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(43)2002 - 0096918
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(71) 가 가
2 4 - 1

(72) 가 3 3 - 5 가 가

(74)

:

(54) ,

TAT

82) LCD (282) , (30) , I/O (284) (280) , (280) , (286) , (286) (L/S) (288) .

(282) (284) , (30) .

1

2

LCD

3

4

5(a) ,
PCBLCD ,
5(c) , COGCOG
PCB 가

5(b) , CPU

6(a) ,
6(b) , CPULCD ,
PCB

6(c) , COF

COF
PCB 가

7

8(a) ,

2

1
8(c) ,

8(b) ,

3

9(a) ,

(30) 1
(30) 2

9(b) ,

10

11

I/O

12

I/O

13

LV - LV

14

LV - LV

15

LV - HV

16

HV - LV

17

18

가

19(a) , I/O

19(b) ,

20(a) ,

corner

, LCD

20(b) ,

21 ,

22 , I/O .

23 EL 2 .

24(a) , EL 4 , 24(b) , 4 .

10, 100 : 20, 120 : LCD

22_{nm} : TFT24_{nm} :

26_{nm} : 28_{nm} :

30, 130 : 50, 150 :

60, 160 : LCD 80, 180 :

200, 210 : 280 : I/O

282 : 284 :

286 : 288 : L/S

400₁ 400_Q : 410₁ 410_Q : I/O

412_j : LV - LV 414_j : LV - LV

416_j : LV - LV 418_j : LV - HV

420_j : LV - HV 422_j : HV - LV

424_j : 426_j : G/A

430 : 440_j :

500_j, 504_j, 524_j, 540_j, 544_j, 548_j, 552_j, 556_j, 560_j, 570_j :

502_j, 526_j, 542_j, 572_j : EXOR 506_j, 520_j, 550_j, 558_j : LS

508_j, 522_j :

528_j, 532_j, 564_j, 576_j : n

530_j, 562_j, 574_j : p

546_j: NAND 554_j: NOR

가

(Thin Film Transistor: EL, TFT)

TFT

TFT

가

가

TAT

가

가

TAT

1 2

1 2

1 2

가

[illegible]

가

1 , 1 2
2 ,
1 2
2 , 1 2
I/O , 가 1 , 2
2 , 3
2 , 2

[illegible]

, I/O, 2 3,

$$, \quad 2 \quad 3$$

, 1 , .

, , TAT , 가 .

, 2 1 2 , , 2 2 .

, TAT , .

, 1 2 , 2 2 .

, TAT , .

()

, .

1.

1.1

1 , .

(10) , (Liquid Crystal Display: , LCD), (20),
() () (30), (, 2
) (50), LCD (,) (60), (,
) (80) .

LCD (,) (20) , . , Y
X X (,) (2) G_1 G_N (N , 2) ,
X Y (,) (1) S_1 S_M (M , 2
) , G_n ($1 \leq n \leq N$, n) S_m ($1 \leq m \leq M$, m)
, TFT(22_{nm}) (,) 가 .

TFT(22_{nm}) , G_n . TFT(22_{nm}) , S_m
. TFT(22_{nm}) , () (24_{nm}) (26_{nm}) .
(24_{nm}) , (26_{nm}) (28_{nm}) ,
가 .

(28_{nm}) , (80) Vcom .

(30) , 1 , LCD (20) S_1 S_M

, (30) , 1
 , (30) ,
 ,
 (50) , 1 , LCD (20) G_1 G_N
 , (50) ,
 ,
 (50) , LCD (60) , 1
 .
 LCD (60) , (Central Processing Unit: , CPU)
 (30), (50) (80) , LCD
 (60) , (30) (50) ,
 (80) Vcom
 .
 (80) , , LCD (20)
 Vcom , (30), (50) LCD (20)
 , Vcom , LCD (20) TFT
 .
 (10) , LCD (60)
 (30), (50) (80)가 , LCD (20)
 , 1 , (10) LCD (60) , LCD (60)
 (10) , LCD (60) (10)
 가 .

1.2

2 , (10) LCD (20) ,
 .
 (10) , LCD (60)
 (50) (80)가 , LCD (60) , (30) 1 (30),
 ,
 POL , LCD (60) , (50) ,
 , LCD (60) , (80) VCOM
 .
 , (30) , , 1
 (50) , , LCD (20)
 TFT , Vg (80) ,

(20) Vcom , VCOM , LCD

가 , TFT Vcom 가 V_{CL} , Vp가 , V_{CL} , 가 가

2.

2.1

(LCD , ,)

3 ,

(100) LCD (120), (130), (150), LCD (160), (180) , 1 (10)

(130) , 가 (, 0.35 μ)

(150) , (150) , (20V 50V) , (150)

TFT

(180) , (150)

LCD (160) , , (160) , (, 0.18 μ)

LCD (160) , ,

(130)

(150) (180)

LCD (160) , (design rule) , IC ,

(10) LCD (60) , (50) (80) (30)가 (50)

(80)

4 ,

(30) , (200)

, LCD (60)
(50) (80)

, LCD (60) (210) ,

가 , , , .

2.2

LCD , , , 가 , LCD , 가 .

가 . ,

, COG(Chip On Glass) , COF(Chip On Film) ,

5(a),(b),(c) , COG

COG , 5(a) COG , LCD (20) (25
0) , (30) (50) , 가 가 COG
(252) A , 5(b) CPU PCB(Printed Circuit Board)(254)
(252) B가, 5(c)

6(a),(b),(c) , COF

COF , 6(a) COF , (30) (50) ,
가 가 (flexible tape)(260) , LCD (20)
(262) , COF (264) A , 6(b) CPU
PCB(266) (264) B가, 6(c)

COG , (250) , LCD (20)
(250) (face down) 가 .

, COF , (260) , , LC
D (20) , 가 , COF ,

, LCD (20) (30)
CD (20) (30) , , L

3.

