



1 1 ,  
 2 2 ,  
 3 3 ,  
 4 4 ,  
 5 5 ,  
 6 6 ,  
 7 MT - CMOS ,  
 8 .

5 : p MOSFET( ) 6 : n MOSFET( )

11 : 12 :

14, 15 : p MOSFET( )

16, 17 : n MOSFET( )

20 :

21, 21<sub>1</sub> 21<sub>n</sub>: ( )

22, 22<sub>1</sub> 22<sub>n</sub>: ( )

23, 24, 23<sub>1</sub> 23<sub>n</sub>, 24<sub>1</sub> 24<sub>n</sub>: ( )

48 : ( 1 , 2 )

49 : ( 1 , 2 )

58<sub>1</sub> 58<sub>n</sub>, 59<sub>1</sub> 59<sub>n</sub>:

(LSI)

가

, LSI

MOSFET

가

MOSFET

가

가

7 ,  
Id CMOS)

7 - 212218

MT - CMOS(Multi - thresho

n MOSFET . p

MOSFET(1), (2)

(1), (2) (5) p

MOSFET , (3), (4) (6)

p

MOSFET(5)

, n MOSFET(3), (4)

n MOSFET(6)

(4)가 2 NAND

(11)

, p

MOSFET(5)

(12) 가

MOSFET(1)

(9)

CSB1

, n MOSFET(6) 가

(10)

(13)

CS1

2 NAND

(11)

CS1

CSB1

. p

MOSFET(5)

n MOSFET(6)

가

, 가

(9)

(12)

V<sub>DD</sub>

(11)

NAND

, 가

(10)

(

13) V<sub>GND</sub>

(11)

NAND

(12)

V<sub>DD</sub> 가

, MOS

FET(1) (4)

( )

(12)

V<sub>DD</sub> 가

(11)가

CS1

CSB1

, p

MOSFET(5)

n

MOSFET(6)

, 가

(9) 가

(10)

(12)

(13)

, p

MOSFET(5)

n

MOSFET

(6)

( )

MOSFET(1) (4)

, MOSFET

가

(11)가

, MOSFET(1)

(4) MOSFET(5), (6)

7

(11)가 2

NAND

, LSI

가

, 2 NAND

가

, 8 2

. , (14), (15) p MOSFET, (16), (17) n MOSFET , ( )  
) . (5) p MOSFET, (6) n MOSFET , ( )  
MOSFET(14) (17) (20)가 , (18), (19)가

CS1 CSB1 (20)가  
, p MOSFET (14), (15) n MOSFET(16),(17)  
, (18), (19)

, CS1 CSB1 가 , MOSFET  
(14) (17) MOSFET(5), (6) , (18), (  
19) (18)가 (19)가  
, MOSFET(14) (17) p MOSFET(15) n MOSFET(16)  
, p MOSFET(15) n MOSFET(16) 2  
(19)가 (18)가  
(18), (19) 가  
가

1 , , 1  
1 가

2

( 1)

1 1 (1), (2)  
p MOSFET, (5) p MOSFET, (3), (4) n MOSFET, (6) n MOSFET, (23), (24)  
, p MOSFET(1), (2) p MOSFET(5)  
, n MOSFET(3), (4) n MOSFET(6)  
( , 「 」 ). , MOSF

ET(1) (4)가, 2 NAND (11) , MOSFET(5), (6)  
 , p MOSFET(5) (12) 가 (9)  
 CSB1 , n MOSFET(6) 가 (10) (13) ,  
 CS1 .

, (14), (15) p MOSFET, (16), (17) n MOSFET , (20)  
 , (21), (22) MOSFET(14) (17) (23), (24)가  
 . MOSFET(14) (17) , (18), (19)가  
 , p MOSFET(14), (15) VC1 ( )  
 21) , n MOSFET(16), (17) VD1 (22)

(11) CS1 , CSB1  
 , p MOSFET(5) n MOSFET(6) , 가  
 (9) (12)  $V_{DD}$  , 가 (10) (13)  $V_{GND}$   
 , 2 NAND (11) NAND , MOSFE  
 T(1) (4) ( ) (12)

(11) CS1 , CSB1  
 , p MOSFET(5) n MOSFET(6) , 가 (9) 가  
 (10) (12) (13) , p MOSFET(5) n MOS  
 FET(6) ( ) MOSFET(1) (4) ,

, (20) CS2가 ,  
 (21) p MOSFET(14), (15) VC1  $V_{DD}$  ( )  
 22) n MOSFET(16), (17) VD1  $V_{GND}$  ,  
 (20) , (20) p MOSFET(14), (15) n  
 MOSFET(16), (17) , (18), (19)  
 , (20)가  
 (21) VC1  $V_{DD}$  , (22) CS2가 ,  
 , p MOSFET(14), (15) VC1 VD1  $V_{GND}$   
 , n MOSFET(16), (17) (12) VD1  
 (12) 가 , (20) (12)  
 (13) .

