

(19)
(12)

(KR)
(B1)

(51) 。 Int. Cl.7
G09G 3/36

(45)
(11)
(24)

2004 02 19
10-0419090
2004 02 04

(21) 10-2001-0008163
(22) 2001 02 19

(65)
(43)

10-2002-0067813
2002 08 24

(73) 416

(72) 71-11 102 1207

(74)

:

(54)

, LCD ,
, , , , ,
1 / 1
, ,
, 가 ,

3

LCD, , , , , 가 ,

1 (Normally white mode) TN 가

2
 3 1
 4 3 가
 5 3 가 가
 6 2
 7 3
 8 4

< >

10 : PC 12 :
 20, 400 : LCD 22 :
 100 : 200 :
 300, 800 : 410 : ()
 420 : 430 :
 440 : 450 : LCD
 500 : 600 :
 700 :

(LCD) 90 180 240 TN(Twist Nematic) (+) TN
 STN(Super Twist Nematic)
 가 (Normally white mode) TN 가
 1 , LCD (0) -20 T
 N 가 TN TFT LCD (Gray)
 , LCD 가 가 LCD
 , 가

LCD 2 3 1 3 ; ;
 가 가 , 가 LCD
 가 LCD , 가
 1 2 ; ;
 1 3 3 ; ;
 2 1 3 ; ;
 1 ; ;
 ; 2 ;
 2 ; ;
 1 ; ;
 2 ; ;
 가 ; ;
 2 ; ;
 2 ; ;
 CD (20) , (Gamma) , PC (10) L
 PC (10) (12) , LCD LCD
 가 (20) , PC (22) , PC (10)
 PC (10) 가 , 가 가
 , PC
 LCD PC (10) LCD (20) ()
 , LCD (20) LCD (20) LCD (20)
 LCD
 3 1
 3 , 1 LCD (100),
 (200), (300) LCD (400)

(AVDD) (100) DC/DC (300) (Vin) LCD (1) (Voff) (200) (Von) (R1) 가 (VR2) (Von) (V_B) (300) npn (Q1) (AVDD) 2 (CVDD) LCD (400) (V_B) 1 (440) LCD (450) (410), (420), (430) (400) (440) LCD 가 (450) (300) 2 (430) (410) 2 (CVDD) (420) 2 (CVDD) (Vcom) L (450) 2 (CVDD) (Vcom) (420) () 2 (CVDD) (Vcom) (Vcom) (flicker) , STN LCD TN (flicker) , STN DC/DC (100) (Vin) LCD TFT (Von) TFT (Voff), (Voff) -7 (AVDD) (Von) (R1) 가 (VR2) (Q1) (V_B) (V_B)

$$V_B = \frac{VR_2}{(R_1+R_2)} \cdot V_{on}$$

(Q1) (Q1) (V_E) 2 (AVDD)

$$V_E \leq AVDD - V_{CE}$$

(Q1) 3 (V_{BE}) (V_B)

$$OV < V_B < V_E + V_{BE} = AVDD - V_{CE} + V_{BE}$$

1 3 가 가, 가 4 , 가 (VR2) 가 ([AVDD - V_{CE} + V_{BE}] · R1 / [Von + AVDD - V_{CE} + V_{BE}]) (V_B) (V_E) (CVDD) 4

$$CVDD = V_B - V_{BE}$$

(CVDD) (410) 가 (VR2) (CVDD) (+) (-) (flickering) (Vcom) (CVDD) (CVDD) (Vcom)

5 3 가 (VR2) 가

5 가 (0) LCD VR2c 가 가 , -10 L
 CD VR2a VR2b LCD V_B 가 , -20 LCD

가 (VR2) LCD LCD LCD
 (Gray) 가 가 LCD (가)
 1 가 가 LCD (가)

, 가 LCD 가

6 2
 6 (300), LCD (400), (500) (600) (100),
 (300), LCD (400) 3 (100),
 (500) (501) (600) , 3 8가

(600) (100) (Von) 1 ,
 (R61, R62, ..., R68) ,
 (500) (501) , 1
 (R1) (Von) 가 (300) ,
 가 2 가 (CVDD) (+) (-)