7 , (30) .

(30) , I/O (280) , (1) (282) ,
(2 , 3) (284) .

I/O (280) , 1 , 2 3 .
, I/O (280) , (282)
(286) , (286)
(Level Shifter: , L/S) (288) .

, (282) LCD (60) , (284)
(50) (80) , LCD (60)
가 , LCD (60) 가 가 .

, (286) () ,
, ,
.

8(a),(b),(c) , (30) .

8(a) , (282) , L/S(288) ,
(286) (EXclusive OR: , EXOR) (290) . EXOR ()
290) , 가 , 「H」 , L/S(288)
, (284) , 「L」 ,
L/S , (284) , LCD
(60) , .

8(b) , (292) . , EXOR (290)
가 ,
「H」 「L」 , 가 ,
가 .

8(c) , (282) , (286) EXOR (290)
, EXOR (290) 가 L/S(288) , (284)
, 8(a),(b) , EXOR (290) , E
XOR (290) .

, , (286) L/S(288) I/O , (30)
.

9(a),(b) LCD (20) ()
() 1 2) I/O (280) ,
, LCD
가 , ,

4. ()

() (30)

10 (30)

(30) (400₁ 400_Q (Q ,))

(30) , 400_j (1 ≤ j ≤ Q, j) , I/O (410_j) , I/O
 I/O (410₁ 410_Q) , 1 (430)

16

I/O (410_j) , , I/O (410₁) , I/O
 (410_Q) I/O (400₁) 1
 , I/O (410₁) (430) (1)

I/O (410_Q) , 2 , 1 (410_Q)가
 , 1

11 , I/O (410_j)

I/O (410_j) (1 ≤ j ≤ Q) , (400_j)
 LV - HV(High Voltage) (418_j), (424_j), LV(Low Voltage) - LV (412_j),
 (Gate Array: , G/A) (426_j)

LV - LV (412_j) , LV - LV (414_j), LV - LV (416_j)

LV - LV (1)(414_j) , (LV) , LV
 (400_j)

LV - LV (1)(416_j) , (400_j) LV
 LV (424_j)

LV - HV (418_j) , LV - HV (420_j), HV - LV (422_j)

LV - HV (2)(420_j) , LV , HV
 (400_j)

HV - LV (2)(422_j) , (400_j) HV
 LV (424_j)

(424_j) , LV - LV (414_j), LV - LV (416_j), LV - HV (420_j), HV - LV (422_j) , (430)

G/A (426_j) , LV - LV (414_j), LV - LV (416_j), LV - HV (420_j),
HV - LV (422_j) , (424_j) .

I/O (410_j) , G/A (426_j) , LV - LV (414_j), LV - LV (416_j), LV - HV (420_j), HV - LV (422_j) .

가 .

, G/A (426_j) .

, I/O .

, I/O , I/O .

, LV HV .

, 11 , A - A , B - B , C - C , I/O (410_j) , AI LV HV (400_j) , .

12 , I/O (410_j) .

HV (400_j) , LV - LV (414_j) , LV - LV (416_j) , LV - (420_j) , HV - LV (422_j) .

LV - LV (414_j) , LV - LV (416_j) , LV - HV (420_j) , HV - LV (422_j) , SWA , ND(1)

SWA , SW1 SW16 (424_j) ,
SL1 SL16 .

SA , SW1 SB1 SB4 , SWA , SEL1 SEL16 ,
(440_j) . (440_j) , 7 G/A (440_j) , SB1 SB4, SEL1 SEL16 ,
40_j) , .

SWA , SW1 SW16 , LV - LV (416_j), HV - LV (422_j) , LV - LV (416_j), HV - LV (422_j) .

, LV - LV (414_j), LV - LV (416_j), LV - HV (420_j), HV - LV (422_j) , SB1 SB4 (440_j) (420_j) , INV1 INV4 , .

, .

, LV VCC, HV VDD, VSS . ,
CONT XCONT .

13 , LV - LV (414_j) .

LV - LV (414_j) , (500_j, 504_j), EXOR (502_j), (Level Shifter: ,
 LS)(506_j), (508_j) .

LS(506_j) (508_j) , HV (500_j, 504_j), EXOR
 (502_j) , LV . HV , LV
 , , HV , LV

LS(506_j) , SB1 XSB1 HV , (508_j)

ND , (500_j)

INV1 , (500_j) ND , EXOR (502_j) , EXOR (502_j) ,
 (504_j)

(504_j) , (508_j) , (400_j)

LV - LV (414_j) , ND INV1
 , HV (508_j) , (4
 00_j) , (400_j) , HV , LV
 INV1

가 ,

14 , LV - LV (416_j)

LV - LV (416_j) , LS(520_j), (522_j), (524_j), EXOR (526_j)

LS(520_j) (522_j) , HV (524_j), EXOR (526_j)
 , LV

LS(520_j) , SB2 XSB2 HV , (522_j)

(522_j) , (400_j) , LV (524_j)

, (524_j) , VSS n (528_j)가 n
 (528_j) , SB2 XSB2가 「H」
 , LV - LV (416_j) , n (528_j) (524_j)
 VSS ,

INV2 , (524_j) , EXOR (526_j) , EXOR (526_j) ,
 (524_j) , 가 ND

EXOR (526_j) , p (530_j) LV VCC , n (532_j)
VSS .

p (530_j) , XSB2가 , n (532_j) ,
SB2가 .

, LV - LV (416_j)가 , ND 가 ,
ND 가 .

LV - LV (416_j) , (400_j) HV (522_j)
, EXOR (526_j) , (400_j) ,
HV , LV ND . ,
INV2 ,
가 .

15 , LV - HV (420_j) .

LV - HV (420_j) , (540_j, 544_j), EXOR (542_j) . , LV - HV
(420_j) , NAND (546_j), (548_j, 552_j), LS(550_j) . , LV - HV
(420_j) , NOR (554_j), (556_j, 560_j), LS(558_j) .

