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(73) 가 가
,
2 2 3

(72) 2 2 - 3 가 가
2 2 - 3 가 가

(74)
:

(54)

ESD SOI .
(+) 30 가 가 PMOS Q21
Q22 , (-) 30 가 가 NMOS
Q11 Q12 . , 30 가 가 , NMOS Q11, Q1
2 PMOS Q21, Q22 .

1		1			.
2		1			.
3			NMOS		.
4	3		NMOS		.
5		2		1	.
6	2	2			.
7	2	3			.
8		3		1	.
9	3	2			.
10		4			.
11	10		4		.
12	5				.
13	5				.
14		5		1	.
15	5	2			.
16	5	3			.
17	5	4			.
18	SOI				.
19			NMOS		.
MOS				20	N
21		MOS			.
22	,		NMOS		.
23	22				.
24			NMOS		.
25			NMOS	26	NMOS

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34 31

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35 31

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36 32

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5,5',5n,5p,16,17 : 6,6',6A,6n :

7, 7', 25 : 8,8',26 :

9A 9C : 10A 10C :

14 : 21 23,51,52,54,55 : p

53 : n 53,27A 27D :

30 : 31 :

32 : () 33 : ()

45 : 46 :

47 : D11,D12 :

Q11,Q12 : NMOS Q21, Q22 : PMOS

, SOI

MOS

,

MOS , PN
SOI MOS SOI (Silicon - on - insulator) ,
가 . , MOS
SOI , 가 .
, MOS .

31 SOI
30
36(, 「 」)
가
()32
, PMOS Q31 NMOS Q32
, PMOS Q31 NMOS Q32
33 , PMOS Q31 NMOS
Q32 36 , PMOS Q31 NMOS

30 가 , MOS Q31, Q32 ,
32 33 31 . , 36 37
, 37 31 , 31
.

32, 30, 38, 39, 가, 36, 30, 32, 33, 38, 39, 가, 32, 39, 가, 33, 38, 39, 32, 33.

30 가 , 38, 39
32, 33 31 . , 36 31
37 , 31 .

33 PMOS Q33 NMOS Q34가 82 , PMOS Q33 NMOS 83 .

33 , 31, 32 가 82()
 , 83()
 , 가 , 「
 가 .

34 31 MOS , 35 34 A - A
 1 2 SOI 3
 11 2 18A, 18B , 10¹⁷/cm³ (NMOS
 3 , PMOS n) 6, 6', 6 10²⁰/cm³ (NMOS
 n , PMOS p) 7 8, 6' 10²⁰/cm³
 7' 8' , 3 6, 6' 7, 7' 8,
 8' 4, 4' 5, 5' 18A 5,
 6, 7 8 NMOS Q32가 , 18B 5',
 6', 7' 8' PMOS Q31가 .

11 18A, 18B 3 , 7, 7' ,
 8, 8' 11 12A 12D가 , 12A, 12B 7, 7'
 14 , 12C 8 13
 12D 8' 15 . , 13
 33 , 14 30' , 15 32 ,
 30' 32 36 . , 34 11

34 , 30 PMOS Q31, NMOS Q32 ,
 36 , Q31, Q32 31
 37 . , 36 Q31, Q32
 , 37 .

PMOS Q31 5' 40 32 , NMOS Q32
 5 41 33 ,

31, 34 35 30 ,
 36 Q31, Q32 가 36 36 ,
 Q31, Q32 32 33 . 37 ,
 36 가
 , (+) 가 NMOS Q32 7 6
 33 . PMOS Q31가 32
 가 , (-) 가 PMOS , NMOS Q31 7'
 6' 32 , NMOS Q32가
 30 가 PMOS Q31 NMOS Q32 ,
 36, 37 31 .

36 32 ,
 1 2 3 3 11 2
 19A, 19B , 10¹⁷/cm³ p 9B, 10¹⁷/cm³ n
 10B , 9B 9A 10A ,
 9C , 10C . , 9 A 9C 10²⁰
 /cm³ 10B p , 10A 10C 10²⁰/cm³ n

, 3 9B 9A 10A 4 5
 , 10B 9C 10C 47 5' .
 9A, 9B 10A 39가 , 9C, 10B 10C
 38가 .

35 가 . , 6, 7 8 ,
 9B, 9A 10A , 6', 7' 8'
 10B, 9C 10C . , 5, 5' 9A, 9C
 10A, 10C , .

, 32 36 39 9B 10A
 , 38 9C 10 B 3
 1 35 가 .

SOI , 2 ,
 (, 3 , thermal r
 unaway) . , 가 , 가
 2 , ESD(Electro Static Dischar
 ge :) .

SOI , 3 , 3
 4 , ESD 4 , ,
 2 가 3 () .
 , ESD SOI .

1 , SOI 가 , ,
 ,
 PN 가 가 가 , 1 가 ,
 가 가 2 , 2 가 , 가
 가 , 가 가 1 가 , PN 가
 가 3 , 2 가 가
 가 4 .

2 , SOI ,
 ,
 , MOS
 , MOS MOS
 1 , MOS 2 ,

[illegible] $\langle \langle \quad \quad 1 \rangle \rangle$

< >

18 SOI 2 3 . , 1 2 ,
2 3 . , 1, 2 3
SOI . , 3 4
4 5 . 4 3 6 , 6
3 7 8 .

SOI, (1/10)², 가, SOI 가 .

19 NMOS Q1 IN(SV) 19 가 , 20
가 NMOS , 19 P1 P5

20 NMOS Q1 (+) SV 가 ,
(P1). P 1 NMOS Q1 가
, NMOS Q1
(P2). , NMOS Q1
(P3), NMOS Q1 (溶融) 가 ,
(P4). , NM
OS Q1 가 (+) (P5), NMOS Q1
, 21 , 5(6)
10 , 가 .

, SOI NMOS , 22
, () IN W NMOS 가 , 22
, 23 가 6 NMOS T1 T6가 IN
, NMOS T1 51, 61 71
, NMOS T2 52, 61 72 , NMOS T3
62 53, 62 72 , NMOS T4 54,
62 73 , NMOS T 5 55, 63 73
, NMOS T6 56, 63 74 ,
30 가 .

, SOI 6 NMOS T1 T6 IN
, IN, 가 , 6 NMOS T1 T6 가
, NMOS T1 T6 , 가
, 가 ,
가 .

25 NMOS Q2 IN(SV) 25 가 24
가 NMOS .

25 , 24 NMOS . 25
, 26 IN NMOS
T11 T16 , SV 가 , SV
가 가 .

26 NMOS , 가
, 가
, 가
가 , ESD
28 28 27
가 D1 SV 가
,
가 , NMOS
2 3), (가), (MOS
ESD 가
ESD 가
30 30 29
가 D1 SV가 가
가 , ESD
30 가 가
, ESD
< 1 >
1 1 1
, 30 36 () 37
, 37 31
, 32, 33 NMOS Q11 Q12가 , PMOS Q21
Q22 , NMOS Q11 가 33 32 ,
가 36 (37) . NMOS Q12 33
, NMOS Q11 . PMOS Q21 32
, 36 , PMOS Q22 32 ,
36 , NMOS Q11, Q12 PMOS
Q21, Q22 , 23 26 MOS
, (+) 30 가 , PMOS Q21 Q22
가 30 가 , 30 가
PMOS Q21 Q22 , 32 33

, (-) 30 가 , NMOS Q11 Q12 30 가 NMOS
Q11 Q12 , 32 33 .

, 30 가 , NMOS
Q11, Q12 PMOS Q21, Q22 가 , MO
S Q11, Q12, Q21 Q22 32 33 , 36 37
31 .
MOS Q11, Q12 PMOS Q21, Q22 가 .

OS , 1 1 , (+) , (-) 가 , NM
Q11, Q12 PMOS Q21, Q22 ,
가 , ESD .

, NMOS Q11, Q12 PMOS Q21, Q22 30 가
가 , .

3 PF N MOS 2 , 31 3
2 CMOS , PMOS NMOS CMOS ,
. I 1

< 2 >

, 2 2 , NMOS Q12 PMOS Q21 D11
D12 , D11 36 33 ,
D12 81 , 32 .

2 , (+) 30 가 , 30
D12 PMOS Q22 , 32 33 .

, (-) 30 가 , 30 NMOS
Q11 D11 , 32 33 .

, 1 2 , (+) (-) 가 , NMOS
Q11, D11, D12, PMOS Q22 ,
가 , ESD .

, NMOS Q11, D11, D12 PMOS Q22 30 가
가 , .

2 , MOS 1 , 1
가 .

< < 2 > >

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3 IN(SV) NMOS Q3 C1 C1, C2
IN C2 33 , NMOS Q3 ESD
가 IEEE IRPS 1992 p . 141 .