, 1 , (20) MOSFET  
 , 가 . , (11) (20) MOSFET  
 . 가 . , 1  
 가 CS1 CS2 , 가 가

( 2)

2 2 ,  
 (20) 1 ,  
 2 (11)가 MOSFET(5), (6) MOSF  
 ET(1) (4)

2 (11) CS1 V<sub>GND</sub>  
 CSB1 V<sub>DD</sub> MOSFET  
 MOSFET 1 가  
 MOSFET(5), (6)

( 3)

3 3 (L  
 SI) , (11<sub>1</sub>) (11<sub>m</sub>)  
 CSB1<sub>1</sub> CSB1<sub>m</sub> p MOSFET(5<sub>1</sub>) (5<sub>m</sub>) CS1<sub>1</sub> CS1<sub>m</sub> n MOSFET(6  
 1) (6<sub>m</sub>) , (20<sub>1</sub>) (20<sub>n</sub>) , CS2<sub>1</sub> CS2<sub>n</sub>  
 (21<sub>1</sub>) (21<sub>n</sub>), (22<sub>1</sub>) (22<sub>n</sub>) ( ) (23<sub>1</sub>) (23<sub>n</sub>), (24<sub>1</sub>) (24<sub>n</sub>)  
 2 2

(11<sub>1</sub>) (11<sub>m</sub>) , p MOSFET(5<sub>1</sub>) (5<sub>m</sub>) , CSB1<sub>1</sub>  
 CSB1<sub>m</sub> 2 p MOSFET(5) , n MOSFET(6<sub>1</sub>) (6<sub>m</sub>)  
 CS1<sub>1</sub> CS1<sub>m</sub> 2 n MOSFET 가 ( 21<sub>1</sub>) (21<sub>n</sub>) 1 (21) 가 CS2<sub>1</sub> CS2<sub>n</sub>  
 (20<sub>1</sub>) (20<sub>n</sub>) p MOSFET (23<sub>1</sub>) (23<sub>n</sub>) (2  
 0<sub>1</sub>) (20<sub>n</sub>) (22<sub>1</sub>) (22<sub>n</sub>) 1 (22) 가  
 CS2<sub>1</sub> CS2<sub>n</sub> (20<sub>1</sub>) (20<sub>n</sub>) n MOSFET (23<sub>1</sub>) (23  
 n) , CSB1<sub>1</sub> CSB1<sub>m</sub>, CS1<sub>1</sub> CS1<sub>m</sub> CS2<sub>1</sub> CS2<sub>n</sub>

(11<sub>1</sub>) (11<sub>m</sub>) CSB1<sub>1</sub> CSB1<sub>m</sub>, CS1<sub>1</sub> CS1<sub>m</sub>  
 가 (11<sub>1</sub>) (11<sub>m</sub>) , (20<sub>1</sub>) (20<sub>n</sub>)  
 CS2<sub>1</sub> CS2<sub>n</sub> (20<sub>1</sub>) (20<sub>n</sub>)

3

MOSFET

가

2

, 1

( 4)

4 CS1<sub>1</sub> CS1<sub>m</sub> 4 CSB1<sub>1</sub> CSB1<sub>m</sub>, (48)  
 (50<sub>1</sub>) (50<sub>m</sub>) ( 1 ), (49) ( 1 ),  
 BE<sub>1</sub> BE<sub>m</sub>, (51<sub>1</sub>) (51<sub>m</sub>) BE<sub>1</sub> BE<sub>m</sub>  
 (50<sub>1</sub>) (50<sub>m</sub>) (51<sub>1</sub>) (51<sub>m</sub>)가 (48)  
 V<sub>H</sub>, V<sub>L</sub> V<sub>DD</sub> V<sub>GND</sub>  
 (49) (50<sub>1</sub>) (50<sub>m</sub>) ND1<sub>1</sub>  
 ND2<sub>1</sub>, ..., ND1<sub>m</sub> ND2<sub>m</sub> ND1<sub>1</sub> ND1<sub>m</sub>  
 ND3<sub>1</sub> ND4<sub>1</sub>, ..., ND3<sub>m</sub> ND4<sub>m</sub> ND2<sub>1</sub> ND2<sub>m</sub>  
 CSB1<sub>1</sub> CS1<sub>1</sub>, ..., CSB1<sub>m</sub> CS1<sub>m</sub> BE<sub>1</sub> BE<sub>m</sub> (51<sub>1</sub>) (51<sub>m</sub>)  
 3 3