LV - HV (420_j) , (400_j) , HV
VDD VSS , 가 p (562_j) n (564_j)가 .

(540_j, 544_j, 548_j, 556_j), EXOR (542_j), NOR (546_j), NAND (554_j) , LV
, LS(550_j, 558_j), (552_j, 560_j), p (562_j), n (564_j)
, HV .

ND , (540_j) .

(540_j) , EXOR (542_j) . EXOR (542_j) ,
INV3 , ND , 가 (544_j) .

(544_j) , NOR (546_j) NAND (554_j) .

NOR (546_j) , SB3 (544_j) (N
OR) , (548_j) .

NAND (554_j) , SB3 (544_j) (
NAND) , (556_j) .

LS(550_j) , (548_j) HV (552_j) , HV
(562_j) (552_j) , p .

LS(558_j) , (556_j) HV (560_j) , HV
(564_j) (560_j) , n .

LV - HV (420_j) , ND , INV3 , LS(550_j, 558_j) HV , p (562_j) n (564_j)
 , INV3 , 가 , LV HV
 16 , HV - LV (422_j)
 HV - LV (422_j) , (570_j), EXOR (572_j)
 (570_j) , HV , LV VCC가
 (400_j) , (570_j)
 , (400_j) LV , (570_j)
 (570_j) , EXOR (572_j) . EXOR (572_j) , INV4 , (400_j) , 가 ND
 EXOR (572_j) , p (574_j) LV VCC , n (576_j) VSS
 p (574_j) , XSB4가 , n (576_j)
 SB4가
 , HV - LV (422_j)가 , ND 가
 , ND
 HV - LV (422_j) , (400_j) , LV VCC가 H V (570_j) , EXOR (526_j) , LV ND (400_j) , HV
 , INV2 , 가
 (440_j) , SB1 SB4, S
 EL1 SEL16, SA
 17 , (440_j)
 (440_j) , LCD (60) ,
 SB1 SB4, SEL1 SEL16, SA
 , LCD (60) 가
 , CK , D7 D0 1

RES , 가 . S7 S0 X
S7 S0 AI ,

SB1 SB4 .
(440_j) , (424_j) , (430)
, 4 .

SA , ,

INV1 INV4 , 가 .

5. 가

18 , 가 (10) .

, 4 , .

LCD (60) , (30) , CPH, LP, D0 D
17, CMD, INV, POL, OE, 가 EIO,
XRESH , .

, LCD (60) , (50) , CPV, STV,
XOEV, XOHV, XRESV
(50) , LCD (60) (30) ,
(50) , I/O (30) , .

, LCD (60) , (80) , XSTBY, PMDE, 1
2 PCK1, PCK2, VCOM ,
I/O , LCD (60) (80) ,
(30) , (80) .

, LCD (60) , HV 가
(30) , , LCD
(60) , ,

19(a),(b) , (10) (30) .

19(a) (30) LCD (20) (,
1 2) ,

1, 19(b) 2, LCD (30) (60) 가

20(a),(b) (10)

20(a) 1 2) I/O (30) LCD (20) (LCD

(60)

20(b) (30) (50) (80) LCD (20) (50)

21 A0 A2 E , A2, A1, A0 가 가

A0, A1, A2

(30) 22 HV VDD , LV

VCC VSS I/O (700)

6.

23

EL

2

EL

Sm

Gn

TFT(800_{nm})

TFT(810_{nm})

LED(830_{nm})

TFT(800_{nm})

p

TFT(800_{nm})

LED(830_{nm})

TFT(810_{nm})

TFT(800_{nm})

Sm

TFT(810_{nm})

Gm

(820_{nm})

TFT(800_{nm})

EL (820_{nm}) , Gn TFT(810_{nm}) , Sm
 T(800_{nm}) Vgs , Sm TFT(800_{nm}) 가 . TFT(800_{nm})
 ED(830_{nm}) LED(830_{nm}) , TFT(800_{nm}) 가 . TF
 T(800_{nm}) LED(830_{nm}) 가 .

(820_{nm}) Sm Vgs , 1
 Vgs LED(830_{nm})

24(a) , EL 4
 24(b) ,

EL , TFT(900_{nm}) , TFT(910_{nm}) , (920_{nm}) , LED(9
 30_{nm}) .

23 2 , p TFT(940_{nm})
 (950_{nm}) Idata , p TF
 T(960_{nm}) (920_{nm}) TFT(900_{nm}) .

EL , Vgp p TFT(960)
 Vsel p TFT(940_{nm}) TFT(910_{nm}) , (950_{nm})
 Idata TFT(900_{nm}) .

TFT(900_{nm}) 가 , (920_{nm}) Idata

gp , Vsel p TFT(940_{nm}) TFT(910_{nm}) , V
 p TFT(960_{nm}) , TFT(900_{nm}) LED(930_{nm})
 (920_{nm}) , Idata
 가 LED(930_{nm}) .

EL , , Vsel, .

LED , (ITO) , (seal) ,

EL EL
 , EL .

가 , 가
 , 가 .

, , .

(57)

1.

1 2 1
 ,
 , 2 2
 1 ,
 2 , 2 ,
 1 , 2 I/O
 .

2.

1 ,
 I/O , 2 ,
 .

3.

1 2 ,
 I/O , 1 2
 .

4.

1 2 ,
 1 , 1 2
 .

5.

1 2 ,
 I/O ,
 .

6.

1 2 ,
 I/O , I/O ,
 I/O ,

,

1

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1

1

1

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2

1

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7.

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가

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8.

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9.

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8

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1

2

가

1

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1

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10.

1

2

1

,

, 2

2

1

,

2 , 2 ,

1 , 2 I/O ,

3

,

2 ,

가 1 2 , 2, 3

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11.

10 ,

I/O , 2 3 ,

.

12.

1 10 ,

1 , .

