

(19)  
(12)

(KR)  
(A)

|                                           |                 |                               |
|-------------------------------------------|-----------------|-------------------------------|
| (51) 。 Int. Cl. <sup>7</sup><br>G09G 3/36 | (11)<br>(43)    | 10-2005-0001790<br>2005 01 07 |
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| (71)                                      | 20              |                               |
| (72)                                      | 340 1401        |                               |
| (74)                                      |                 |                               |
|                                           |                 |                               |
| (54)                                      |                 |                               |

P N (MOS)

,

,

1

N( , N ) , 2 N

,

,

6

1

2 1

3

4 3  
.  
5 3  
.  
6 3  
.  
7a 3  
.  
7b 3  
.  
8 3  
.  
9 3  
.  
< >  
10, 112 : : 10, SR1 SR4  
30, 200 : 40 : RS  
50 : 60 :  
102 : 104 ;  
106: : 108 :  
110 : 114 :  
116 : 190 :  
120 : 1141, 1142 :

, P N (MOS)  
.  
(Liquid Crystal Display ; , 'LCD' )  
가 , LCD , /  
.  
, LCD , LCD

가  
(Thin Film Transistor)

1

가

가

LCD  
가

(Amorphous)

(Poly)

가

가

LCD

가

가

LCD가

가

가

LCD

, 'K.Maeda et al. SID'02 Digest, pp 794-797.'

(Multi-Resolution for Low Power Mobile AMLCD

)가

1

2

(10) , LCD

(30) , CMOS

4

(GCK1, GCK2, GCK3, GCK4)

(GSP)

RS

(40)

(GSP)

(50)

(10)

(30)

(20)

(60)

(10)

4

(GCK1, GCK2, GCK3, GCK4)

(10)

가

(MC)

1

4

(GCK1, GCK

2, GCK3, GCK4)

(20)

(20)

1

2

(GCK1, GCK2)

3

4

(GCK3, GCK4)

(20)

(10)

1

4

(GCK1, GCK2, GCK3, GCK4)

(60)

(20)

(HIGH)

CK3, GCK4)

(MC)가

(10)

(20)

(10)

1

4

(GCK1, GCK2, G

(LOW)

(GCK1, GCK2)

(MC)가

(10)

(GCK3, GCK4)

2

(10)  
(20)

1

2

2

가 2

OS-FET, P, MOS-FET CMOS 가 , 가 (20)가 N M  
가 , 가 가

, 2 (GSP) 1 4 가

가 가 , .

, P N (MOS)

, .

, , , ,

, 1 N( , N ) , 2

N . 1 2

1 4 2 , 1 3 가 , 1 2 ,

2 1 3 2

, 4 2 1 3 2

. 1 4 1 2 4N( , N 1  
4N

, 4N+1 , 4N+1 4N+2 4N+2

, 4N+1 , 1 2 4N+3

1 , 4N+2 4N 4N+3 4N+1 2

1 1 4N 1 4N+1 4

N+1 3 1 , 3 1 , 1

3 2 1 , 3 4N 4N+1 1 2  
4 4

1 4 PMOS NMOS

2 4 4N 5 , 5 4N+1 4  
N+1 7 6 3 , 7 4N 4N+1 1 7 5 , 3 5 4  
8 4

5 8 PMOS NMOS

4N 1 1 가 1 4  
4N 4N+1 4N+1

4N+2 2 1 1 4 가 4  
N+3 4N+3 , 4N+1 4N+2

4N 1 2 1 4  
4N 4N+1 4N+1 가

4N+2 2 2 1 4  
4N+3 가 4N+3 , 4N+2 4N+1

1 1 4  
2 1 4

2

1 1 N( , N )  
1 , 2 ,  
3 , 1 N  
4

2 1  
2

1 가 1 ,

1 2 , 1 3 , 2  
4 .  
2 3 2  
4 1  
4N , 4N , 1 4 가 4N+1 4N+1  
4N+1 4N+2  
4N+2 4N+3  
4N 4 2 1 4N+1 4  
4N 가 4N+1 4N+2  
4N+1 4N+3  
4N+2 가 4N+3  
1 1 4  
2 1 4  
2 1 4  
2  
3 9  
3 LCD  
3 , (Liquid Crystal Display ; , 'LCD' ) (CI  
c) (GL) (102) , (102) (GL) (DL)  
(104)가 (106) , (102) (106) (110) ; (106) ( )  
(108)  
(DL) (102) (LC) (LC) (GL)  
(LC) 가 100 (TFT) (TFT) 가  
(GL) (106) (DL) (104)  
(108) (R), ( )  
G) (B) (108) (108) (R, G, B)  
(104) , (108) / (H,V)  
(SOE), (POL) (Dclk), (SSC),  
(GSP), (GSC), (104) (GOE) (106)  
(108) (102)

3, CLK4) (MC) 1 4 (CLK1, CLK2, CLK3, CLK4) (112) .

(112) (MC)가 4 (102) 가 1 (CLK1) , 1 (HIGH) (CLK2)가 2 (CLK2) , 1 (CLK1) 3 (CLK3) , 2 (112) (CLK) 4 (CLK4) (106) , (LOW) 2) (MC)가 5 (CLK2) , 2 (CLK2) 가 1 (CLK1) , 1 (CLK1) 가 2 (CLK2) , 2 (CLK2) 3 (CLK3) , 1 (CLK1) ) 4 (CLK4) (106) .