Q3 IN가 , NMOS Q3 C1, C2 NMOS
가

, (+) SV 가 , NMOS Q3 가
가 가 , 4
가
3 NMOS Q3 IN, 33
가 , ESD
SOI 2 .

< 1 >

5 2 1
, 1 2 SOI 3
11 2 20A, 20B . 20A , $10^{17}/\text{cm}^3$ p 3
6, 6 $10^{20}/\text{cm}^3$ n 7 8
20B 10^{15} $10^{17}/\text{cm}^3$ p 21, p 21 $10^{20}/\text{cm}^3$
p 22, 23 .

, 20A 3 6, 7 8 4
5 . , 20B 3 p 21 p 22, 23
4' 5' .

, 11 20A, 20B 3 , 7 ,
8 , p 22 11 12A, 12C 12E가 , 12A
7 14 , 12C 8
13 , 12E p 22 28
, 13 33 , 14 50 , 28
33 . , 50 34 IN IN

, 20A 4, 5, 6, 7 8 NMOS
Q3가 , 4 5 7
() CA, 4 5 8
() CB가 .

, 20B MOS 4', 5', p 21 23 NMOS Q3 가
 21 p 22, 23 CC가 4 CA 3 5' p
 C1 , CB CC C2 .

, 2 1 SOI MOS 가
 , 50 IN 가 , CA 가
 . CA 33, 5 CB CC 가
 , NMOS Q3 가
 , IN가 (,) N
 MOS Q3 NMOS Q3가 가 , IN가 (+)
 Q3가 가 , NMOS Q3 Q3 IN NMOS 가
 , NMOS Q3 IN NMOS 가 .

, 2 1 , ESD

< 2 >

6 2 2
 , 1 2 SOI 3
 11 2 20A, 20B . 20A 5 1 가 .

20B , $10^{16} / \text{cm}^3$ p 24, 24 $10^{20} / \text{cm}^3$ p
 25, 26 , 20 B 3 24,
 25 26 4' 5' .

, 11 20A, 20B 3 , 7 ,
 8 26 11 12A, 12C 12F가 , 12A
 7 14 , 12C 8
 13 , 12F 26 29 . ,
 13 33 , 14 50 , 29 33
 .

, 20A 5, 6, 7 8 NMOS Q3가
 , 4 5 7 CA, 4
 5 8 CB가 .

, 20B 4', 5', p 21, 25 26 NMOS Q3
 가 NMOS 4' 5' 25
 2 CD가 , CA 3 C1 ,
 CB CD C2 . CD 24
 5' 24 $10^{16} / \text{cm}^3$,
 5' 24 .

, 2 2 가 IN가 SOI MOS 가 , I
N가 (+) 가 , 1 .

< 3 >

7 2 3 . 3 11
, 1 2 20A, 20B . 20A 5 1 가 .
20B , 10^{15} $10^{17}/\text{cm}^3$ p p 52, 54, 52 $10^{20}/\text{cm}^3$
 $10^{20}/\text{cm}^3$ n n p 51 n 53, p 54 1
n 53 p 52, 54 . 20B 3 p 52 p
54 43 44 16 17 .

, 11 20A, 20B 3 , 7 ,
8 , p 51 , n 53 p 55 11
12A, 12C, 12G, 12H 12 I가 , 12A 7 14
, 12C 8 13 , 12G p
51 15A , 12H n 53
15B가 , 12 I p 55 15C
15A 15C , 13 33 , 14 50 ,
33 , 15B 20A 5 .

, 20A , 1 2 , 5, 6, 7 8
NMOS Q3가 , 4 5 7
CA, 4 5 8 CB가 .

, 20B 43, 16, p 51, 52 n 53 NMOS
Q3 가 1 MOS 44, 17, p
54, 55 n 53 NMOS Q3 가 2 MOS
.

, 20B p 52 n 53 n 153 p 54
CE()가 . , CA 3 C1 , CB
CE C2 .

, 2 3 SOI MOS
, 1 2 가 IN가 가 가 ,
IN가 (+) 가 , 1 .

3 . 1 2 가 MOS Q3 5
, 3 5, 3
3 CE ,
33 NMOS Q3 5 Q3 5 , 가
NMOS Q3 5 , 가

< < 3 > >

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MOS ESD 가 MOS 20 , MOS
 , 가 가
 , 30
 , EDS .

MOS
 3 .

< 1 >

8 4 1 가 SOI
 MOS 2 SOI 3 . 11 45,
 46 10²⁰ /cm³ n 45 , 10¹⁶ /cm³ p 7 6A,
 46 , 10¹⁷ /cm³ p 7' 6' 8 10²⁰ /cm³ n
 8' .
 , 45 3 6A, 7 8
 4 5p . 46 3 6', 7'
 8' 5n . 5p p
 , 5n n .

11 45, 46 3
 7, 7' , 8, 8' 11 12A, 12A', 12C, 12C'가
 12A, 12A' 7, 7' 14, 14' , 12C, 12C'
 8, 8' 13,13' .

45 5p, 6A, 7 8 NMOS
 (NMOS)가 , 46 5n, 6A,
 7 8 NMOS (NMOS)가 .

6A 6' 가 . 5p n
 6A 가 가 ,
 6A 5n 가 p 46 NMOS
 .

, 4 1 45 NMOS , 46
 NMOS , ESD
 , 46 NMOS
 ,
 < 2 >
 9 4 2 SOI
 MOS
 2 SOI 3 , 1
 46 6n $10^{20}/\text{cm}^3$ n 45 , $10^{17}/\text{cm}^3$ n 11 45, 6n,
 7 8
 , 45 3 6n , 7 8
 4 p 5p , 8 1
 가
 , 가 45 5p, 6n, 7 8 NMOS
 가 , 46 5n, 6n, 7 8 NMOS
 가
 45 NMOS 6n 7 8
 , 1 가 , 5n p
 가 가 p , 46 NM
 OS , 가 , 45 NMOS
 , 가
 , 4 2 45 NMOS , 46
 NMOS , ESD
 , 46 NMOS
 ,
 < >
 , 3 1 2 NMOS
 PMOS 가
 , 1 2 , 45 NMOS 5p p
 , 46 NMOS 5n n ,
 ESD
 , 1 2 1 NMOS Q11, Q12 PMOS Q21, Q22 ,
 3 1 2 MOS , ESD 가
 .
 < < 4 > >

< >

SOI MOS , MOS
36 4,4' 5, 5' 가

4, 4' ESD
, SOI
4

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10 11 4
. , 11 BB 10 . , 10 11 , 32 3
8, 39, 2 D 11, D 12

10 11 , 1
3 11 2 19A, 19B , $10^{17}/\text{cm}^3$ p 3
9B, $10^{17}/\text{cm}^3$ n 10B가 9B
9A 10A가 , 10B 9C 10C
9A 9C $10^{20}/\text{cm}^3$ p , 10A 10C
 $10^{20}/\text{cm}^3$ n , 9A, 9B 10A 39가
, 9C, 10B 10C 38가
, 10A, 9C, 9A 10C 27A 27D
가

27A 27D 9A 9C 10A 10C , 9
A, 9C 10A, 10C . , 46
45
12A 12D , 12A 12D 10A, 9C,
9A 10C

, 11 19A, 19B 3 , 27A 27D
11 12A 12D가 , 12A, 12B 27A, 27B
14 , 12C 27C
13 , 12D 27D 15
13 33 , 14 50 , 15 32
, , 50 32 36 , IN
, 11 11

4 , 32 36 가 (+)
가 , 39 9B 10A , 33
38가 , 32
가 38 9C 10B

32 , 39가 33 .

4 ESD , 36 ESD 가 .

9A, 9C 10A, 10 13 15 27A 27D , .

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2 1 2 D11, D12 , 4 MOS , ESD .

< < 5> >

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SOI MOS (가 , 12) , 5 3 47(, 7, 8 가) , 12 C - C 13 , 2 47(3) 5 .

47 47 47 , 47 47 4 47 , 47 5 , 4 5 , ESD .

SOI 3 가 MOS 5 .

< 1 >

14 5 MOS 1 2 가 「日」 7 , 2 , 5 7, 8 , 12A 13 , 68 14 , 12C 8 58 , 14 5 2 1 20A NMOS .

7 5 1 , 5 47 , ESD , 4

< 2 >

15 5 MOS 2 .

