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(22) 2000 07 27

(71)

3 416

(72)

24

(74)

:

(54)

.

, n , m , m ,
, 가 ., TFT LCD , n ,
m , 가가 .

9

LCD, , ,

1		가	.
2		가	.
3			.
4		-	.
5	1	가	.
6	1	가	.
7	2	가	.
8			.
9			.
10	1		.
11	2		.

가 (LCD: Liquid Crystal Display) ,
가
LCD (electric field) 가 LCD
가 (thin film transistor: T
FT) TFT LCD가
TFT LCD가
가 가 , TFT LCD
, (FLC; ferro - electric liquid crystal) OCB(optically compensated band)
TFT LCD
, OCB FLC TFT LCD

TFT LCD

[illegible]

LCD

LCD

LCD

가

,

LCD

가

1

.

1

TFT(10)

TFT

(Dm)

(Sn)

(Vcom)

(Cl)

TFT

(Cst)

1
TFT
com)

(Sn)

(

가

가

TFT(10)가

,

가

(Vd)

(Vp)

(V

가

(

1

가

가

,

(Vp)

1

)

가

(

1

)

가

,

1

(Cst)

가

(Vp)

,

가

,

(

'

.)

.

TFT가

, TFT가

, $Q = CV$

가

(Vp)

(Normally white mode) TN(twisted Nematics) LCD

,

0V

가

 $C(0V) = \epsilon_{\perp} A/d$, $\epsilon_{\perp}$

가

,

가

, A

d

LCD

(full black)

5V

5V가

가

가

 $C(5V) = \epsilon_{\parallel} A/d$

. TN

 $\epsilon_{\parallel} - \epsilon_{\perp} = 0$

가

가

n

n - 1

TFT가

 $C(5V) \times 5V$

.

,

 $(V_{n-1} = 0V)$

가

TFT

 $C(0V)$

.

n

5V

(Vd)

가

(Vp) 5V

(

 $C(0V) \times 5V$

,

 $C(0V)$ $C(5V)$

.

,

n+1

 $C(3.5V) \times 5V$ 가

,

(Vp)

3.5V

5V

가

.

(Vp)

,

가

(

)가

(

)

,

.

가

,

, n - 1

가

,

(Vp) 5V
 $C(5V)$

, n

5V

(Vp) 5V가

.

 $C(5V) \times 5V$

(Vp)

가

(Vd) , 가 (Vp) 가 (Vw) ,

3

3

1

(Sn') , (Sn) (Sn - 1) (Sn)

가

()가

)가 () () () () () ()

() () ()

가

(m) i(i=1, 2, ..., n - 1) (bits) , m n (n - i) LSB(Lea

4 - (modeling)

4 , 가 v ($\varepsilon(v)$

($\varepsilon_{\perp}$)

4 , $\varepsilon(v)/\varepsilon_{\perp}$, $\varepsilon_{||}/\varepsilon_{\perp}$ 3 가 , Vth Vmax 1V, 4V 가 , Vt

h Vmax ()

1 LCD (' ' .)가 Cst Cst
A d ,

$$Cst = C_l = \frac{1}{3} (\epsilon_{\parallel} + 2\epsilon_{\perp}) \frac{A}{d} = \frac{5}{3} \epsilon_{\perp} \frac{A}{d} = \frac{5}{3} C_0$$

$$, C_0 = \epsilon_{\perp} \frac{A}{d}$$

$$4, \epsilon(v)/\epsilon_{\perp} \quad 2$$

$$\epsilon(v)/\epsilon_{\perp} = \frac{1}{3}(2V + 1)$$

$$LCD \quad C(V) \quad , LCD \quad C(V)$$

$$C(V) = C_l + Cst = \epsilon(v) \frac{A}{d} + \frac{5}{3} C_0 = \frac{1}{3}(2V + 1)C_0 + \frac{5}{3} C_0$$

$$= \frac{2}{3}(V+3)C_0$$

가 Q , 4가 .

$$Q = C(V_n)V_n = C(V_f)V_f$$

$$1) , V_n \quad (n-1) \quad (V_f) \quad , C(V_f) \quad (n)$$

$$3 \quad 4 \quad 5가$$

$$C(V_n - 1)V_n = C(V_f)V_f = \frac{2}{3}(V_n - 1 + 3)V_n = \frac{2}{3}(V_f + 3)V_f$$

$$, V_f \quad 6$$

$$6 \quad V_f = \frac{-3 + \sqrt{9 + 4V_n(V_{n-1} + 3)}}{2}$$

가 $(V_n - 1)$, V_f 가 (V_n)

, n (V_n) 가 V_n' , V_n'

7

$$(V_n - 1 + 3)V_n' = (V_n + 3)V_n$$

, V_n' 8 .

