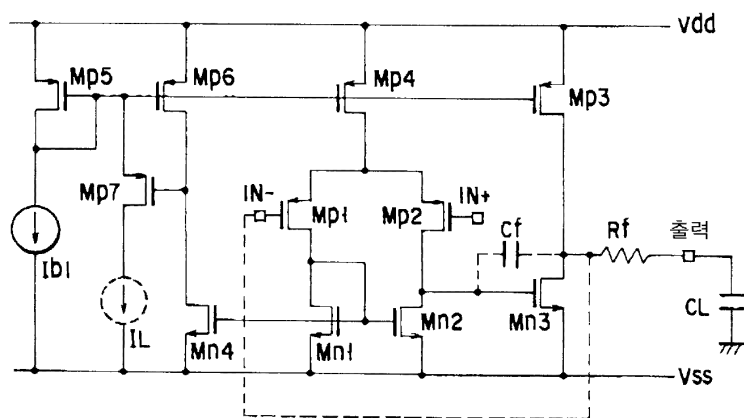
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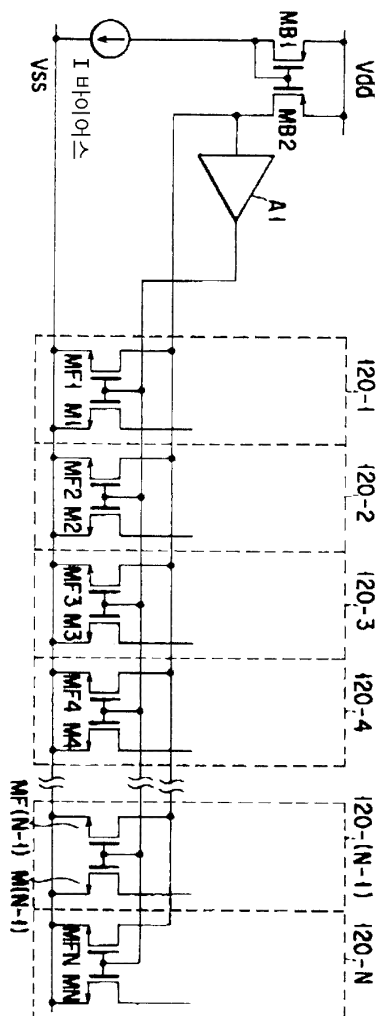
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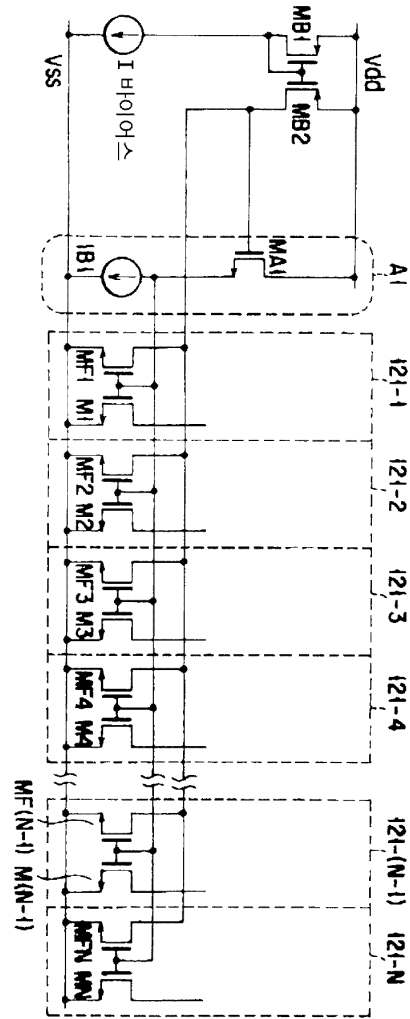
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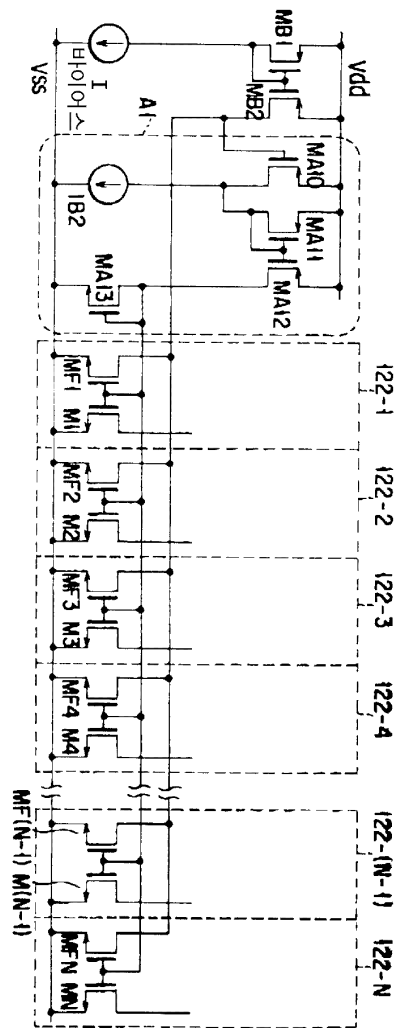
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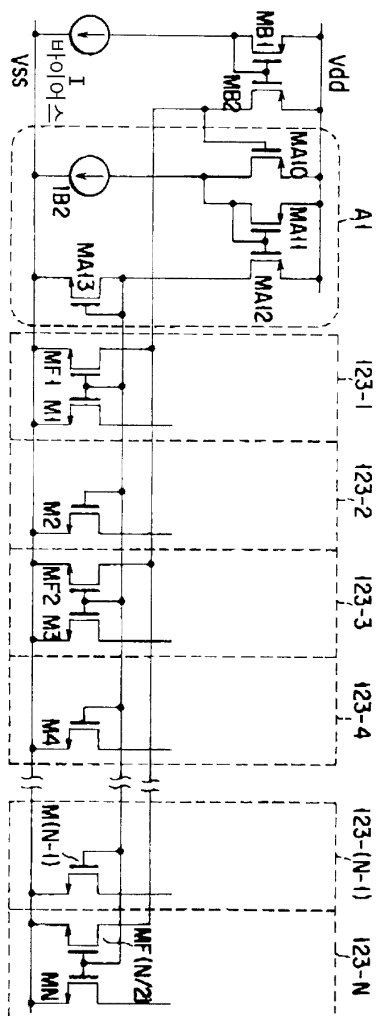