(104) (108) (SSP, SSC, SOE, POL) (104) (H1, H2, ...) 1 (DL) , (104) (108) (R, G, B) (DL) (104) (DL) IC .

(106) 6 (MC) (108) ( (112) 1 4 (CLK1, CLK2, CLK3, CLK4) (VSS) (116) , (116) 1 4 (CLK1, CLK2, CLK3, CLK4) (GSP) (108) (SR) (120) (SR1, SR3 SR ; n-1) (2N) (2N+1, N 0 SRn) (116) (120) (SR1, SR3 SR 1 4 (CLK1, CLK2, CLK3, CLK4) (116) )

(114) (108) (Overlap) (Non Overlap) (GSP) 7a , (190) (106) (200) (120) 7b ,

(120) (116) (112) (MC) (108) 1 4 (CLK1, CLK2, CLK3, CLK4) 2 (GL) , (120) (SR) , P MOS N MOS .

(120) (SR) 4N , 1 (SR1) (IN) (108) (GSP)가 , 1 (CK1, CK2) (116) 1 2 (1161, 1162) (CLK1, CLK2)가 , (VSS) (116) 5 (1165) (VSS) , 1 (SR1) (OUT) (102) 1 (GL1) (114) 1 2 (1141) , 1 (SR1) (MC) 1 2 (CLK1, CLK2) (GL1) (GSP) (OUT) 1

(120) (SR) 4N+1 , 2 (SR2) (IN) (114) 1 (SR1) (1141) (1) (GSP) 1 (SR1) (116) 4 3 (116) (CK1, CK2) (VSS) (116) (1163) 4 3 (CLK4, CLK3)가 , (VSS) 2 (SR2) (116) 5 (1165) (VSS) , 2 (114) 2 (1142) (102) 2 (GL2) (MC) 4 3 (CLK4, C LK3) (108) (OUT) (GSP) 1 (SR1) (GL2) .

(SR3) (120) (SR) 4N+2 , 3  
 (CK1, CK2) (IN) 2 (SR2) 가 1 2  
 4 (CLK3, CLK4)가 (116) 3 4 (1163, 1164) 3  
 (VSS) (VSS) (116) 5 (1165)  
 (GL3) , 3 (SR3) (SR3) (102) 3  
 4 (CLK3, CLK4) 2 (SR2) (MC) 3  
 UT) 3 (GL2) (O)

(SR4) (120) (SR) 4N+3 , 4  
 R2) (IN) (114) 2 (1142) 2 (S  
 1 2 (CK1, CK2) (SR3) 가 ,  
 2 1 (CLK2, CLK1)가 (116) 2 1 (1162, 1161)  
 (1165) (VSS) (116) 5  
 (102) 4 (GL4) , 4 (SR4) (MC)  
 2 1 (CLK2, CLK1) 2 (1142) 2  
 (SR2) 3 (SR3)  
 (OUT) 4 (GL4)  
 1 4 (SR1, SR2, SR3, SR4) (106)  
 (120)

(114) (120) 4N (SR1) 4N+1  
 (SR2) 1 (1141) , 4N+2 (SR3) 4N+3  
 (SR4) 2 (1142) , 1 2 (1141, 1  
 142)가

(114) 1 (1141) 4N (SR1) (IN) 4N+1  
 (SR2) (IN) 1 (T1) , 1 (T1)  
 4N+1 (SR2) (IN) 3 (SR1) (T3) , 1 3  
 (T1, T3) 1 (N1) 4N+1 (OUT) 2  
 (T2) , 3 (T3) 4N+1 (SR2) (IN)  
 2 (N2) (116) 5 (1165) 2 (N2) (T1  
 (VSS) 4 (T4) , 1 4 (T1 T4) P  
 T4) P MOS N MOS , 1 4  
 MOS

, 1 (1141) 1 (T1) (116) 2 (116  
 2) 2 (CLK2) , 2 (T2) (116)  
 1 (1161) 1 (CLK1) , (114) 1  
 (1141) 3 (T3) (116) 3 (1163)  
 3 (CLK3) , 4 (T4) (116) 4  
 (1164) 4 (CLK4)

(114) 2 (1142) 4N+2 (SR3) (IN) 4  
 N+3 (SR4) (IN) 5 (T5) , 5 (T7) , 5 7  
 (T5, T7) 3 (N3) 4N+2 (SR3) (OUT)  
 5 4 (N4) (116) 5 (1165) (SR4) (IN)  
 (VSS) 8 (T8) , 5 8 (N4) (T5 T8)  
 T5 T8) P MOS N MOS , 5 8  
 P MOS

(114) 2 (1142) 5 (T5) (116) 4  
 (1164) 4 (CLK4) , 6 (T6)  
 (116) 3 (1163) 3 (CLK3) ,  
 (114) 2 (1142) 7 (T7) (116) 1 (1)

161) 1 (CLK1) 8 (T8) (116)  
2 (1162) 2 (CLK2)

MC) 1 4 (SR1, SR2, SR3, SR4)가  
1 4 (CLK1, CLK2, CLK3, CLK4) (114)  
가

8 4 (102)  
(102)  
(MC)가  
(108) (108) (MC) (112)  
(112) 4 1 4 (CLK1, CLK2, CLK3, C  
LK4) (120) (116)

