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(71) 가 가

2 4 - 1

(72) 가 392 - 8502 3 3 - 5 가 가 ()

(74)

:

(54) , ,

, 가 .

(D3) 가 " 0 " , (241 243) 가 ,
(241 243)가 (D3) 가 " 0 " , (D0 D2) 가 ,
DAC (CD0 CD2)

- 1 1 .
- 2 (200) .
- 3 .
- 4 D/A (UC1) .
- 5 D/A (D3) 가 “ 0 ” 가 .
- 6a , (D3) 가 “ 0 ” (6a) (V)
 , 6b , , DAC (6a) .
- 7 D/A (D3) 가 “ 1 ” 가 .
- 8a , (D3) 가 “ 1 ” (6a) (V)
 , 8b , , DAC (6a) .
- 9 D/A .
- 10 (Dbj) 가 “ 0 ” .
- 11 (Dbj) 가 “ 1 ” .
- 12 .
- 13 12 Z - Z ' .
- 14 .
- 15 .
- 16 .
- 17 1 .
- 18 TN V - T .

* *
 AA : CD : DAC ()

D, D0 D3 : 9a :

3a : 6a :

100 : 200 :

241 243 : ()

210 : X 220 : 1

230 : 2 240 : D/A

UC1 UCn : D/A

VCGW, VCGK : (1 , 2)

VDAW, VDAK : DAC , DAC (1 , 2)

(Thin Film Transistor: 「TFT」)가

TFT 1 , 1

TFT

가

가

가가

가 가 (, V-T) , 가 가
가 , 1 , 가

17 , 1

, 1 (921), 2 (922) DA (93)
(前段) , (6) (91)가

8 (6) , 6 (DA) (91) (DA)
(DB; D 1, D 2, ..., D 8) , (91) , RAM ROM
, DA (93)
가

DA (93) , DA DA (93) , 8
(941 948) (941) C , (942, 943, ..., 948)
, 2C, 4C, ..., 128C가

(99) (940) (940) (端) (Vcom) 15 Cs
 (940) (端) (Vcom) 가 .
 DA (93) , 2 (Va Vb) (941 948)
 (Va) (Ta) (941 948)
 (951 958) (Ta) (951 958)가
 (941 948) 가 (Vb)
 (Tb) (99) (910)가 (910)가
 (99) (Vb) .

(99) (941 948) (D 1 D 8)
 (961 968)가 (961 968) (99) (DB)
 가 가 .

isted Nematic) , 18 가 V - T TN(Tw
 () V - T ()

V - T V - T 가
 가 가 (91) 가
 가 가 가

(91) 가 RA
 M ROM (91) 가 ()
 91) 가 가

가

가
 가 1 (量)

(量)

, 가 가 , ,

가

, 가 , ,

가

, 가 , ,

가

가

, , , ,

,

, 가 (가), ,

가,

가

, 가 , ,

가

, 가 , ,

가

가

, 1 , 1

1

2 , 2 , ,

2

2

, 가 , ,

가

, 가 , ,

가

가

, 가 , ,

가

, 가 , ,

가

< 1. >

< 111. >

(AA)

TFT가

1 (AA) (AA)

(200)가

(AA)

(200)

(A),

(100)

V - T

(X1 Xn)

, TFT

(300),

(400)

(50

0)

(Din)

(Din)가 4

(Din) 1

가 , RGB 3

(500)

(Din)

가 " 1 "

(D)

가 " 0 "

(Din)

(D)

(500)

(500) 3

(300)

(D)

Y

(YCK), X

(XCK), Y

(D

Y), X

(DX),

(TRS)

(300)

(100)

(200)

(400)

(AA)

(VCGW),

DAC

(VDAW),

(VCGK),

DAC

(VDAK)

< 1 - 2. >

(A) , m (3a) , X , n (6a) ,
 Y .
 1 (3a) (6a) , TFT(50) 가 (3a)
 , TFT(50) 가 (6a) , TFT(50) (9a)
 , (9a) , (6a) .
 , TFT(50) 가 (3a) , (Y1, Y2, ..., Ym)가,
 가 (3a) 가 TTF(5
 0)가 (6a) (X1, X2, ..., Xn) ,
 , .
 , 가 가 가 ,
 가 가 , 가 ,
 , 가 가 ,
 (A) .
 , 가 가 (51) , (9a) (9a) 3
 (51) , 가 가 .

< 1 - 3. >

가 (100) , Y . Y
 가 가 , Y (DY) ,
 Y (YCK) Y .
 (Y1, Y2, ..., Ym) (Y1, Y2, ..., Ym) (3a)

< 1 - 4. >

, (200) . 2 , (200)
 , 3 (200)
 (200) , X (210), (D0 D3)가 (Ld0 Ld3),
 (SW10 SWn3), 1 (220), 2 (230) D/A (240) .
 (Ld0 Ld3) , (D) (D0 D3)가
 .
 X (210) , X (210) , 3
 X (XCK) , X (DX) (SR1, SR2, ..., SRn)

2 (SW10 SWn3) TFT (SW10 SWn3)
 (SW10 SW13, SW20 SW23, ..., SWn0 SWn3) 4 가 1
 , " n " (A)
 , n (SR1, SR2, ..., SRn)가 (Ld0 Ld3)
 1, SR2, ..., SRn) (D0 D3)가 1 (220) (SR

1 (220) , n (UA1 UAn) (UA1 UAn) ,
 (D0 D3) , 3
 (D)a1 Dan

B1 2 (230) , n (UB1 UBn) (U
 UBn) , 1 (220) (TRS)
 (TRS) 1 , 2 (230)
 1 (220) 가, (Db1 Dbn) (3)
 (SW10 SWn3), 1 (220) 2 (230) (D0 D3)

C1 2 D/A (240) , n D/A (UC1 UCn) , D/A (U
 UCn) . D/A (240) , (Db1 Dbn)
 , DA (X1 Xn)
 Xn) (Db1 Dbn) DA (X1

< 1 - 5. D/A >

, D/A (UC1 UCn)

< 1 - 5 - 1. D/A >

4 , D/A (UC1) , UC1 가

, D/A (UC1) , (SWck, SWcw, SWdk, SWdw)
 (Db1) (D3) 가 (D3)가 " 0 "
 , (SWcw, SWdw)가 가 (SWck, SWdk)가 가
 (D3)가 " 1 " , (SWck, SWdk)가 가 (SWcw, SWdw)가 가

, (D3)가 " 0 " , (Db1) (VCG
 W), DAC (WWAW) , DAC (D3)가 " 1 " , (Db1)
 , (VCGK), DAC (VDAK)

, D/A (UC1) , (244) , (244) ,
 (SSET)가 (“ 1 ”) 가 , 가 ,
 (SSET)가 , (VCGW) (VCGK) (
 6a) , (CS) .

, D/A (UC1) , AND (AND0 AND2), (SW0c, SW0d, SW1c, SW1d, SW2c, SW2d),
 DAC (CD0 CD2), (INV), OR (OR0 OR2), (241 243)

AND (AND0 AND2) (WRT)가 ,
 (Db1) 1 (D0) 3 (D2)가 , (WRT) ,
 (SSET) (“ 1 ”) . AN
 D (AND0 AND2) , (WRT)가 “ 1 ” , 1 (D0) 3 (D2) , (SW0
 c, SW0d, SW1c, SW1d, SW2c, SW2d)

(SW0c, SW1c, SW2c) , AND (AND0 AND2) 가 “ 1 ” 가 , “
 0 ” 가 , (SW1d, SW2c, SW2d) , AND (AND0 AND2) 가
 “ 0 ” 가 , “ 1 ” 가 .

(WRT) , (SSET) , “ 0 ” ,
 (SW0c, SW1c, SW2c)가 가 , DAC (CD0 CD2)
 (VCGW) (VCGK) , (SSET)
 DAC (CD0 CD2) 0V가 .

, (WRT) “ 1 ” , DAC (CD0 CD2) ,
 1 (D0 D2) 가 “ 1 ” , DAC (VDAW) DAC
 (VDAK) 가 .

, (241 243) , “ 1 ” 가 ,
 “ 0 ” 가 , OR (OR1 OR2) ,
 (D3)가 (INV) , (Db1) (D3)
 가 “ 1 ” , (241 243) , 1 (D0) 3 (D2) . 가
 , (D3) 가 “ 0 ” , (241 243)가
 가 .

< 1 - 5 - 3. D/A 가 >

(1) (D3) 가 “ 0 ”
 , (D3) 가 “ 0 ” , (Db1) “ 0000 ”
 “ 0111 ” ,
 5 , D/A (D3) 가 “ 0 ” 가 .
 가 , (SSET)가 , (244)
 (VCGW) (CS) , (6a) DAC (CD0
 CD2) VCGW가 (1).

(SWck, SWcw) , (D3) (VCGW)
 (VCGK) , (SW0c, SW0d, SW1c, SW1d, SW2c, SW2d) , DAC
 (CD0 CD2) (241 243) DAC (CD0 CD2) (6a)
 (SWck, SWcw) , (SW0c, SW0d, SW1c, SW1d, SW2c, SW2d) , (244) ,
 1 1 .

(SSET) , (WRT)가 ,
 (Db1) 1 (D0 D3) , 가 “ 1 ” , DAC (CD0 CD
 2) DAC (VDAW) 가 , DAC (CD0 CD2)
 (VCGW) (2) .

(SWdk, SWdw) , (D3) DAC (VDAW) DAC
 (VDAK) , (SW0c, SW0d, SW1c, SW1d, SW2c, SW2d) , (D0 D2)
 DAC (CD0 CD2) .
 (SW0c, SW0d, SW1c, SW1d, SW2c, SW2d) , (SWdk, SWdw) , 2

(VDAW) (VCGW) vdaw, vcgw , (VDAW) 가
 DAC cd, (VCGW) 가 DAC cd ,
 (6a) (V) , (1) .

$V = vcgw + \{cd / (cd + cd' + Cs)\} (vdaw - vcgw) \dots\dots (1)$

(cd+cd' +Cs) , (6a) (V) .
 6a , (D3) 가 “ 0 ” (6a) (V)
 , 6b , DAC (6a) .

(Db1) “ 0000 ” , DAC (CD0 CD2)
 (6a) (V) , “ vcgw ” 가 .