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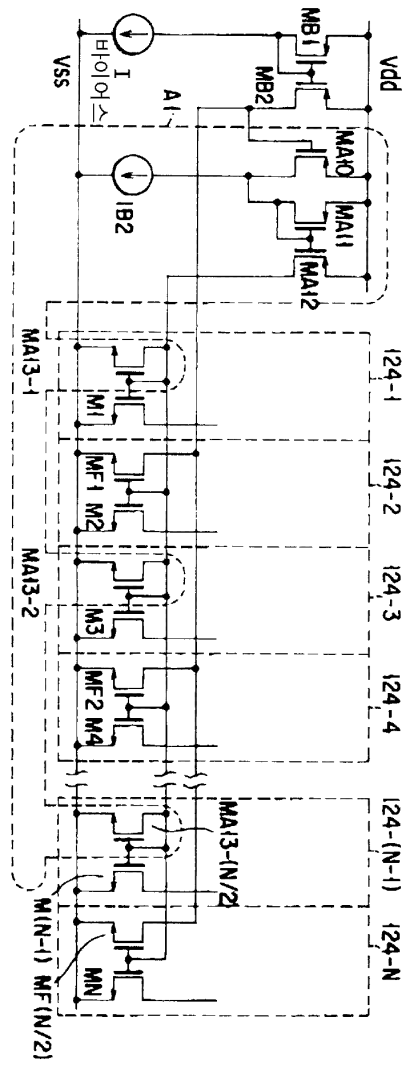
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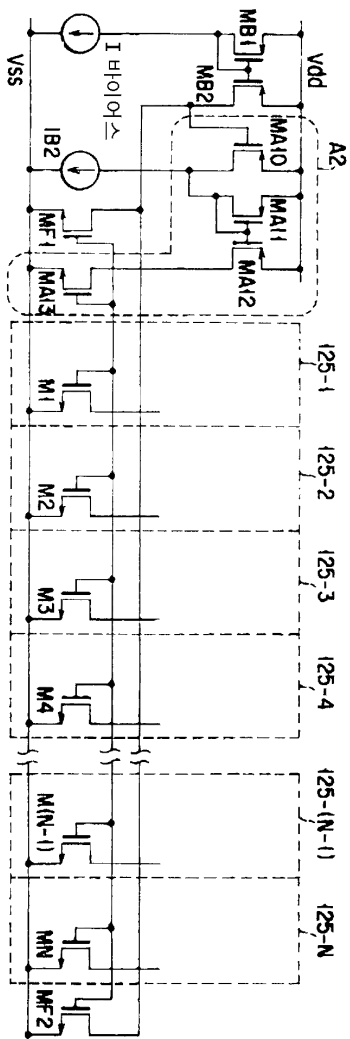
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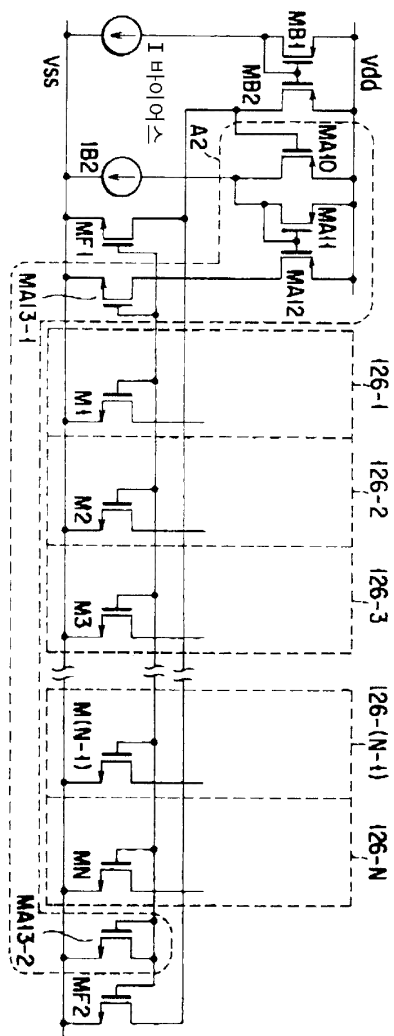
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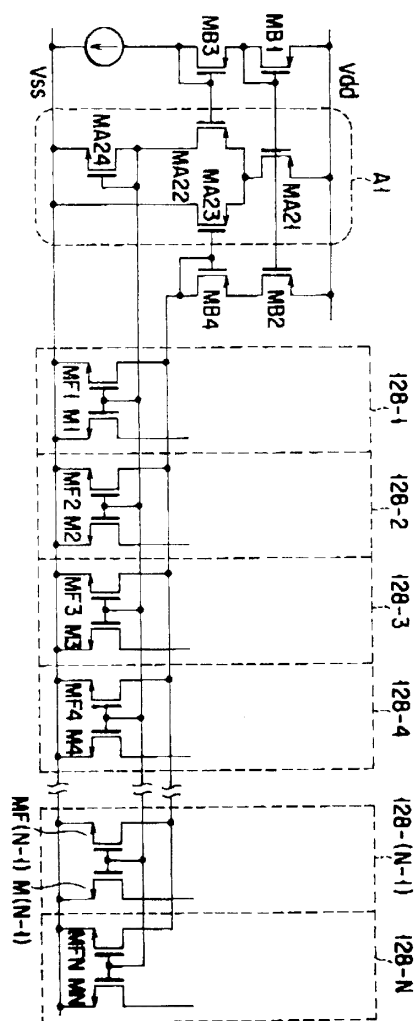
19



20



22



专利名称(译)	集成电路器件和使用它的液晶显示器件		
公开(公告)号	KR100360759B1	公开(公告)日	2002-11-18
申请号	KR1020000009342	申请日	2000-02-25
[标]申请(专利权)人(译)	株式会社东芝		
申请(专利权)人(译)	Sikki东芝股份有限公司		
当前申请(专利权)人(译)	Sikki东芝股份有限公司		
[标]发明人	ITAKURA TETSURO		
发明人	ITAKURA,TETSURO		
IPC分类号	G02F1/133		
代理人(译)	KIM MYUNG SHIN 基姆赢得了哦		
优先权	1999048327 1999-02-25 JP		
其他公开文献	KR1020000058198A		

摘要(译)

本发明涉及集成电路器件和使用该集成电路器件的液晶显示器。并且在集成电路器件中，它具有集成在芯片内部的多个放大器电路。由所提供的相应多个功率晶体管组成的电流镜像电路是包括在输入侧晶体管中的相应输出电流，并且如上所述与多个二极管连接的接收电流接收用于设置偏置电流的电流作为偏置电流到放大器电路。输入侧晶体管分布在多个放大器电路上。集成电路器件和液晶显示器。