8

$$V_n' = \frac{V_{n+3}}{V_{n-1}+3} \quad V_n = V_n + \frac{V_n - V_{n-1}}{V_{n-1}+3} V_n$$

, (V_n') 가 , $(V_n - 1)$ 8

V_n' 8 4 가 , LCD

9

$$|V_n'| = |V_n| + f(|V_n| - |V_{n-1}|)$$

, f LCD . f .

, $|V_n| - |V_{n-1}|$ $f=0$, $|V_n| - |V_{n-1}|$ $f=0$, $|V_n| - |V_{n-1}|$

가 .

5 가 .

5 , 1 V_n' 가 , (V_p) (,

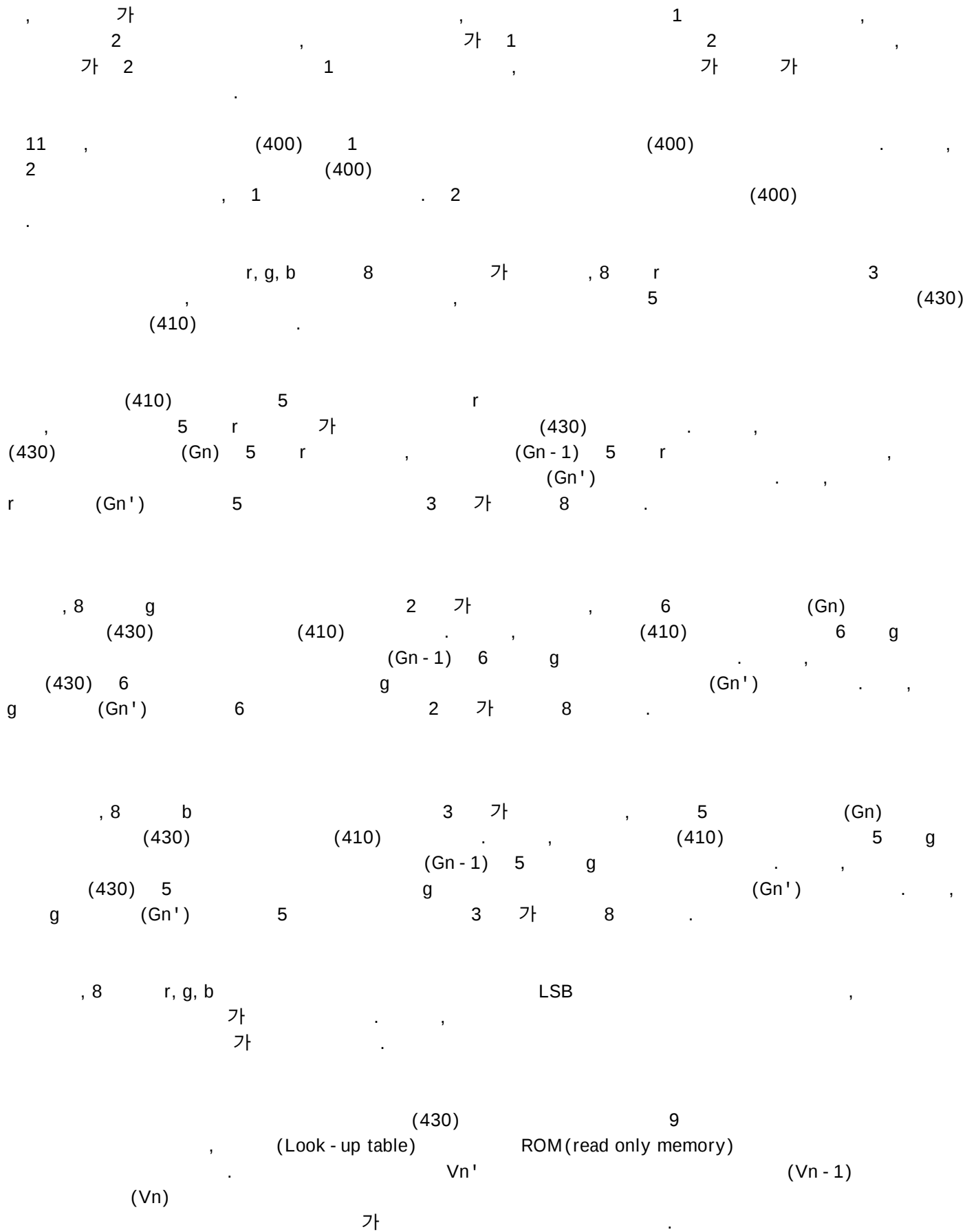
1 () 가 ,

가 .

, () (Q) .

6 1 가 . 6
 , 1 가 ,
 .
 , 2 Vn' 가 .
 7 1/2
 (overcompensate) .
 .
 8 . 8
 .
 8 , (100), (20
 0), (300) (400) .
 (100) (S1, S2, S3, ..., Sn)
 , (D1, D2, ..., Dm) .
 (110) (110) (Cl) (C
 st) .
 (200) 가 , 가
 TFT .
 (400) (,) n (
 Gn) , m m (Gn') .
 (stand - alone) , LCD
 .
 (300) (400) (Gn') (
) 가 .
 9 (400) .
 9 , (400) (410), (c
 ontroller) (420), (430) , r(red), g(green), b(
 blue) n . (430) (3 × n) 가
 (3 × n) , , n r, g, b 가 .
 (430) 가
 9 , (410) , r(red),
 g(green), b(blue) n m , r, g, b
 , (430) (410) m
 (Gn) , m (Gn - 1) .

(430)
(Gn) (n - m) ,
(Gn - 1) m , (410)
(Gn')
10
10 1 (400) r(red), g(green), b(blue) 10 8
(400) 8 r LSB 2 () 6