13.

1 2 ,

12 ,

2 2

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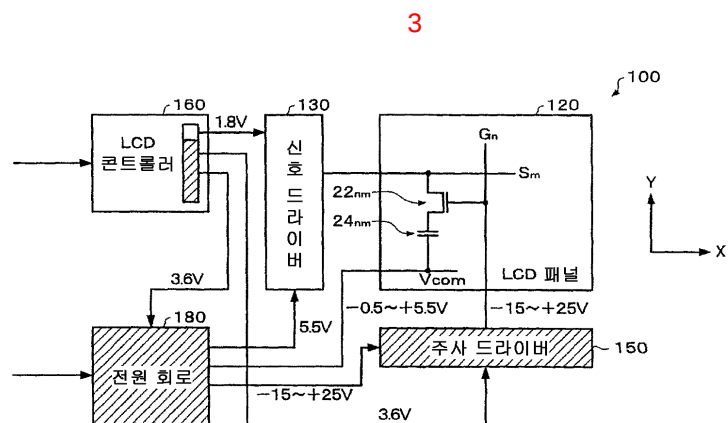
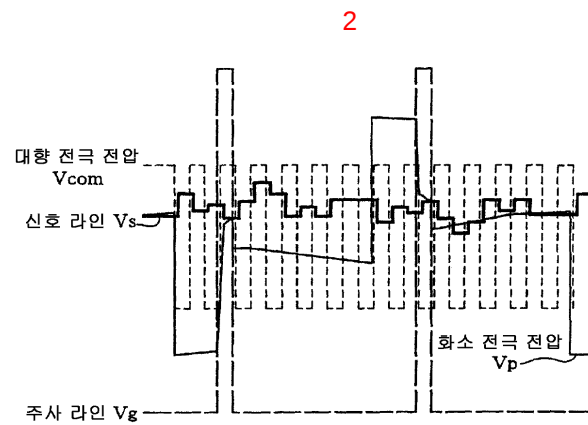
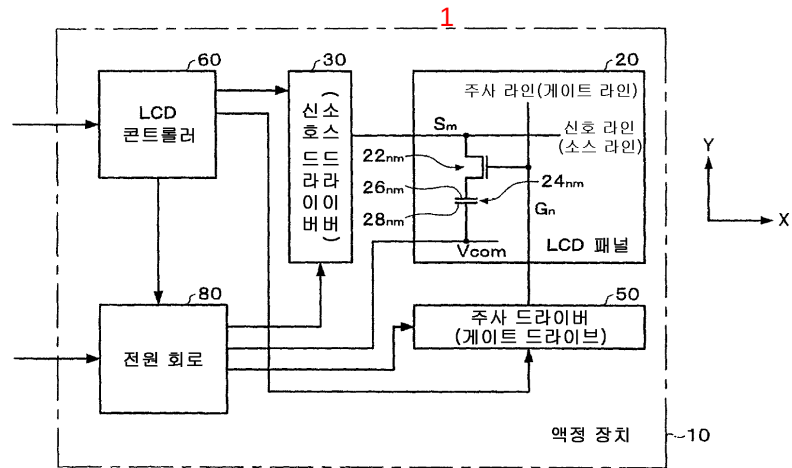
14.

1 2 ,

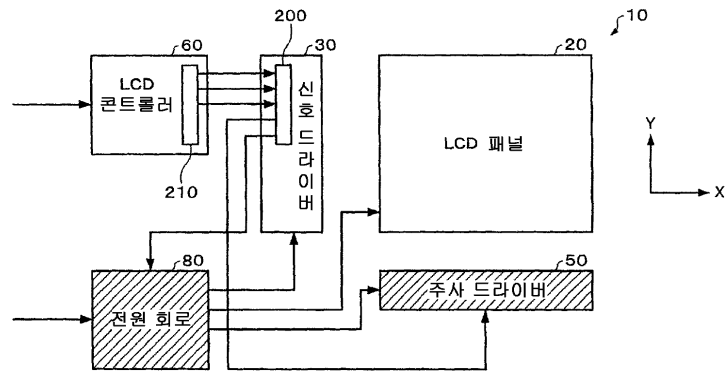
12 ,

2 2

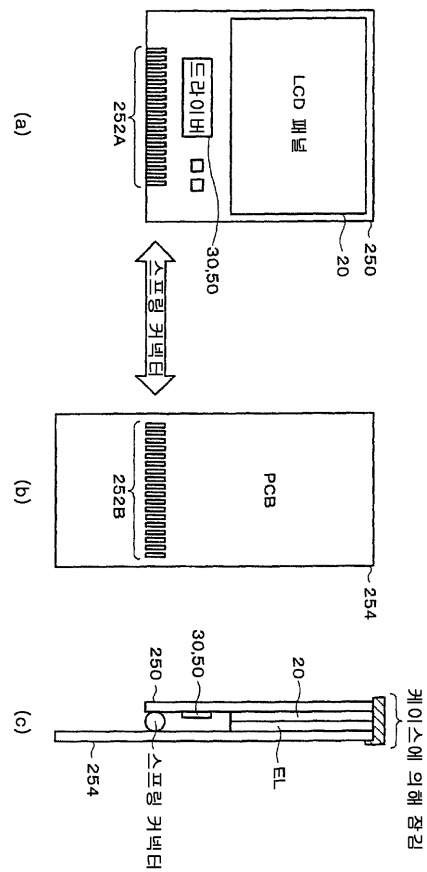
.