ST0 (108) (GSP) 1 (SR1)  
2 (SR2) 2 (SR2) (108)  
(GSP) 3 (CLK3) 가 1 (1141) 3  
(T3) 2 (CLK2) 2 (SR2) (IN) (T1) 1 (N1)  
) 2 (CLK1, CLK2) (T3) 1 (1141) 1 (SR1) 1  
2 3 (108) ST0 1 (GSP)

ST1 1 (SR1) 1 2 (CLK1, CLK2) (GSP)  
GSP) 1 (GL1) ST1 1 (T2)  
(1141) 1 (T1) 2 (CLK2) 가 2 (CLK3)  
1 (CLK1) 가 3 (T3) 3  
가 4 (T4) 4 (CLK4) 가 2  
(SR2) (IN) 1 (SR1) 1 (GL1)  
가 2 (T2), 1 (N1), 3 (T3) 2 (N2) 1  
1P1) (108) 2 (SR2) (IN)  
(GSP) 1 (T1)

ST2 2 (SR2) 4 3 (CLK4, CLK3) 1 (SR  
1) 1 (1P1) 2 (GL2)  
(SR2) 2 (GL2)  
3 (SR3) ST2 1 (1141) 4 (T4)  
4 (CLK4) 2 (N2) (VSS)

ST3 3 (SR3) 3 4 (CLK3, CLK4) 2 (SR  
2) (OUT) 3 (GL3) 4 (C  
LK4) (SR4) 가 ST3 6 (1142) 5 (T5) 4  
(T7) 1 (CLK1) 가 3 (CLK3) 가 7  
CLK2) (T7) 가 4 (SR4) (IN) (T8) 2  
(SR3) 3 (GL3) 가 6 (T6), 3 (N3), 7  
(T7) 4 (N4) 2 (1P2) 2 (SR  
2) (OUT) 4 (SR4) 5 (T  
5)

ST4 4 (SR4) 1 2 (CLK1, CLK2) 3 (SR  
3) (OUT) 4 (GL4) 4  
(SR4)

ST1 ST4 4  
(102)  
가

(MC)  
(GSP)

(SR)가  
가

(108)

가

9 5 (102)

(102)

(MC)가 (108)

(MC) (112) (108) (112) 5 (120)

1 4 (CLK1, CLK2, CLK3, CLK4)

(116)

ST0 1 (1141) 1 (T1) 2 (CLK2) 가 ,  
2 (T2) 1 (CLK1) 가 , 3 (T3) 3 가  
(CLK3) 가 4 (T4) 4 (CLK4) 가  
ST0 (108) (GSP) 1  
(SR1) 2 (SR2) , ST0 1 (SR1) 1  
2 (CLK1, CLK2) (108) (CLK4, CLK3) (108)  
(SR2) 4 3 (GSP)

ST1 1 (SR1) 1 2 (CLK1, CLK2) (S  
GSP) 3 4 (CLK3, CLK4) STO (GL1) 2 (S  
R2) 2) (GL1, GL2) 3 (SR3) (IN) , ST1 1 2 (GL  
2) (GL1, GL2) 2 , ST1 2 (1141)  
1 (T1) 2 (CLK2) 가 , 2 (T2) 1  
(CLK1) 가 , 3 (T3) 3 (CLK3) 가  
4 (T4) 4 (CLK4) 가 (IN) , 1  
(SR1) (OUT) 2 (SR2) (IN) (T4)  
3 (VSS) (T3) , 2 (N2) 4

, ST1 2 (1142) 1 4 (CLK1, CLK4) 5 7  
(T5, T7)가 2 (SR2) (OUT) 가 4  
(SR4) , ST1 3 4 (SR3, SR4) 2  
(SR2) (OUT)

ST2 3 (SR3) 3 4 (CLK3, CLK4) 2 (SR  
2) (1142) 6 (T6) (OUT) , ST2 3 (GL3) 2  
2 ST1 (IN) , ST2 4 (GL4) (SR4) 1  
4 (CLK4) 가 , 6 (T6) (1142) 5 (T5)  
, 7 (T7) 1 (CLK1) 가 3 (CLK3) 8 (T8)  
2 (CLK2) (SR4) 가 (IN) , 3 (SR3) (OUT)  
4 (N2) 8 (T8) 7 (VSS) (T7)  
2 , ST0 ST2 5 4N (SR1) 4N+1  
(SR2) 가

1 4 , 4N 4N+1  
2 . ,

CMOS PMOS NMOS

가

(57)

1.

1 N( , N ) ,

2 N

2.

1 , 1 2

3.

2 ,

1 가 1 ,

1 2 ,

1 3 ,

2 4 .

4.

3 ,

2 3 2 ,

4 1 .

5.

4 ,

,

1 4 ,

1 2  $4N( , N 1 )$

,

3 4  $4N+1$   $4N$  ,

$4N+1$  3 4  $4N+2$

,

1 2  $4N+1$   $4N+2$   $4N+3$

.

6.

5 ,

,

$4N$   $4N+1$  1 ,

$4N+2$   $4N+3$  2

.

7.