(2) (D3) 가 “ 1 ”

(D3) 가 “ 1 ” , (Db1) “ 1000 ”
 “ 1111 ” , .

7 , D/A (D3) 가 “ 0 ” 가 .

가 , (SSET)가 , (244)
 (VCGK) , (CS) , DAC (CD0 CD2)
 VCGK가 .

(SSET) , (WRT)가 ,
 (Db1) 1 (D0 D3) , 가 “ 1 ” , DAC (CD0
 CD2) DAC (VDAK) 가 , 가 (241)

243) (VCGK) (6a) DAC (CD0 CD2) (6a)

(VDAK) (VCGK) vdak, vcgk (VDAK) 가 DA
 C cd, (VCGW) 가 DAC cd ,
 (6a) (V) (2)

$V = vcgk - \{cd / (cd + Cs)\} (vcgk - vdak) \dots\dots (2)$

(cd/cd+Cs) (6a) (V)

(500) (Din) 가 " 1 "
 (D) , vcgk > vdak가

8a (D3) 가 " 1 " (6a) (V)
 8b , DAC (6a)
 (Db1) " 1000 " DAC (CD0 CD2)
 (6a) (V) , " vcgk " 가

9 , D/A D/A (Db1 Dbn)
 (D3) , 가 , 가
 (241 243) 가

< 2. >

(D)가 (200) (D) , 1 (220)
 2 (230) 가
 3 (Db1 Dbn)가 2 (230) ,

j (Dbj) 10 (Dbj) 가 " 0 "
 (OR0 OR2) H , DAC (CD0 CD2) 가 , OR
 a) (6

(Dbj)가 (T1) (TRS)가 H , 2 (230)

(SSET)가 (T1) (T2) , H , (6a) , (6a)
 (244)가 가 , (VCGW) (6a) (V) (vcgw)
 (CS) , (6a) (vcgwr)

(SSET)가 H (WRT) L , (SSET)
 (SW0c, SW1c, SW2) 가 , DAC (CD0 CD2) 가

, DAC (CD0 CD2) (6a) , (T3)
DAC (CD0 CD2) (VCGW)

, (T4) (T5) (WRT)가 H , (D0 D2) ,
가 " 1 " DAC (CD0 CD2) DAC (VDAW)
DAC (Dbj) 가 DAC ,
DAC (6a) (CS) (Dbj) (6a)
(V) (1) , (Dbj)
(6a) 가 .

H , (Y) , (T2) H ,
, L , (6a) , (Y)가 L
(TQ) , (6a) (9a) 가 가
, (9a) (Dbj) 가

, 11 (Dbj) 가 " 0 "
, (D3)가 " 1 " , (D0 D2) 가 " 1 "
DAC , DAC 가 (6a)

, (Dbj) 가 " 0 " 가 , (TRS)
(Dbj)가 , (SSET)가 , (244)가 가
, (VCGK) (6a) , (6a) (V) ,
(vcgk)

, (SSET) (WRT) L , (SW0c,
SW1c, SW2) 가 , DAC (CD0 CD2) (VCGK)

, DAC 가 (6a) , (T3)
DAC (VCGK)

, (T4) (T5) (WRT)가 H , (D0 D2) ,
가 " 1 " DAC (CD0 CD2) DAC (VDAK)
DAC (Dbj) (量) 가 DAC
(6a) (CS) , (6a) (V)
(2)가 , (Dbj) (6a) 가

, , (D3)
, , , DAC (CD0 CD2)

< 3. >

, (AA) , 12 13 , 12 ,
(AA) , 13 , 12 Z-Z'

(108) , (AA) , (9a) (101)
 , (102) , (103)가 (104)
 , (104) , (102) , (105)
 가 , (105) , (106)

(101) , (104) 1 , (200)가
 , Y (6a) , 1 (107)
 , (300)

1 2 , 2 (100)가 , X (3a)
 (100) 1 , (112) 가 ,

(102) (108) , (101) 4 , 1
 A) , (101) , (102) , (A
 가 , , (100) 가 .
 , (102) 가 .

(101) (102) , (105) ,

(100) (200) , (101)
 , TAB(Tape Automated Bonding) IC , (
 101) IC , COG(Chip On Grass) , (101)

< 4. >

< 4-1 : (500) >

가 “ 1 ” , (500) , (Din)
 (UC1) 3 3 , 4 , (500)
 (UB1) D/A

< 4-2 : >

(VCGK), DAC, (VDAX), (VCGW), DAC, (VDAW), (正極性)

(正負極性)
(400),
(400),

가 1, 가 1, 가 1, 가 2, 가 3, 가

D/A VCGW, VDAW, VCGK, VDAK
(400), (200)

< 4-3 : >

(Din)가 「1111」, 「0000」
「1111」, 「0000」, DA
(가)

< 4-4 : >

(D) (D3) (D)가 V - T
V - T DA (D) (D3)

< 5. >

< 5-1 : >

02) (1100) , , 가 (1104) 4 (11
 (1106) 2 (1102) (1108) RGB 3 , ,
 (1110R, 1110B 1110G) .

(1110R, 1110B 1110G) , (AA) , ()
 R, G, B ,
 (1112) 3 . (1112) , R B 90
 , G , (1114) ,

, (1110R, 1110B 1110G) , (1110G)
 , (1110R, 1110B)
 , (1110R, 1110B 1110G) , (1108) , R, G, B

< 3 - 2 : >

, (AA) , 15 ,
 , (1200) , (1202) , (1204) ,
 (1206) , (1206) , (1005)
 가 .

< 3 - 3 : >

, (AA) , 16 ,
 , (1300) , (1302) , (1005)
 , (100) , 가 .
 , 14 16 , , , ,

POS , , , , , , , 가 , ,

DAC , , , ,

, V - T ,

(57)

1.

가 , ,

가

1

(量)

(量)

2.

가

가

가

3.

가

가

가

1

1

2

2

4.

가

가

가

1

2

1

1

2

2

5.

4

가

6.

5 ,
 ,
 . 가 , OR , OR

7.