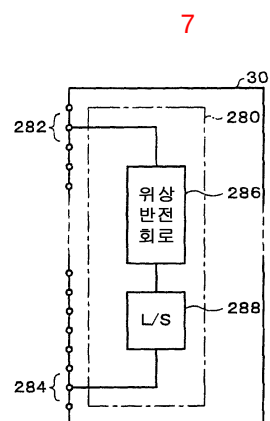
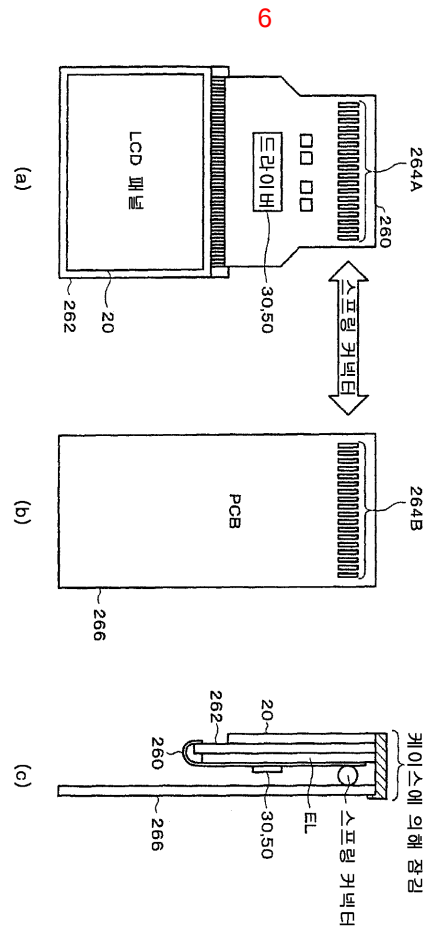


4



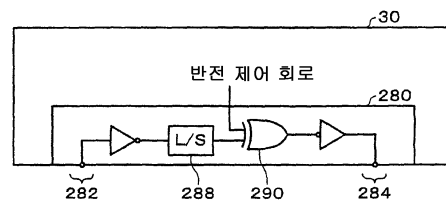
5



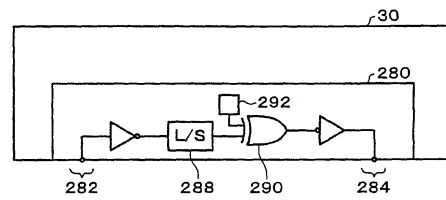


8

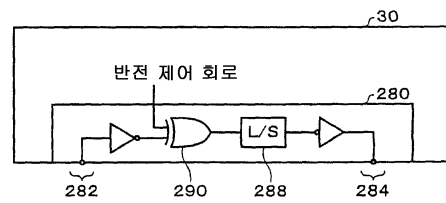
(a)



(b)

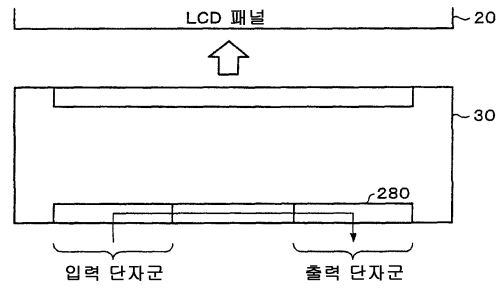


(c)

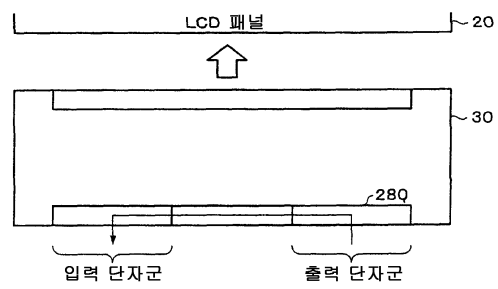


9

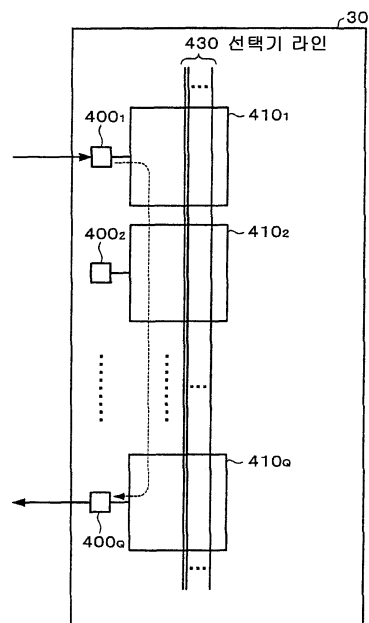
(a)



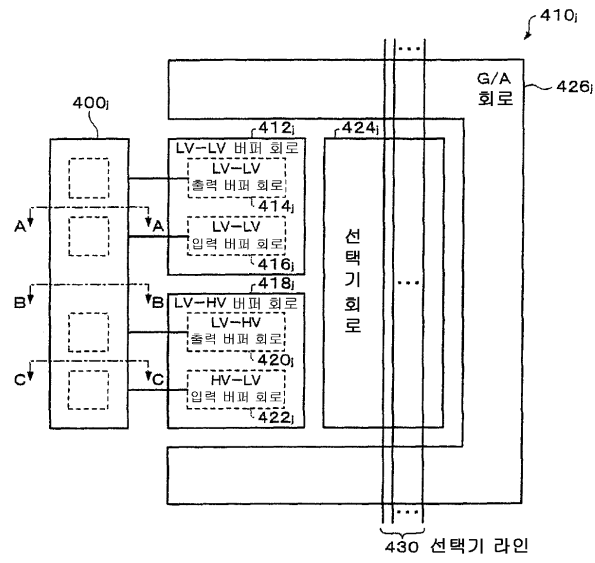
(b)



