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가

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가

6

1

EL

2			EL
3	2		
4			EL
5	4		EL
6		1	
7	6		IC
8	6		IC
9		2	
10	9		IC
11	9		IC
12			(Active Matrix Type) EL
13	12		EL
14		3	
15	14		IC
16	14		IC
17		4	
18	17		IC
19	17		IC

< >

2 : 4 :

6 : 8 :

10 : 12 :

14 : 16,42,62 : EL

18,44,64 : 20,46,66 :

21 : IC 22,48,68 : EL

50,70 :

52,56,72,76 : IC

54a,58a,74a,78a : /

54b,58b,74b,78b : IC

(Cathode Ray Tube), (Liquid Crystal Display), (Field Emission Display),
 (Plasma Display Panel) - (Electro-Luminescence : , 'EL')

EL EL EL EL EL EL EL EL EL
 가 가 가 가 가 가 가 가 가
 1 EL EL EL EL EL EL EL EL EL (2)
 (14) (4), (6), (8), (10), (12)
 (14) (2) 가 (2) (4)
 (6) (8) (8) , (14) (12)
 (10) (8) , (8) (6) (10)
 (14)

EL
 (14)

2 (Active Matrix Type) EL

2 EL (SL) (DL)
 EL(, OEL) (22) EL (16) , (SL)
 (18) , (DL) (20) (SL)
 OEL (22) (SL) 가 가 (DL)
 (DL) , (SL) OEL (22) 가 (SL)
 가 가 (DL) OEL (22) 가 가
 가 OEL (22) OEL (22) 가
 OEL (22) 가 (DL)
 (18) (SL)
 (20)
 (DL)
 EL 가 OEL (22)
 , OEL (22) (DL)

(Integrated Circuit ; 'IC')(21) , IC(21) 3
 (Current Mirror)

3 MOSFET(M0) , IC(21) (VDD) MOSFET(M0) , (VDD) M
 (Current Circuit) OEL (22)
 (i) MOSFET (M1 M4) . ,
 IC(21) MOSFET(M1 M4) M4) (i)
 MOSFET(M1 M4)

MOSFET(M0) (VDD) MOSFET (M1 M4)
 MOSFET(M0) (i) 2ⁿ (2i,4i,8i)
 OEL (22) MOSFET (M1 M4) (i) , EL
 IC(21)

IC(21) MOSFET(M0) IC(21) (R)
 MOSFET(M0) IC(21) (i)

IC(21) (20) 3 IC(21) ,
 MOSFET(M0) IC
 IC(21) (VDD)

EL IC

IC EL

EL

EL

가

가

2ⁿ

/ , 2 1 1 , 1

2 , 1

3 , 2 3 3

4 , 4

3

5

3

1 / , 2 2 1 , 2 ,
 3 2 3 3 5

5

(VDD) ; (OLED) (VDD) (OLED) 6 , 7 ,
 6 , 7 (VDD) 8 9 (Cst)

가

가

2ⁿ

/ , 2 2 1 , 1 , 1
 4 , 4 3 , 2 3 3
 5

3

1 / , 2 2 1 , 2 ,
 3 2 3 3 5

5

6 (GND) ; (OLED) (GND) (OLED) 6
 7 , 7 ,
 8 , 6 7
 9 , 6 7
 (GND) 8 (Cst)

가 가 가 , 가 가
 가 가 ,

가 가 가 , 가 가
 가 가 ,

, 4 19

4 (Active Matrix Type) EL

4 , EL(, 'OEL') EL (SL) (DL)
 (44) , (48) (DL) EL (42) , (46) (SL) (DL)

OEL (48) (SL) 가 가 OEL (48) 가 (DL)
 (DL) (SL) 가 (DL) OEL (48) 가 (SL)

가 OEL (48) 가 OEL (48) OEL (48) 가
 (44) (SL)

(DL) (46)

EL , OEL (48) (DL) 가 OEL (48)

OEL (48) 5 (50) (OLED) (OLED) 1 TFT(
 (50) (VDD) (OLED) (VDD) 2 TFT(T2) ; 2 TFT(T2),
 T1) ; 1 TFT(T1)

(SL) (DL) (DL) 3 TFT(T3) ; 1 TFT(T1)
 2 TFT(T2) (DL) 3 TFT(T3) 4 TFT(T4); 1 TFT(T1) 2 TF
 T(T2) (VDD) (Cst) 1 4 TFT(T1
 T4) P MOS-FET .
 3 4 TFT(T3,T4) (SL) -
 e : Vth) (Vcl) 3 4 TFT(T3,T4) (SL) (Threshold Voltag
 가 (Cst) 1 2 TFT(T1,T2) 1 TFT(T1)
 가 2 TFT(T1,T2) (Vd) 1 TFT(T1) 1
 1 TFT(T1) (Vd) (OLED)
 2 TFT(T2) 1 TFT(T1) 1 TFT(T1)
 가 (Cst) (Vd) (VDD) (OLED) 1 TFT(T1)
 가 (46) IC
 6 1 IC , 8 6 7 6 IC
 6 8 (46) IC (52a,52b,52c,...)
 IC (52a,52b,52c,...) / (54a) , / (54a)
 IC(54b) / 가 (54a) (i) IC (52b) 가
 1 (D1) , 1 (D1) 1 (VDD1) IC (GND)
 3 (D2,D3) , 2 (D3) 2 (VDD2) 4 (GND) 2
 4 IC (52b) (D4) 2 (VDD2) 4 (D4) ,
 IC (52b) 5 (D5) 3 (D1) 3 (D3) N MOS-FET
 , 4 5 (D4,D5) P MOS-FET .
 , 1 (VDD1) 1 (D1) (Iref)가
 2 (VDD2) 2 (D2) 4 (D2) (Iref)가
 (D5) (Iref)가 , 4 (D4) 2 (D2)
 (46) IC(54b) IC (52b) 가
 가 가
 IC(54b) 8 (VDD) 3 (VDD3) 3 (D3)
 MOSFET(MO) , MOSFET(M0) MOSFET (M1
 (i) IC(54b) MOSFET(M1 M4)
 MOSFET(M1 M4)
 (i) () .

