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(12)

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G09G 3/36

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(43)

2002 - 0017530
2002 03 07

(21) 10 - 2000 - 0050907
(22) 2000 08 30

(71) .
,
20

(72) 101 607
1344 - 174
203 - 1005

(74)
:

(54)

(Pixel Row)

가 ,

, ,

1 가 1

.

가 . ,

가 .

5

1

2 1

3 2 /

4 1

5 4

6 4 /

7 2

8a 8b 2 (Simulation)

< >

2₁ 2_n, 12₁ 12_n: T1 T12 : NMOS

4₁ 4_n, 14₁ 14_n: 131 13n :

(Active Matrix Display Device)

(Pixel Row)

(Television)

(Computer)

()

1 가 (ROW₁ ROW_n) n (2₁ 2_n) ()
 4₁ 4_n) n (SP)가 2 n (2₂ 2_n)
 (g₁ g_{n-1}) 4 (C1 C4) (ROW_i)

NMOS (2₁ 2_n) (T5) , 2 (4i) , (4i) 6 NMOS (T6) 5

1 NMOS (T1) 3 (C3) (gi-1)가 (P2) (VP2)
 (VSS) 4 NMOS (T4) - (Turn-on) 2 (P2) (VP2)
 (T5) - 1 (P1) (VP1) 5 NMOS (4i)
 5 NMOS (T5) 1 (P1) (VP1) , 1 (C1) (floating)
 1 (C1) 1 (P1) (Coupling) 5 NMOS (T5) (4i)
 1 (C1)

1 (C1)가 (Vout) 5 NMOS (T5)가 - (4i)

(gi-1)가 (T1) (turn-off) , 3 (C3)가 (T1) 1 NMOS (T3)
 가 3 NMOS (T3) - 2 (P2) (VP2) 6 NMOS (T6) 2 NMOS (T2)
 2 (P2) (VP2) 1 (P1) (VSS)

20V~25V가 (Clock pulse) 20V

가 가 PMOS NMOS 20V~25V 0V~20V가 20V
 가 PMOS -8V~12V 가

가 IC , IC PMOS NMOS 0V~10V
 가 -8V~12V 가 , 가 -8V~12V

가

가

1 가 1

4 10

4 가

4 $m \times n$ (Pixel Array)
 n $(12_1 \quad 12_n)$ n $(12_1 \quad 12_n)$ n
 $(131 \quad 13n)$ $(131 \quad 13n)$ $(14_1 \quad 14_n)$
 (SP) 4 $(C1 \quad C4)$ 2 $(ROW1 \quad ROWn)$ 1 (12_1)
 (131) 1 (12_1) 4 (122)
 $(C1 \quad C4)$ 1 (12_1) 가 1 (131)
 $(ROWi)$

5 가

NMOS PMOS
 가 NMOS

5 $(12_1 \quad 12_n)$ $(12i - 1)$ 4 $(P4i)$ $(12i)$ 1
 $(P1)$ 1 NMOS $(T1)$; 1 $(P1)$, 2 $(P2)$ (10)
 2 NMOS $(T2)$; 3 (8) , 3 $(6c)$ 2 $(P2)$
 3 NMOS $(T3)$; 2 $(P2)$ (10) 4 NMOS
 $(T4)$; 3 $(P3)$ (10) 1 (Cgd) ; 1 $(P1)$, 1
 $(6a)$ 3 $(P3)$ 5 NMOS $(T5)$; 2 $(P2)$, 3 $(P3)$
 (10) 6 NMOS $(T6)$ $(131 \quad 13n)$
 2 $(6b)$, 5 $(P5)$ 6 $(P6)$ 7 NMOS $(T7)$; 5
 $(P5)$, (11) 6 $(P6)$ 8 NMOS $(T8)$; 6 $(P6)$
 $(14i)$ 2 (CLS) ; $(14i)$, (11) 8 NMOS (
 $T8)$ 9 NMOS $(T9)$; $(14i)$, (10) 7 NMOS
 $(T7)$ 10 NMOS $(T10)$

5 6 1
 $(gi - 1)$ 가 1 NMOS $(T1)$ 4 NMOS (T
 $(Turn - on)$ 2 $(P2)$ $(VP2)$ (VSS) , 1
 $(P1)$ $(VP1)$ 1 (Cgd) 5 NMOS $(T5)$ - ,
 1 $(6a)$ 8 NMOS $(T8)$ $(12i+1)$