가 , (Vcom) (CVDD)
 (CVDD) (Vcom)

7 3
 7 (300), LCD (400), (500) (700) (100),
 0) (500) (V71, V72, ..., V78) , (300), LCD (40)
 (700) (501) (300) (500)
 3 가 (CVDD) (CVDD) (+) (-)

가 , (Vcom) (CVDD)
 (CVDD) (Vcom)

, 8 , (100) (AVDD)

8 4
 8 (400) (800) DC/DC , LCD (400) (100), LCD
 (100) (VF) 가 1 (Vin) 2
 (800) (R21, R22) 1 (AVDD) 1 (AVDD)
 () 1 (AVDD) (VF) DC/DC
 CVDD) LCD (400) (410) (800) 1 (AVDD) 2 ()
 (410) 4 , LCD (+) (-) (420) 2 (CVDD)

가 , (100) DC/DC (800) AVDD, (,) V_{REF}, AVDD
 R₂₁, V_{REF} 5 R₂₂, DC/DC (, 1.2V)

$$V_a = \frac{R_{22}}{(R_{21} + R_{22})} \cdot (AVDD - V_{REF}) + V_{REF}$$

(100) DC/DC (AVDD) 6 .

$$AVDD = \frac{(R_{21} + R_{22})}{R_{22}} \cdot (V_a - \frac{R_{21}}{R_{21} + R_{22}} \cdot V_{REF})$$

$$= \frac{(R_{21} + R_{22})}{R_{22}} \cdot V_a - (\frac{R_{21}}{R_{22}} \cdot V_{REF})$$

6 , 2 (CVDD) , 2 (CVDD) (V_{REF})

LCD 가

(57)

1.

1

2.

1

1

3.

1

LCD 가

가

4.

3

가 LCD

LCD 가

5.

4

가

6.

, ;
1 ;
1 ;

7.

6 1 ;
8. 1 ;

8.

1 ;
1 ;
1 ;

9.

8 1 ;
10. 1 ;

10.

1 ;
2 ;
2 ;

11.

10 1 ;
1 2 ;
1 2 ;
가 1 ;
2 ;

12.

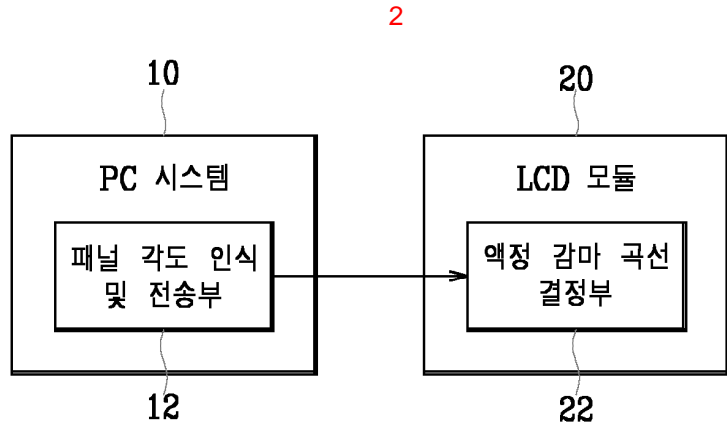
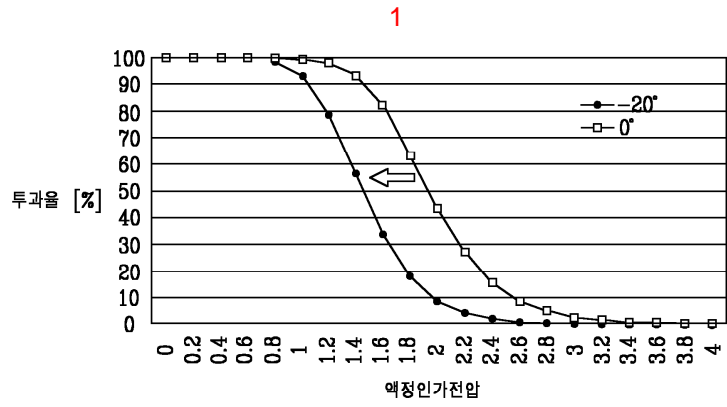
11 1 ;
가 LCD ;

13.