MOSFET(M0) (GND) MOSFET (M1 M4) (i) 2 n MOSFET (M1 (2i,4i,8i
M4) MOSFET(M0) MOSFET (M1 M4) (i) ,
) OEL (48) IC(54) (R)
EL MOSFET(M0) IC(54) (i) MOSFET(M0) IC(54) (i) (R)
9 2 10 9 IC
IC , 11 9 IC
9 11 (46) IC (56a,56b,56c,...)
IC (56a,56b,56c,...) / (58a) / (58a)
IC(58b) / (58a) (Iref) IC (56) 가 (D1)
, 1 (D1) (58a) 1 (VDD1) (GND) 1 (VDD1) 2 1 (D2) , 2
(D2) (GND) 3 1 (D3) , 3 IC (56)
4 (GND) (D4) , 3 (D3) IC (56) (GND)
(D1,D2) 5 (D5) IC(58b) 5 (D4,D5)
4 5 P MOS-FET , 3 5 IC(58b) (D3) D5) P MOS-FET ,
(D4,D5) N MOS-FET
D2) (GND) 1 (D1) - (D3)
) (Iref)가 , 1 (D1) 2 (D3)
(Iref)가 , 2 (D2) (Iref) 3 , 3
(D3) 3 (D3) (Iref) , 4
(D4) (D4) IC(56b) (Iref)가 , 3
(D4) 3 (D3) 5 (D5) (46)
IC(58b) (Iref) 가 가
IC(58b) 2 (VDD2) 5 (D5) MOSFET(
MO) , (VDD) MOSFET(M0) OEL (48)
, (i) MOSFET (M1 M4)
IC(58b) MOSFET(M1 M4)
MOSFET(M1 M4) (i)
(M)

MOSFET(M0) (GND) MOSFET (M1 M4) (i) 2 n MOSFET (M1 (2i,4i,8i
M4) MOSFET(M0) MOSFET (M1 M4) (i) ,
) OEL (48) IC(58) (R)
EL MOSFET(M0) IC(58) (i) MOSFET(M0) IC(58) (i) (R)
12 (Active Matrix Type) EL

) 12 , OEL (68) EL EL (62) , (SL) (DL)
 (64) , (DL) (66) (SL) .
 OEL (68) (SL) 가 가 (DL)
 (DL) (SL) OEL (68) 가 (SL)
 가 (DL) OEL (68) 가 가
 가 OEL (68) 가 OEL (68) 가
 OEL (68) 가 (SL) .
 (64) (SL) .
 (66)
 (DL) .
 EL 가 OEL (68) (DL) OEL (68)
 , OEL (68) (DL) .
 OEL (68) 13 (70) (OLED) (70)
 (GND) (OLED) (GND) (OLED) 1 TFT(T1) ;
 1 TFT(T1) (DL) (DL) (GND) 2 TFT(T2) ; 2 TFT(T2), (SL)
 T2) , (DL) 3 TFT(T3) 3 TFT(T3) 2 TFT(T3)
 (GND) (Cst) 4 TFT(T4); 1 TFT(T1) 2 TFT(T2)
 MOS-FET 1 4 TFT(T1 T4) N
 3 4 TFT(T3,T4) (SL) -
 e : Vth) (SL) (Threshold Voltage
 (Vcl) 3 4 TFT(T3,T4) (CL)
 가 1 2 TFT(T1,T2) 1 TFT(T1)
 2 TFT(T1,T2) 가 (Vd) 1 TFT(T1)
 가
 1 TFT(T1) (Vd) (Vd) (VDD) 1 TFT(T1)
 (OLED) (Vd) 2 TFT(T2) 1 TFT(T1)
 (Cst) (Vd) (GND) (OLED) 1 TFT(T1) 가
 (66) IC
 14 3 IC , 16 14 15 14 IC
 14 16 (66) IC (72a,72b,72c,...)
 IC (72a,72b,72c,...) IC (72a,72b,72c,...) (cascading) .
 IC (74a) / (74a)
 IC(74b) / (74a)