가 , ,
 ,
 ,
 1 ,
 2 ,

DA DA ,

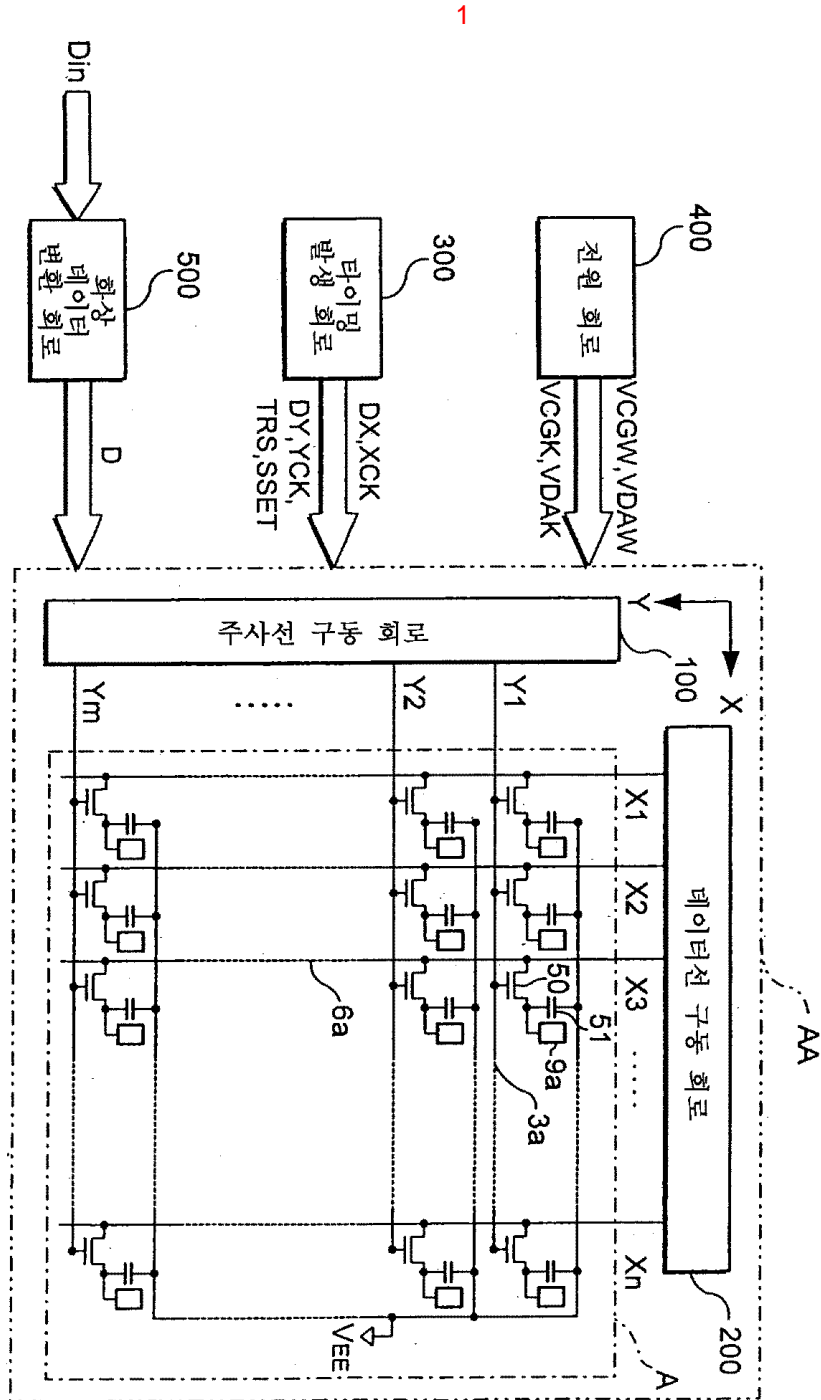
DA , , 가

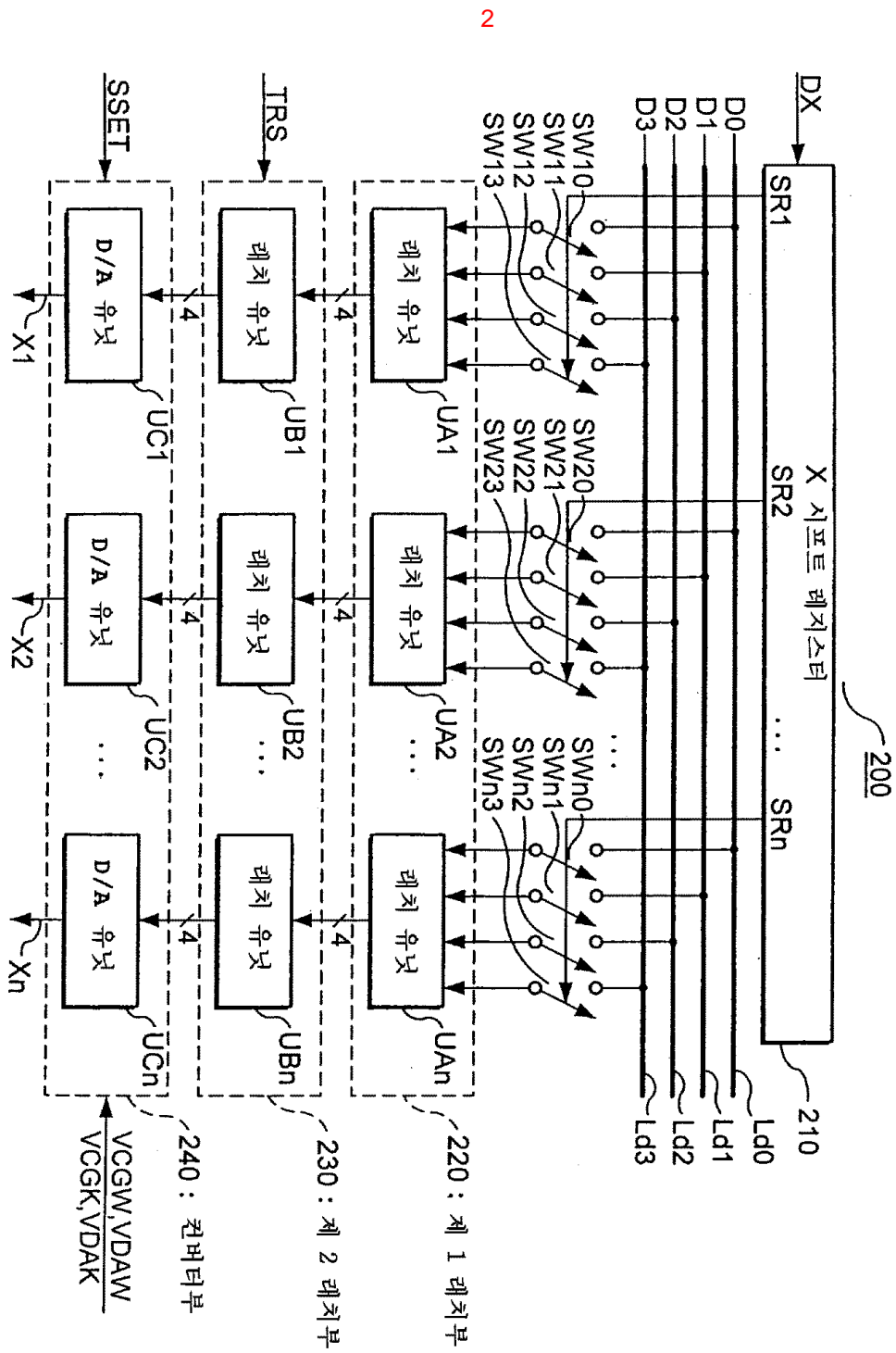
가 , ,
 , 1 2
 , 1 ,
 , 1 2 ,
 2

8.

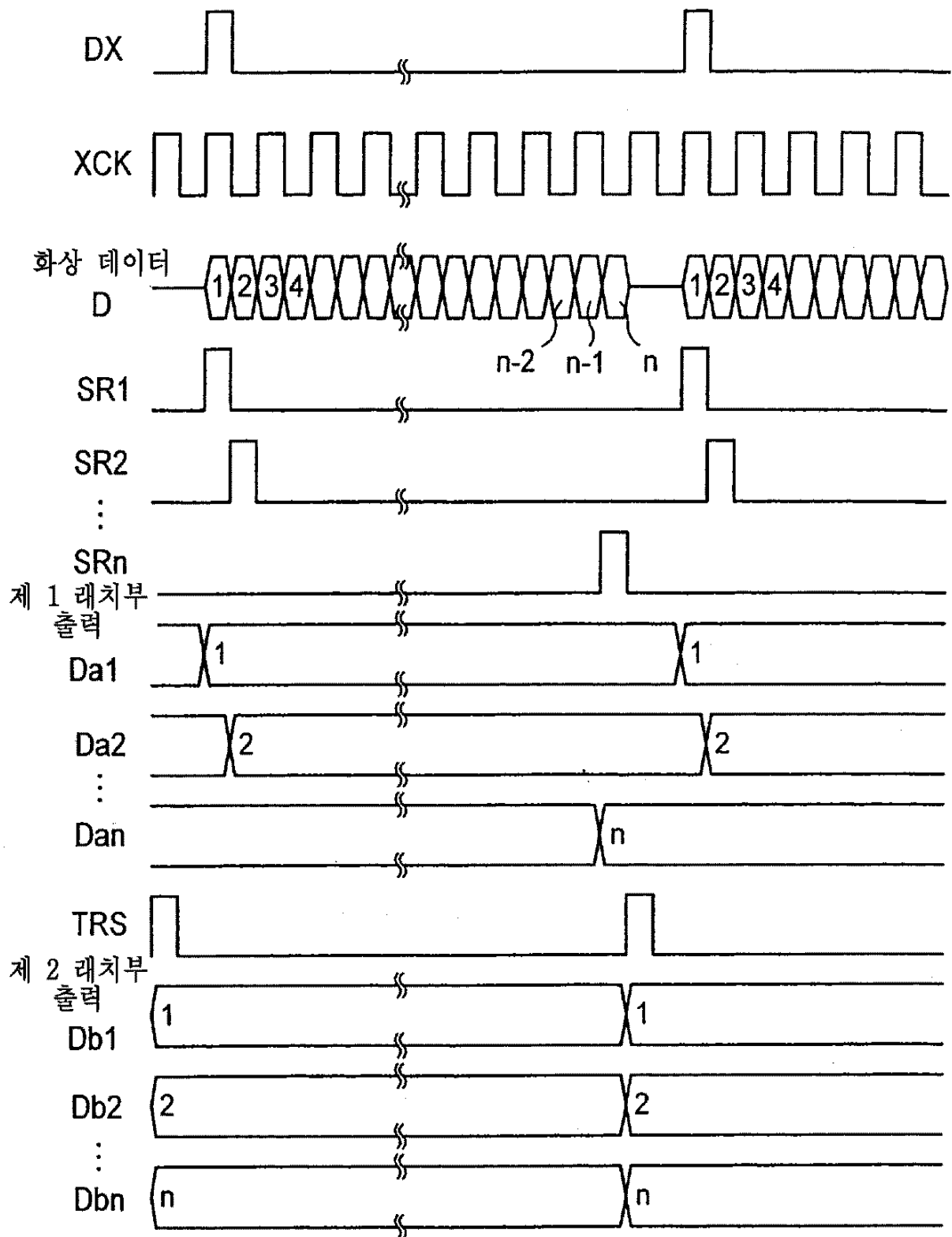
가 , , ,
 ,
 4 ,

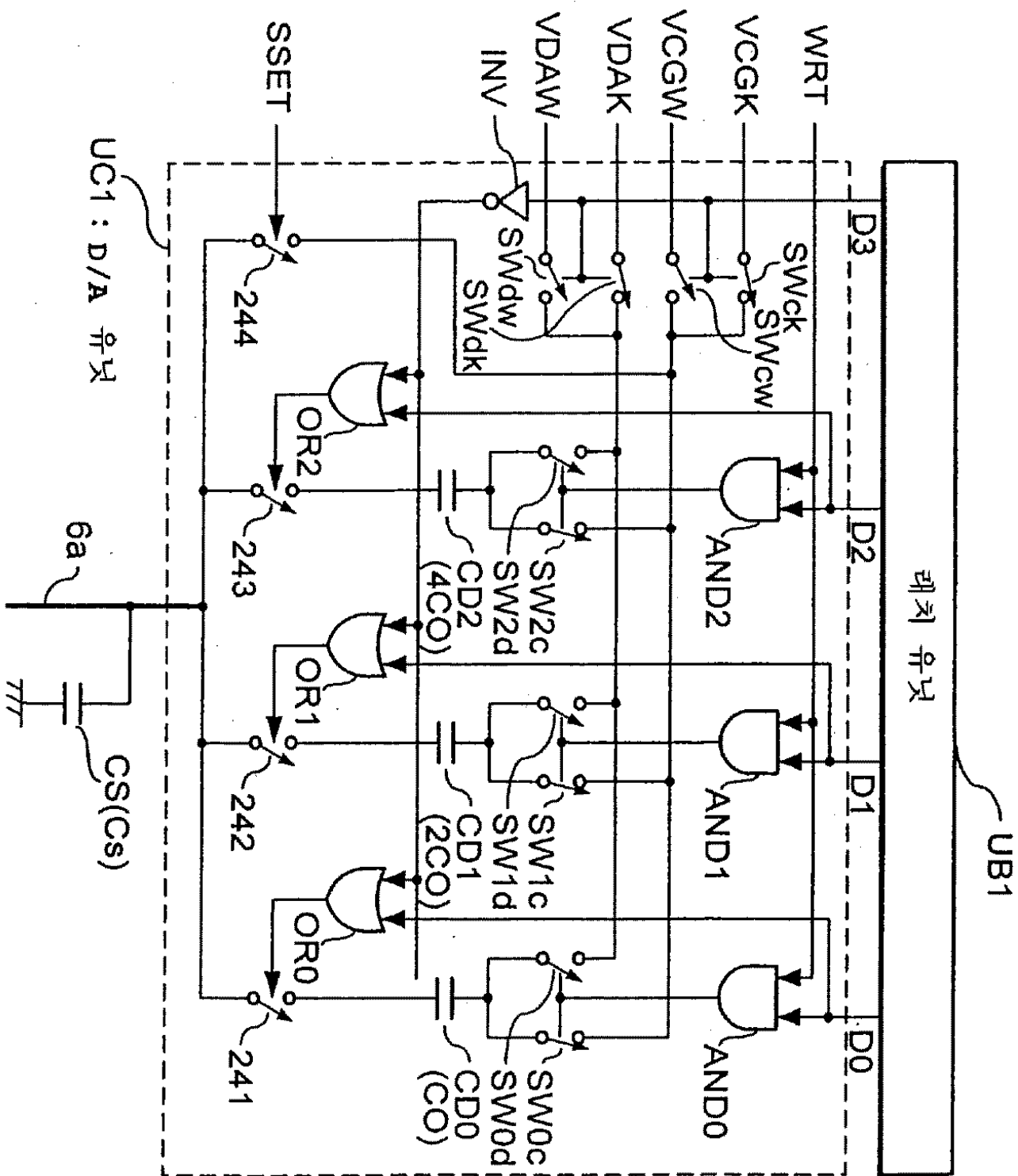
9.

