

(19) (KR)  
(12) (A)

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G09G 3/20 (43) 2003 11 21

(21) 10-2003-0001322  
(22) 2003 01 09

(30) JP-P-2002-00142469 2002 05 17 (JP)

(71) 가 가  
가 4 6

(72) 가 1-842-1-508  
가 가 256-11

(74)  
:

(54)

가 가 , 4 1/  
4 4/4 , 1/4 , 2/4 , 3/4 ( 1/  
(6) OLED (4)가 (12) (1) (16) (1)  
/ , 2

1

1

1

OLED

2a	2b	1	.
3a	3b	1	.
4	1	1	.
5		2	OLED .
6	2	1	.
7		3	.
8	3	1	.
9		4	OLED .
10	4	1/4	.
11	4	3/4	.
12	4	1	.
13		5	OLED .
14	5	1	.
15		6	.
16	1		.
17	2		.
18	2		.
<		>	

- 1, 22, 42 :  
2, 23, 46 : TFT  
3 : TFT  
4, 24, 44 : OLED  
5 : TFT  
6, 25, 34, 47 :  
7, 27, 35, 48 :  
8, 28, 49 :  
9, 50 :  
10 :  
11, 53 :

12, 29, 37, 54 :

가 가 ,

16 18 , 2 .

16 , 1 ( , 1 ) .

05) EL(Organic Electro-luminescent) (204) (205)가 (206), (207), (208) (205) (207) TFT(Thin-Film-Transistor : 201) TFT(203) (202) TFT(203) (202) (208)

TFT(203) EL (204) (206) (210) TFT(203) (207) (209) TFT(201), TFT(203) Si-TFT , SiO<sub>2</sub> .

1 .

(206) (209) (210)가 TFT(201) TFT(203) (202) , TFT(203) EL (204) , EL (204)

1 , 8-241048 EL(Organic Electro-luminescent) (OLED ; Organic Light Emitting Diode) 가 ,

17 18 , .

17 2 ( , 2 ) . 2 (209) , 1 (211), (210) (212)가

18 , 2 . 18 , 1

1 Ts , / T1 Tn( , 18 n=5 ) Ts OLE D , 1 가 , , 「 , 」 2 . , Ts T1 T5 OLED , 「 」 2 i 가 가 , 18 가 가 , T1 T5 2

가 .

TFT(203)

TFT(203)

가 가

2001-159878

TV

6

8

16

1

EL

(204)

TFT(203)

TFT(203)

TFT(203)

Vth

가

TFT

Si

Si-TFT

TFT

, 1V

Vth

, 1V

, OLED

가

가

, 1

가

, 17

18

2

OLED

가

가

8

Ts가

, 8

T1 T8

(212)

(206)

가

, 2

, 1

가

, 2

가

가

가 가

3

1

가 3

Si-TFT

3

< >

< 1>

1 4 1 1

1 OLED (6) (9), (10), OLED (4) (6)가, (9) (10) (7), (8) (7) (11) (16) (13) (14) (15) (12) (6), (11), (12) (16) Si-TFT

(6) (7) (1) TFT(2) TFT(2) TFT(2) TFT(5) OLED (4) TFT(2) TFT(3) TFT(5) TFT (3) (8) TFT(2) (10) (9) TFT(3) TFT(2) OLED (4) TFT

Si-TFT OLED (4) OLED (4) 1 2

(11) 가 (12) Si-TFT LSI (16) 1

1 4 2 2 2a, 2b 3a, 3b 1/4 4/4

2a 2b 1/4 1/4 2/4 (11) (9) (10) (13) (14) (11)가 A, B, C, ... (6) (7) (12) 가 5 32가 가 (9), (10) A, B, C

, 2b 2/4 (11) (9) , (10)  
 . (14) (7) (13) , (15) (14) 2b .  
 .  
 , 가 TFT(3) TFT(5)가 / (7) ,  
 TFT(2) OLED (4) (7)  
 가 가 (1) 1/4  
 2/4 (7)  
 (4) 가 , OLED (4) OLED 가  
 TFT(2) OLED .  
 , .  
 3a 3b 3/4 4/4 . 3a  
 3/4 (7) 1/4 (12)가 , (16)  
 (6) (7) (11)가 A, B, C, ... , 2  
 가 .  
 , 3b 4/4 (11) (9) , (10)  
 . (14) (7) (13) , (15) (14) 3b ,  
 .  
 , ( , (7)  
 (4) OLED (4) 가 , OLED  
 4/4 2/4 가 ,  
 . 4/4 , 가 2 가 가 .  
 4 , OLED , 4 1 , Ts ,  
 2 , OLED . 1/4 3/4  
 2/4 4/4 .  
 , 6 MSB(Most Significant bit : ) 5  
 , 32 MSB / 2 ,  
 ( ) ,  
 TFT 가 ,  
 , OLED (4) ,  
 .  
 , TFT TFT p ,  
 2) OLED (4) , CMOS n , TFT(

가, (MSB) k 2 m=6, k=1 (6) 2 m (m-k) 가

(11), (12), (16)

LSI(Large Scale Integrated circuit) Si-TFT 가

Si-TFT

OLED (4) 가

가

가

< 2>

5 6 (25) (26), (27), (28) OLED (24) (25)가 (29) OLED

(25) (27) TFT(21) TFT(23) (22) TF

T(23) T(23) T(23) (24) (27) (28) (26) (31) (29)

(30) (27) T(23) (29) (30), (29)

(31) Si-TFT

OLED 가 1 1/2 , 2 2/2

1/2 (31) (29)가 가 (26) (29)

(30)가 T(21) T(23) (22)

(27) T(23) T(23) (24) 32

1 OLED (24) 5

, 2/2 (31)가 가 (26) (31)

(29) (30)가 T(21) T(23) (22)

(27) T(23) T(23) (24)