(430) (430) (410)
(410) 6 가 (430) 6 r 6
LSB 6 r 2 8 (Gn') 6
가 , (430) 8 g , 8 b r 8
6 가
(410) r, g, b 6
(410) r, g, b , r, g,
b 3
10 , 8 8 30Mb
SXGA(1280 × 1024) 8 r, g, b (410) 6
(410) (410)
, 11 2 , 11 2
LCD , 3 R, G, B
r, g, b 2 1 2



10 11

LCD SXGA(1280 × 1024) , 8 가 가

30Mb가 (420)

2 R, G, B 512Kb × 6 1 R, G, B

512Kb × 3 가

2 (size) × 4, × 8, × 16, × 32 (400) 48 , 16 (wide) 3

48

, n LSB i(i=1, 2, ..., n-1)

, n=8 , 1가 2 MSBs(Most Significant Bits) 6 2 LSBs

8 1280 × 1024 × 3 × 6 (bits) = 22.5Mb ,

(512Kb) 6 24Kb(1 /), 6 × 24Kb(2 /

가

, R, G, B 가 , B 가 (i) $G \leq R \leq B$

가 TFT LCD .

, n m , , 가가 .

(57)

1.

가 ;

•

m R, G, B n , n m ;

2.

1 ,

m

,

,

m

m

.

3.

2 ,

m ,

n LSB i(0, 1, 2, ..., n - 1)

4.

2 ,

m ,

R, G, B

.

5.

4 ,

m ,

B 가

.

6.

4 ,

m ,
 G 가
 7.
 2 ,
 ,
 $(n - m)$ n $(n - m)$,
 n .

8.
 2 ,
 ,
 1 , 2 m m , m , m .

9.
 2 ,
 V_n , V_{n-1} ,
 $|V_n'| = |V_n| + f(|V_n| - |V_{n-1}|)$
 V_n' .

10.
 2 ,
 .

11.
 2 ,
 .

12.

11 ,

2 1 2 1 , .

13.

, , 가
 ,
 ;

n , n m m
 ;

.

14.