6 ,

1 ,

$4N$   $4N+1$  1

1 ,

1  $4N+1$  3

3 ,

1 3 1  $4N$

1 2 ,

3  $4N+1$  4 2

4

.

8.

7 ,

1 4 PMOS NMOS

.

9.

6 ,  
 2 ,  
 4N 5 4N+1 4  
 5 4N+1 1  
 7 ,  
 5 7 3 4N  
 3 6 ,  
 7 4N+1 1 8 4  
 .

**10.**

8 ,  
 5 8 PMOS NMOS  
 .

**11.**

7 ,  
 1 ,  
 1 1 4 4N  
 가 4N+1 ,  
 4N 4N+1  
 .

**12.**

9 ,  
 2 ,  
 1 1 4 4N+2  
 4N+1 가 4N+3  
 ,  
 4N+2 4N+3  
 .

**13.**

7 ,  
 1 ,  
 2 1 4 4N  
 4N+1 ,  
 4N 가 4N+1  
 .

14. 9 ,  
2 ,  
2 1 4 4N+2  
4N+1 4N+3  
4N+2 가 4N+3 .

15. 5 ,  
1 1 4 .

16. 5 ,  
2 1 4 2  
.

17. 1 N( , N ) 1  
,  
2 ,  
3 ,  
1 N 4  
.

18. 17 ,  
2 ,  
1 ,  
2 .

19. 18 ,  
,  
1 가 1 ,  
1 2 ,

1 3 ,

2 4 .

20.

19

$$2 \qquad 3 \qquad 2 \qquad ,$$

4 1 .

21.

20

4 ,

$$1 \leq \frac{1}{4N+1} \leq 4N$$
$$4N \qquad \qquad \qquad 4N+1$$
$$1^4 + 4^4 + \dots + (4N+3)^4 + (4N+2)^4 + (4N+1)^4$$
$$4N+2 \qquad \qquad \qquad 4N+3$$

22.

20

4 ,

$$2 \quad 1 \quad 4 \quad 4N$$

$$4N+1 \quad ,$$

4N 가 4N+1

$$1 \quad 4 \quad 4N+3 \quad 4N+2 \quad 4N+1$$
$$4N+2 \qquad \qquad \qquad \text{가} \qquad \qquad \qquad 4N+3$$

23.

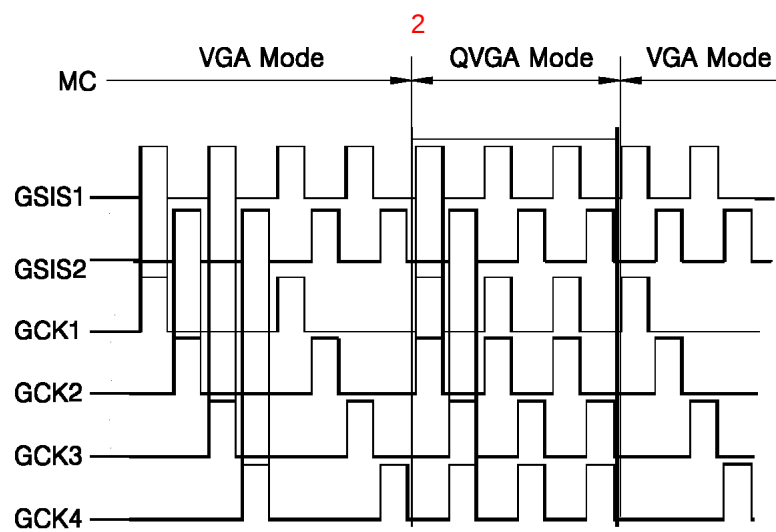
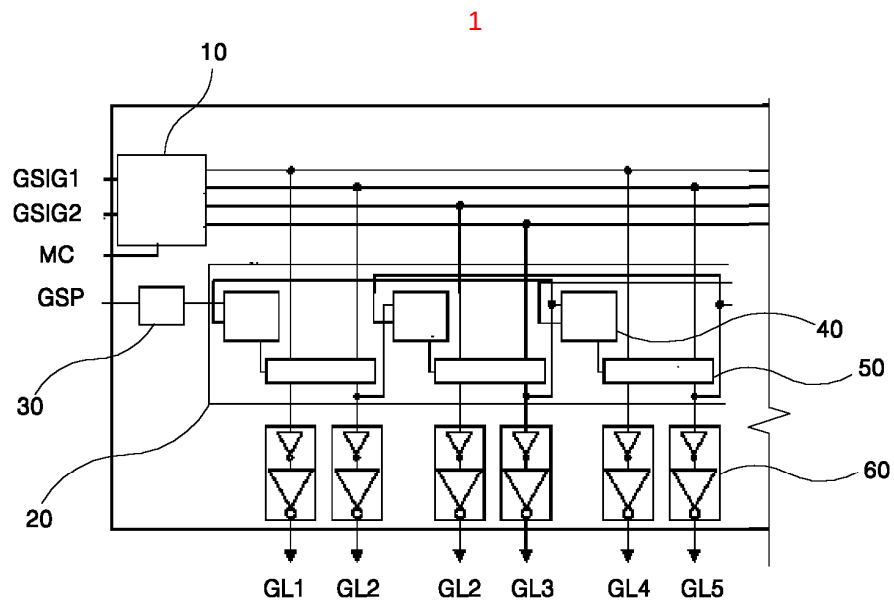
19