1 OLED (24) MSB1

OLED (24) 가

T(23) 가

, 2/2 가 2 가 가

6 1 OLED 2

MSB 5 , 2/2 MSB 1/2 , 6  
 , / 2 ,  
 1 ,  
 ( ) TFT(23  
 Technical digest of SID 98, pp.11  
 - 14 (1998)( , 3 ) , 3  
 가 가 TFT  
 < 3>  
 7 8 , 3 (33) (34)가 7 , (34)  
 (36), (35)  
 (34) (35) TFT(32) (33) (33)  
 (36) (38) , (35)  
 (37) (39) TFT(32)  
 (38), (37) (39) Si-TFT  
 가  
 ,  
 ,  
 , 가 1 1/3 , 2 3 2/3 , 3 3/3  
 , 1/3 (37)가 (36)  
 (38)가 (39) 가 (37)  
 (35) TFT(32) (33) 1  
 가 , (33)  
 16 4  
 , 2/3 (39)가 (36)  
 (37) 가 (39)  
 (38)가 TFT(21) (33) 1 가  
 (35) (33)  
 , MSB 1  
 , 3/3 (39)가 (36)  
 (37) 가 (39)  
 (38)가 TFT(21) (33) 1 가  
 (35) (33)  
 , MSB 1  
 , 2/3 3/3 (33) , 가



, TFT(32)  
 , 2/3 3/3 , 가 4 가 가 .  
 8 , 8 1  
 , 1 , 1 3  
 , 1/3 , 2 6 MS  
 B 2 2/3 3/3 , MSB 1 .  
 4 , 1/3 2 3/3 2  
 / 2 , 2/3 1 .  
 , 3 2/3  
 , ( )  
 , 가 , 가  
 , 4 , 2 , 가  
 , 가 , 가 , 가  
 , 가 , 가 , 가  
 , 가 , 1 2  
 , 가 .  
 < 4>  
 9 12 , 4 , 9  
 9 OLED (47) (50), (52), OLED (44) (47)가  
 , (48), (51), (48), (49)  
 , (50), (52) (51) (53)  
 ), (48) (54) (55) (55) (47)  
 (53), (54) (55) Si-TFT  
 (47) , (48) TFT(41) (42) TFT(46)  
 , TFT(46) TFT(41) TFT(45) , TFT(45)  
 (49) . TFT(46) OLED (44) ,  
 TFT(46) TFT(43)가 , TFT(41), TFT(43)  
 ), TFT(45) (50), (52), (45) .  
 , (54) (55) , 1  
 (12) (16) 가 , (54) (55)  
 , TFT .  
 1 4 , 2 2 , 10  
 11 1/4 4/4  
 10 1/4 . 1/4  
 , (51) (53) (50) (52) , (53)가 A, B, C, ... , (

(47) (48) , (54) 가 , 2/4 ( ) 5 , 32가 .

(51) , .

가 가 9 (48)

TFT(41) TFT(43)가 / (48)

OLED (44) TTF(46)

(42) TTF(43)가 ,

(42) , 1/4 .

, 2/4 (51) , TTF(46) ,

TTF(46) (42) .

1/4 ,

OLED (44) 가 .

, 11 3/4

. 3/4 , 1/4 1/4

(48) 가 (54) 가 , (5

5) (47) (48) , (53)가 A, B, C, ... (

2 (55) 「 」 「 」 (

51) , , 4/4 ( ) (

12 , 12 1 Ts ,

OLED (51) .

2 1/4 ,

2/4 , 3/4

LSB(Least Significant bit: 4/4 ) 5 , LSB 6

/ 2 , 32 , 1/64 .

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4 가 , 4 .

가 , 가

가 ,

, 2 OLED 가 ,

4pF 가 20nA, 1V 가

, 200μs , 60 83

(LSB)가 ,

LSB 2 , 40nA ,

166 가 .

LSB , LSB , m , m

(LSB) n 2 , (m-n) 가 DA , m

가 , m n

, n 가

< 5>

13 14 , 5 13 ,

13 OLED (47) (50), OLED (44) (47)가 (52), (51), (48), (49)  
 (53) (48) (60) (50), (52) (51) (53),  
 (48) TFT(41) Si-TFT (42) TFT(46) (47) TFT(46)  
 TFT(41) TFT(45)  
 , TFT(45) (49) TFT(46) OLED (44) T  
 FT(41), TFT(43), TFT(45) (50), TFT(43)가 (52), (45)  
 (60) , TFT가 가  
 1 4 2 2  
 , , 1/4 4/4 0 8  
 , (48) 가 1/4 , 3/4  
 , 10 11 4 ,  
 14 가 14 1 Ts  
 가 8 (51) / 가 1 8 OLED  
 2 3 , 3  
 3 8 OLED (44) 3 , 2/4  
 3 1/4 , 3 3/4 , 3  
 , 4/4  
 , 8 2 8 2  
 가 가 2/4 4/4 , 8 8 8  
 , 가 , 64  
 , 8 8 64 , 64 4 3  
 , 256 , x 4 y 4  
 , x y , 64 , 64 5 3  
 , R, G, B ,  
 가  
 , x , 「 「  
 「 「 2 「 2  
 「 「 「 「  
 「 x 「  
 「 가 「  
 , 「 「 「

&lt; 6 &gt;

15 , 6 . 15 (PDA : Personal Digital Assistants : 100)

(I/F) (102) , I/F (102) I/O(Input/Output) (103) (106), (108) (107) . (105), (109) OLED (101) (105) OLED (101) (100) (101)

08) (107) . (106) OLED (101) (105) OLED (101) 1 (105) OLED (101) (100) (101)

1 (105) OLED (101) , I/F (102) (104) I/O (103) (104) (107) (100) (107)

(104)가 (106) OLED (101) , OLED (107) (101) (106) , (105)

, OLED (101) , 6 (109) 2 가 , (100) 1

가 가 (100) OLED

가 가

(57)

1.

1. ,
2. , 3
3. ,
4. 1 , , ,
5. 1 1 , 3
6. 2.
7. 1 ,
8. 2 3.
9. 2 , , 가
10. 4.
11. 1 ,
12. 4 5.
13. 4 , ,
14. 6.
15. 1 ,
16. Si-TFT , 가 ,
17. 7.
18. 1 ,
19. m , (m-k) , DA k 2
20. 8.
21. 7 ,
22. 9.
23. 8 ,

, 가 , .

9 10. ,

, .

10 11. ,

, 가 , 가 .

11 12. ,

, .

7 13. ,

1 2 , 2 , DA k 1 (m-k) 1 2 .

1 14. ,

m , (m-n) , DA n 2 .

14 15. ,

.

14 16. ,

1 2 , 2 , DA n 1 (m-n) 1 2 .