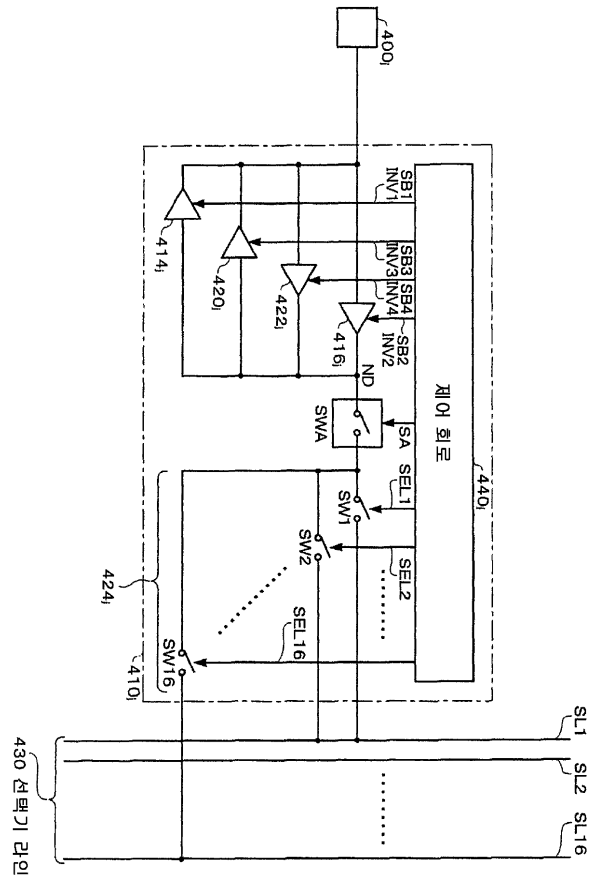
10



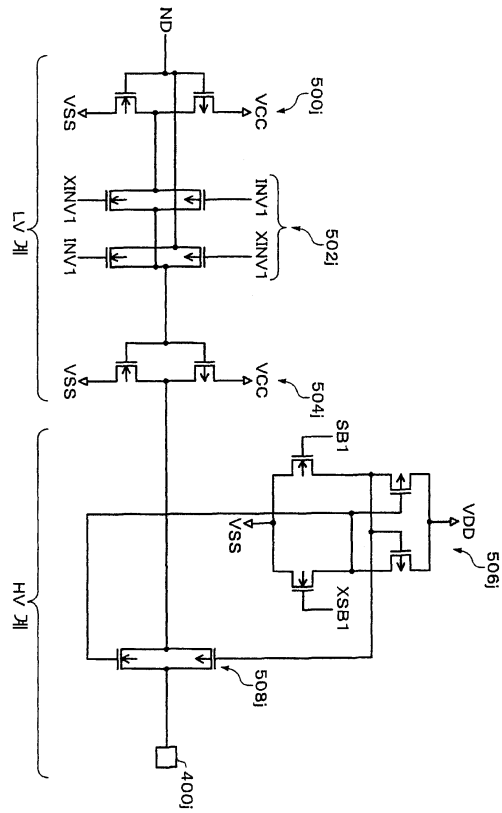
11



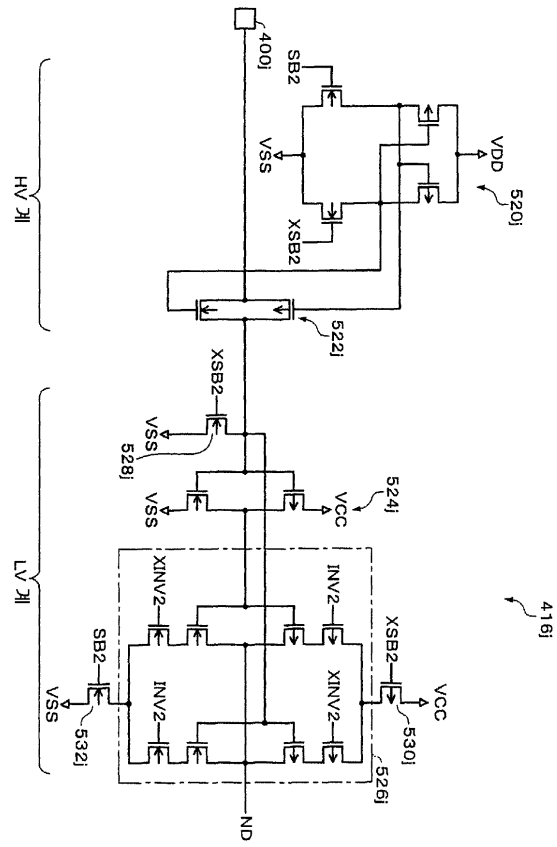
12



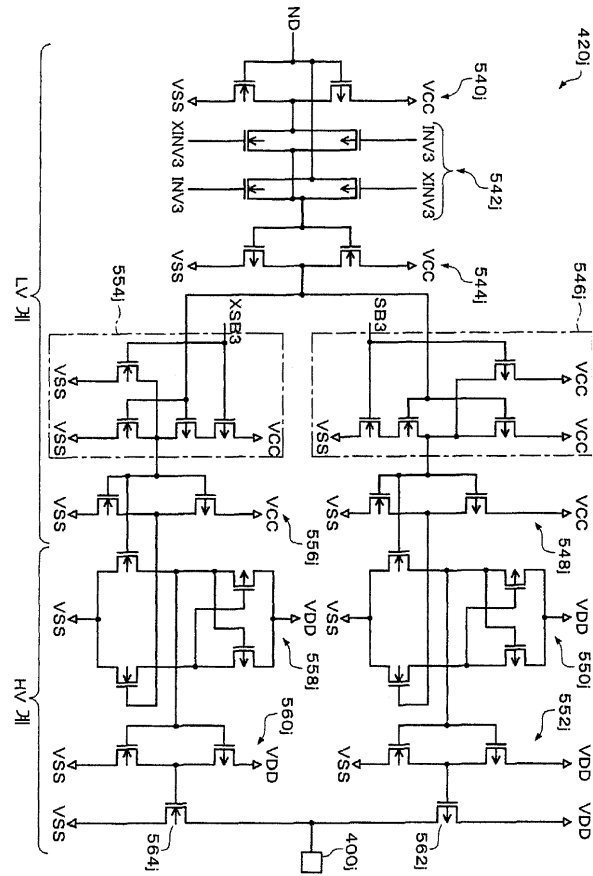
13



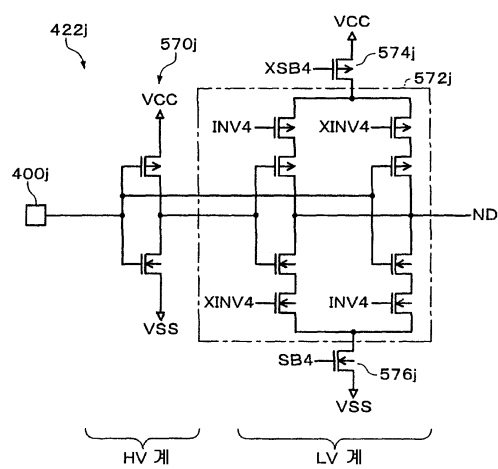
14