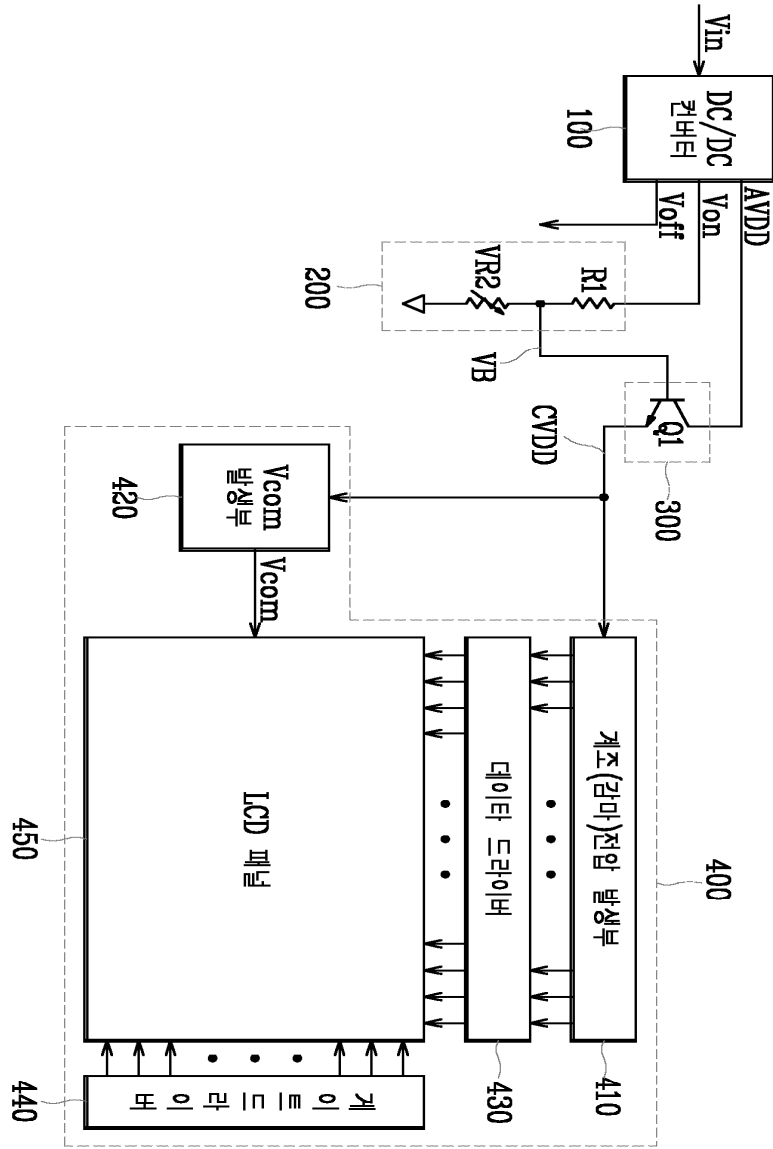
11 ;

14.

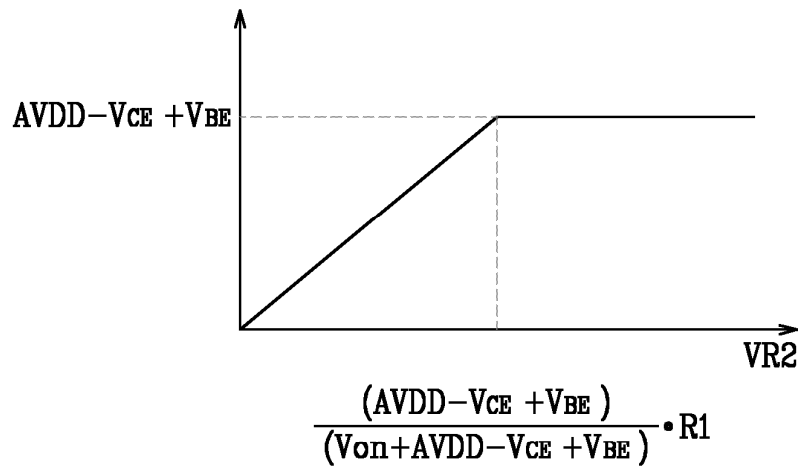
2 ;