1 17. ,

0 x x i (i = 0, 1, ..., y-1) 가 가 , , 1 x y .

17 18. ,

.

19.

17 ,

1 x y

20.

17 ,

1 3 , x 3 , 3  
2

21.

,

,

,

,

,

, 3

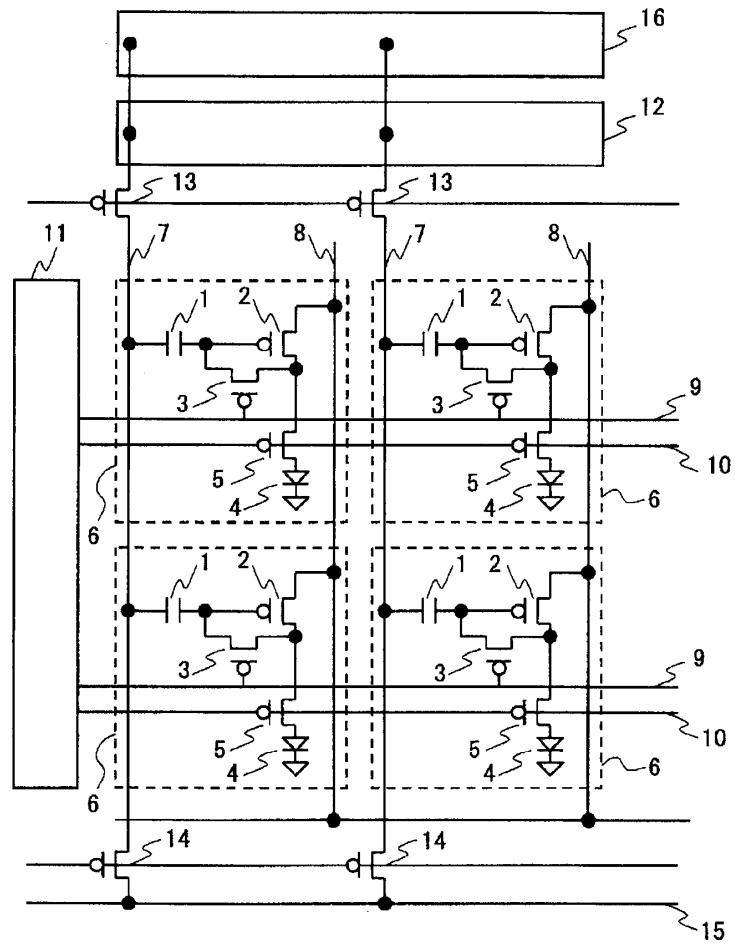
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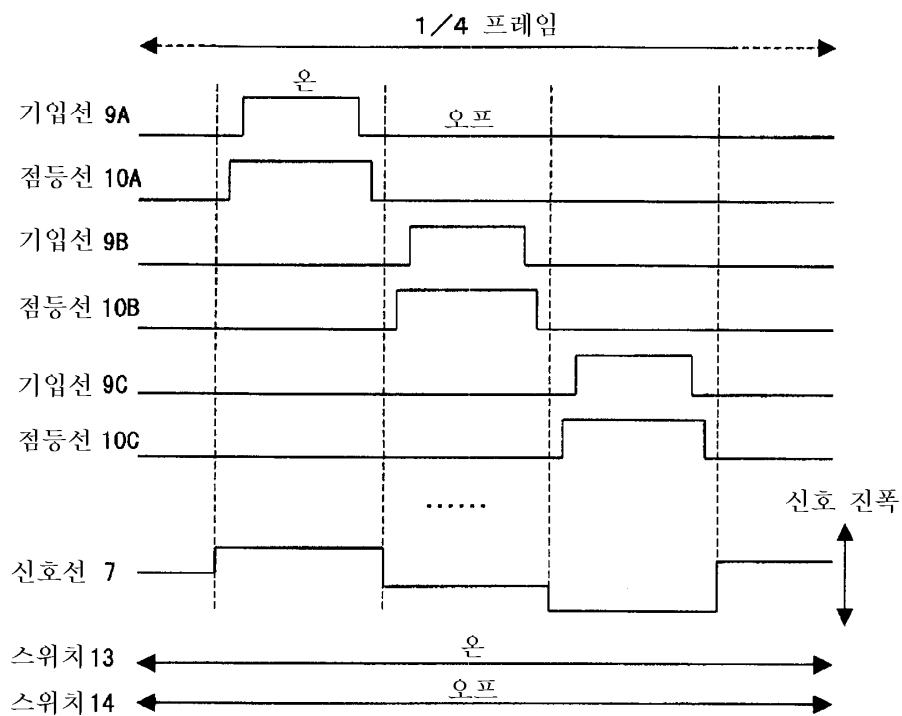
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1 1 3  
.