3 m (11<sub>1</sub>) BE<sub>1</sub>가  
 (50<sub>1</sub>) (51<sub>1</sub>) CSB1<sub>1</sub> CS1<sub>1</sub> V<sub>GND</sub> V<sub>DD</sub>  
 CSB1<sub>1</sub> (50<sub>1</sub>) V<sub>DD</sub> BE<sub>1</sub> ND1<sub>1</sub> V<sub>H</sub>  
 CS1<sub>1</sub> (51<sub>1</sub>) ND4<sub>1</sub> V<sub>L</sub>  
 (50<sub>m</sub>), (51<sub>m</sub>) 가 (11<sub>1</sub>) BE<sub>m</sub> 가

4 가  
 3 가 4

( 5)

5 (21<sub>1</sub>) (21<sub>n</sub>) (MUX), (59<sub>1</sub>) (59<sub>n</sub>) (58<sub>1</sub>) (58<sub>n</sub>)  
 1) (22<sub>n</sub>) (MUX) 4 (22)

3 (20<sub>1</sub>) CS2<sub>1</sub> (58)  
 1) V<sub>DD</sub> 가 (23<sub>1</sub>) (59<sub>1</sub>)  
 V<sub>GND</sub> 가 (58<sub>1</sub>) (24<sub>1</sub>) V<sub>H</sub>가 CS2<sub>1</sub> (23<sub>1</sub>)  
 (59<sub>1</sub>) V<sub>L</sub> (24<sub>1</sub>)

3

5  
 가 5 ( 2 )(48) ( 2 )(49) 4  
 5 3  
 가

( 6)

6 6 (62) MOSR  
 AM (63) (DRAM) 가  
 SRAM 3 가 MO  
 가  $V_H, V_L$  (63) 가 (48) (49)  
 가 6 , DRAM 가

1 가 1 1  
 가 1 가

가 2 가  
 1 가

(57)

1.  
 1 1  
 2 2

2 , 1 ,

1 2 , 2

,

3 1 , 1

3 1 1 3 , 2 1

3 1 2 1

2.