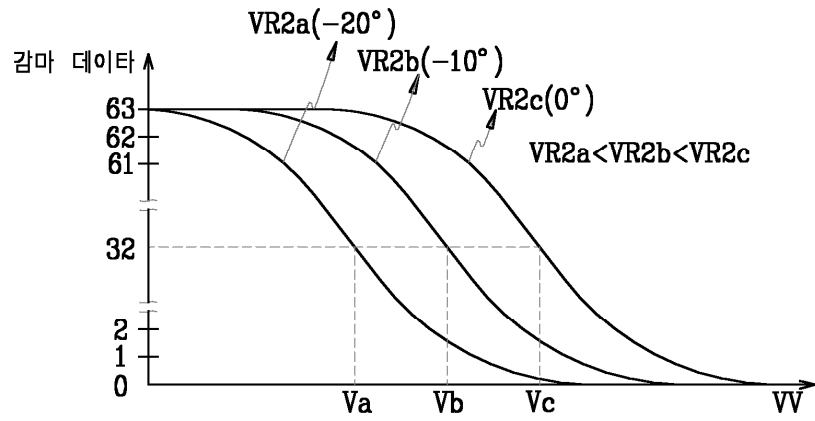
3



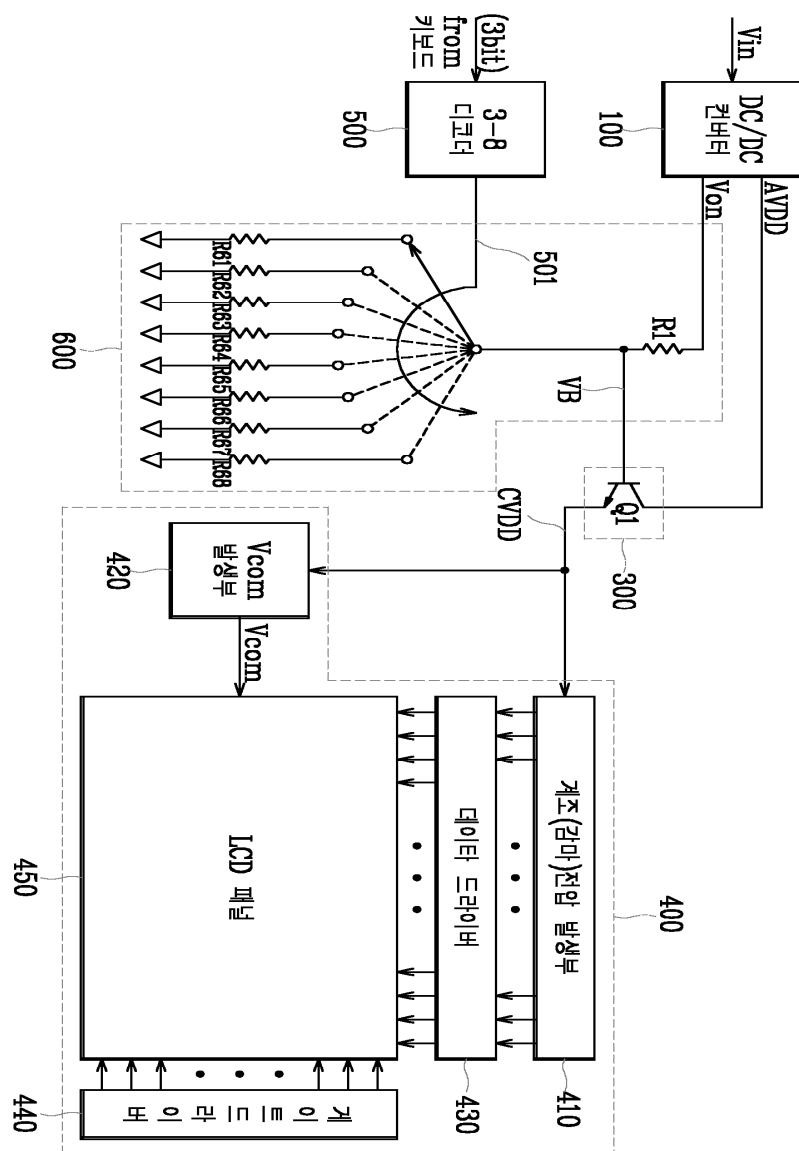