IC(74b) / (74a) (Iref) IC 가
 1 (D1) (74a) 1 (VDD1) (GND) 1 (D1) ,
 2 (D3) 2 (VDD2) 4 (GND) (D4) , 4 3 (D2,D3) ,
 5 (D5) (VDD2) IC (D4)
 4,D5) P MOS-FET (D1 D3) N MOS-FET , 4 5 IC(74b) (D
 , 1 (VDD1) 1 (D1) (Iref)가
 2 (VDD2) 2 (D2) 4 (D2) (Iref)가
 (Iref)가 가 (D4) 2 (D2) (D
 (Iref)가 (46) IC(74) IC (72b) 가
 MO) , 3 (VDD) IC(74b) 3 (VDD3) 5 (D5) MOSFET (M1 M4)
 MOSFET(M0) MOSFET(M0) MOSFET (M1 M4) MOSFET (M1 M4)
 IC(74b) MOSFET(M1 M4) MOSFET(M1 M4) (i)
 MOSFET(M0) 3 (VDD3) MOSFET (M1 M4) (i) 2 n MOSFET (M1
 M4) MOSFET(M0) MOSFET (M1 M4) (i) (2i,4i,8i
 EL OEL (68) IC(78)
 MOSFET(M0) IC(78) IC(78) (i) (R)
 17 4 IC , 19 17 18 17 IC
 17 19 , (66) IC (76a,76b,76c,...)
 IC (72a) IC (78a) , IC (78a)
 IC(78b) / (78a)
 / (78a) (GND) (Iref) IC (76) 가
 IC(78b) 가 (78a) 1 (VDD1) (GND) 1 (D2) ,
 (D1) , 1 (D1) (GND) 3 1 (VDD1) 2 (D3) (D2) ,
 2 (D2) (GND) (D3) , 3 (D3) IC (72b) (GND)
 4 (D4) , 3 IC(78b) 5 (D5)
 (D1,D2) P MOS-FET , 3 5 IC(78b) 5 P MOS-FET ,
 4 5 (D4,D5) N MOS-FET (D3 D5)
 (Iref)가 (GND) 1 (D1) -
 (Iref)가 , 1 (D1) 2 (D3)
 D2) (Iref)가 , 2 (D2) (Iref) 3 (D3)

) (D3) 3 (D3) (Iref) , 3
 (D4) 4 (D4) (Iref)가 , 4
 (D4) IC(78b) 3 (D3) IC (76b) (Iref)가 , 3
 IC(78b) (Iref) 가 가 . (66)

MO) , 2 (VDD2) IC(78b) 2 (VDD2) 5 (D5) MOSFET (M1 M4) OEL (68)
 MOSFET(M0) (i) MOSFET (M1 M4)
 IC(78b) MOSFET(M1 M4) (i)

MOSFET(M0) 3 (VDD3) MOSFET (M1 M4) (i) 2 n MOSFET (M1 (2i,4i,8i)
 M4) MOSFET(M0) (i) (i)
 EL OEL (48) IC(58)

MOSFET(M0) IC(58) (R)
 MOSFET(M0) IC(58) (i)

MOSFET(M0) 2 (VDD2) MOSFET (M1 M4) (i) 2 n MOSFET (M1 (2i,4i,8i)
 M4) MOSFET(M0) (i) (i)
 EL OEL (68) IC(78)

MOSFET(M0) IC(78) (R)
 MOSFET(M0) IC(78) (i)

EL IC IC EL
 IC EL EL 가

(57)

1.

가 / 가 -

2.

1 ,

2 n

3.

2 ,

4.

2 ,

MOSFET, Metal-Oxide Semiconductor Field Effect Transistor) N (

5.

3 ,

/ ,

2

1 ,

1

2 ,

1

3 ,

2

3

4

,

4

3

5

-

6.

5 ,

1 3 N
emiconductor Field Effect Transistor)

(MOSFET, Metal-Oxide S

7.
 5 ,
 4 5 P (MOSFET, Metal-Oxide Semiconductor Field Effect Transistor)

8.
 5 ,
 3

9.
 3 ,
 / ,
 2 1 ,
 1 2 2 ,
 2 2 3 ,
 3 4 ,
 3 5

10.
 9 ,
 1 2 P (MOSFET, Metal-Oxide Semiconductor Field Effect Transistor)

11.
 9 ,
 3 5 N (MOSFET, Metal-Oxide Semiconductor Field Effect Transistor)

12.
 9 ,
 5

13.
 1 ,

6 (VDD) (OLED) (OLED)

6 (VDD) 7 ,

7 , 8

6 7 , 8 9 ,

6 7 (VDD) (Cst)

14.

,

;

가 / 가 -

15.

14 ,

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2 n

16.

15 ,

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17.

15 ,

N (

MOSFET, Metal-Oxide Semiconductor Field Effect Transistor) -

18.

15 ,

/ ,

2 1 ,
 1 2 ,
 1 3 ,
 2 3 4 ,
 4 3 -
 5

19.

18 ,
 1 3 N (MOSFET, Metal-Oxide S
 emiconductor Field Effect Transistor) - .

20.

18 ,
 4 5 P (MOSFET, Metal-Oxide Se
 miconductor Field Effect Transistor) - .

21.

18 ,
 3 -

22.

16 ,
 / ,
 2 1 ,
 1 2 2 ,
 2 2 3
 ,
 3 4 ,
 3 5
 - .

23.

22 ,
 1 2 P (MOSFET, Metal-Oxide Se
 miconductor Field Effect Transistor) - .

24.

22 ,
3 5 N (MOSFET, Metal-Oxide S
emiconductor Field Effect Transistor) - .

25.
22 ,
5 -

26.
14 ,
-

;

6 , (GND) (OLED) (OLED)
6 (GND) 7 ,

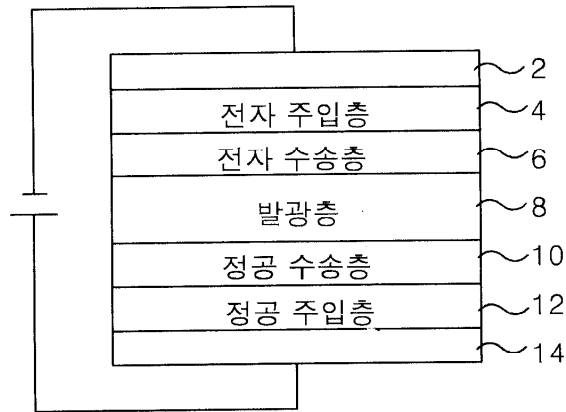
7 , 8
6 7 , 8 9 ,

6 7 (GND) (Cst)