1

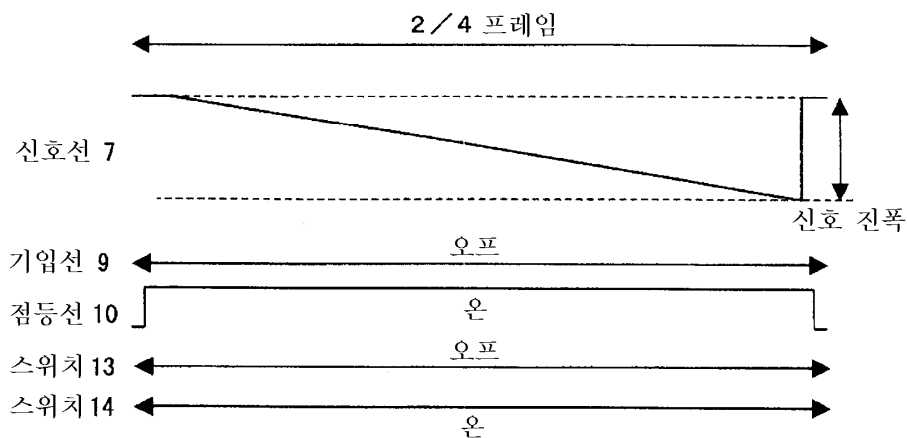


2a

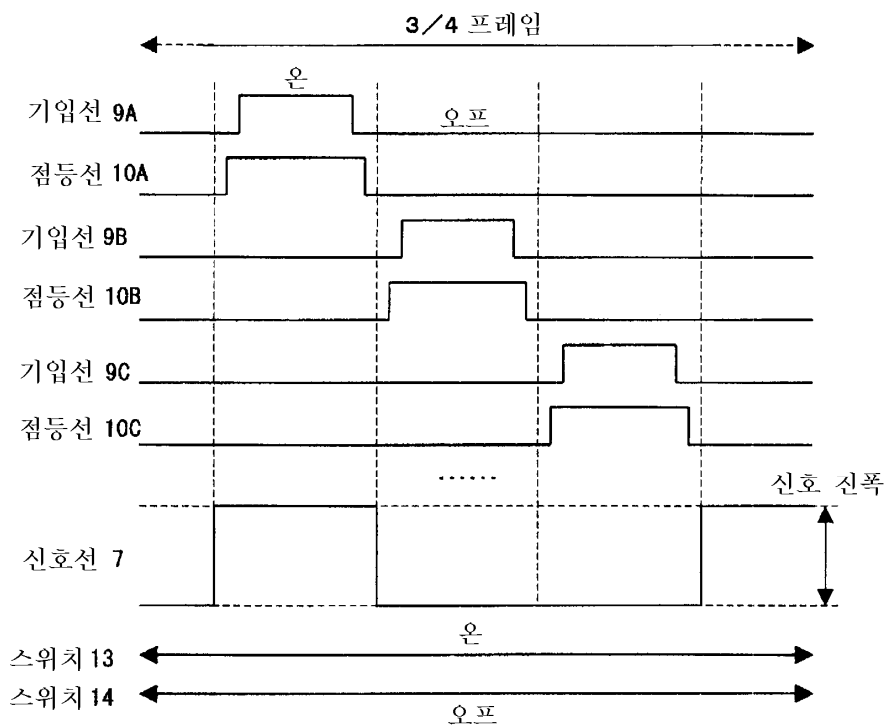




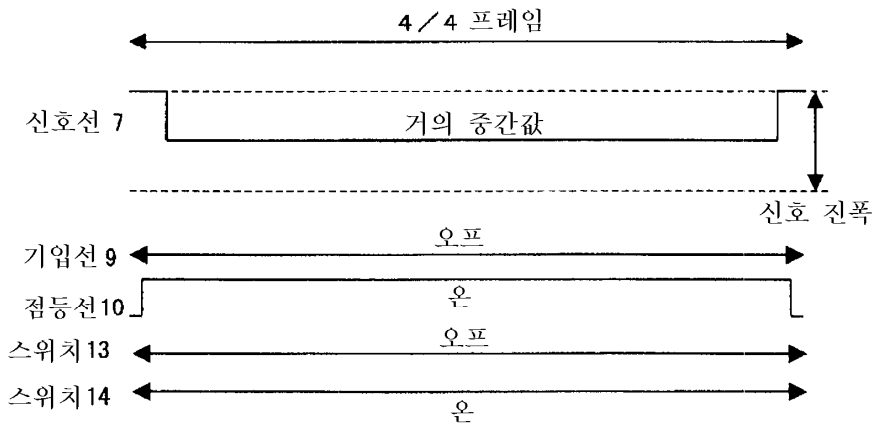
2b



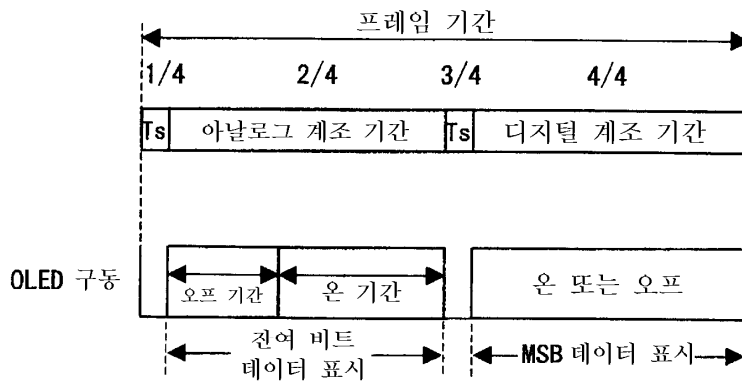
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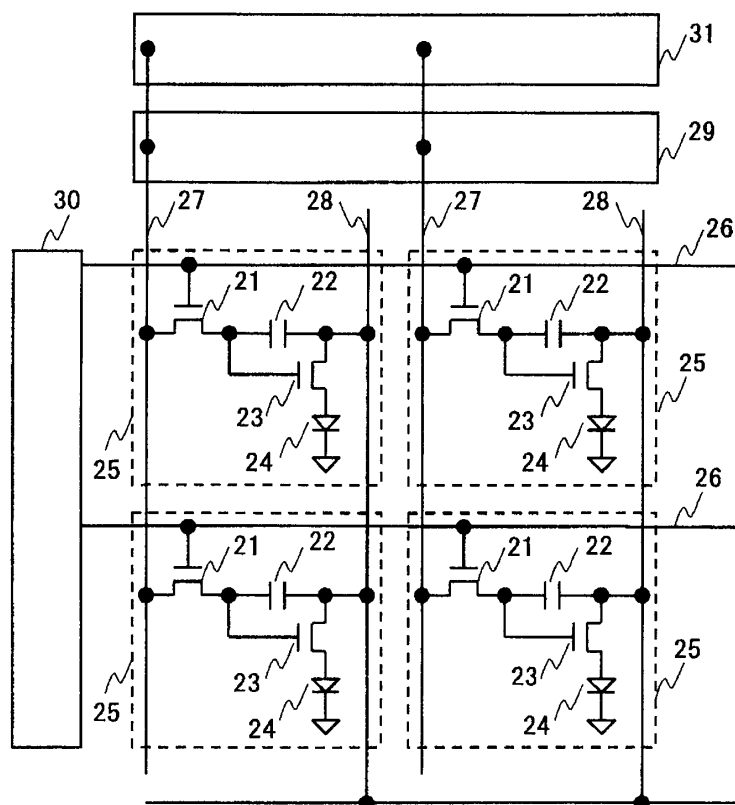