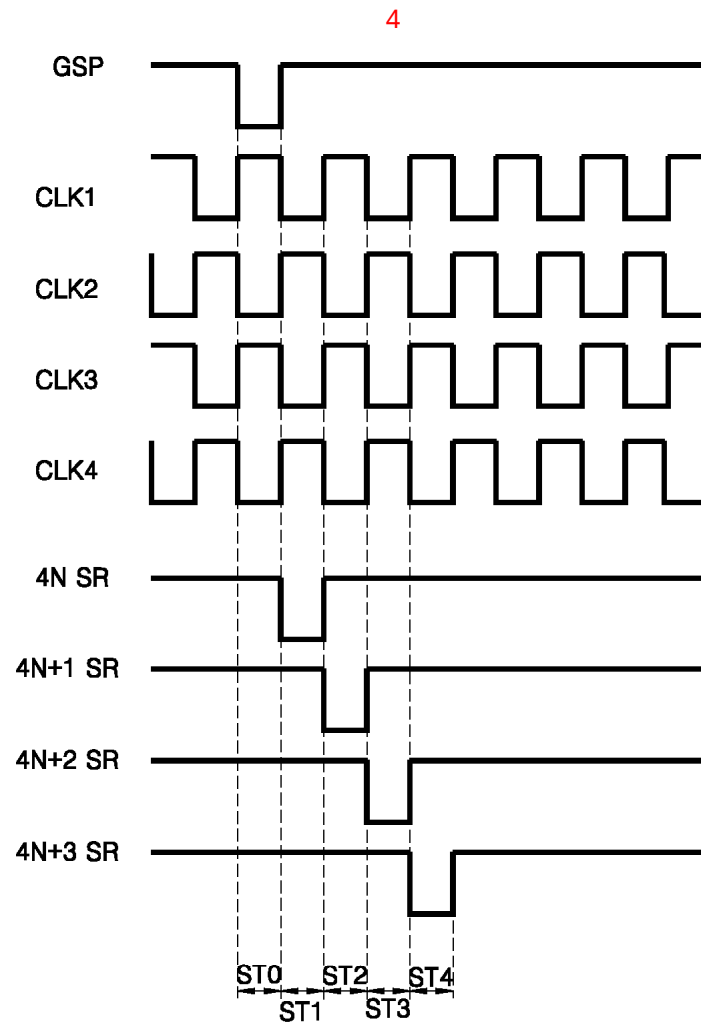
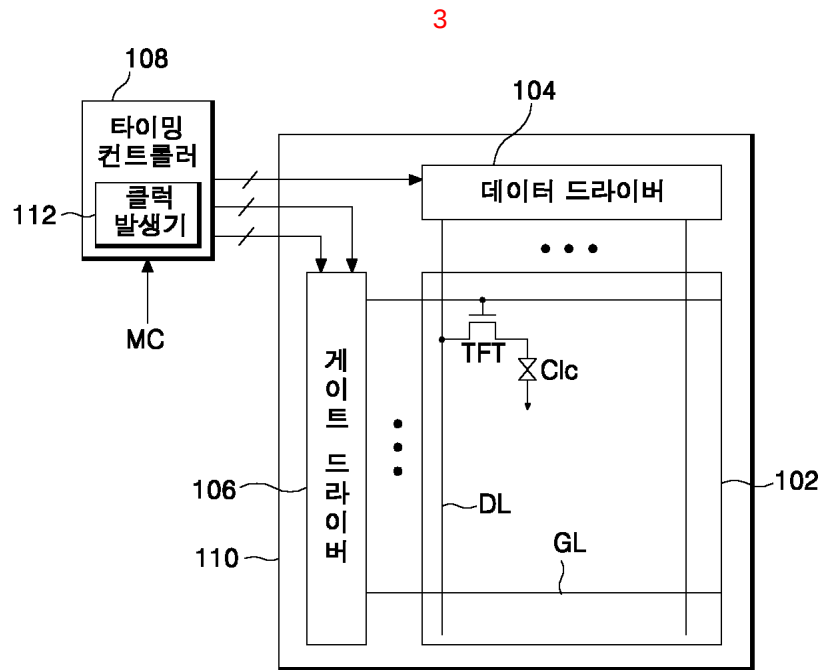
1 1 4