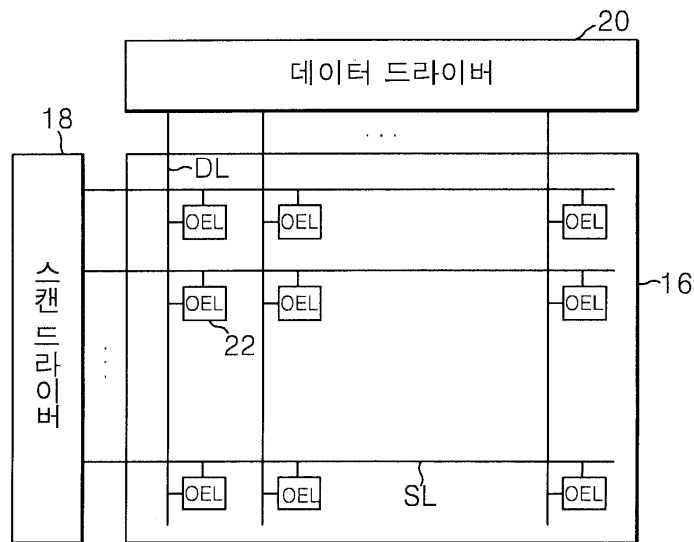
27.
- 가 - ,
가 가 ,
가 가 ,
가 - - .

28.
- 가 - ,
가 가 ,
가 가 ,
가 - - .

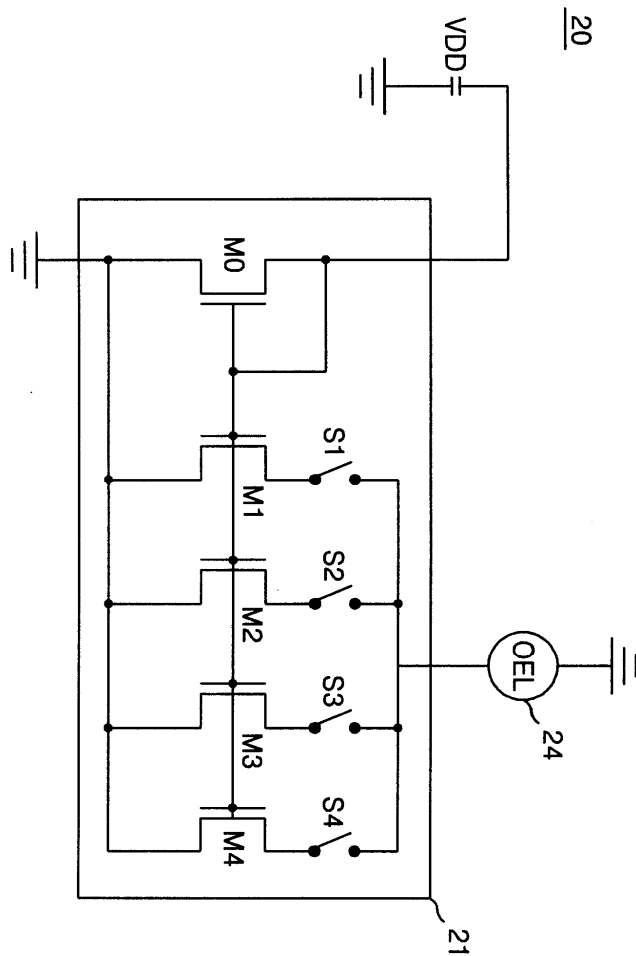
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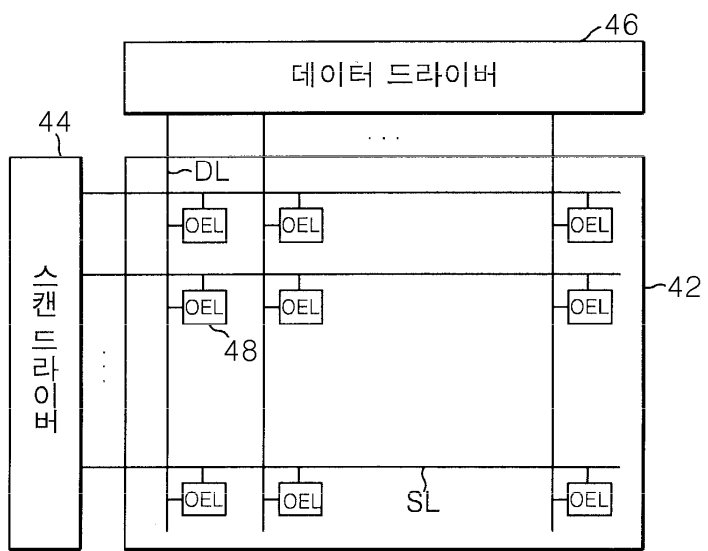
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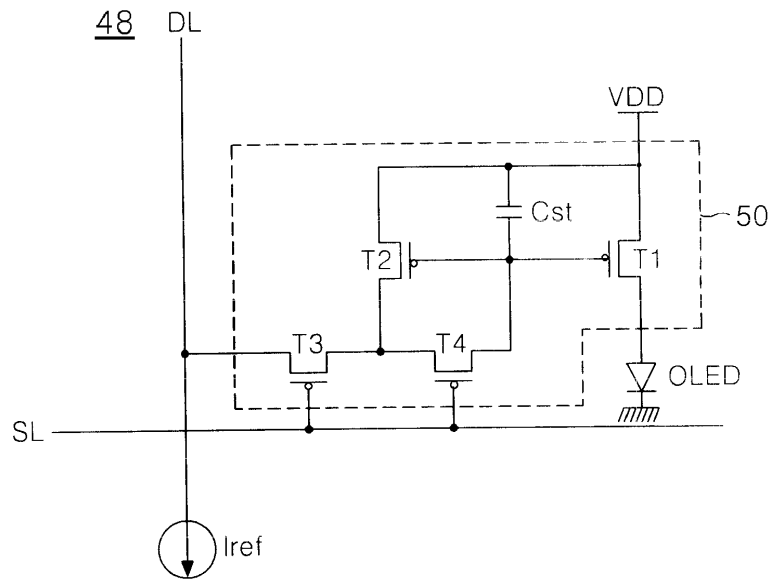
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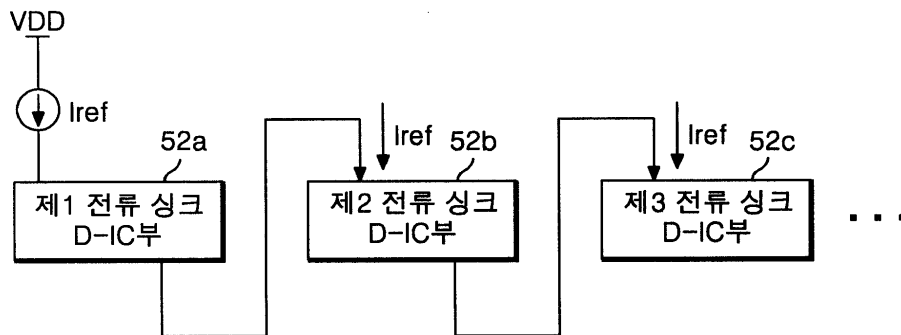