13 ,

n m ;

m 1 m m
 ;

(n - m) m 1 n 2
 .

15.

13 ,

m ,

n LSB i(0, 1, 2, ..., n - 1) .

16.

15 ,

m ,

R, G, B

17.

16 ,

m ,

B 가

18.

16 ,

m ,

G 가

19.

13 ,

$$V_n, \quad V_{n-1}, \quad |V_n'| = |V_n| + f(|V_n| - |V_{n-1}|)$$

20.

14 ,

1

m

m

1

21.

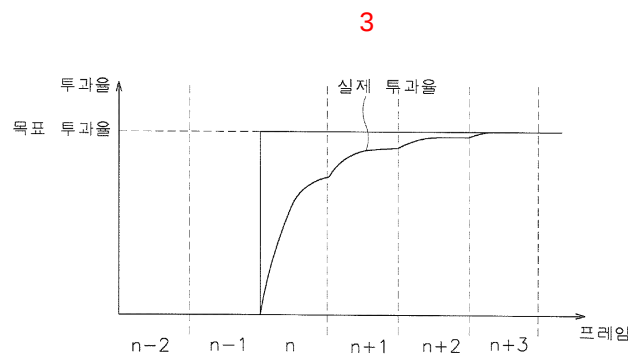
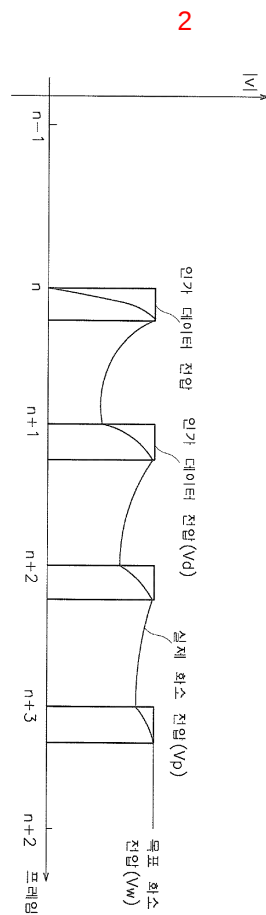
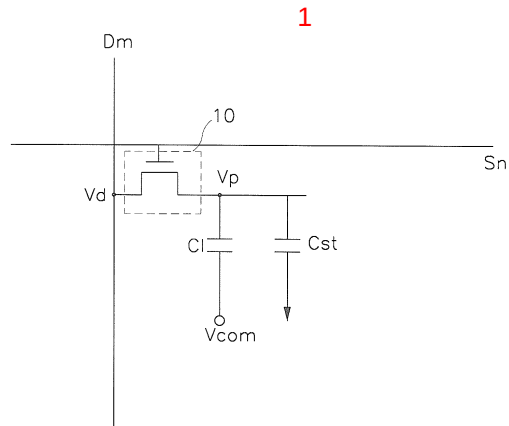
20 ,

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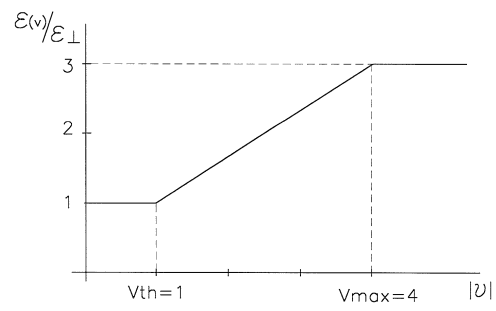
1