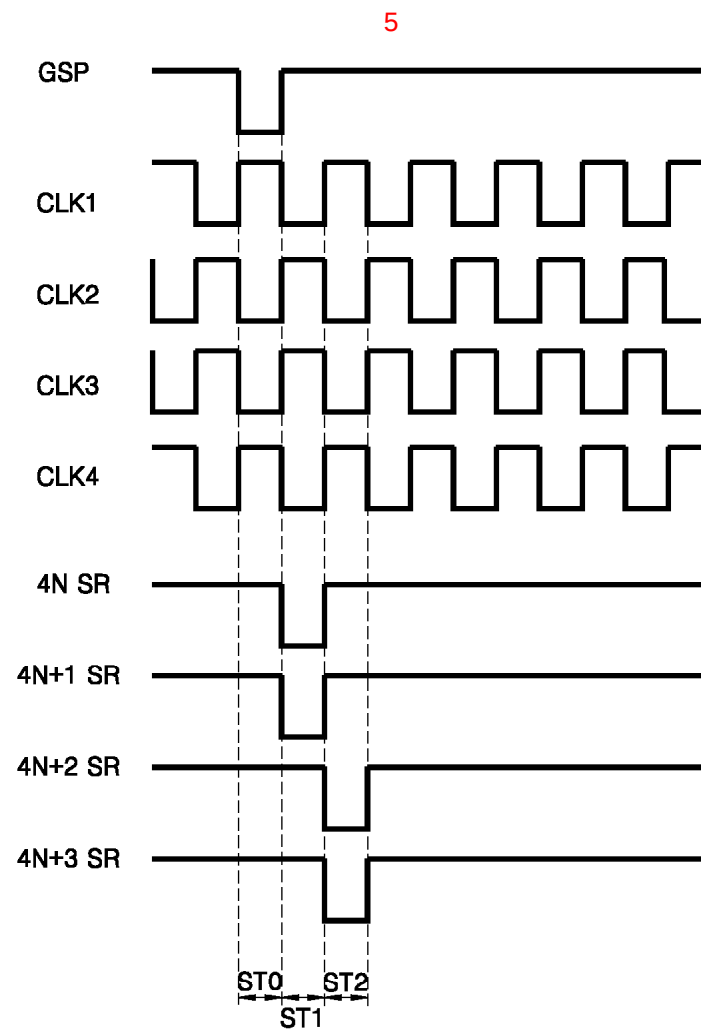
24.

17

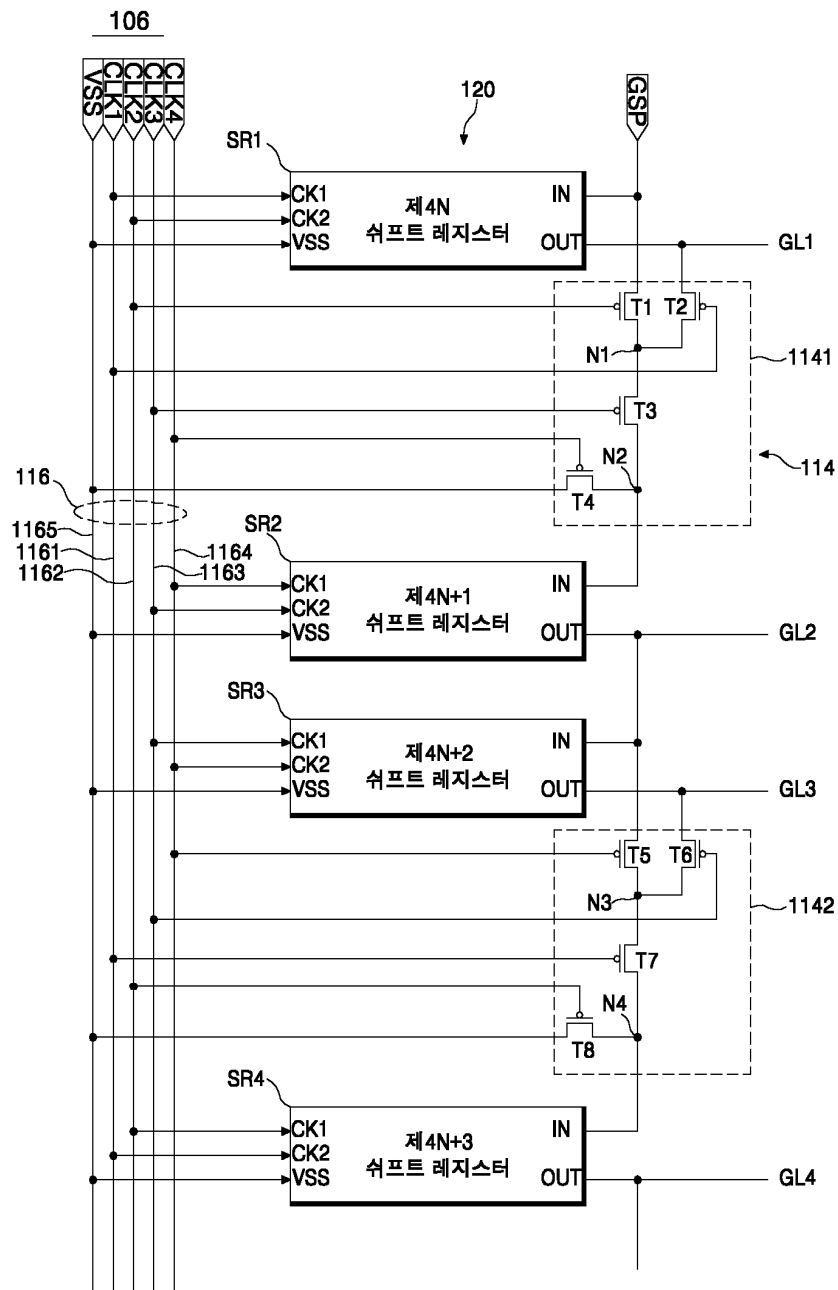
2                      1        4                      2