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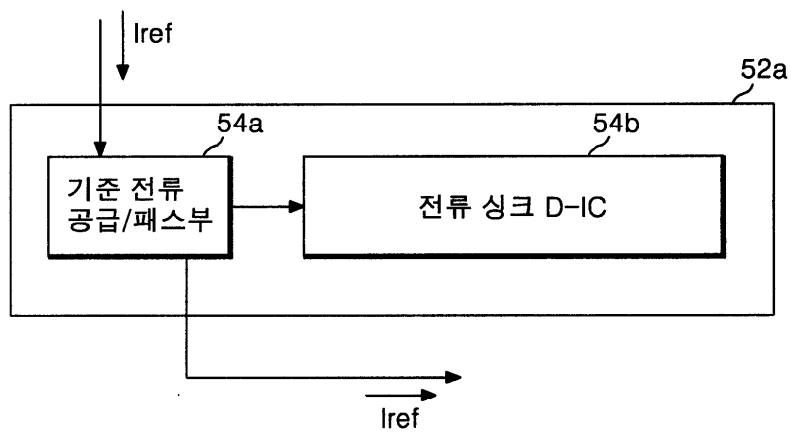


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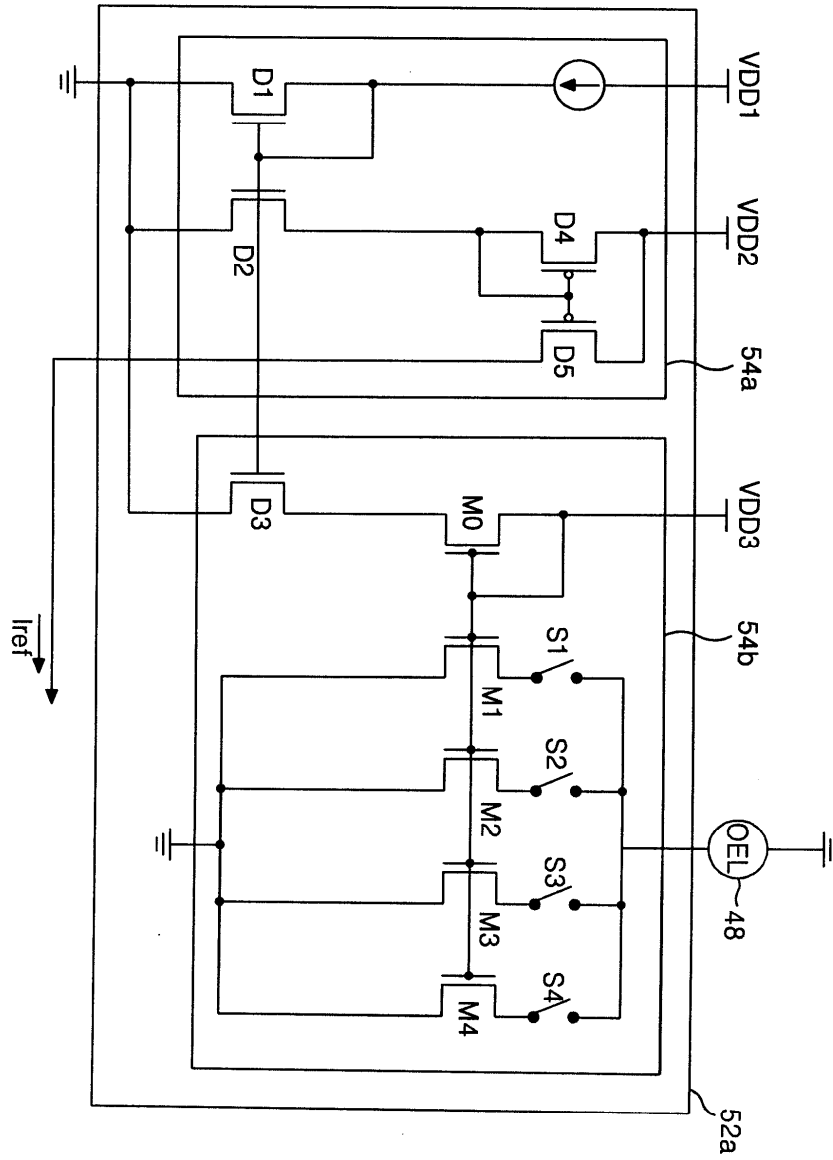
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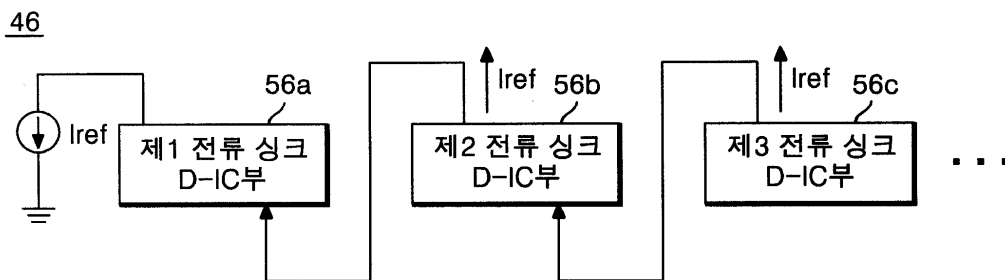