가 「日」, 2
 n 53, p 55, 12G n 53
 15 A, 12H p 55 15B
 15, 7 2 3 20B
 17 가

47, 5 2, 17 47, ESD

< 3 >

16 5 MOS 3
 7, 5 7 「□」
 12A 7 5 47 8
 8 13, 68 14 5 12C
 58 16 5 2 1
 20A NMOS

7, 5 3, 5 47, 4
 5, ESD

< 4 >

17 5 MOS 4
 53, p 55, 17 「□」
 12H p 55 n 53 47 n
 7 55 2 3 20B 15B 17 15A
 17 가

47, 5 4, 17 47, ESD

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, 1 2 1 NMOS Q11, Q12 PMOS Q21, Q22
 5 1 3 MOS ESD

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2 5, NMOS,

PMOS 가 , 32 PMOS , 33 NMOS
 , 32 MOS
 가 , MOS , 32 NMOS ,
 33 PMOS .
 MOS ,
 가 .
 , 1 ,
 가 , 가 가 , 1 2
 가 가 PN 가 1 4 가 , 가 .
 , 1 가 가 , 1 3
 가 , 2 가
 가 , 2 4 가
 .
 , 가 , ESD 2
 , 1 4 가 1 PN , 가 가 가
 , 가 4 , 가
 .
 2 , MOS 1 2
 , 2 가 가
 MOS 가 , 1 2 MOS
 가 가 , 1 .
 , 1 2 가 , MOS
 , ESD .
 3 , MOS MOS
 가 , ESD MOS
 ,
 4 , SOI 1 2
 1 3 4 2 .
 1 4 ESD , ESD
 , 1 4 1 4 1 3
 , 1 3 .
 5 , MOS , ESD
 가 .

(57)

1.

[illegible]

2.

The diagram illustrates a network structure with nodes and edges. The nodes are labeled with 'SOI', '가', 'MOS', and numbers '1', '2', '3'. The edges are represented by lines connecting the nodes. The diagram is organized into several layers, with 'SOI' at the top left and '가' at the top right. The middle section contains multiple 'MOS' nodes and numbered nodes. The bottom section shows a more complex arrangement of nodes and edges, including '가' and 'MOS' labels.

3.

SOI , , MOS ,
 MOS MOS 가

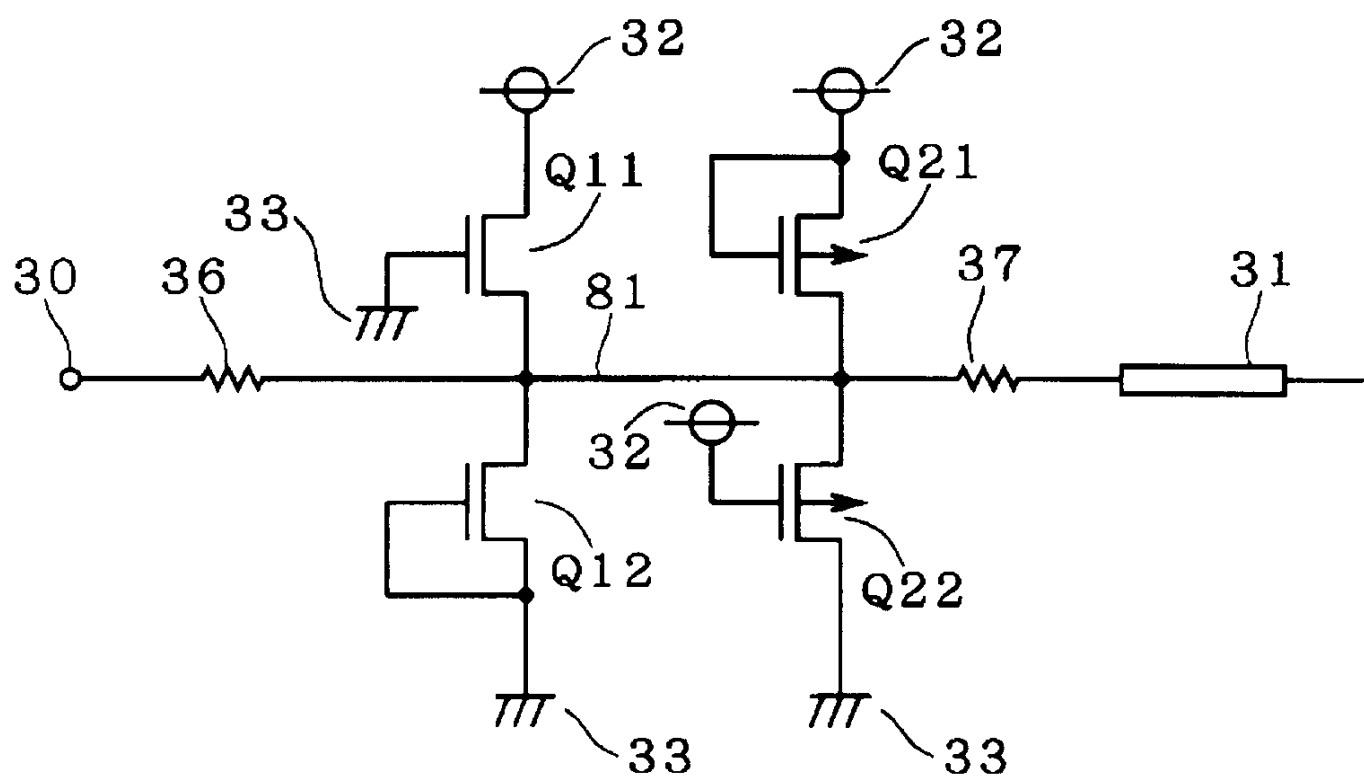
4.

SOI , 1 2 가
 ,
 ,
 1 1 ,
 1 2 2 ,
 1 2 1 3 ,
 3 2 4 , 1 4
 1 4 ,
 1 4 ,
 1 1 ,
 2 3
 2 ,
 4 3
 ,
 1 2 가 1 가 , 3 4
 2 가

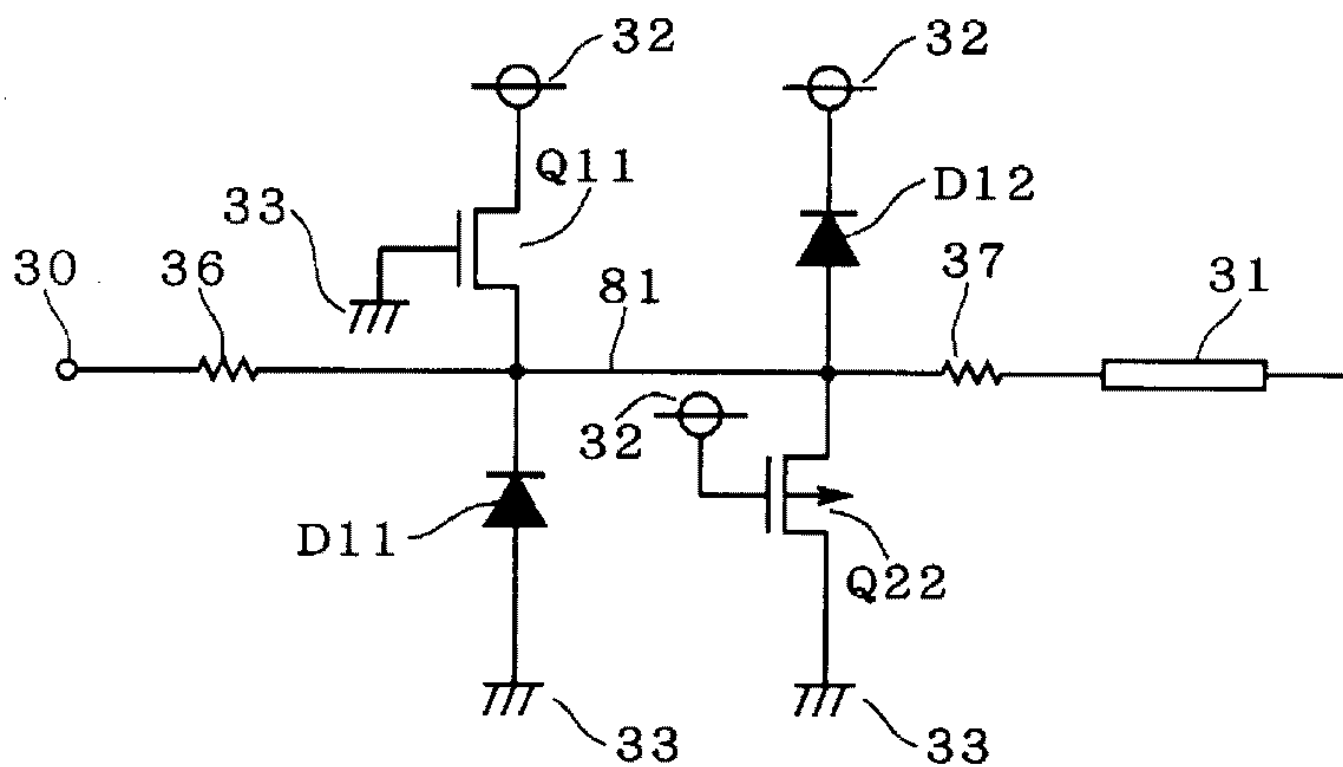
5.