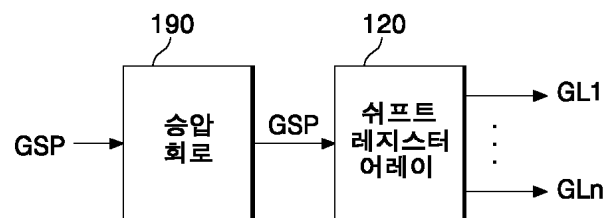


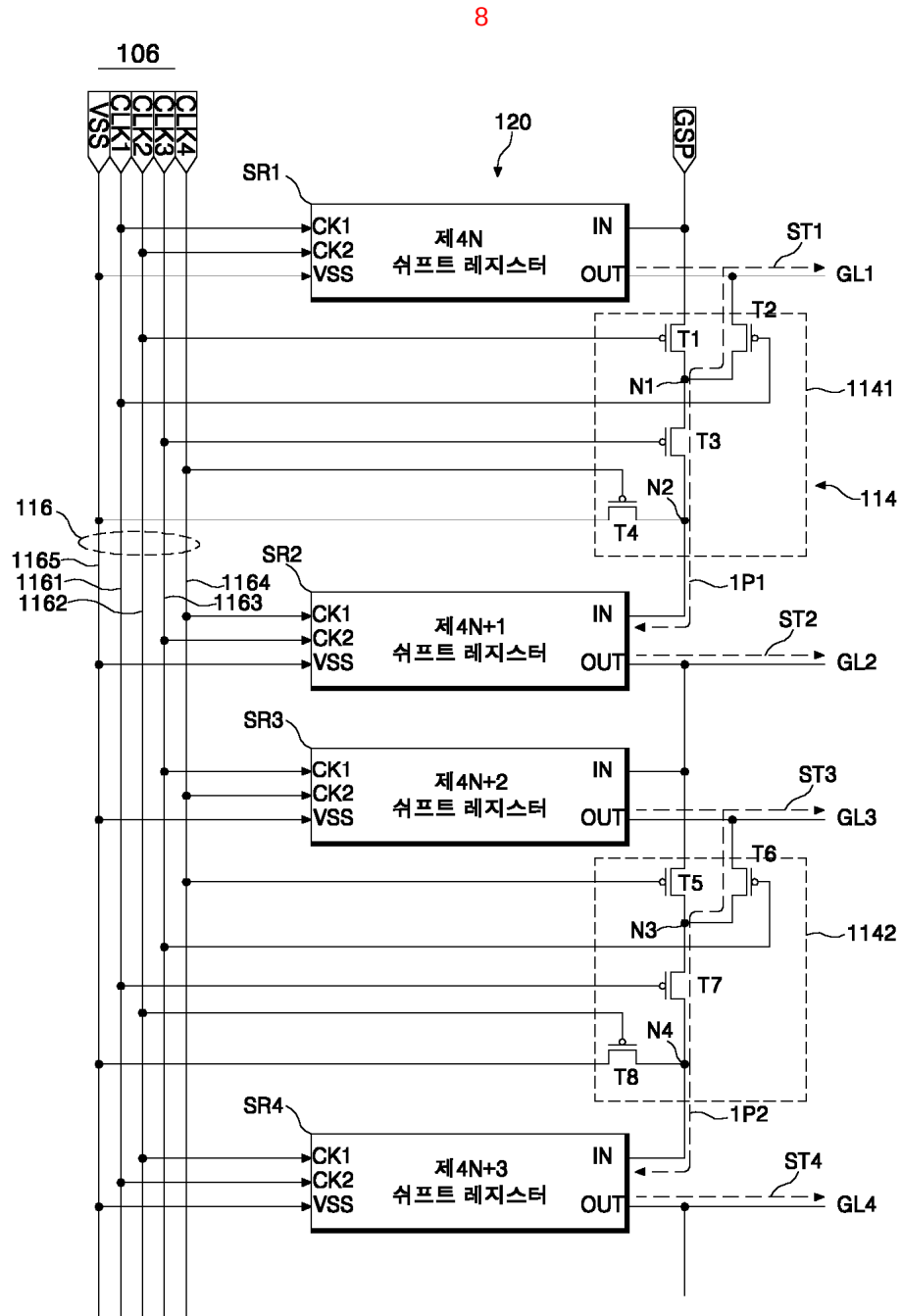
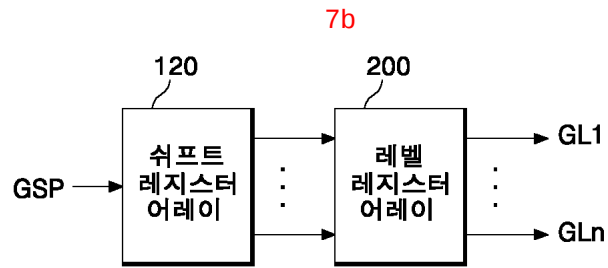