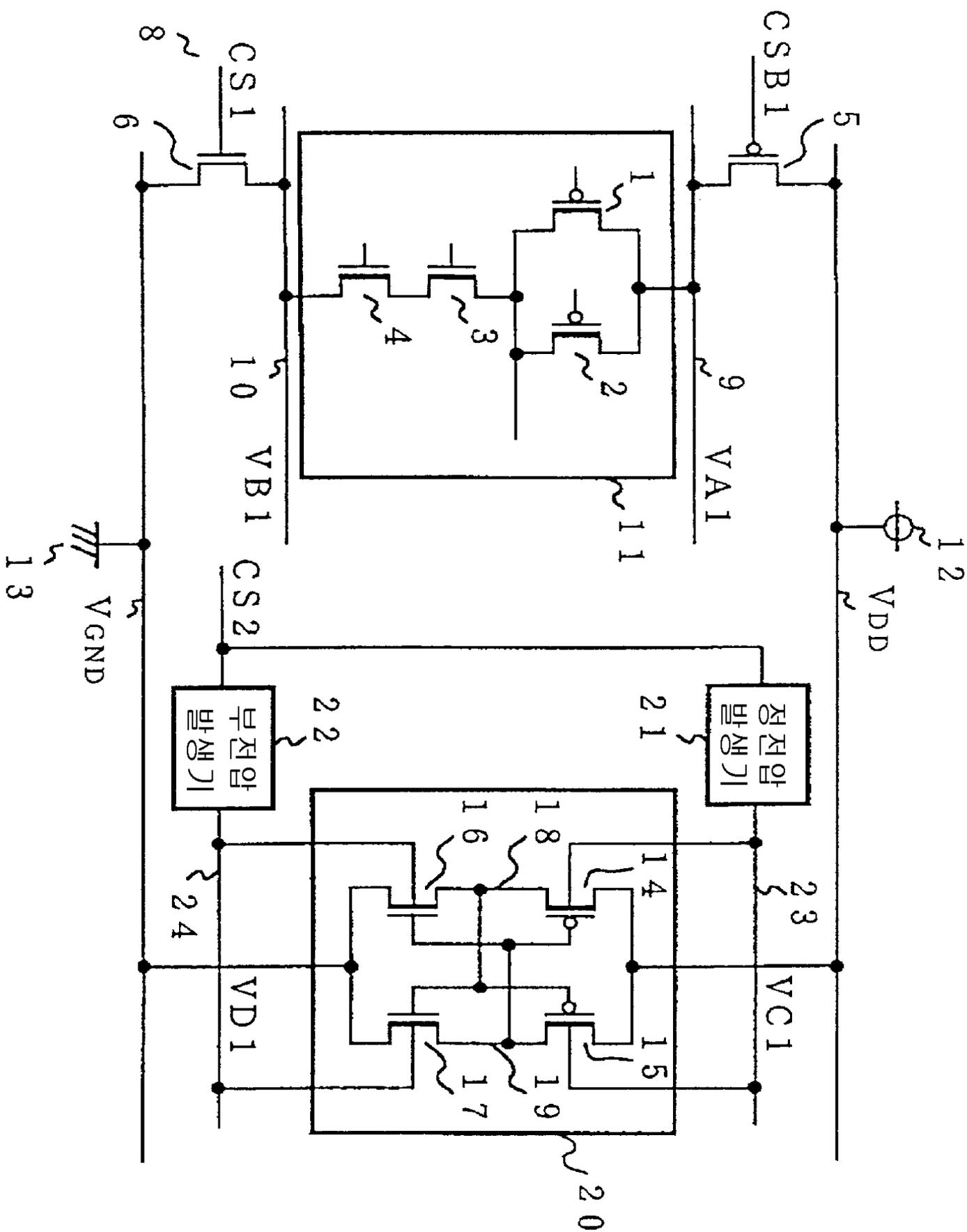
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