SOI MOS 가
 ,
 MOS ,
 .

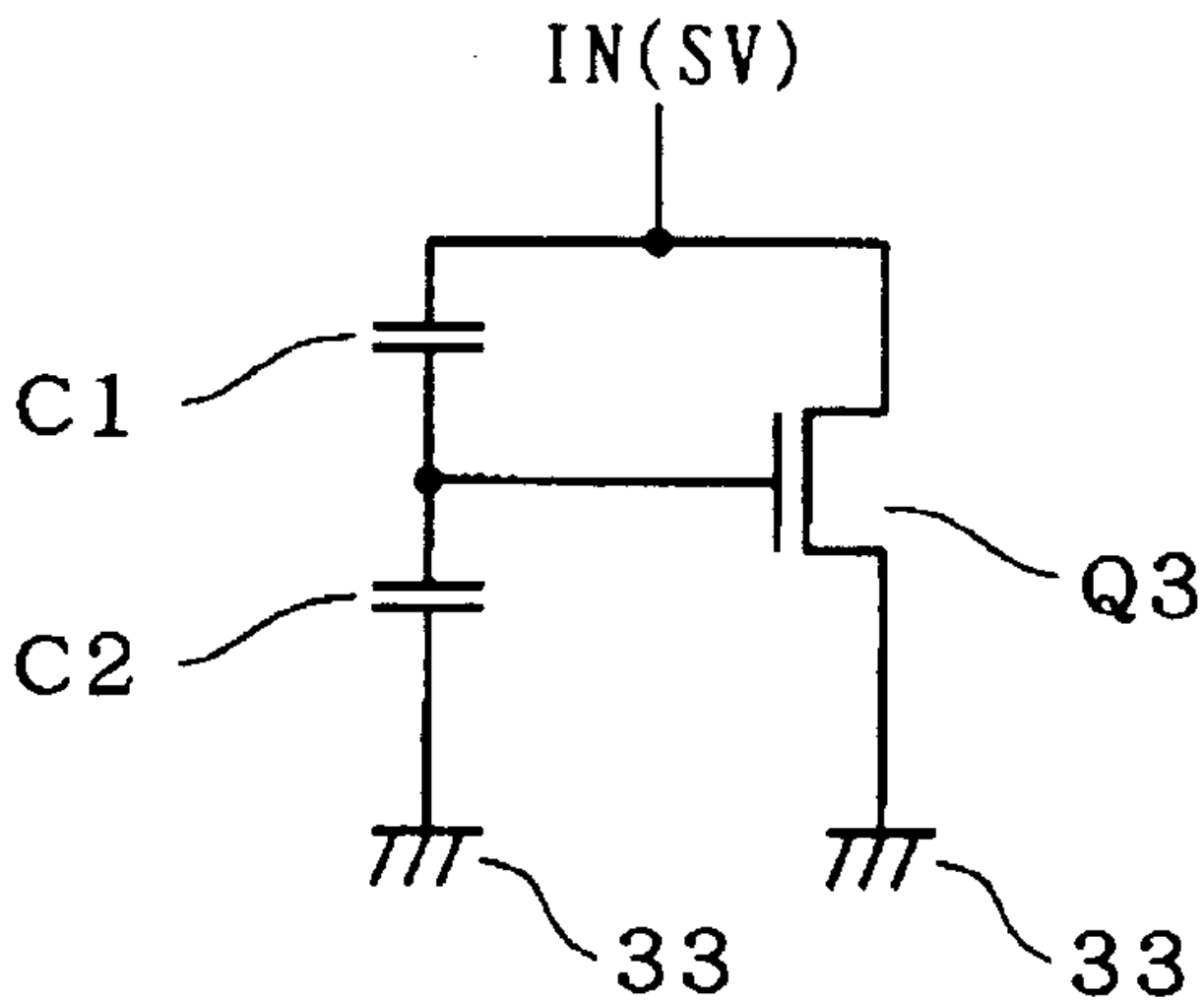
1



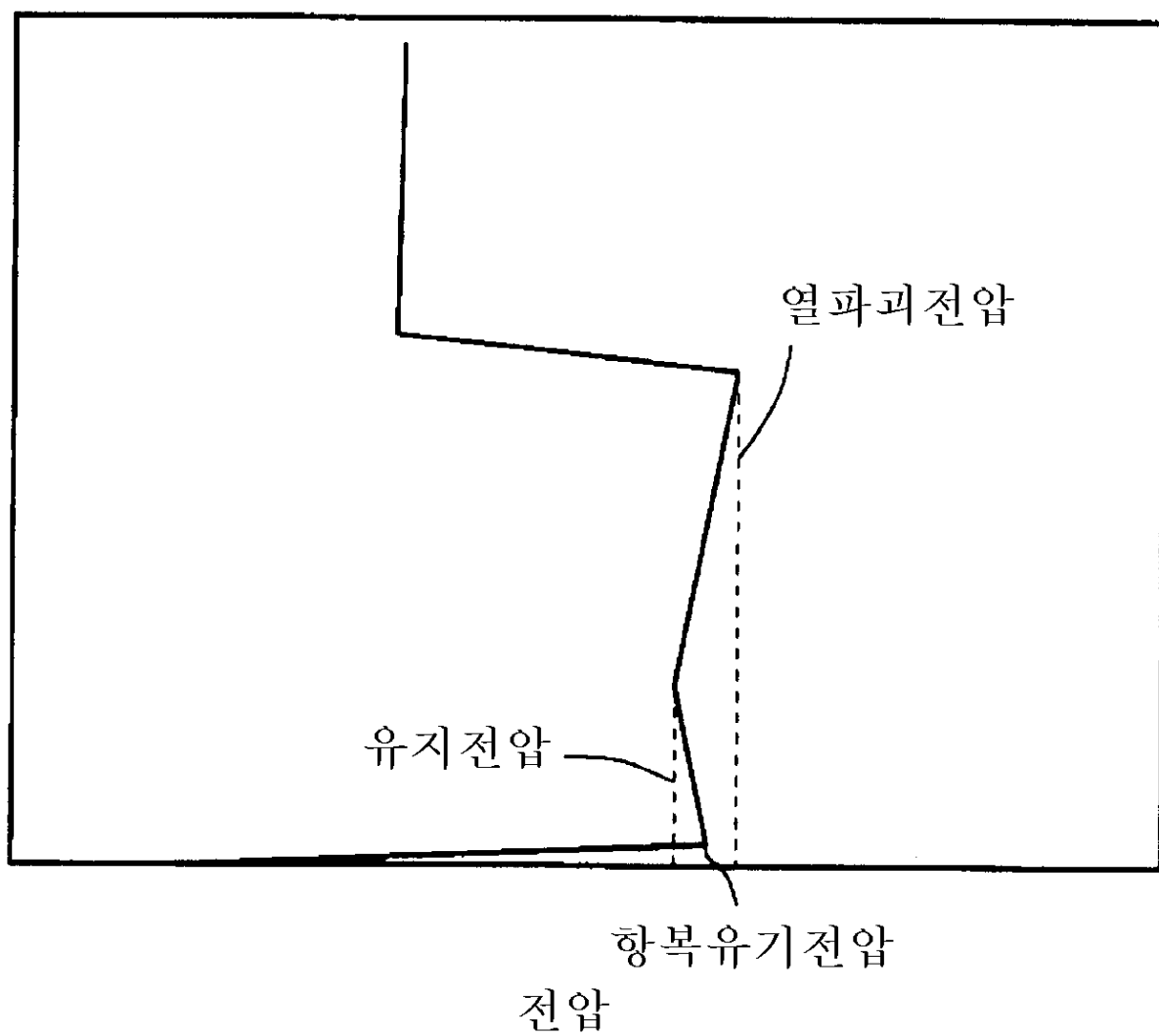
2