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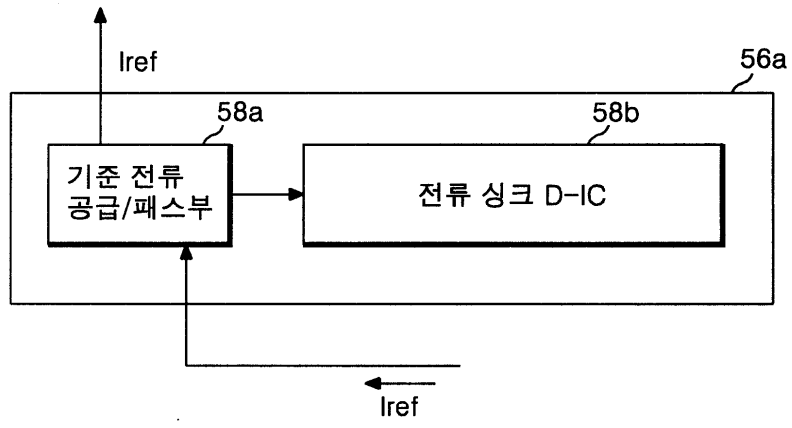
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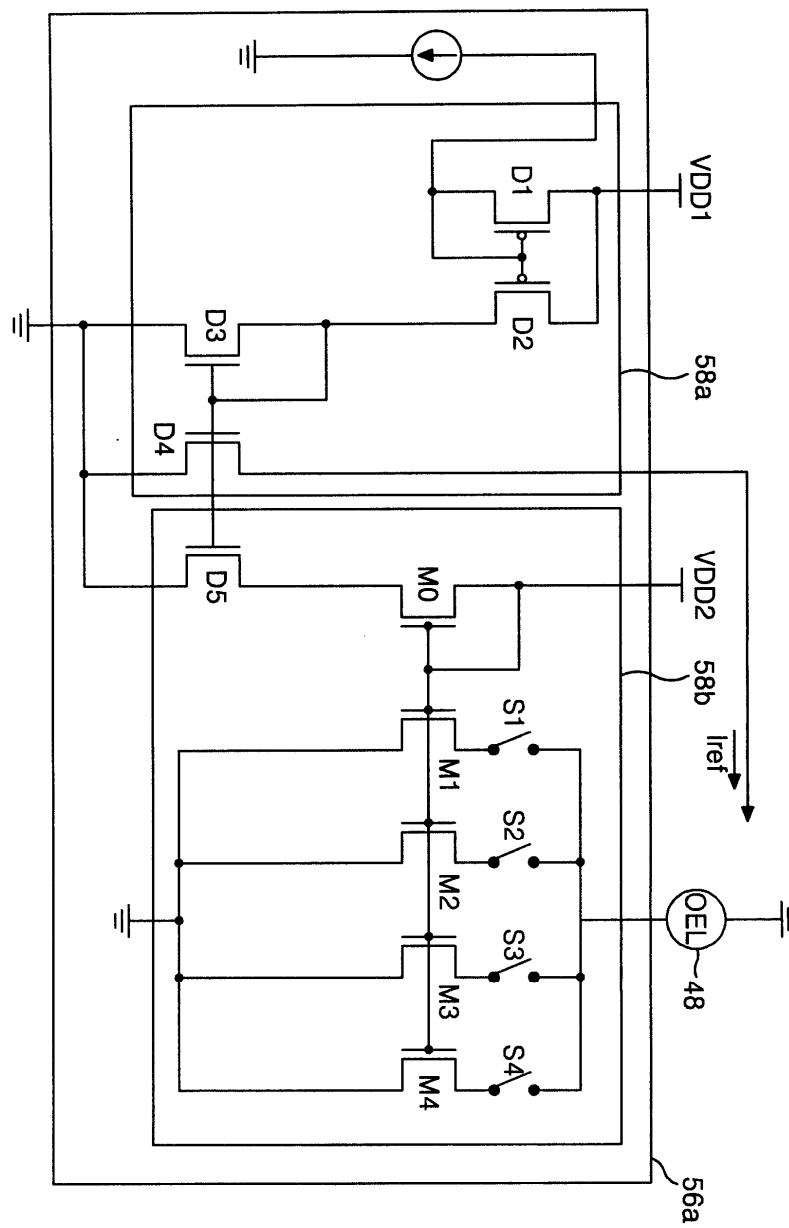
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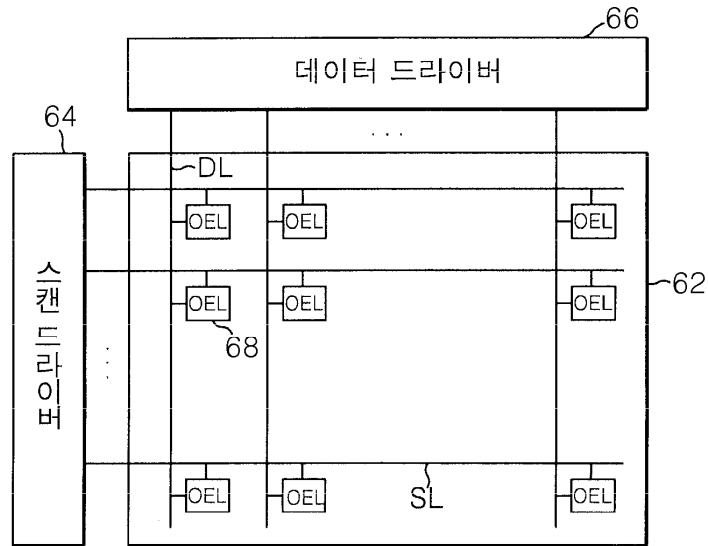