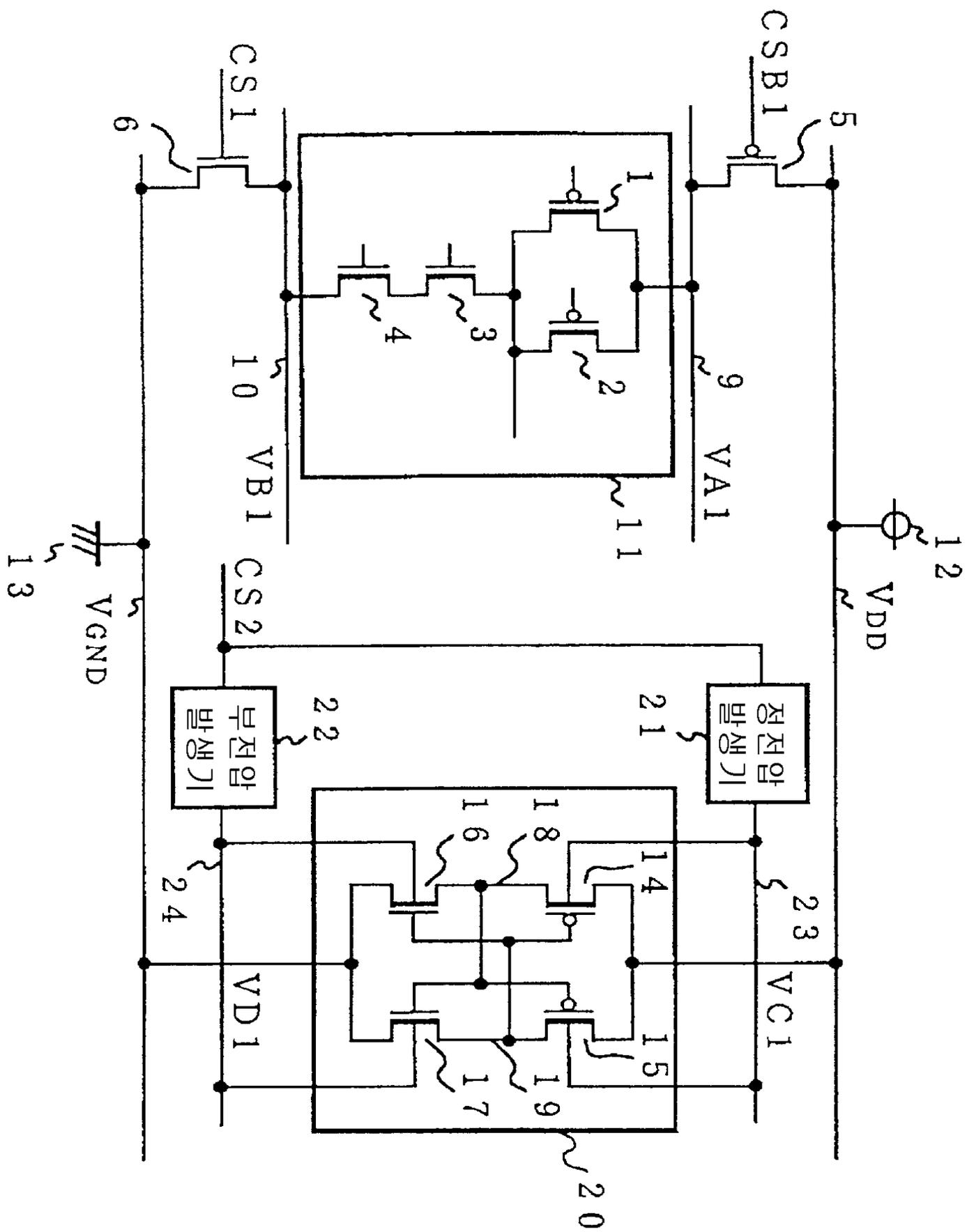
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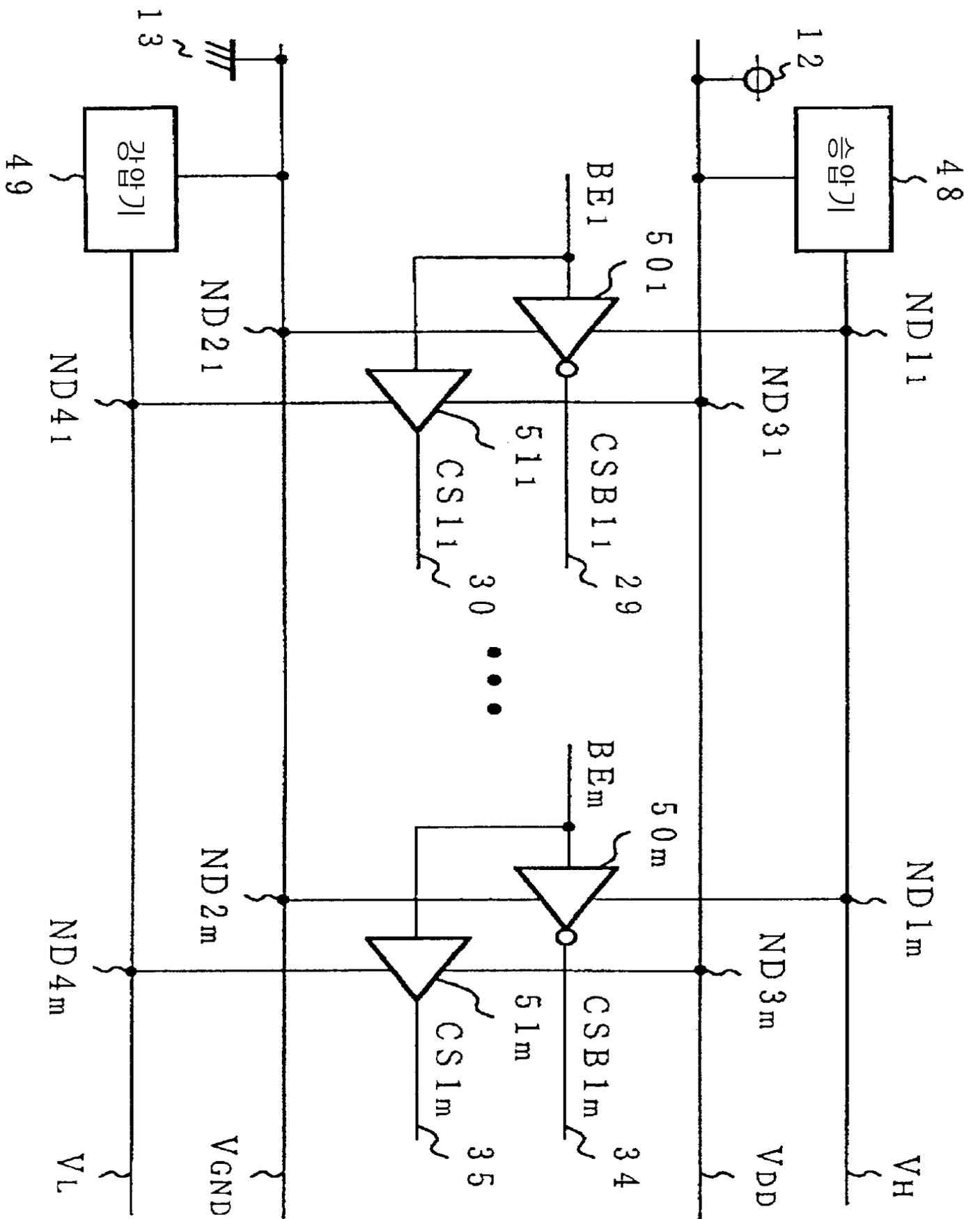