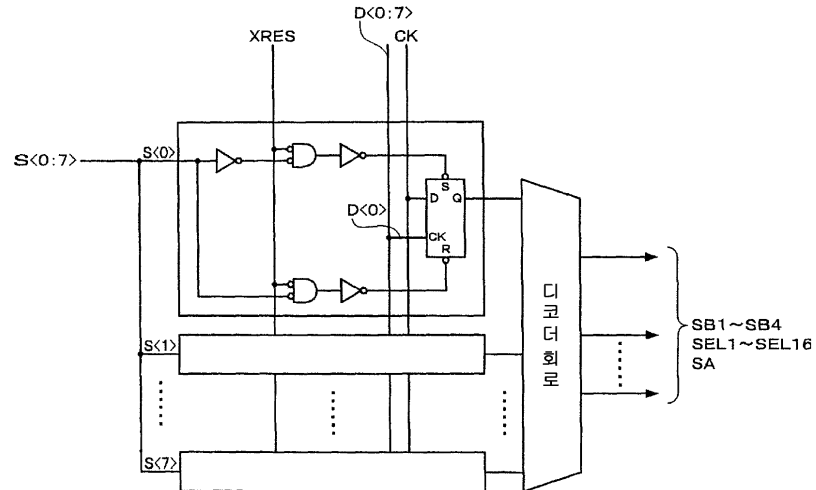
15



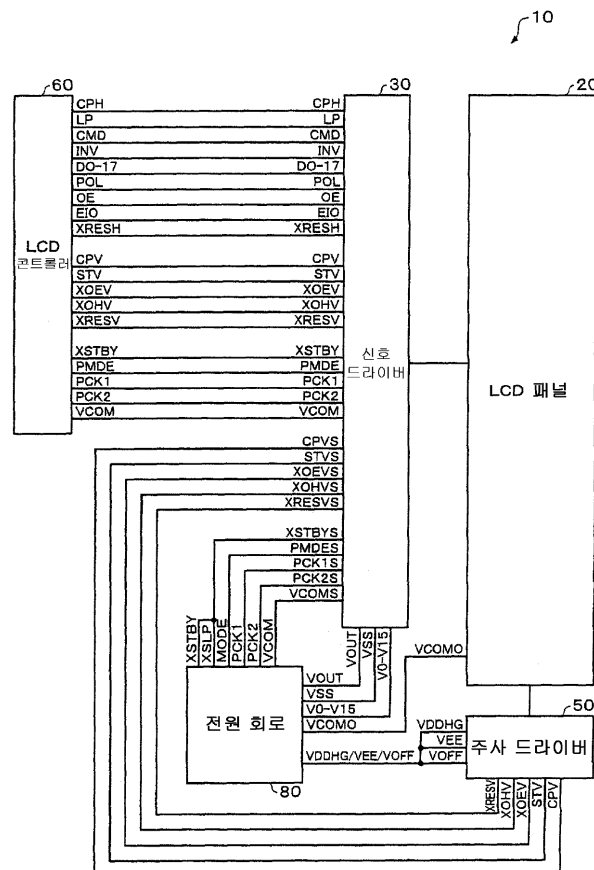
16



17

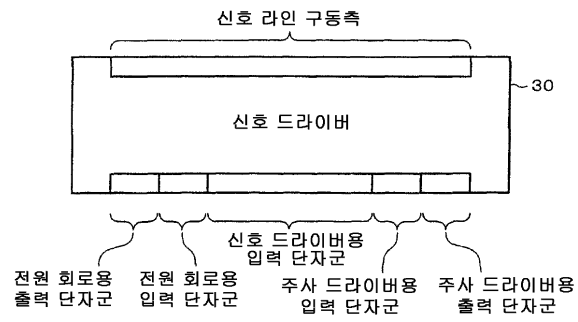


18

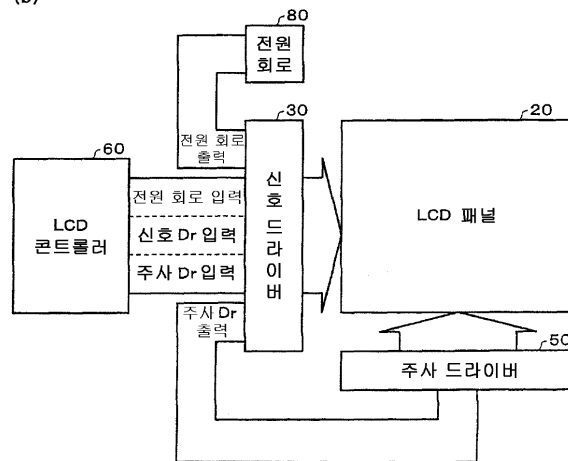


19

(a)

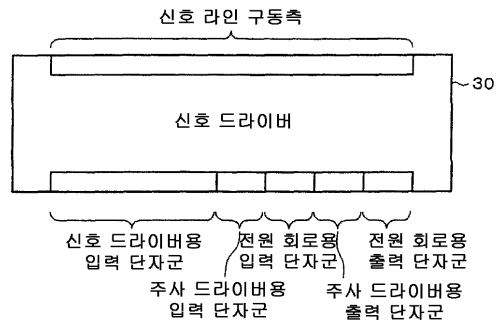


(b)