3b

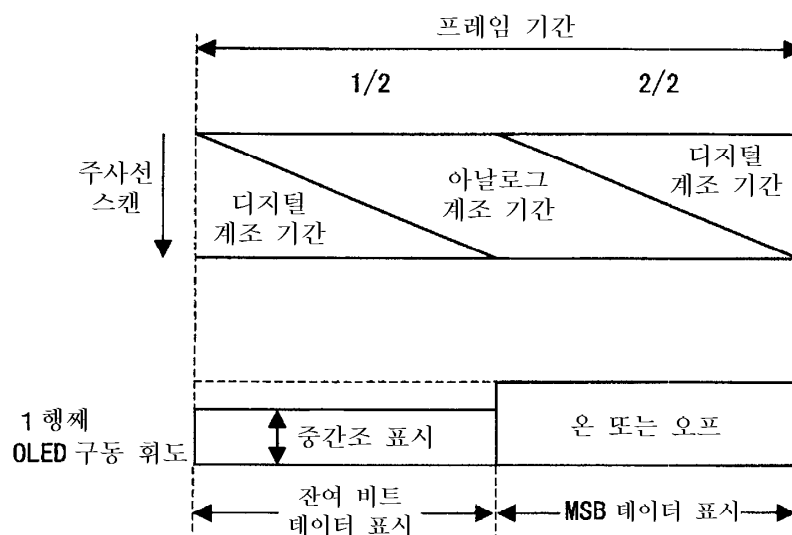


4

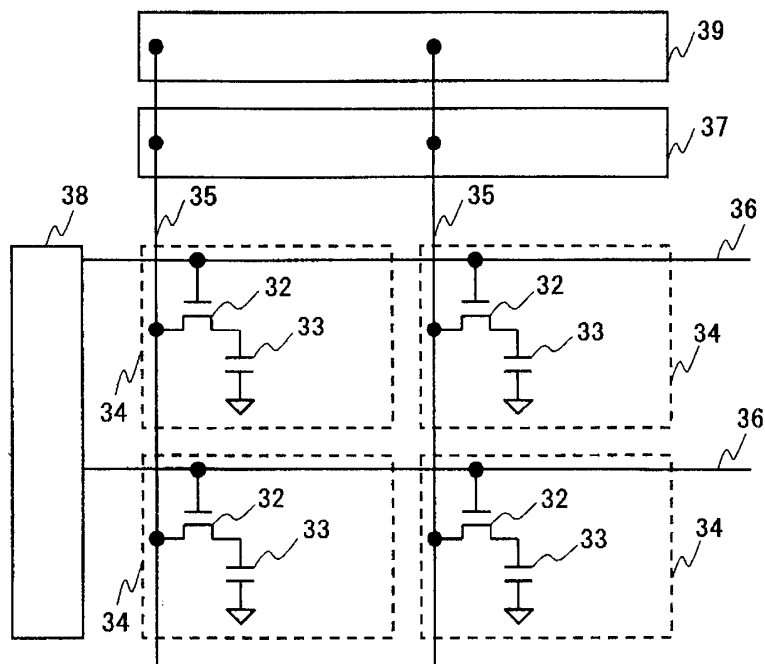




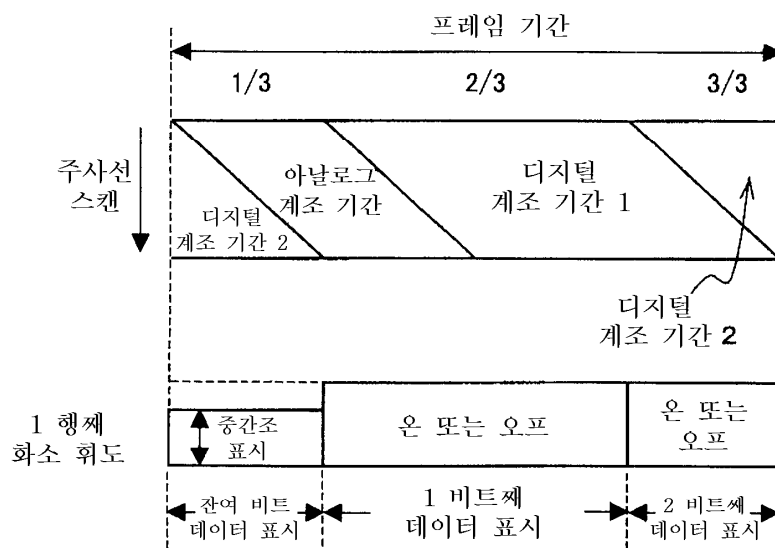
6

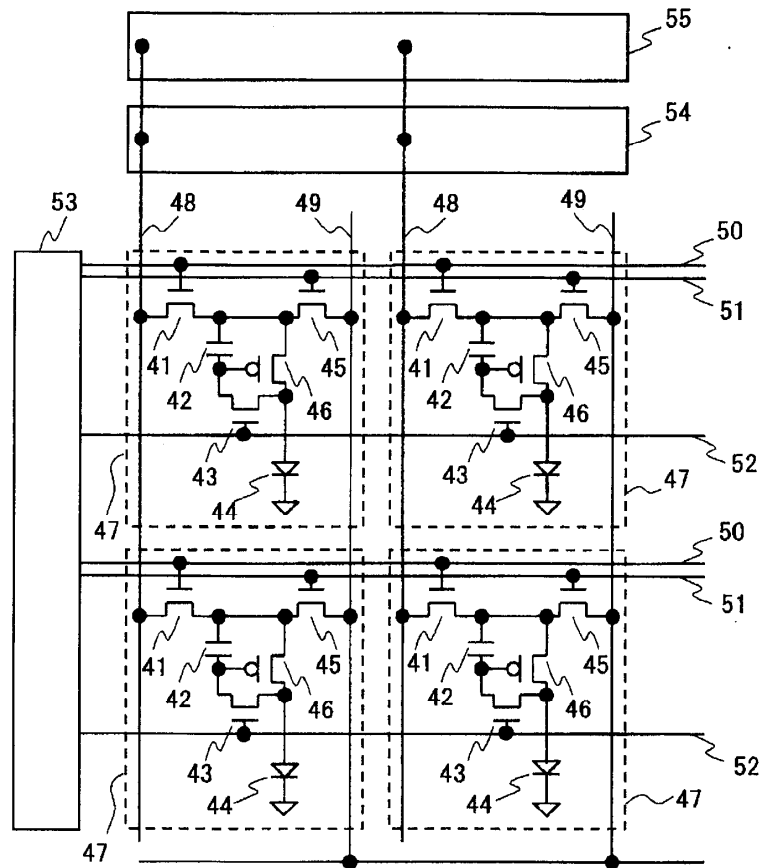


7