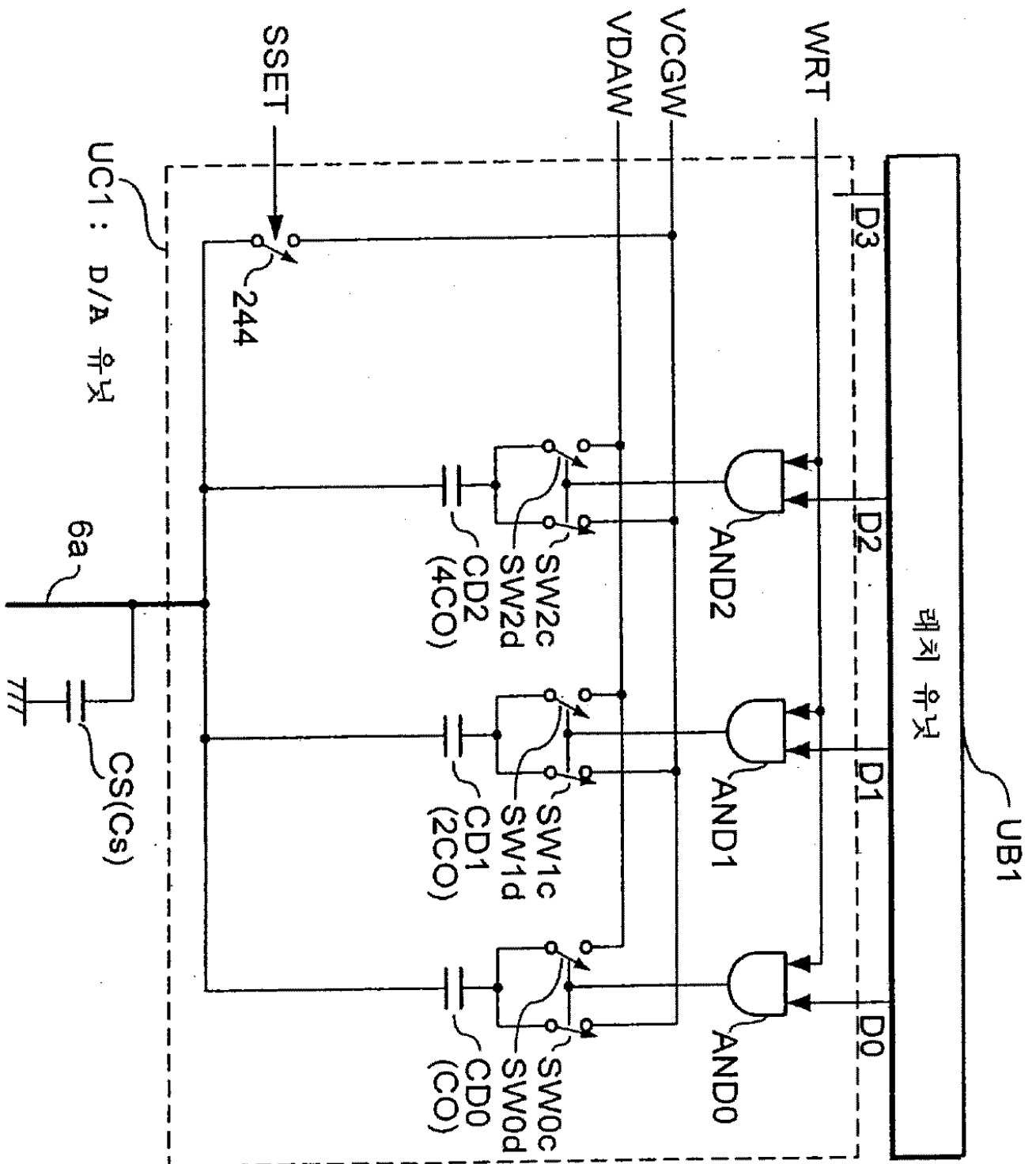




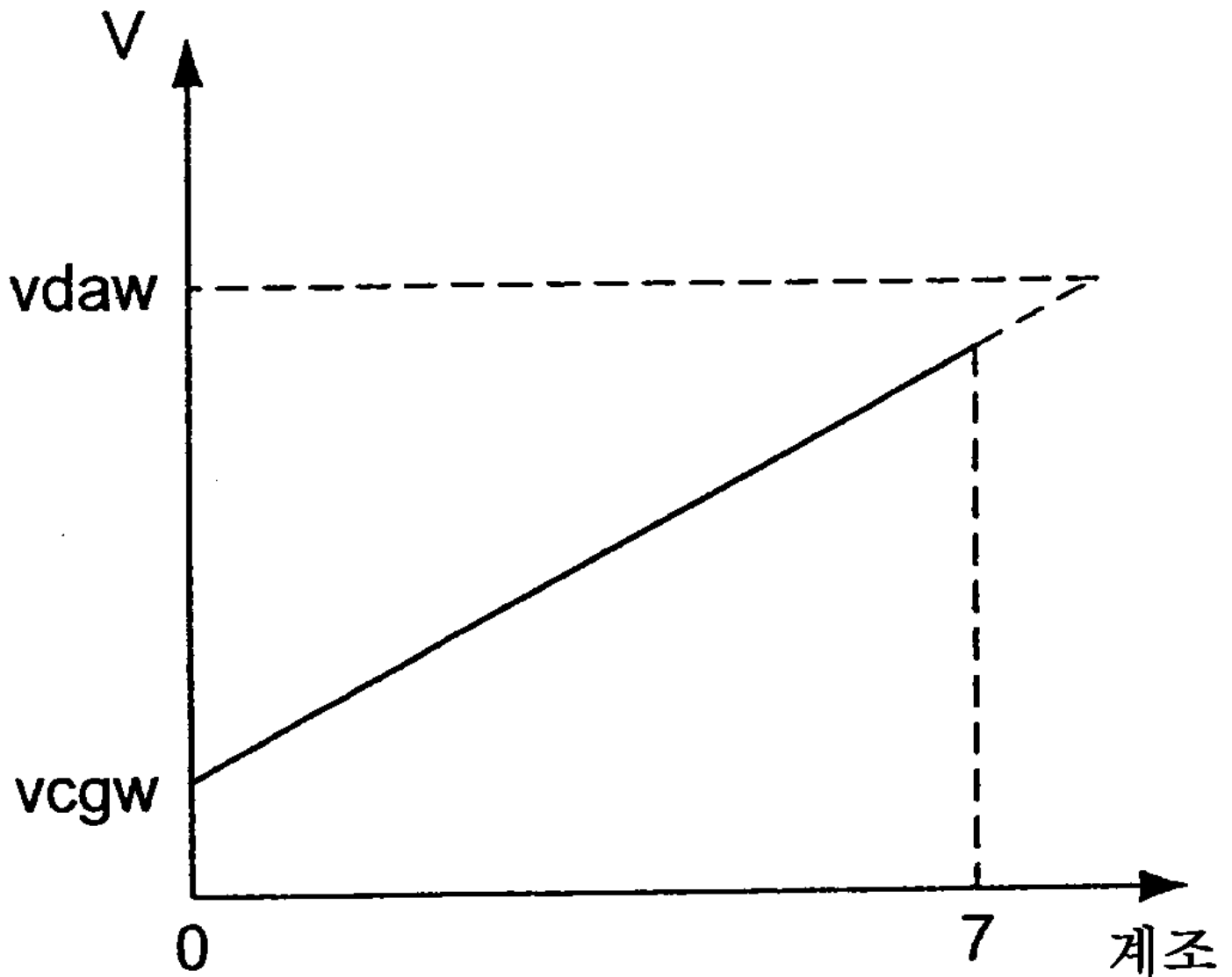
2





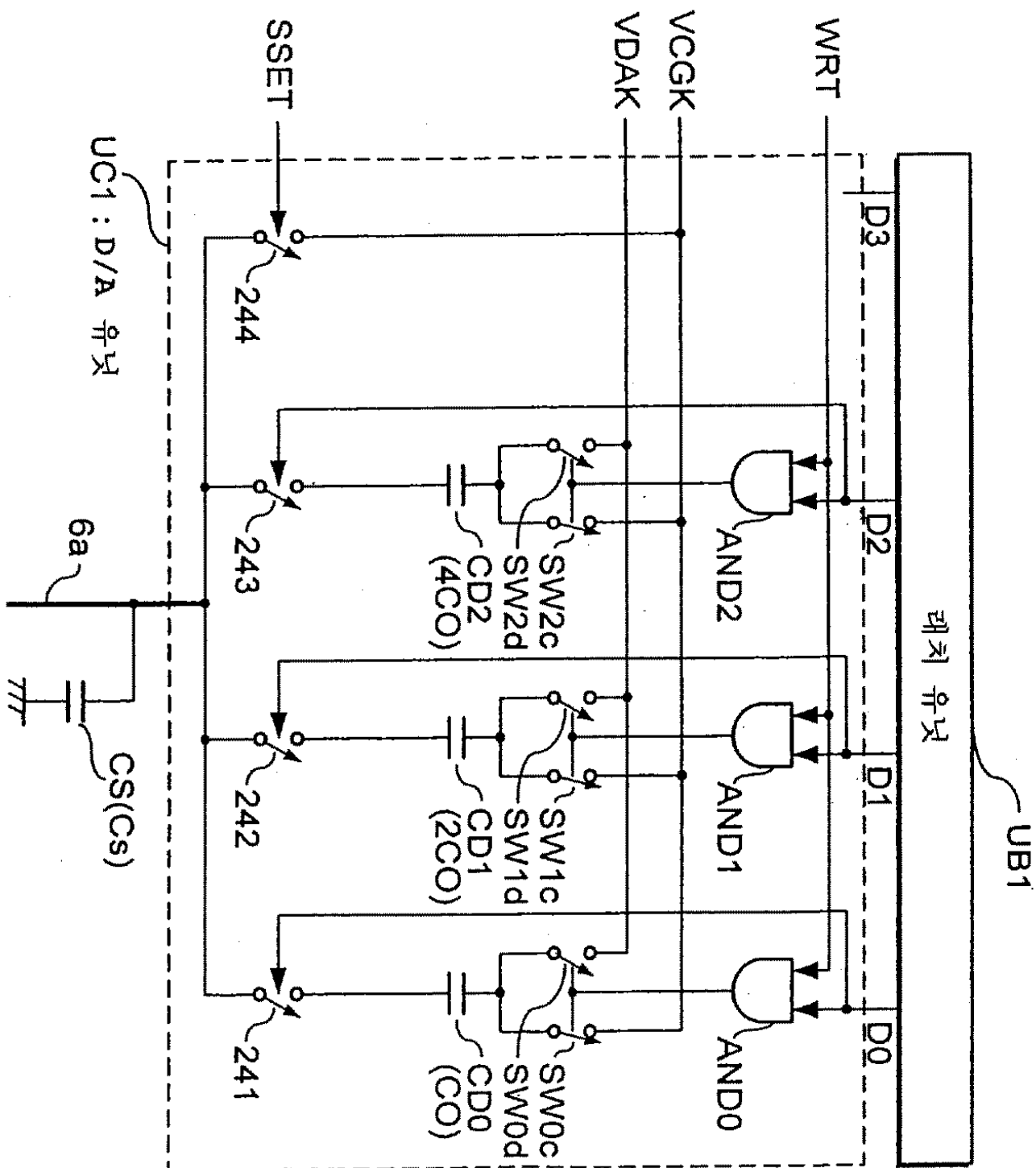


6a

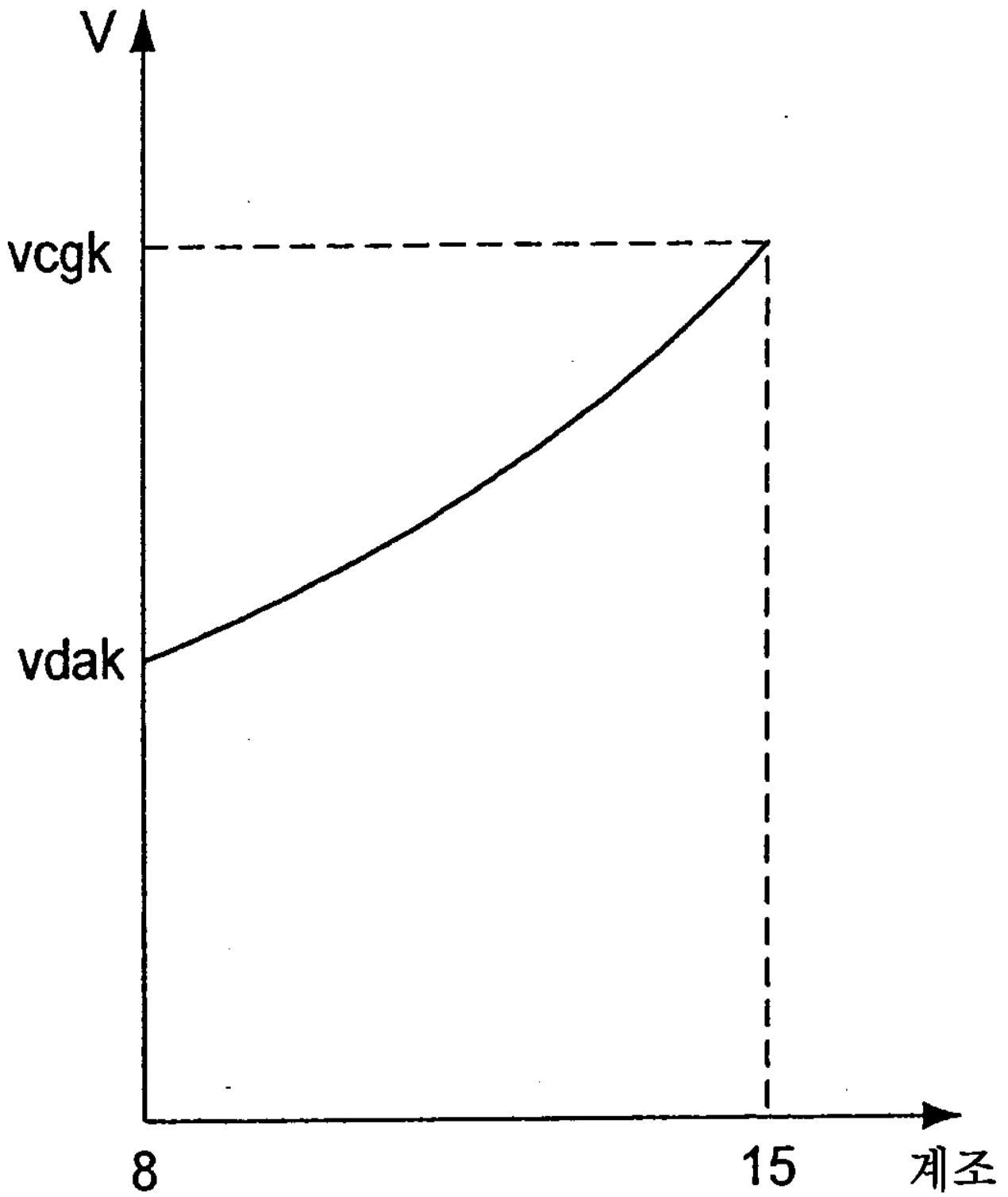


6b

계조	DAC 용량	인가 전압 V
0	0	vcgw
1	1 * C0	$vcgw + \frac{(1 * C0)}{(7 * C0 + Cs)} * (vdaw - vcgw)$
2	2 * C0	$vcgw + \frac{(2 * C0)}{(7 * C0 + Cs)} * (vdaw - vcgw)$
3	3 * C0	$vcgw + \frac{(3 * C0)}{(7 * C0 + Cs)} * (vdaw - vcgw)$
4	4 * C0	$vcgw + \frac{(4 * C0)}{(7 * C0 + Cs)} * (vdaw - vcgw)$
5	5 * C0	$vcgw + \frac{(5 * C0)}{(7 * C0 + Cs)} * (vdaw - vcgw)$
6	6 * C0	$vcgw + \frac{(6 * C0)}{(7 * C0 + Cs)} * (vdaw - vcgw)$
7	7 * C0	$vcgw + \frac{(7 * C0)}{(7 * C0 + Cs)} * (vdaw - vcgw)$