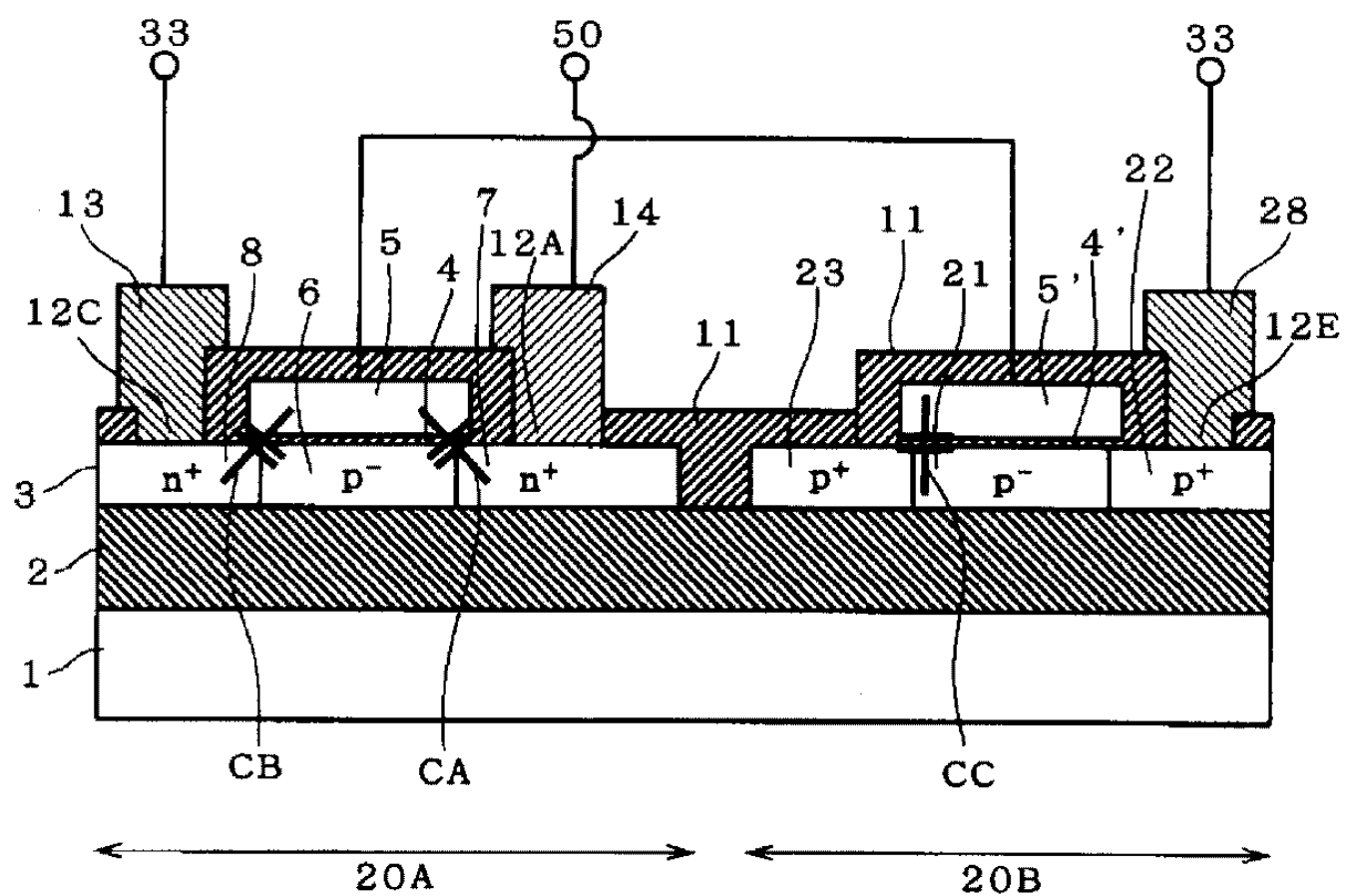
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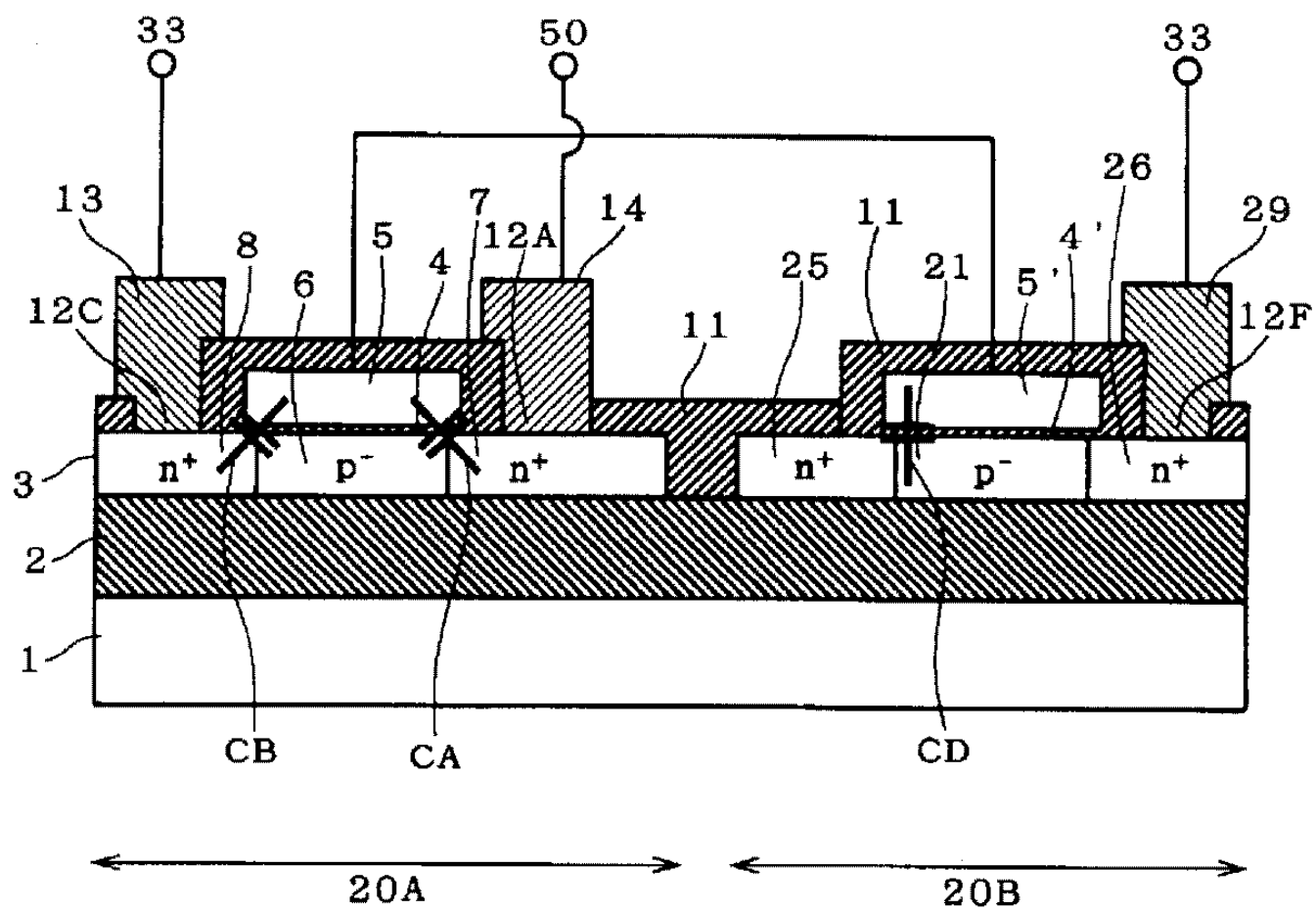
전류