5 NMOS (T5) (P1) (VP1) (6a) (floating)
 1 (6a) 1 (P1) 5 NMOS (T5) (8 NMOS (T8)
 (T8) (12i+1) 8 NMOS (T8) - (Turn - on) 8 NMOS (T8)
 가 (VHIGH) 8 NMOS 6 (P6) 6 (P6) 6 (P6) (VHIGH) 9 NMOS (T9) 9 NMOS (T9) 가
 MOS (T9) - 9 NMOS (T9) 가 (VHIGH) (14i) (VHIGH) 가
 0) 가 , 7 NMOS (T7) 10 NMOS (T10) - , 10 NMOS (T1) (VSS)
 6 (P6) 가 6 (P6) - (Turn - off) , 9 NMOS (T9)가
 - , 10 NMOS (T10) (VSS) (14i)

7 2 가
 7 (P1) , (12₁ 12_n) (12i - 1) 4 (P4i) (12i) 1
 1 NMOS (T1) ; 1 (P1), 2 (P2) (10)
 2 NMOS (T2) ; (8), 3 (6c) 2 (P2)
 3 NMOS (T3) ; 2 (P2) (10) 4 NMOS
 (T4) ; 3 (P3) (10) 1 (Cgd) ; 1 (P1), 1
 (6a) 3 (P3) 5 NMOS (T5) ; 2 (P2), 3 (P3)
 (10) 6 NMOS (T6) (131 13n)
 2 (P5), (6b), 5 (P5) 6 (P6) 7 NMOS (T7) ; 5
 (14i) (11) 6 (P6) 8 NMOS (T8) ; 6 (P6)
 T8) (T7) 9 NMOS (T9) ; (14i), (11) 8 NMOS (10) 7 NMOS
 (P2) 11 NMOS 10 NMOS (T10) , 6 (P6), (14i) 2
 (T11) 12 NMOS (T12) (14i), (10) 11 NMOS

7 1 , ,
 (gi - 1)가 , 1 NMOS (T1) 4 NMOS (T4) -
 (Turn - on) 2 (P2) (VP2) (VSS) , 1 (P1)
 (VP1) 1 (Cgd) 5 NMOS (T5) - , 1
 (6a) 8 NMOS (T8) (12i+1)
 S (T5) , 1 (P1) (VP1) 1 (6a) 5 NMO
 1 (P1) 5 NMOS (T5) 1 (Cgd) (C
 oupling) , 8 NMOS (T8) (12i+1)
 - (Turn - on) , 8 NMOS (T8) 가 (VHIGH)
 8 NMOS 6 (P6) 6 (P6) - 6 (P6) -
 OS (VHIGH) 2 (CLS) , 9 NMOS (T9) 가

(VHIGH) (14i) (VHIGH) 가
 , 2 (6b)가 , 7 NMOS (T7) 10 NMOS (T10) 가
 가 , 7 NMOS (T7) 10 NMOS (T10) , 6 (P6) -
 (Turn-off)가 , 9 NMOS (T9)가 , 10 NMOS (T10)
 (VSS) (14i) (VSS) 가
 , 1 (6a) 2 (6b) 가 7 NMOS (T7) 8 N
 MOS (T8) 가 6 (P6)가 (Floating) 가 (14i) 가
 11 NMOS (T11) (14i), (VSS) 11 NMOS (T11)
 rn-off) 12 NMOS (T12) , 6 (P6)가 - (Tu
 6 (P6) (14i) (Vss)

8a 8b 2 (Simulation)

8a , 가 NMOS , (VHIGH) 10V가
 , (Vss) -8V가 , 0V~10V 가 ,
 10V~-8V가 , 가 , 가 PMOS , (VHIGH
 H) -8V가 , (Vss) 10V가 , 0V~10V
 가 , -8V~10V가 , 8a 8b , (OUT1)
 , 6 (P6) , 9 NMOS (T9)
 10 NMOS (P10) 2 (CLS) (bootstrap)

가 가 가

(57)

1.

가 ,

1

가 1

2.

1 ,

1

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1

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1

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2

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3.

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7.

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가 2 2 가

8.

7 ,
1 가 1 가 2 , 1
2 가 가 2 .

9.