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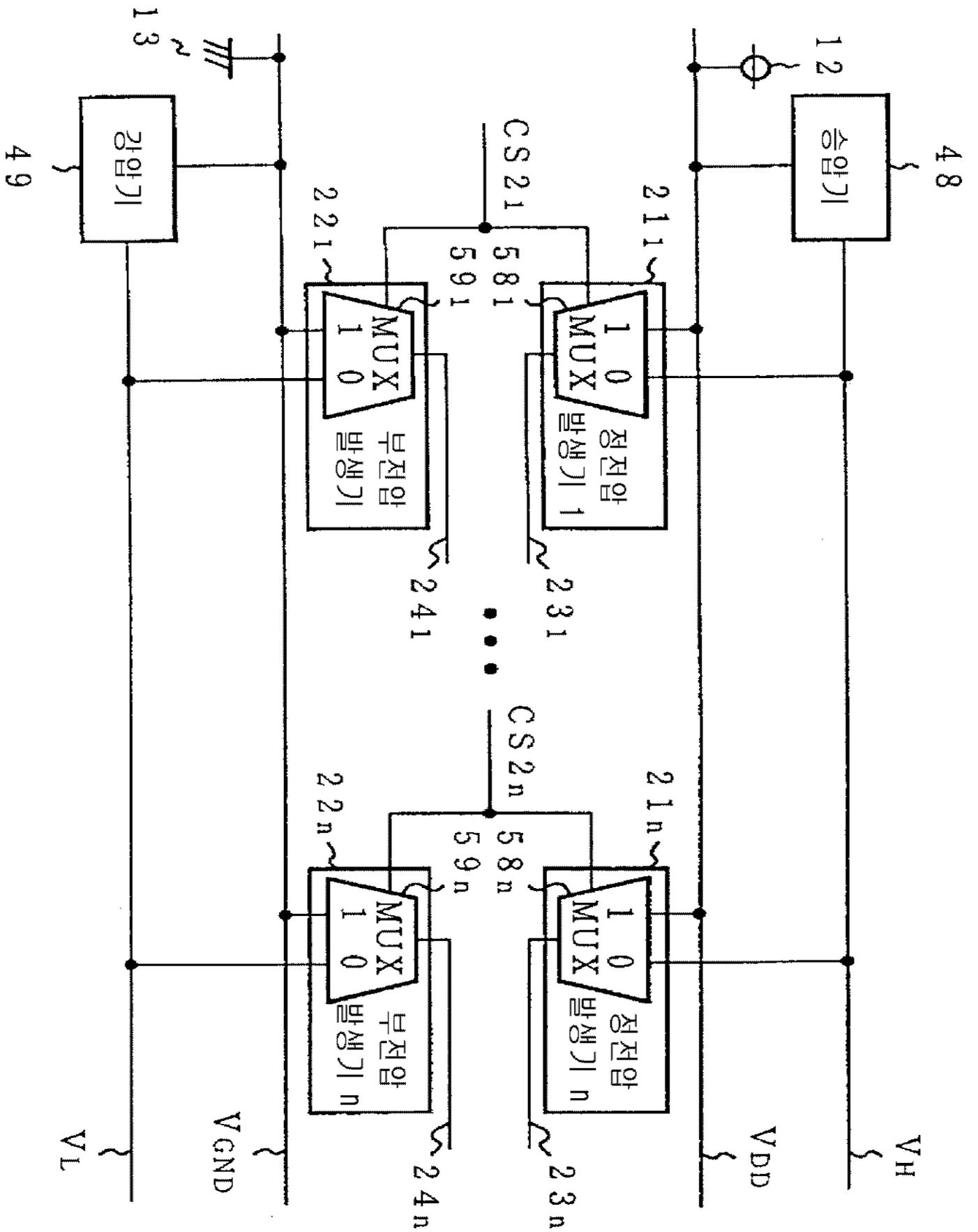