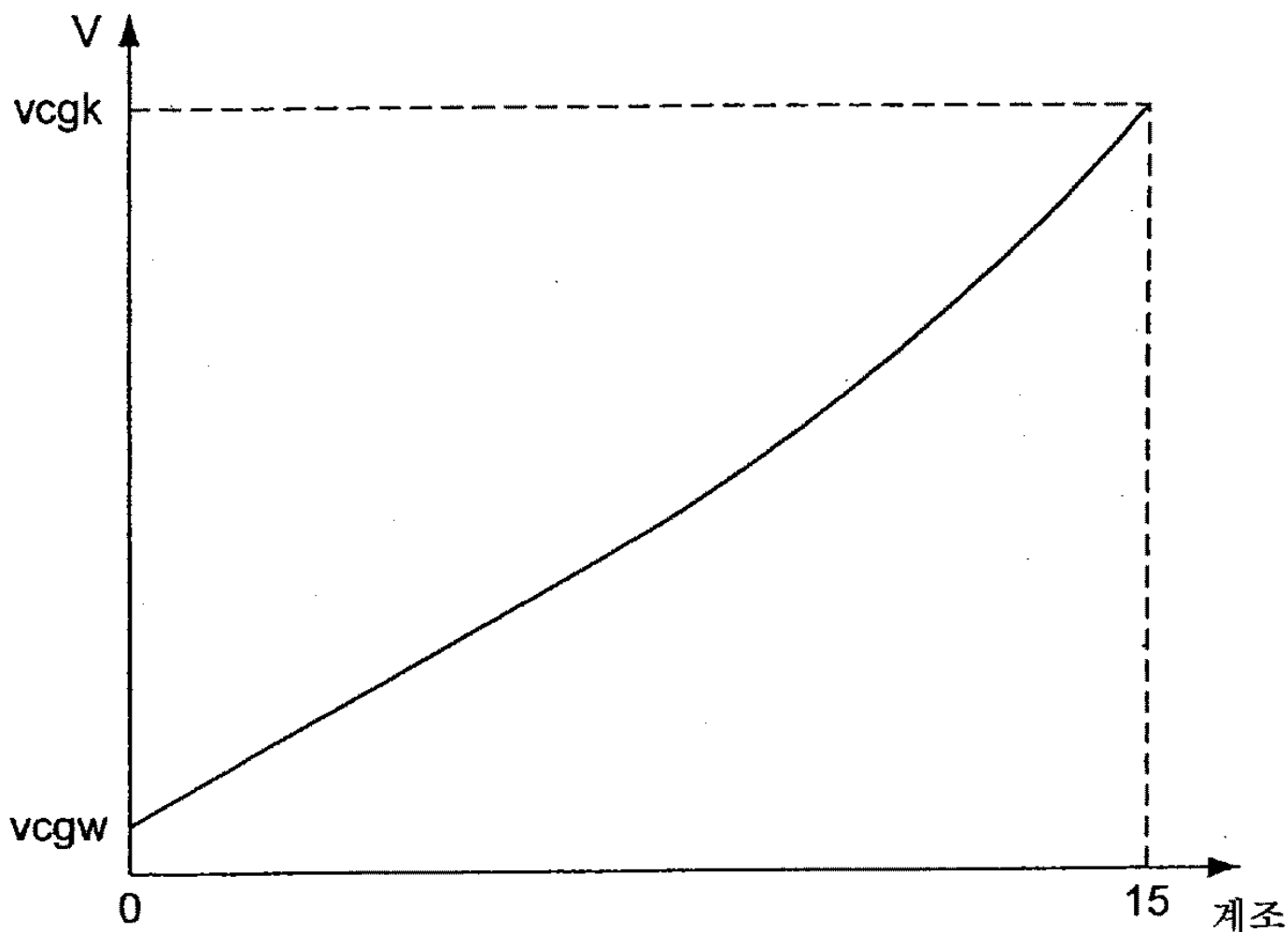
8a

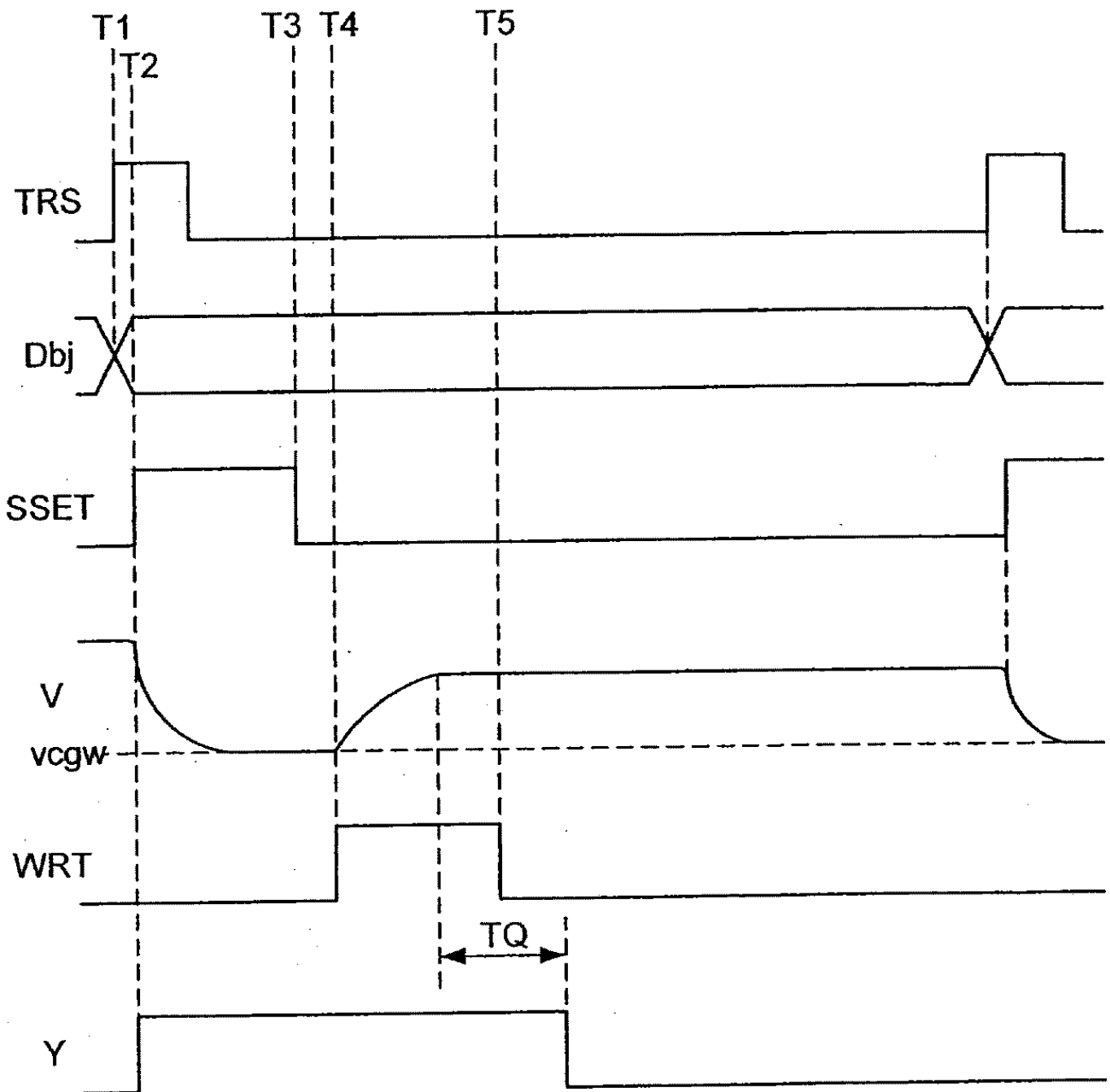


8b

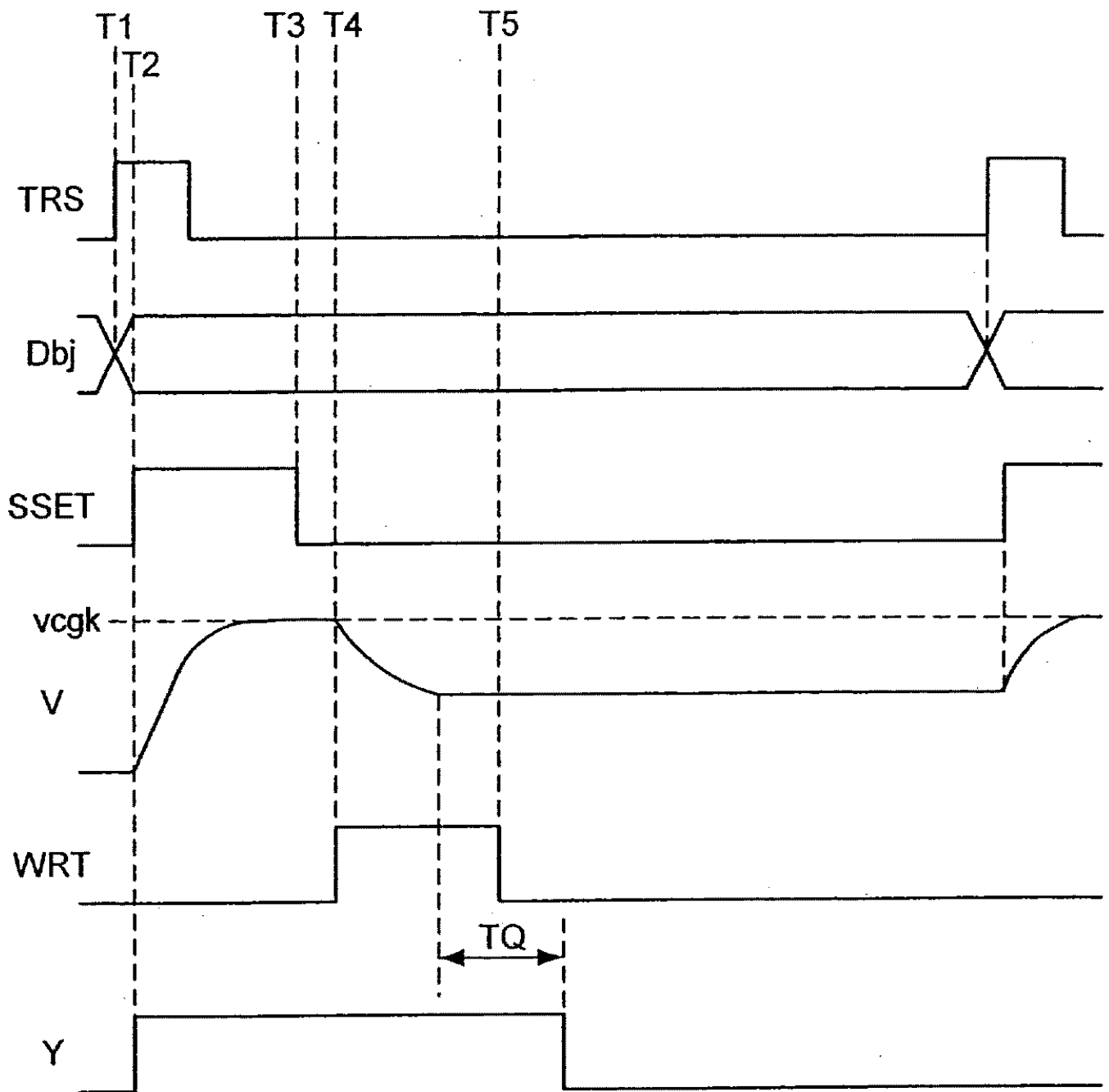
계조	DAC 용량	인가 전압 V
8	0	$vcgk - \{(7 * C0) / (7 * C0 + Cs)\} * (vcgk - vdak)$
9	1 * C0	$vcgk - \{(6 * C0) / (6 * C0 + Cs)\} * (vcgk - vdak)$
10	2 * C0	$vcgk - \{(5 * C0) / (5 * C0 + Cs)\} * (vcgk - vdak)$
11	3 * C0	$vcgk - \{(4 * C0) / (4 * C0 + Cs)\} * (vcgk - vdak)$
12	4 * C0	$vcgk - \{(3 * C0) / (3 * C0 + Cs)\} * (vcgk - vdak)$
13	5 * C0	$vcgk - \{(2 * C0) / (2 * C0 + Cs)\} * (vcgk - vdak)$
14	6 * C0	$vcgk - \{(1 * C0) / (1 * C0 + Cs)\} * (vcgk - vdak)$
15	7 * C0	vcgk