7 ,
2 가 2 가 1 , 가 2
가 가 1 .

10.

1 ,
1 , 1
1 1 .

11.

10 ,
1 1 가 .

12.

10 ,
가 - 가 , 1 가
가 - 가 ,
가 가 , 1 가
가 - 가 .

13.

10 ,

1 가 , 가
가 1 ,

1 가 , 1 가
가 2 .

14.

2 10 ,

1 1 가 가

가 .

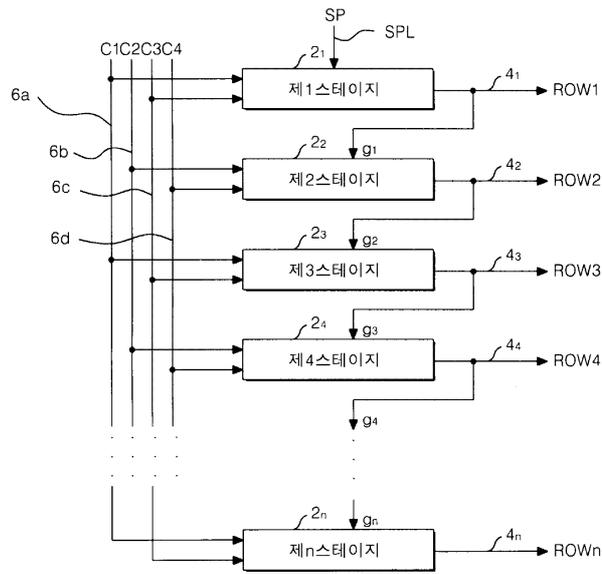
15.

13 ,

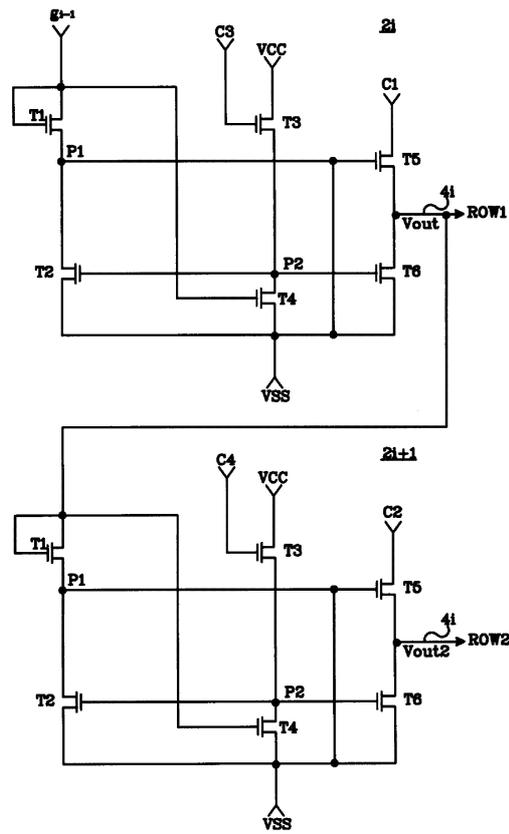
가 2 가 , 가
가 1 ,

가 2 가 , 가
가 2 .