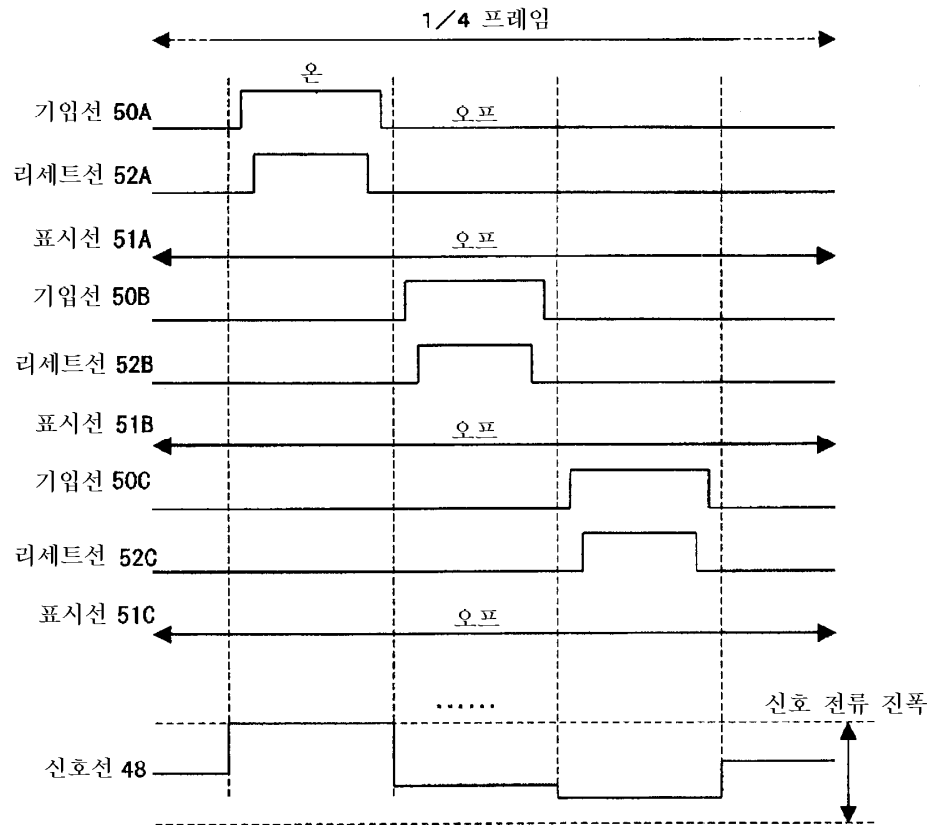


8

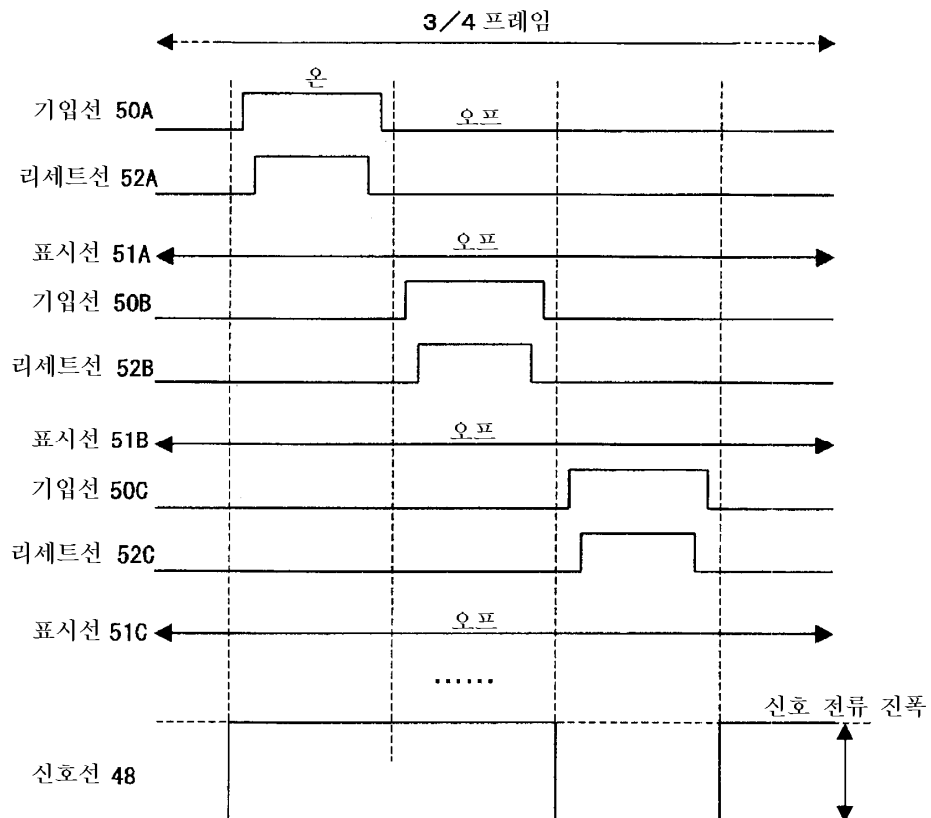




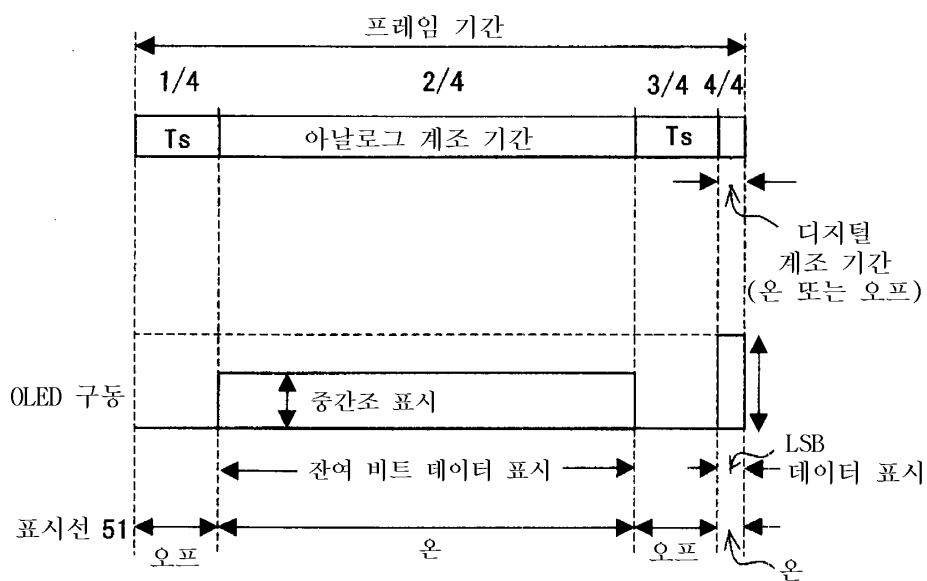
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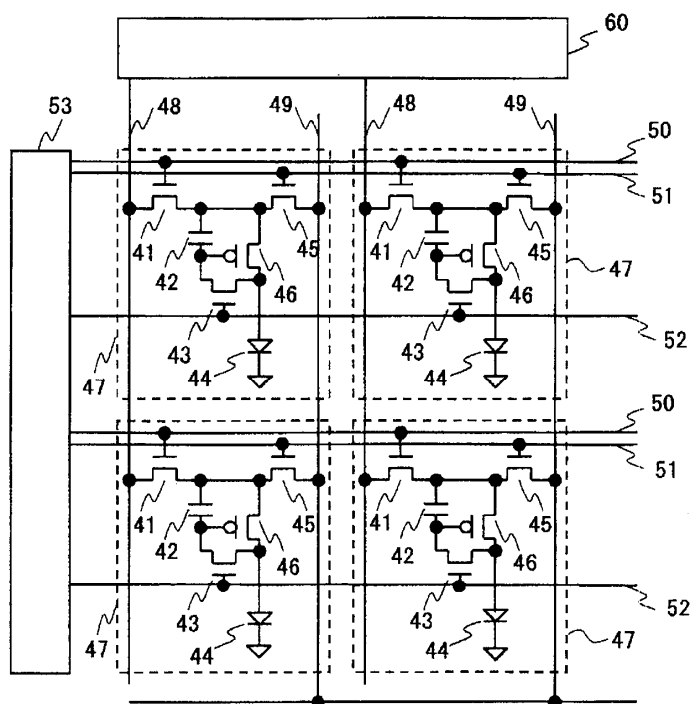