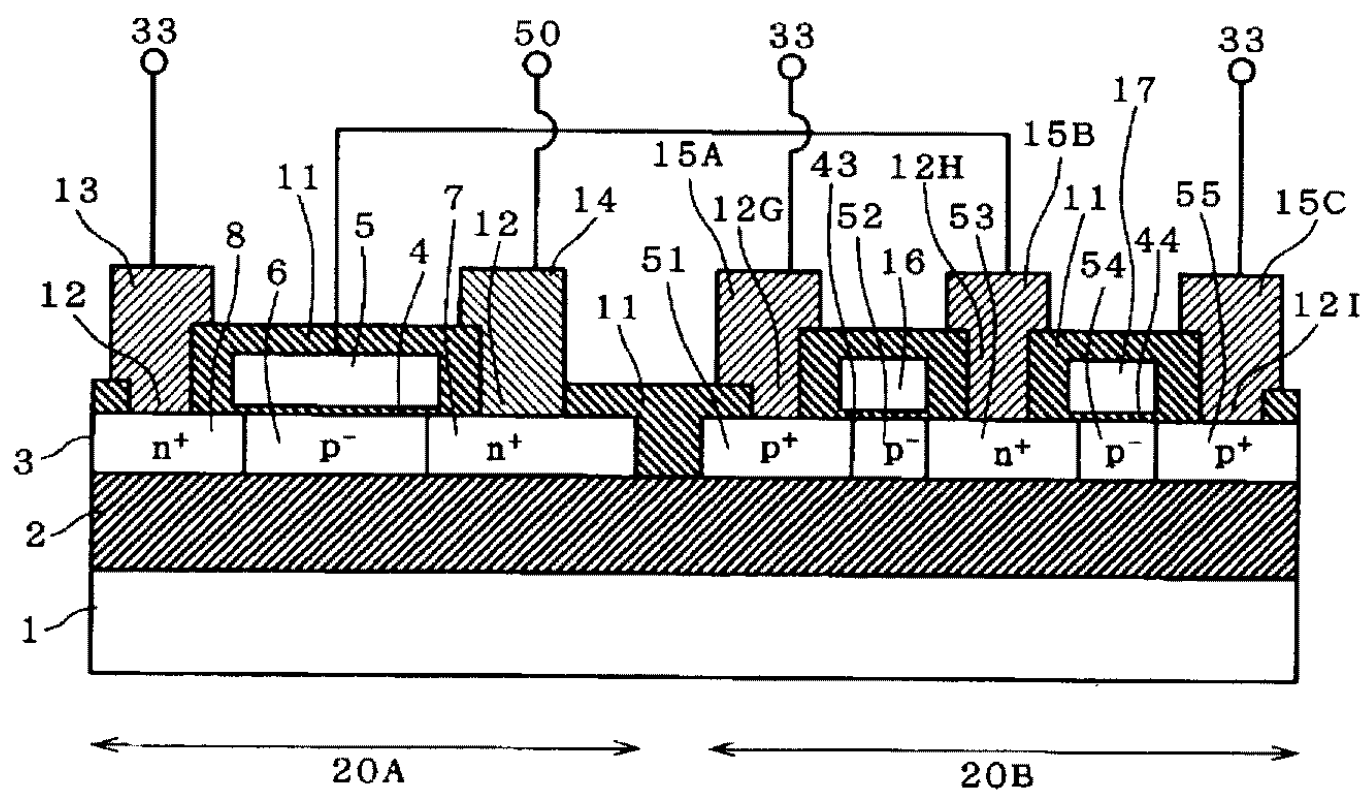
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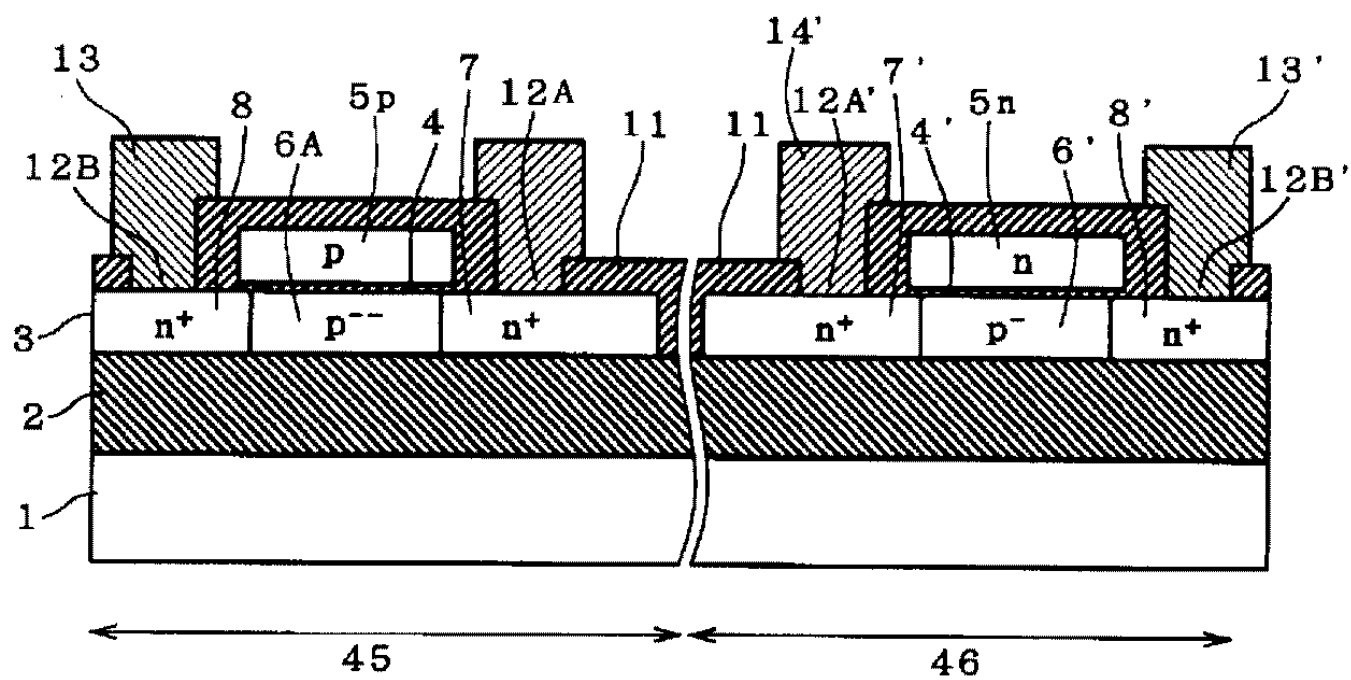
6