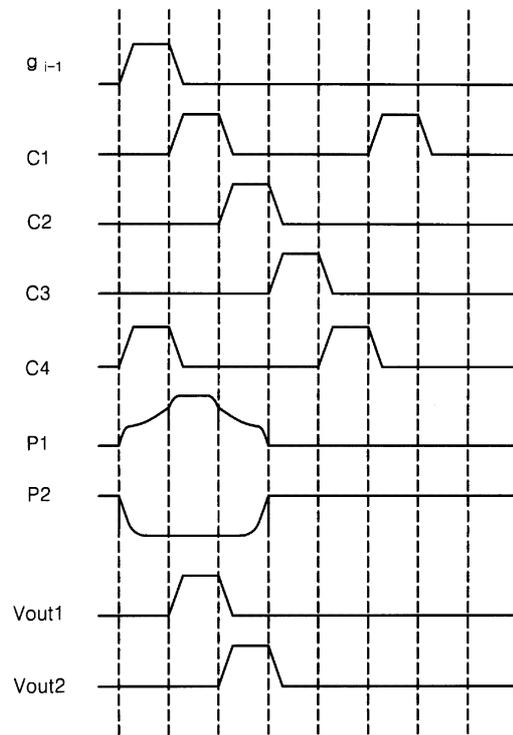
1



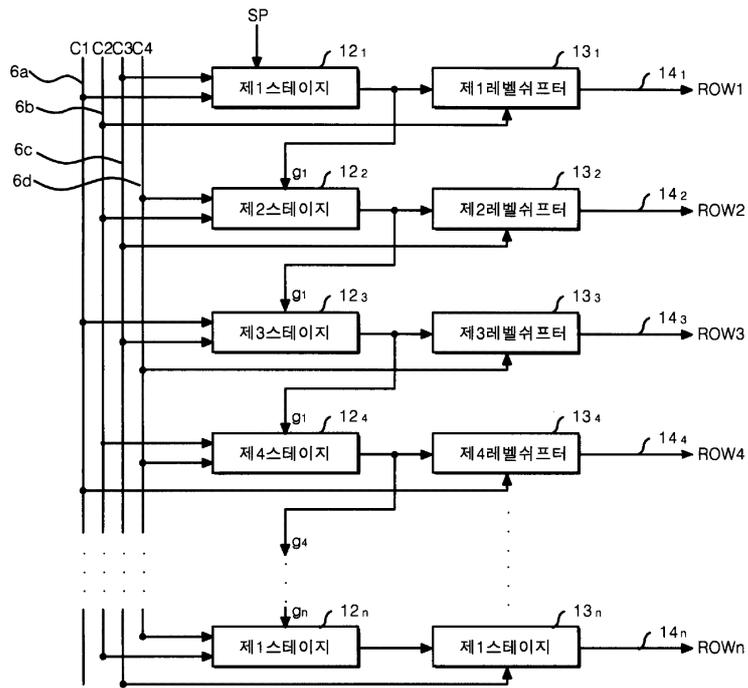
2



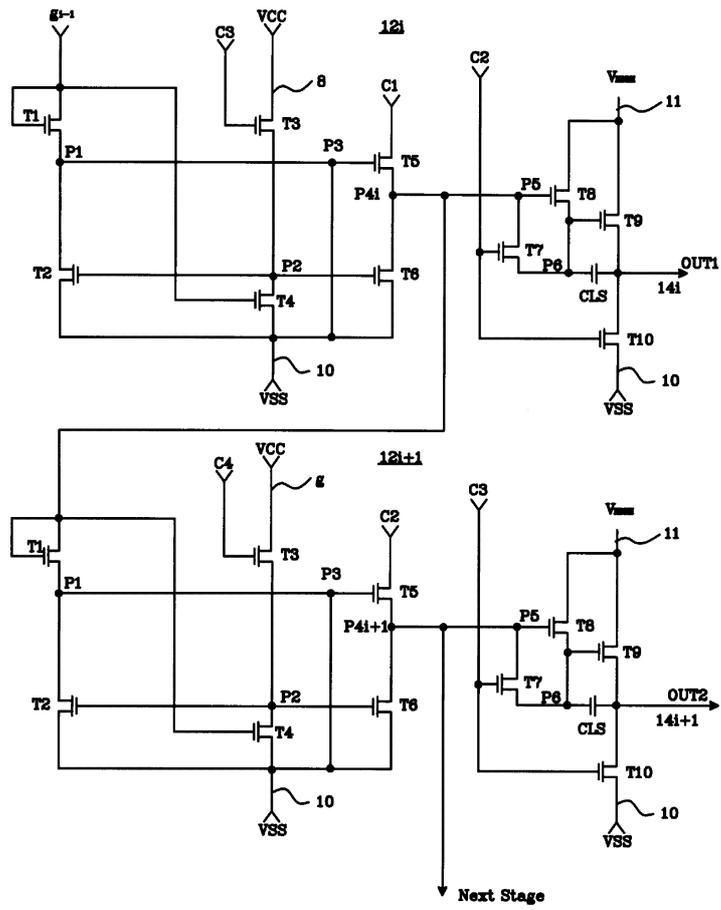
3