4

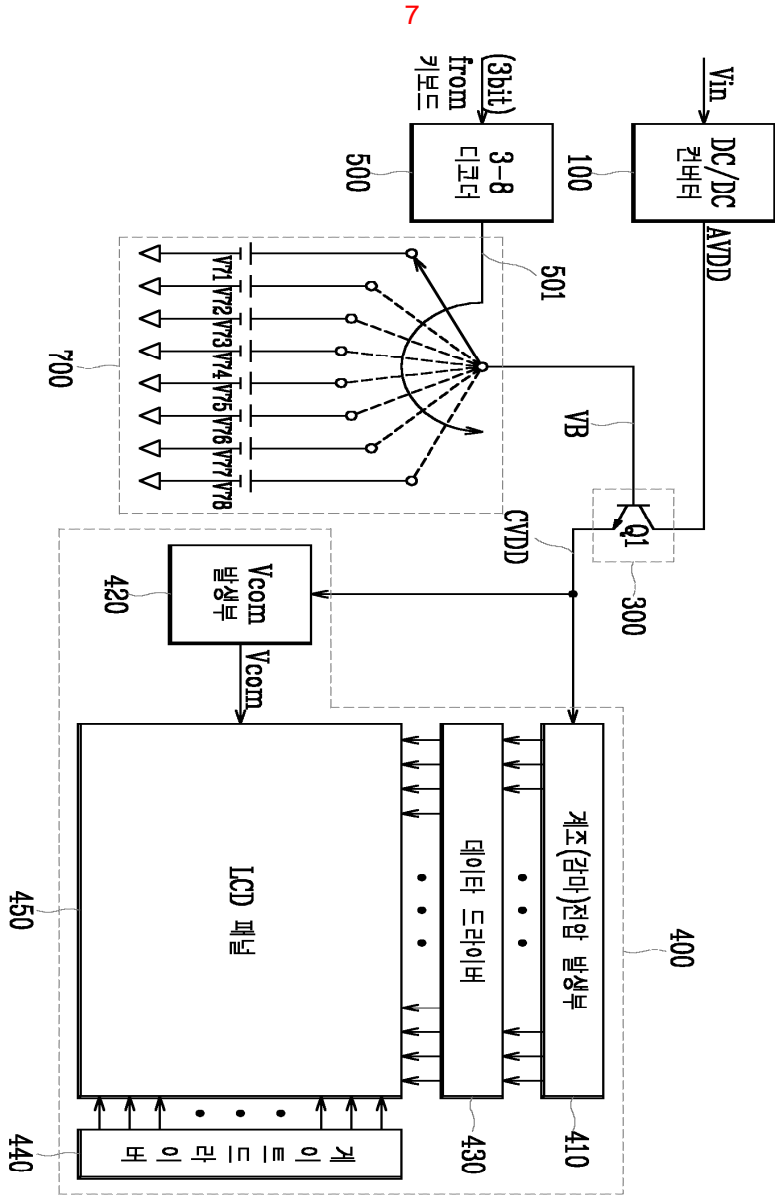


5



6





7