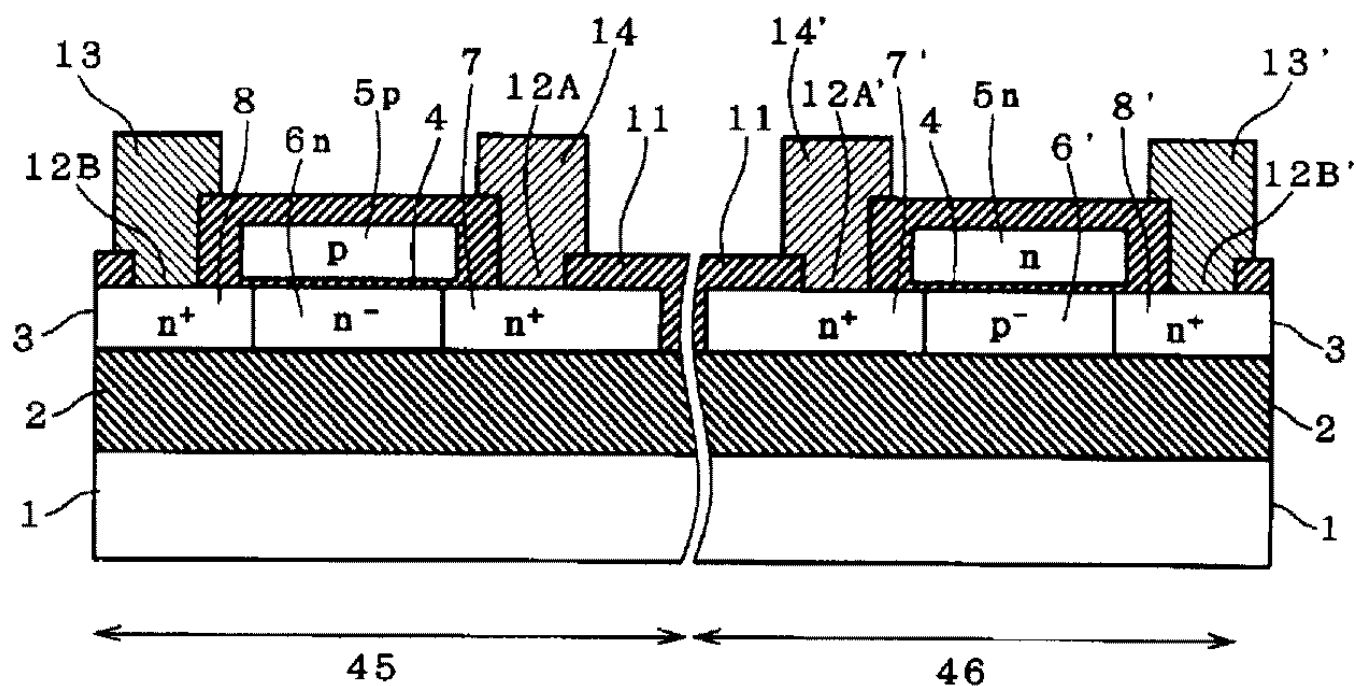
7



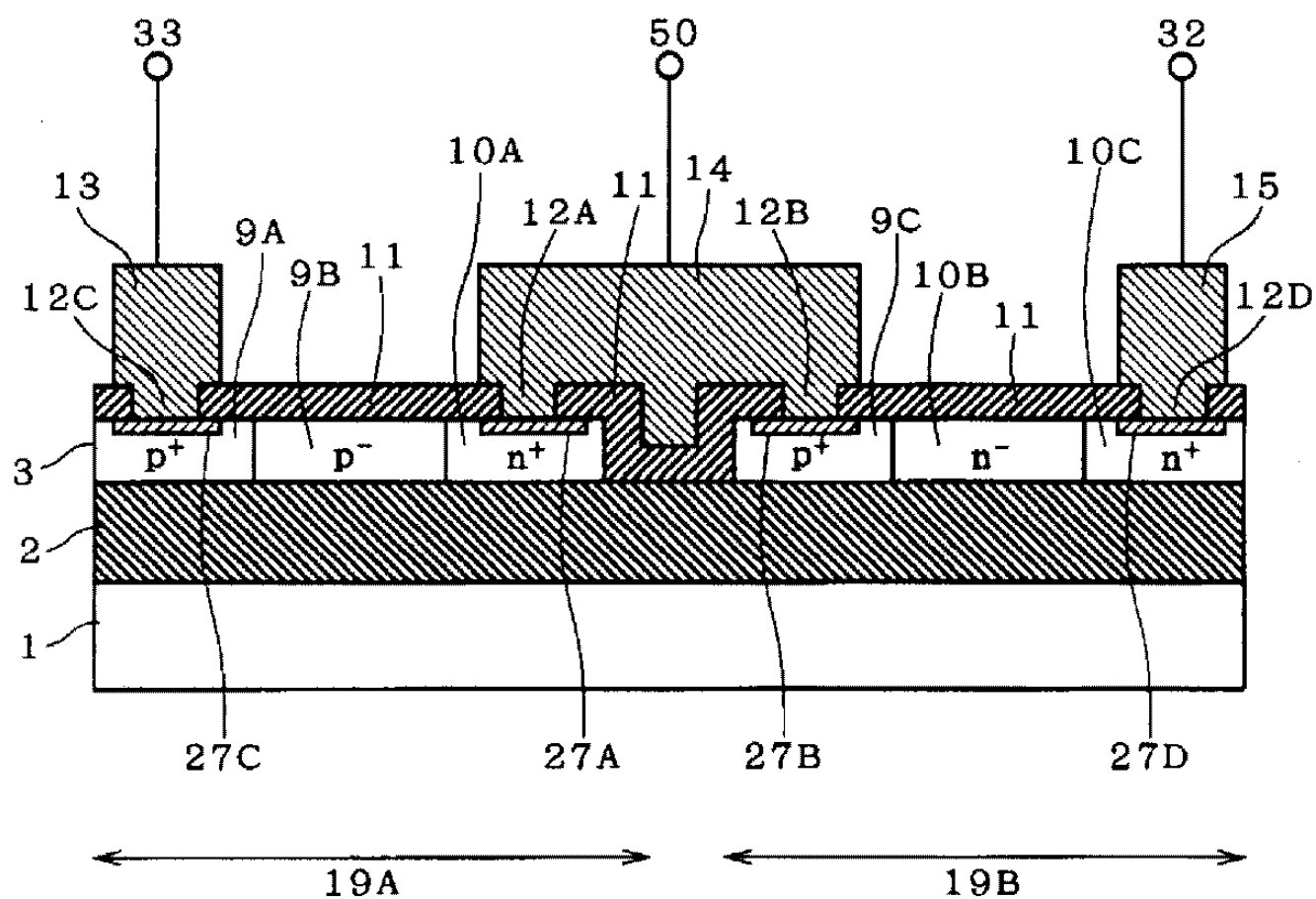
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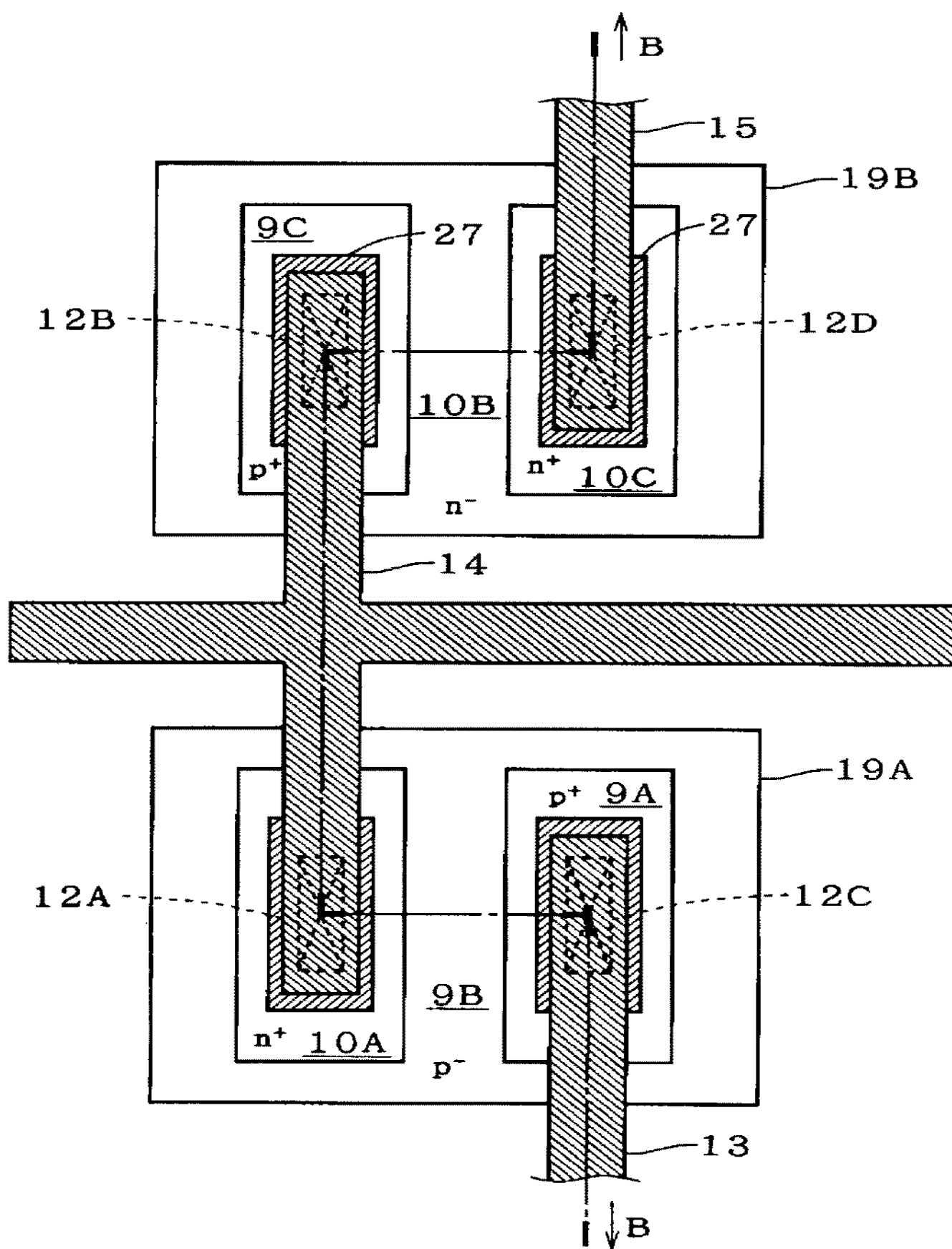
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