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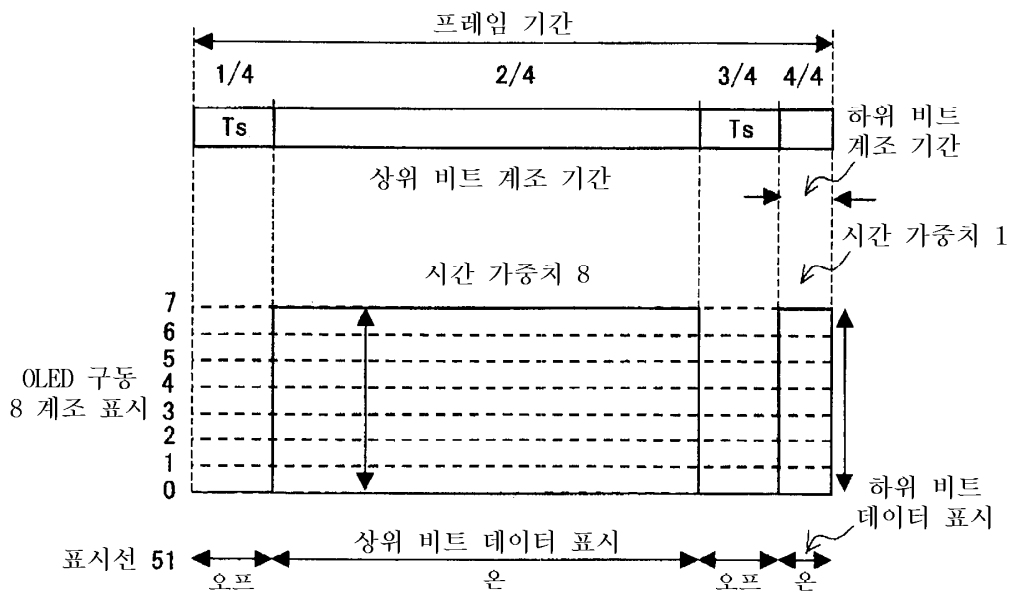
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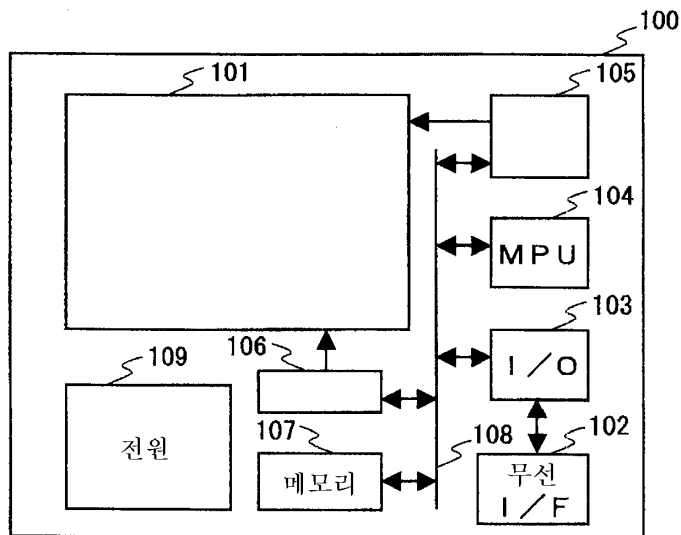
13