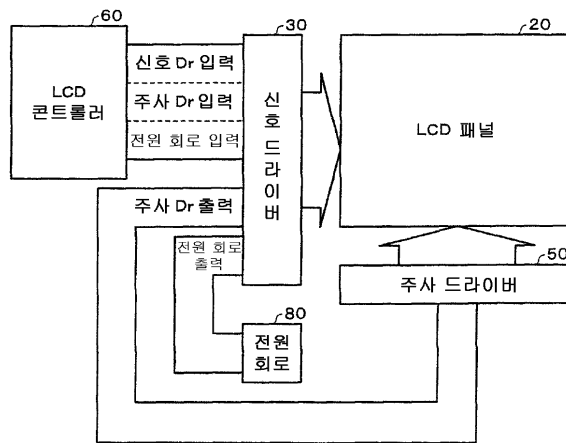


20

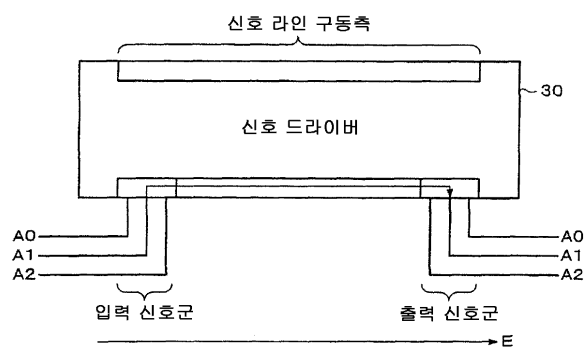
(a)



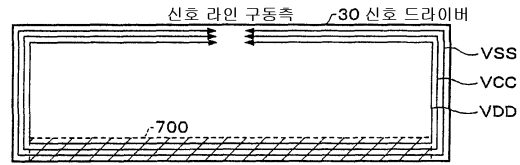
(b)



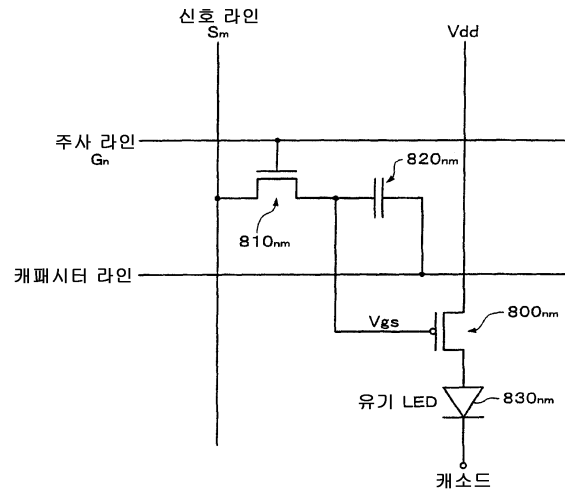
21



22

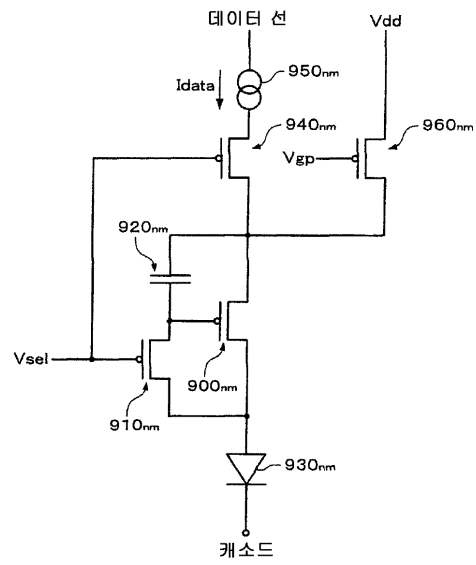


23

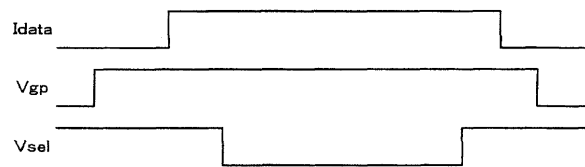


24

(a)



(b)



专利名称(译)	线路驱动电路，电光器件和显示器件		
公开(公告)号	KR1020020096918A	公开(公告)日	2002-12-31
申请号	KR1020020033241	申请日	2002-06-14
[标]申请(专利权)人(译)	精工爱普生株式会社		
申请(专利权)人(译)	精工爱普生株式会社		
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IPC分类号	G09G3/30 G09G3/36 G02F1/1345 G09G3/20 G09G3/32 G02F1/133		
CPC分类号	G09G2300/0842 G09G3/325 G09G3/3688 G09G3/3233 G09G3/3611 G09G2310/0289		
代理人(译)	KIM, CHANG SE		
优先权	2001181679 2001-06-15 JP		
其他公开文献	KR100594655B1		
外部链接	Espacenet		

摘要(译)

本发明的目的在于提供一种线路驱动电路，其能够有效地规划低成本，并且工艺小型化，有效地缩短了显示面板的开发周转时间。电光装置和显示装置。指示和驱动液晶显示器的LCD面板的信号驱动器（30）具有输入端子组（282），其中输入的输入信号组包括I/O电路区域（280）和输出端子组（284）。）输出输出信号组。I/O电路区域（280）包括反相电路（286），反相输入信号组的相位，该输入信号组通过输入端子组（282）和电平转换电路（L/S）输入（288）利用相位 - 反相器电路将相移系列信号的耐受电压等级的电压转换为高耐压组的电压（286）。在信号驱动器（30）的多个端子组的内部，关于输入端子组（282）和输出端子组（284），它任意选择。