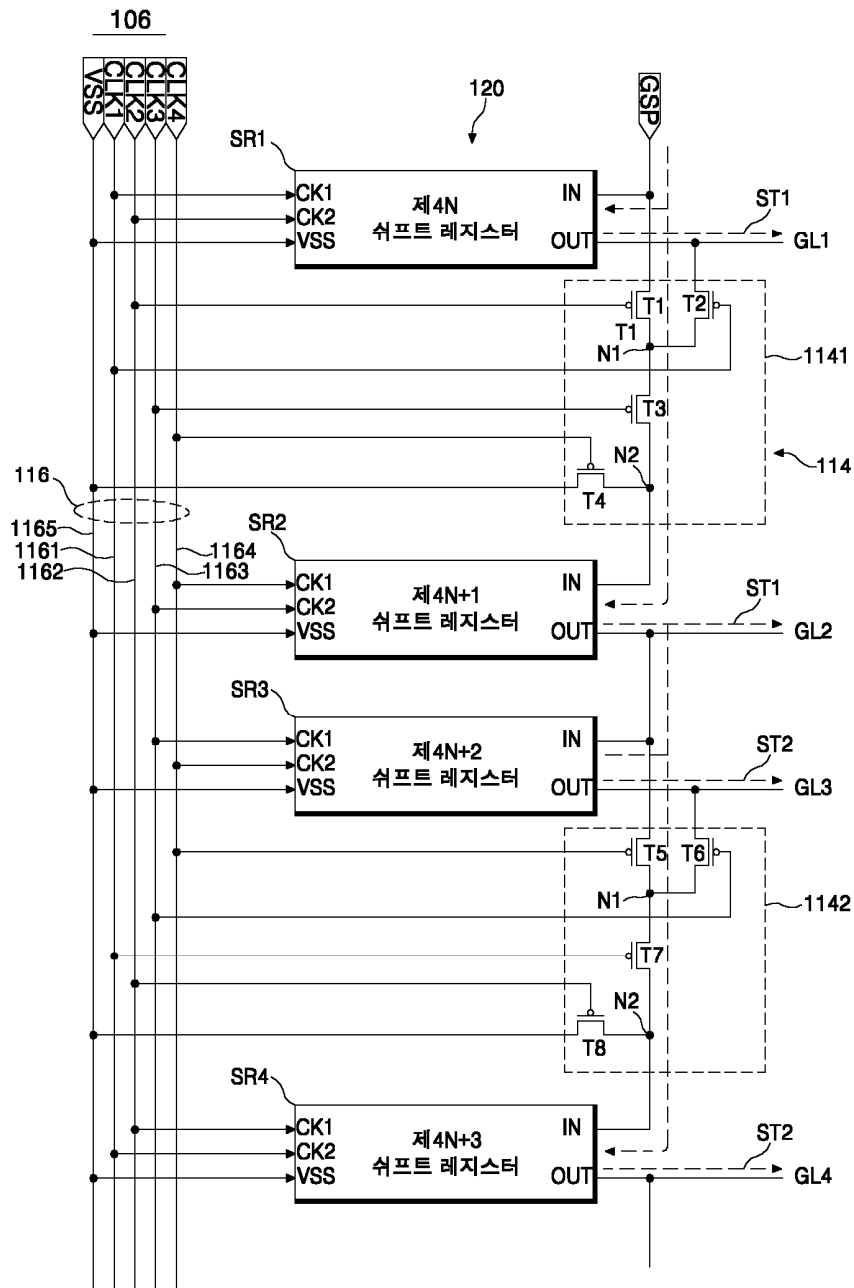
6



7a







|                |                                  |         |            |
|----------------|----------------------------------|---------|------------|
| 专利名称(译)        | 液晶显示装置的驱动装置和驱动方法                 |         |            |
| 公开(公告)号        | <a href="#">KR1020050001790A</a> | 公开(公告)日 | 2005-01-07 |
| 申请号            | KR1020030042124                  | 申请日     | 2003-06-26 |
| [标]申请(专利权)人(译) | 乐金显示有限公司                         |         |            |
| 申请(专利权)人(译)    | LG显示器有限公司                        |         |            |
| 当前申请(专利权)人(译)  | LG显示器有限公司                        |         |            |
| [标]发明人         | KIM SEONGGYUN                    |         |            |
| 发明人            | KIM,SEONGGYUN                    |         |            |
| IPC分类号         | G09G3/36                         |         |            |
| 代理人(译)         | KIM , YOUNG HO                   |         |            |
| 其他公开文献         | KR100545027B1                    |         |            |
| 外部链接           | <a href="#">Espacenet</a>        |         |            |

#### 摘要(译)

本发明涉及液晶显示器的驱动装置和通过仅使用P或n型金属氧化物层半导体 ( MOS ) 薄膜晶体管将液晶显示器的分辨率驱动到多个的驱动方法。根据本发明的液晶显示器的驱动装置包括栅极线和移位寄存器阵列，它提供给栅极线，它产生栅极信号，它根据多个时钟信号移动起始脉冲，它包括定时控制器，产生启动脉冲，并与时钟发生器， $4N + 1$  ( 移位，N为正整数 ) 移位寄存器， $4N + 2$  移位寄存器， $4N + 3$  移位寄存器和 $4N + 4$  移位寄存器根据时钟信号创建多个时钟信号模式改变信号产生模式改变信号，用于改变液晶面板上显示的数据的分辨率，其中数据线被模制成矩阵和液晶面板的形式，以及用于选择性地提供输出信号的开关阵列。根据多个时钟信号将起始脉冲或N数移位寄存器移位到 $N + 1$  移位寄存器。在该配置的发明上显示的数据的分辨率是根据用户的操作将显示面板改变为高分辨率和低分辨率，并且可以降低液晶显示器的功耗。