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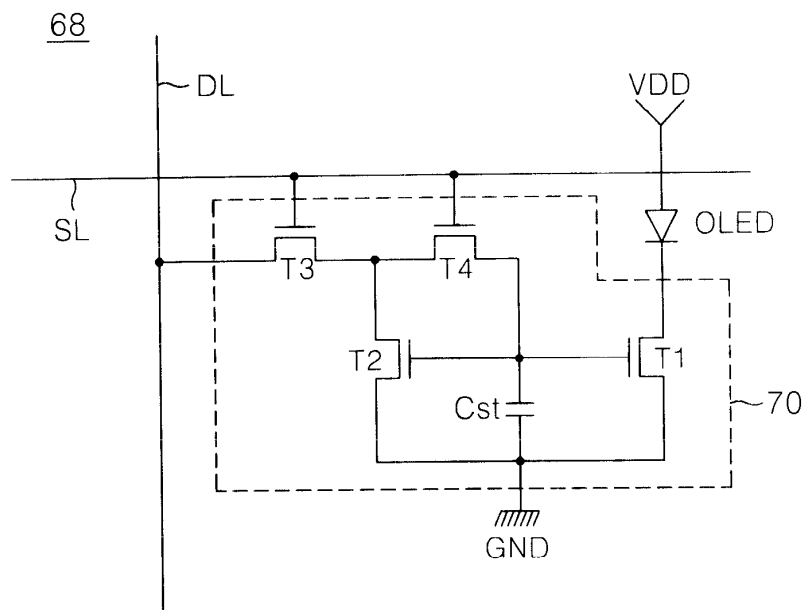
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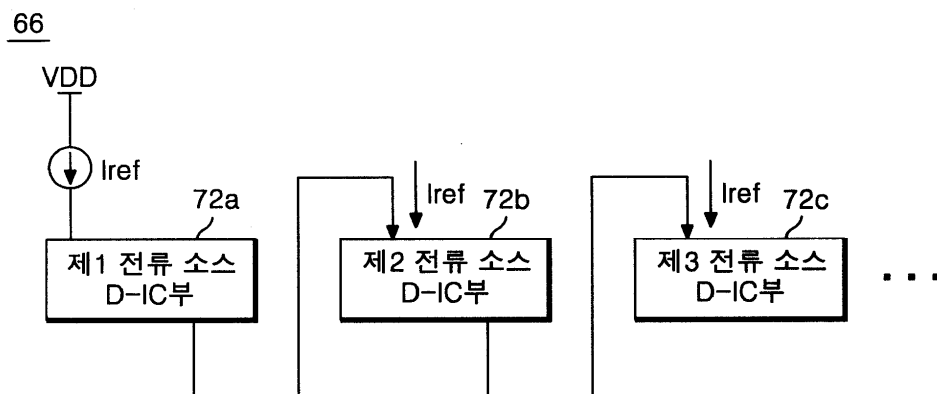
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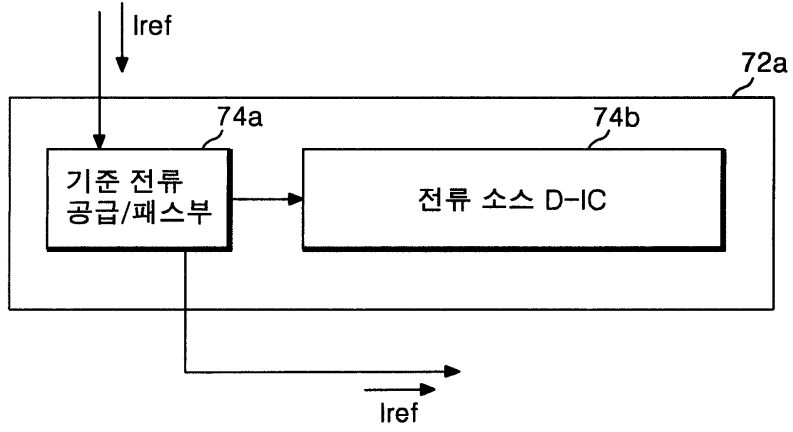
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