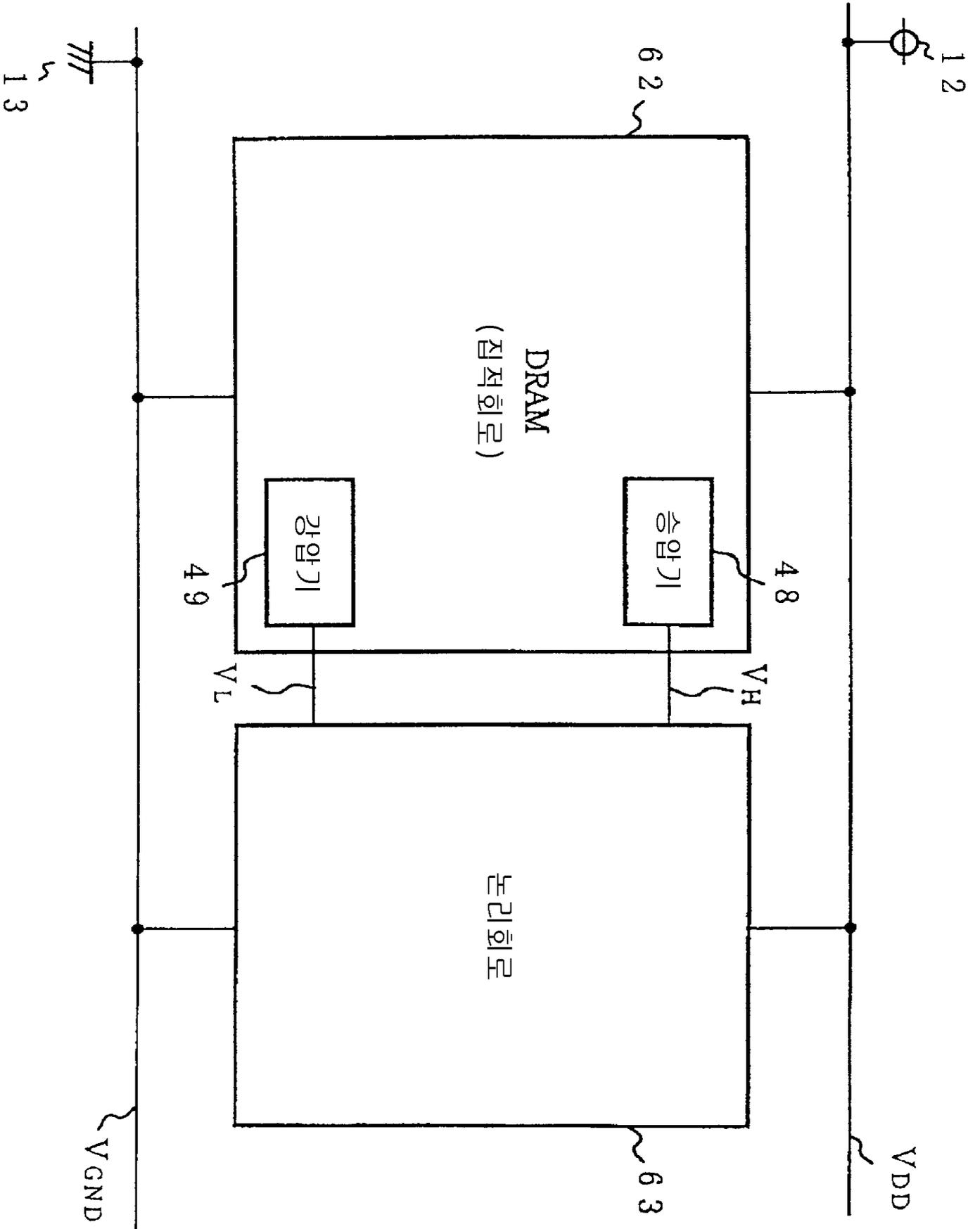


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