14

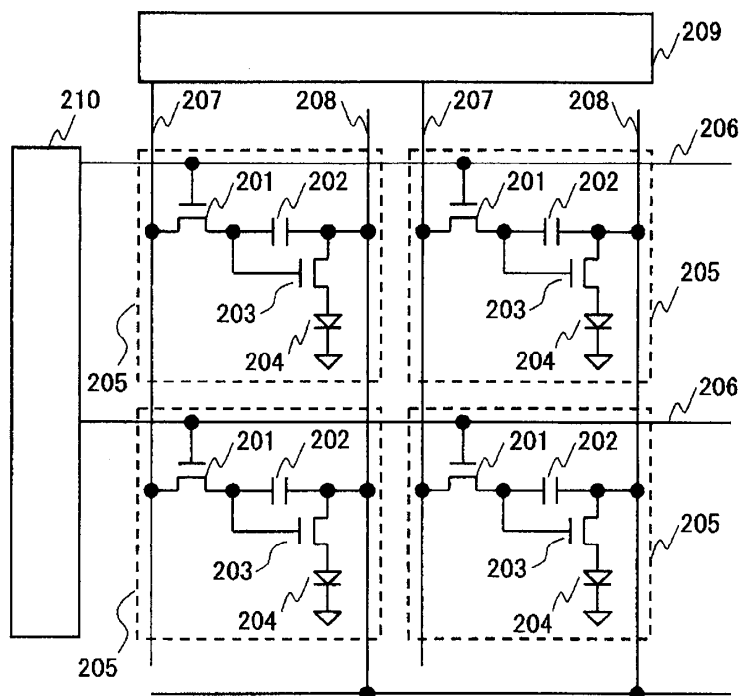


15

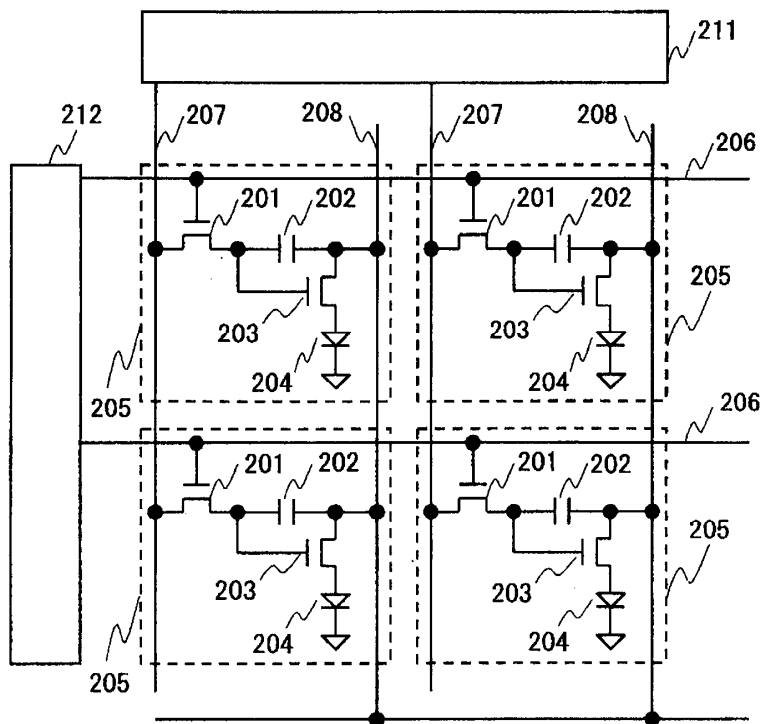




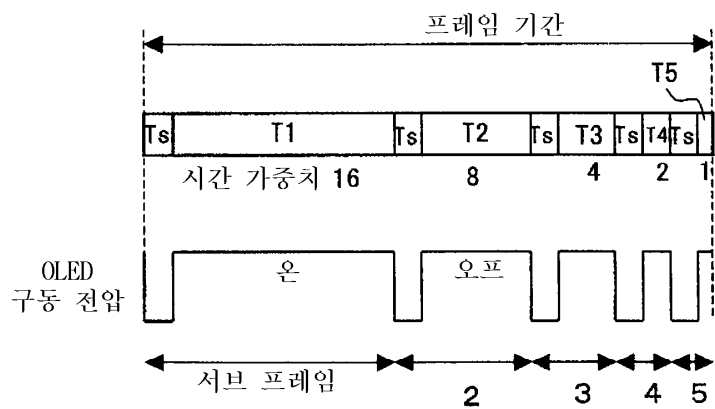
16



17



18



专利名称(译)	图像显示装置		
公开(公告)号	<a href="#">KR1020030089404A</a>	公开(公告)日	2003-11-21
申请号	KR1020030001322	申请日	2003-01-09
[标]申请(专利权)人(译)	日立HITACHI SEISAKUSHODBA		
申请(专利权)人(译)	株式会社日立制作所		
当前申请(专利权)人(译)	株式会社日立制作所		
[标]发明人	AKIMOTO HAJIME 아끼모또하지메 KINUGAWA KIYOSHIGE 기누가와기요시게		
发明人	아끼모또하지메 기누가와기요시게		
IPC分类号	G09G3/30 H01L51/50 G09G3/32 G02F1/133 G09G3/36 G09G3/20		
CPC分类号	G09G2300/0842 G09G3/2014 G09G2320/0252 G09G2310/027 G09G3/2011 G09G3/2077 G09G2300/0417 G09G3/3625 G09G2300/0861 G09G2310/0259 G09G2320/043 G09G3/3233 G09G2310/06 G09G2300/0819 G09G3/2022 G09G3/3648		
代理人(译)	CHU, 晟敏 LEE, JUNG HEE		
优先权	2002142469 2002-05-17 JP		
外部链接	<a href="#">Espacenet</a>		

#### 摘要(译)

本发明的目的是提供一种能够高精度的多级显示装置，显示微噪声或驱动频率高速被推卸的问题。包括1帧的显示信号数据被组织在多个子帧上，例如，子帧1/4~4/4为4. 1/4帧的模拟信号的寻址周期，2/4帧为模拟灰度显示周期数字信号的寻址周期为3/4帧，数字灰度发光周期为4/4帧。像素(6)内的OLED器件(4)的模拟灰度显示周期根据在具有模拟驱动信号电路(12)的像素内的存储器容量(1)中填充的模拟信号电压而辐射时间。为了辐射/不发射二进制，数字灰度显示周期根据填充在存储器容量(1)中的数字信号电压与数字信号驱动电路(16)组织图像显示装置。数字信号电压，发光操作，模拟灰度显示周期，存储器容量。