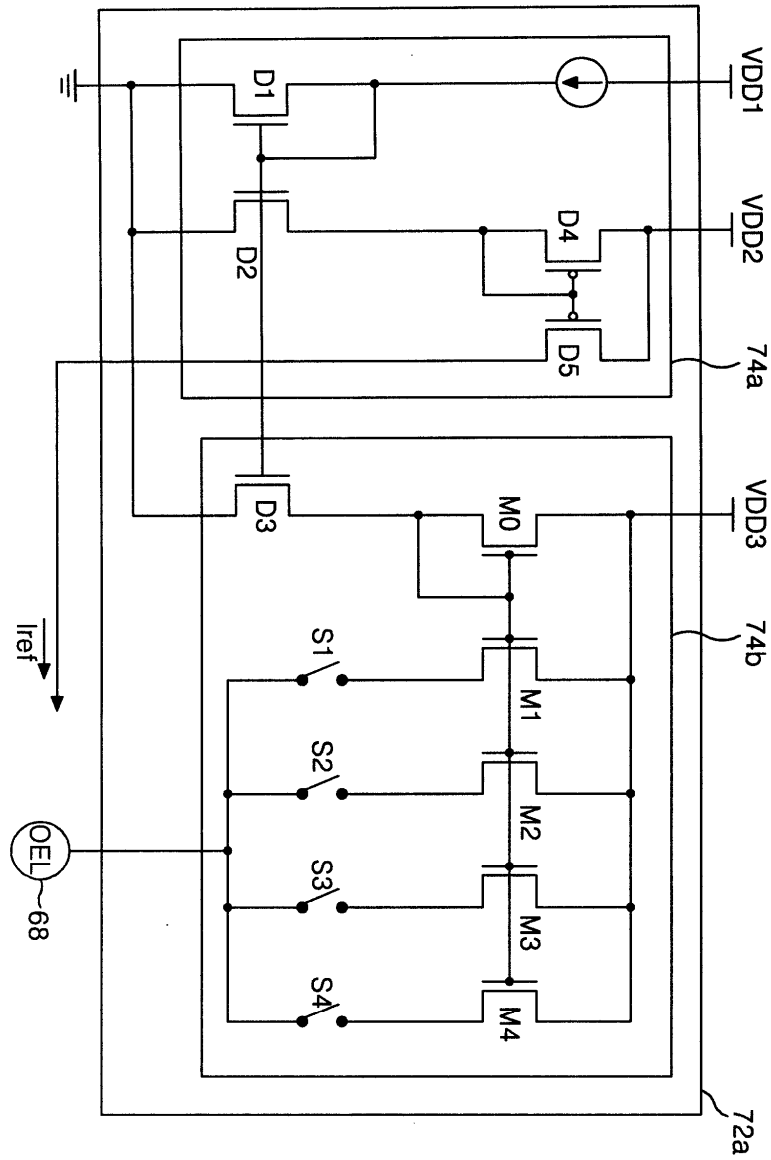
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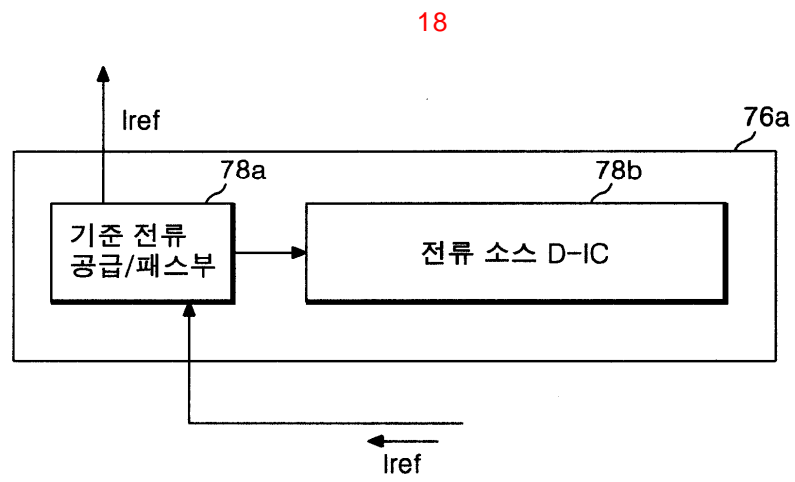
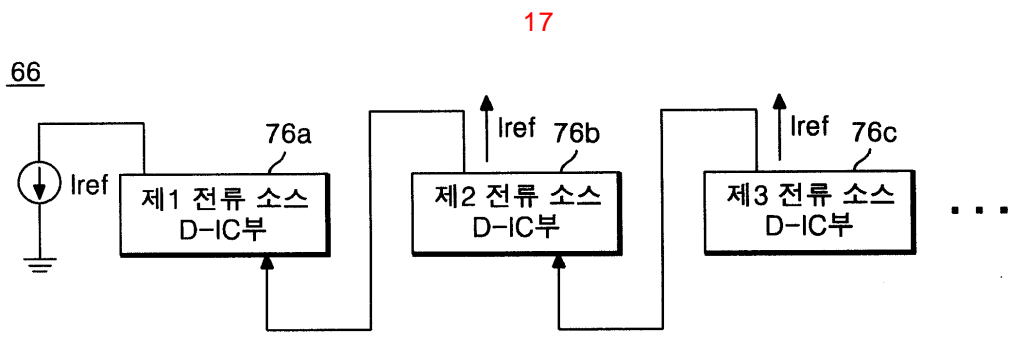


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16





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