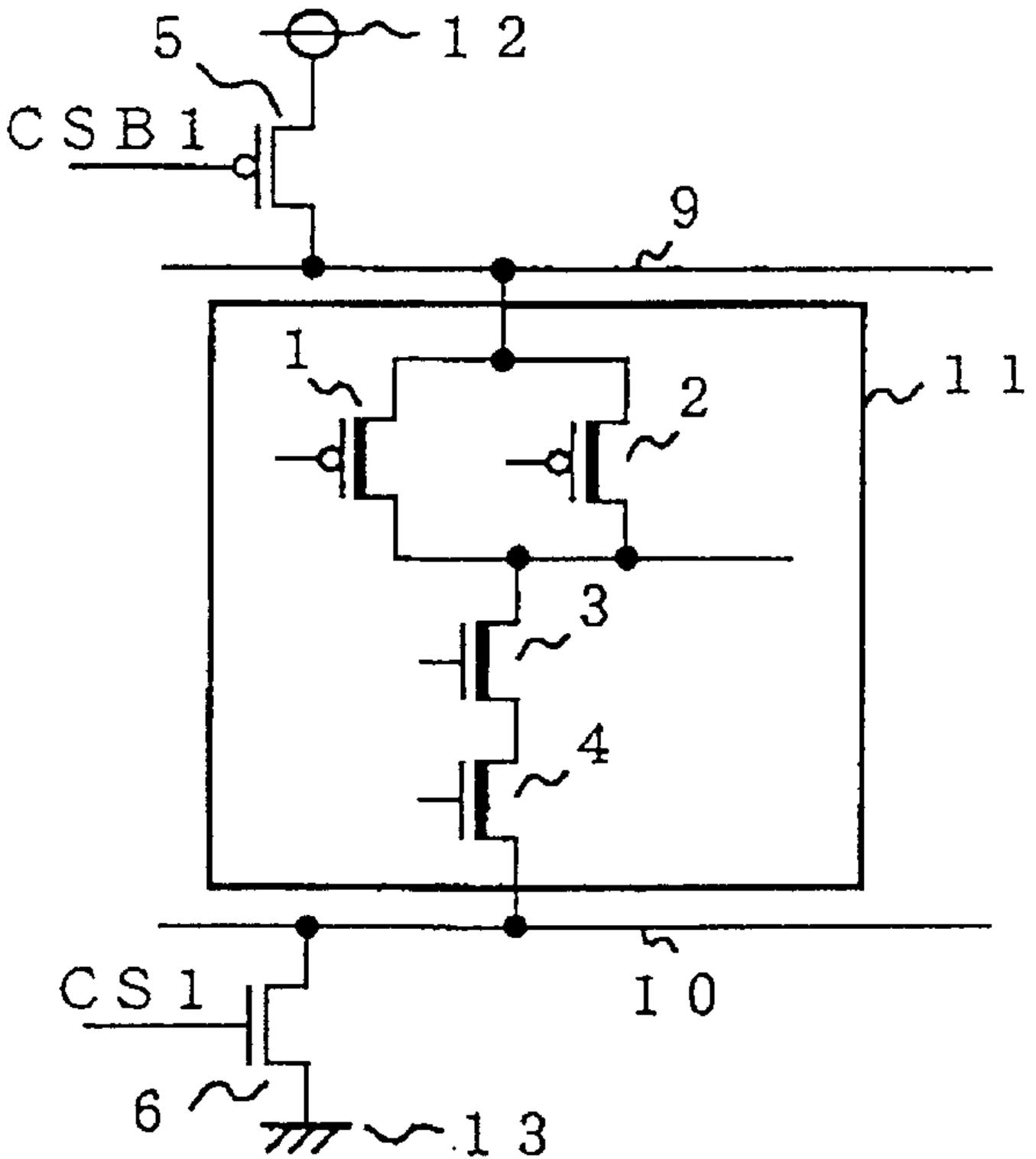


5





7



8