9

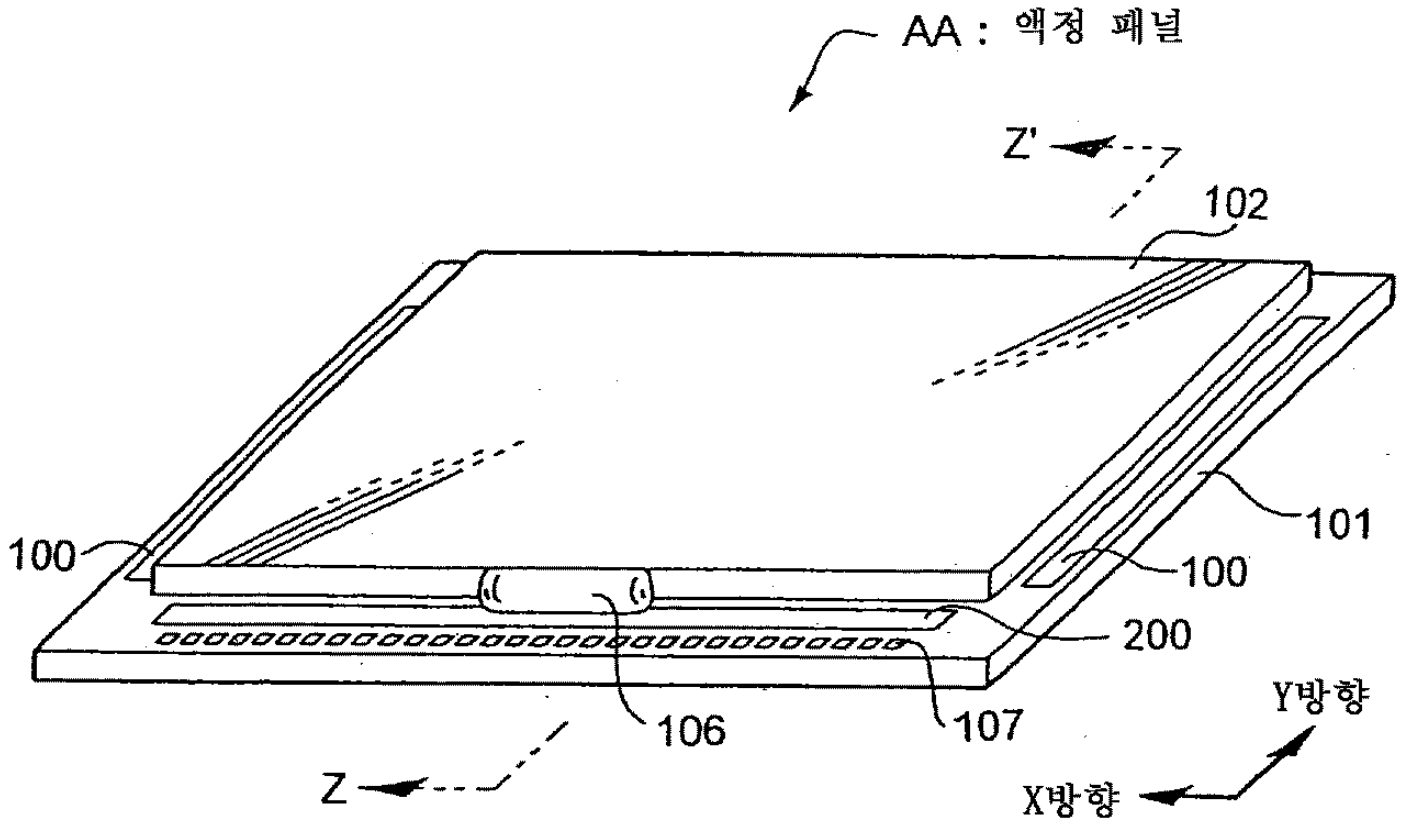




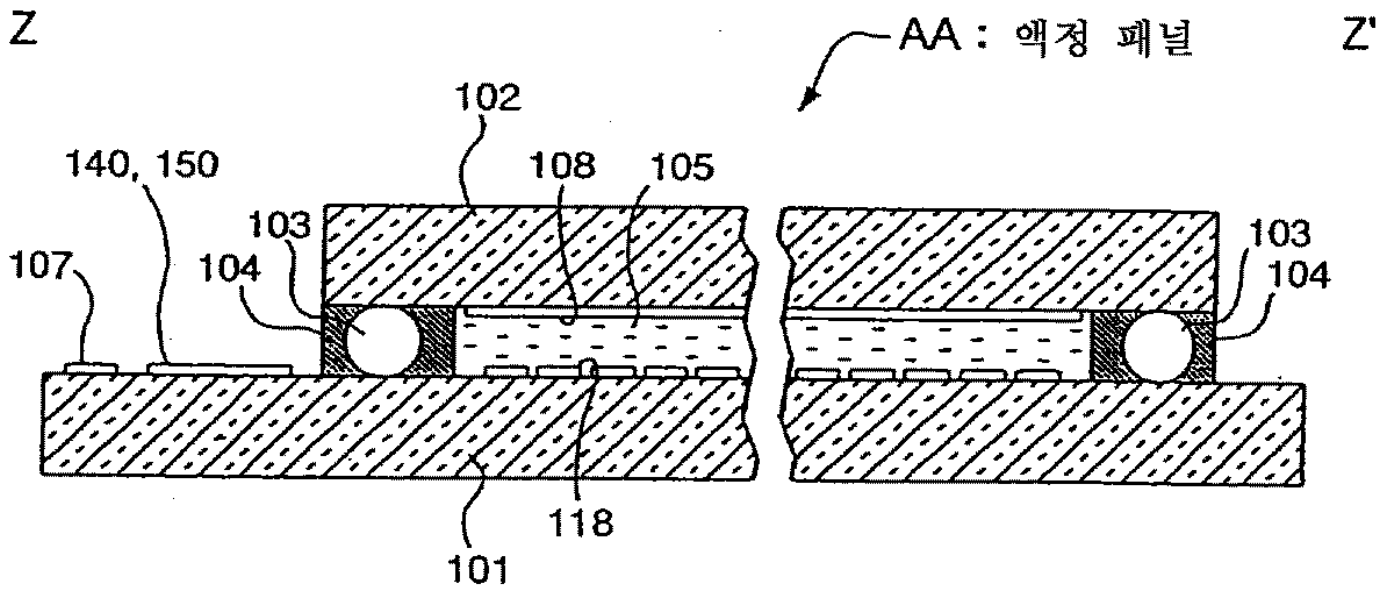
11

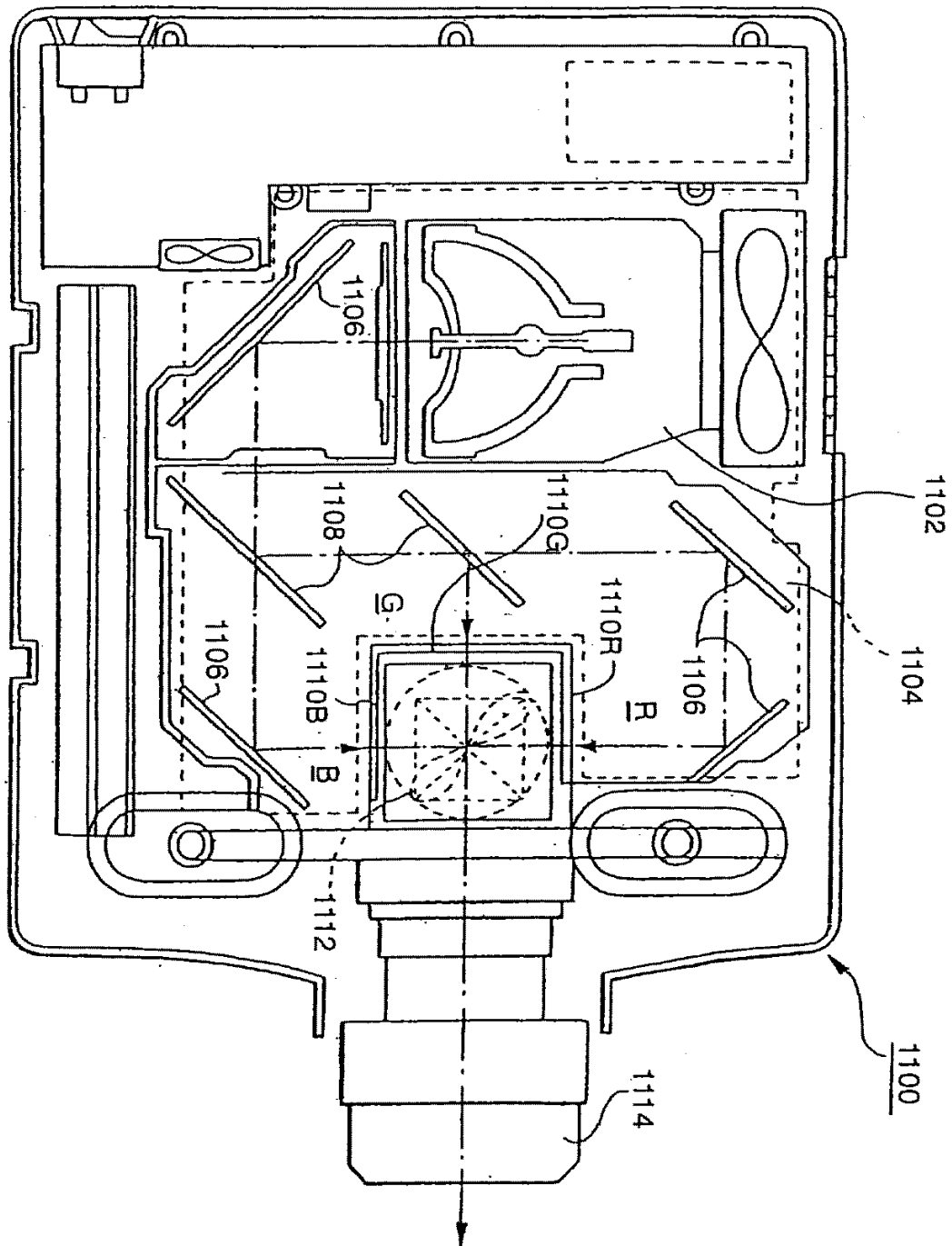


12