2

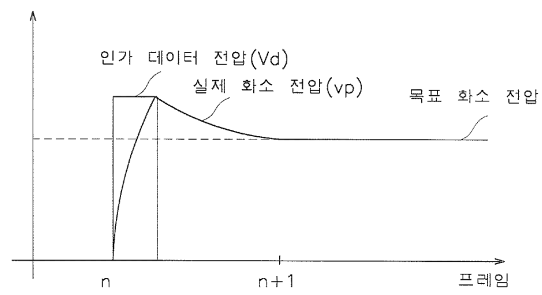
2



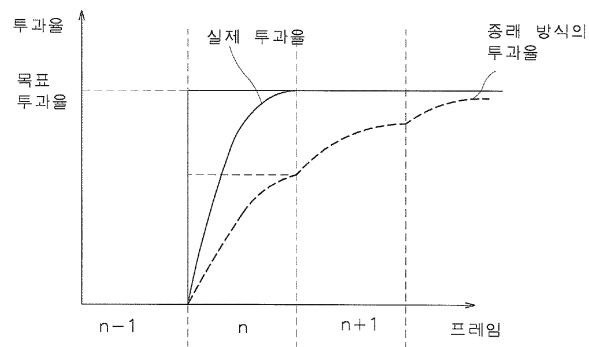
4



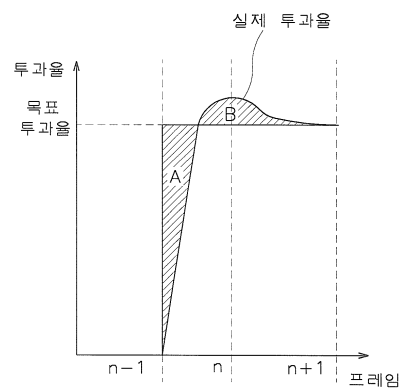
5



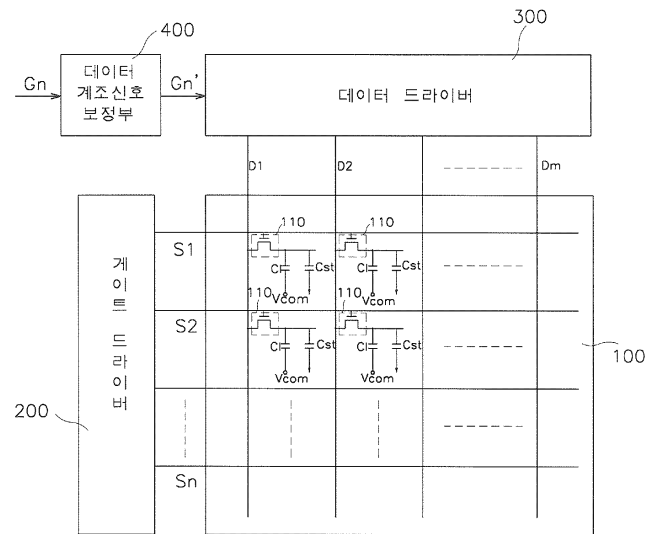
6



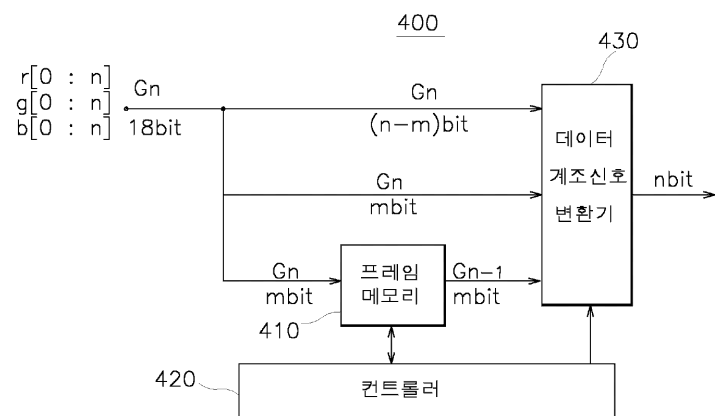
7



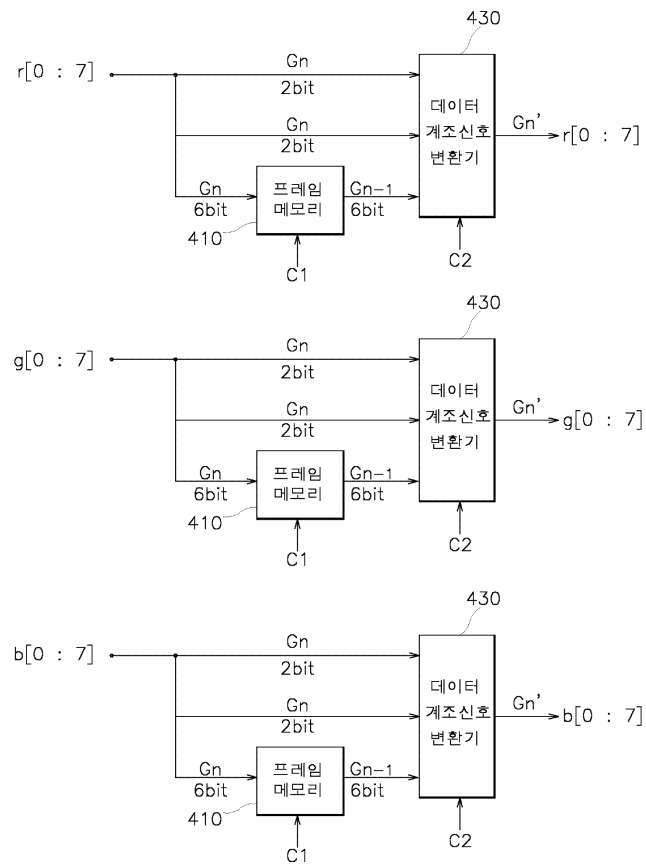
8



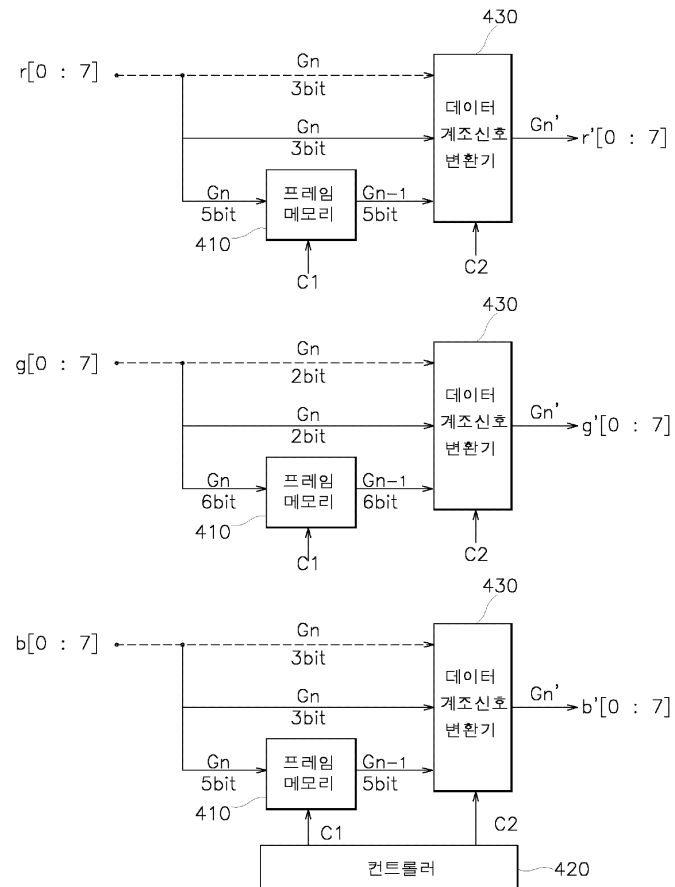
9



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11



专利名称(译)	液晶显示器及其驱动方法		
公开(公告)号	KR1020020010216A	公开(公告)日	2002-02-04
申请号	KR1020000043509	申请日	2000-07-27
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IPC分类号	G09G3/20 G09G3/36		
代理人(译)	KIM , WON GUN		
外部链接	Espacenet		

摘要(译)

液晶显示器及其驱动方法本发明涉及液晶显示器及其驱动方法。 本发明是一种液晶显示面板，栅极驱动器，数据灰度信号校正，还包括：数据驱动器，数据灰度信号校正考虑到前一帧的n位灰度级，所述m位的当前帧的灰度级和m比特的灰度从源接收的生成灰度信号，并将生成的校正灰度信号应用于像素，以改善液晶的响应特性。 根据本发明的实施例，本发明允许像素电压直接达到目标电压电平而没有帧延迟。因此，可以在不改变TFT LCD的面板结构的情况下提高液晶的响应速度。另外，n位灰度sinhojung通过仅使用m个比特，所以能够减少用于数据校正电压所需的存储器的数量和容量，面板产率提高，并且降低了成本。 9 指数方面 LCD，响应速度，位校正，灰度信号