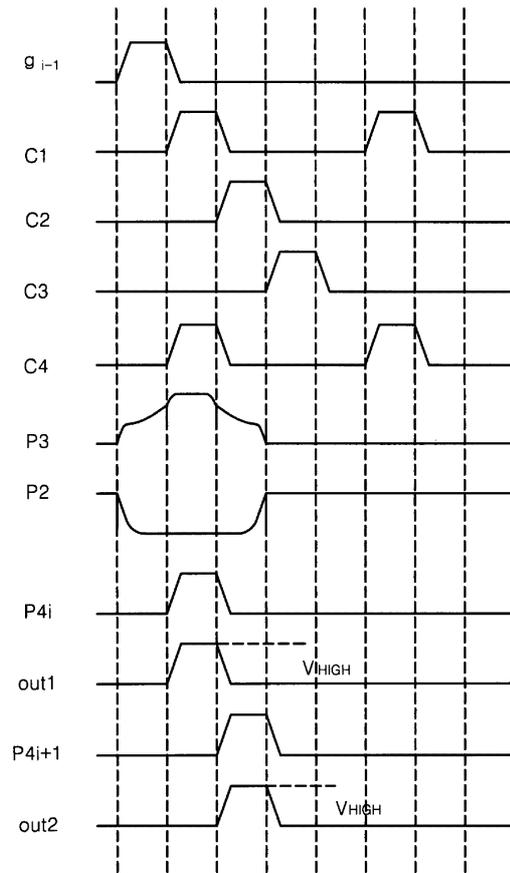
4



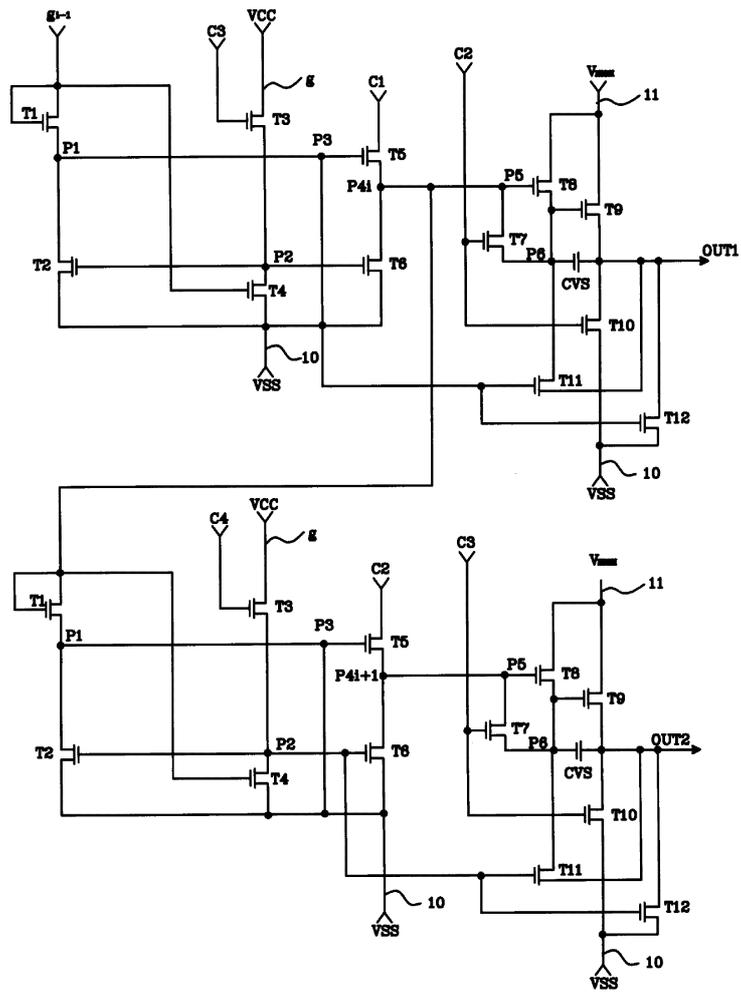
5



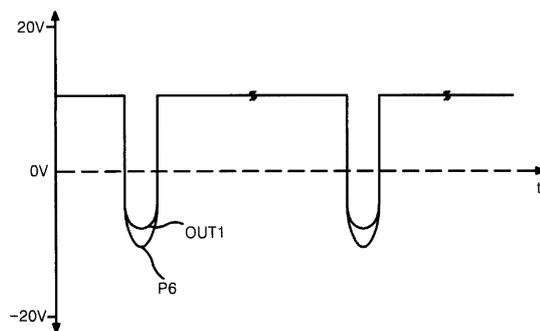
6



7



8a



8b