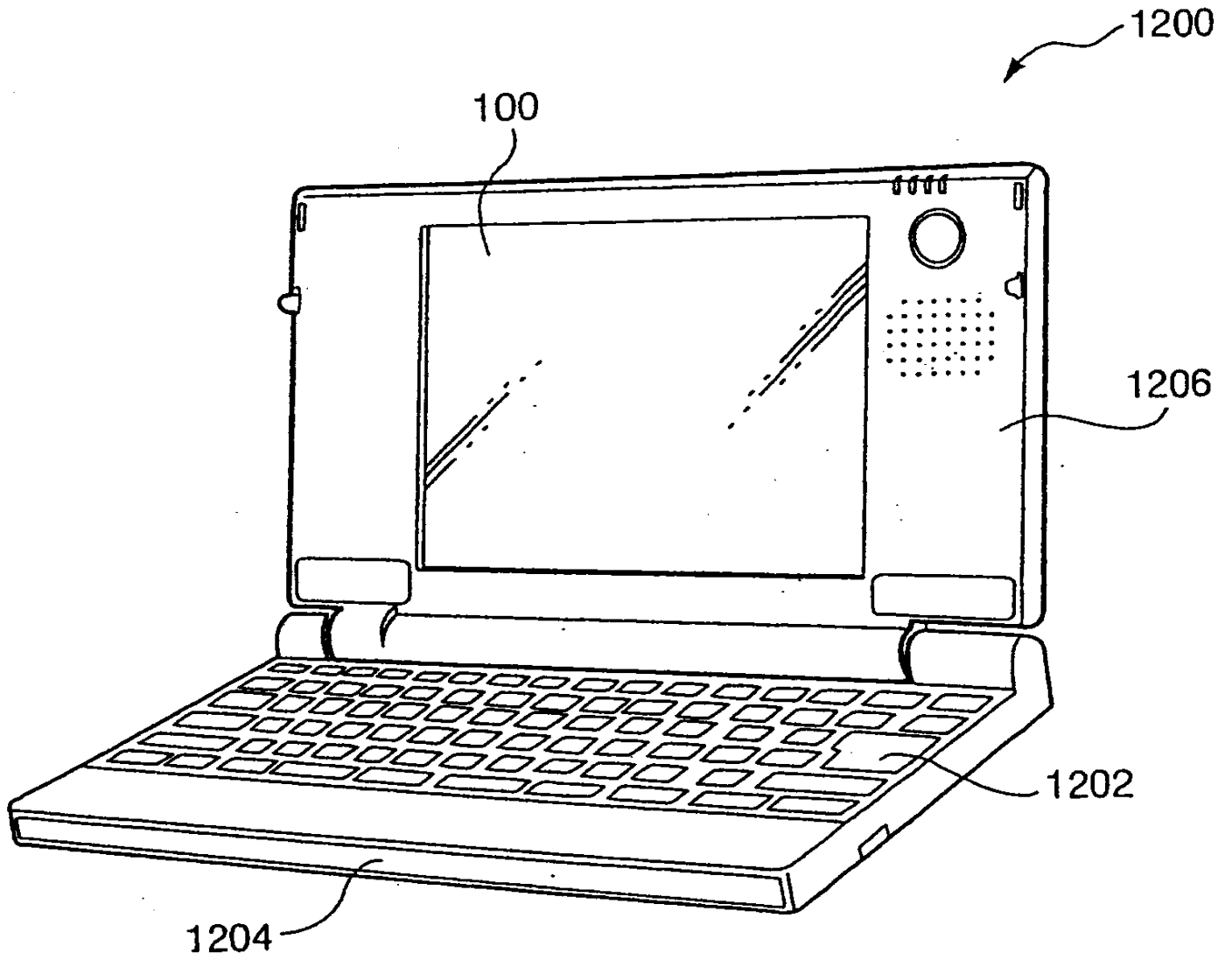


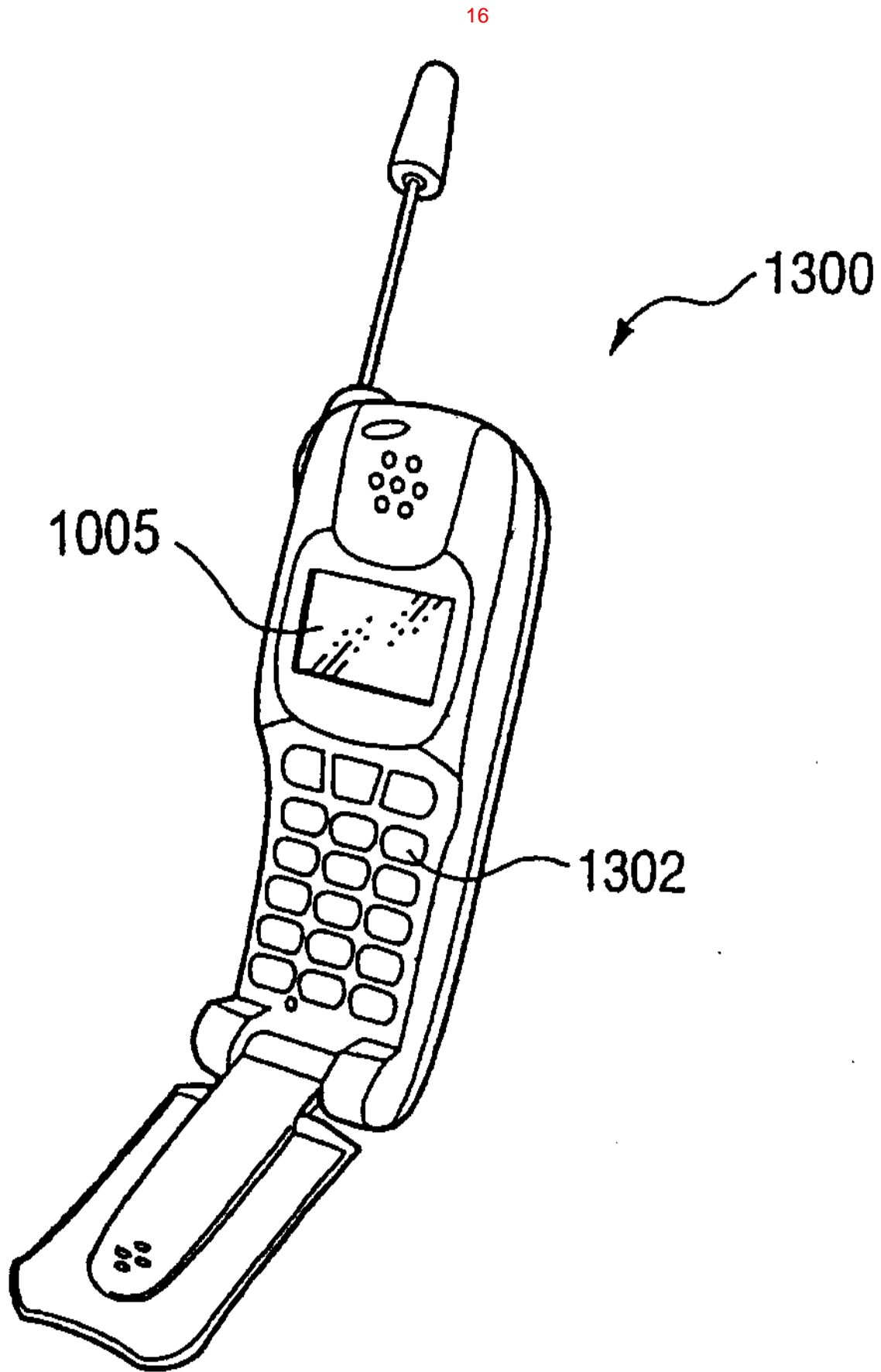
13



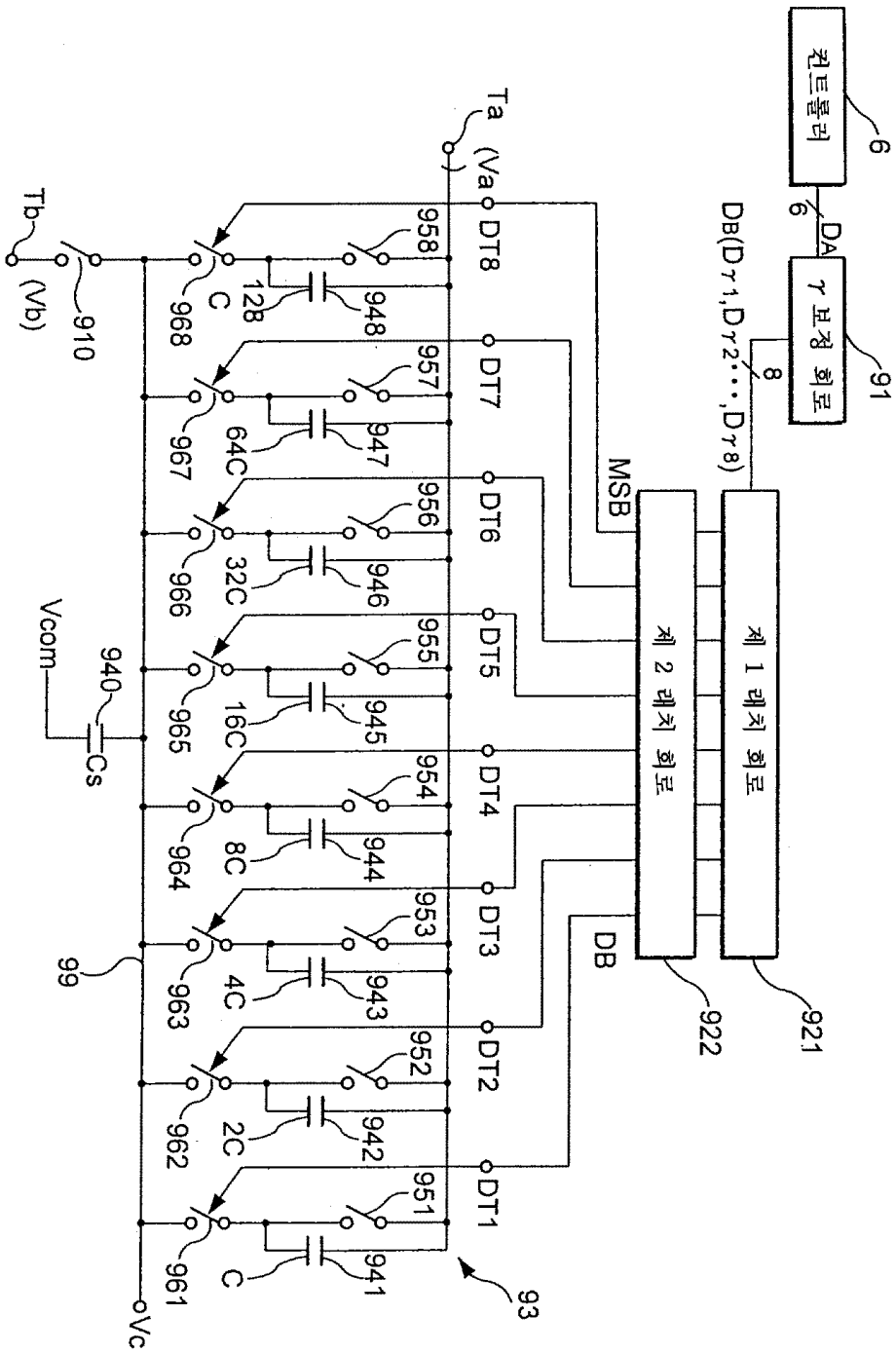


15





17



18