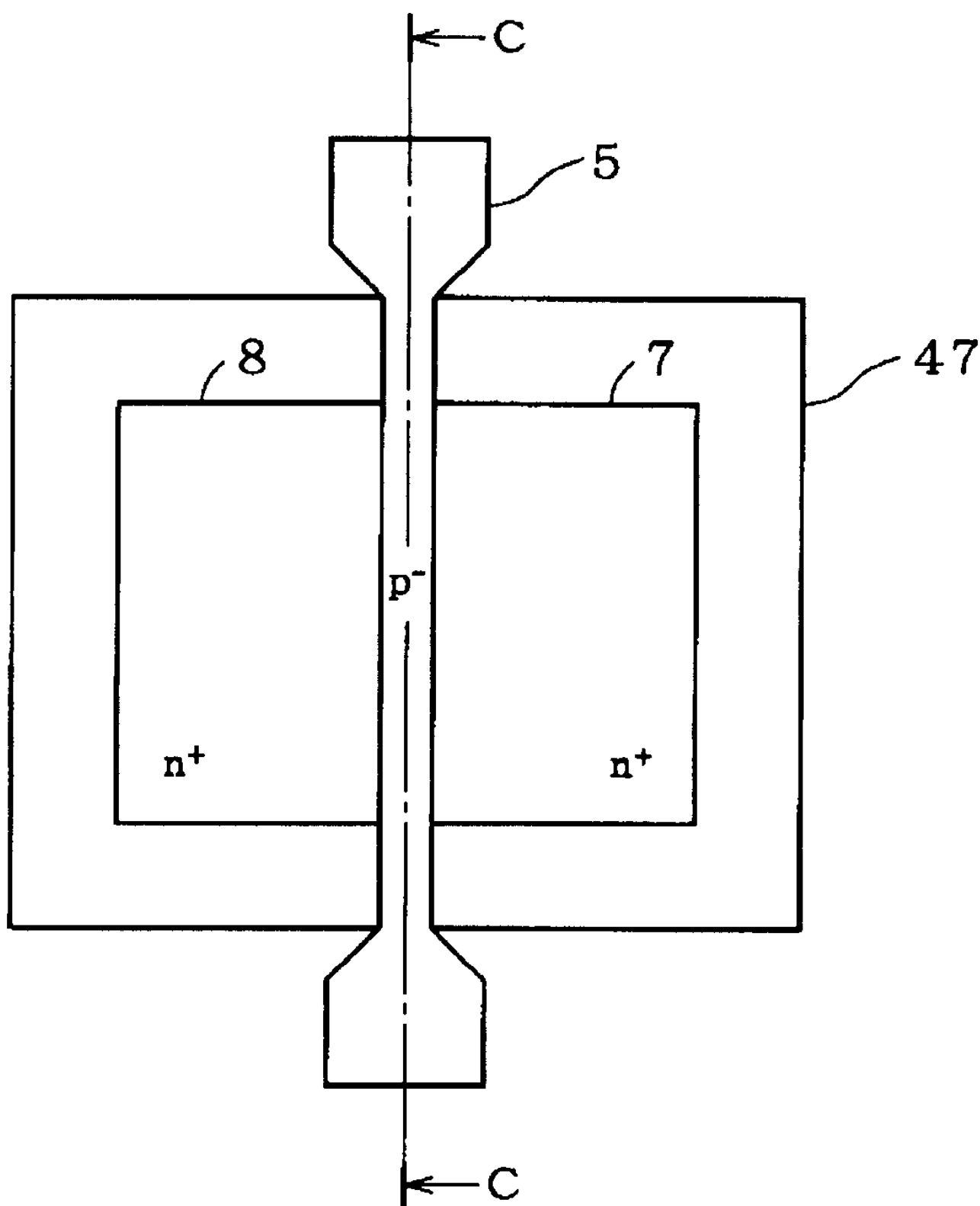
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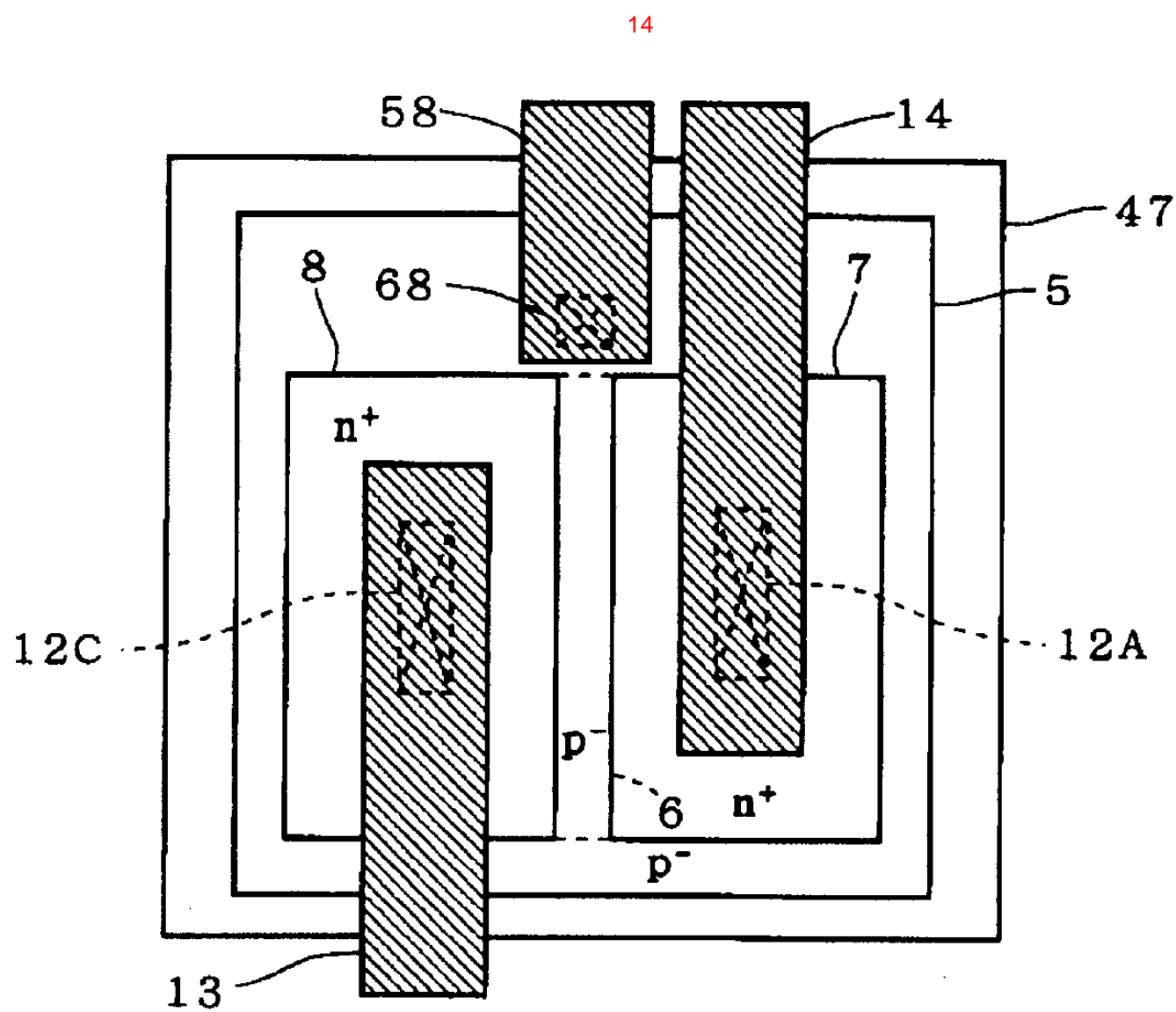
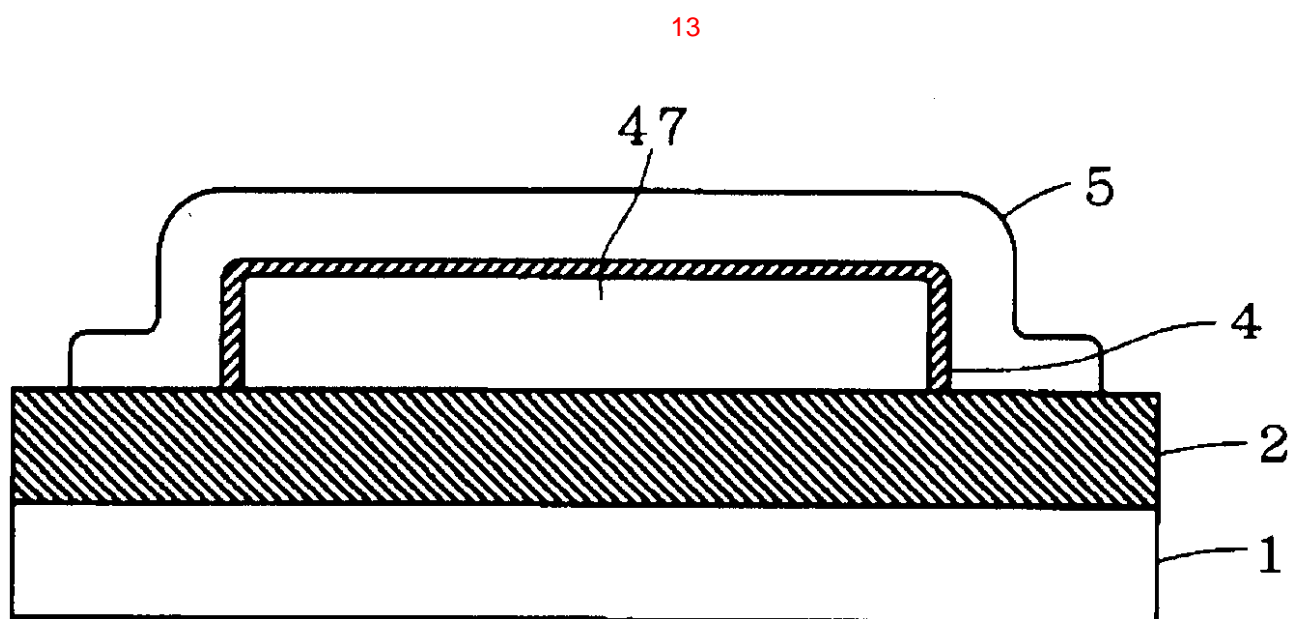


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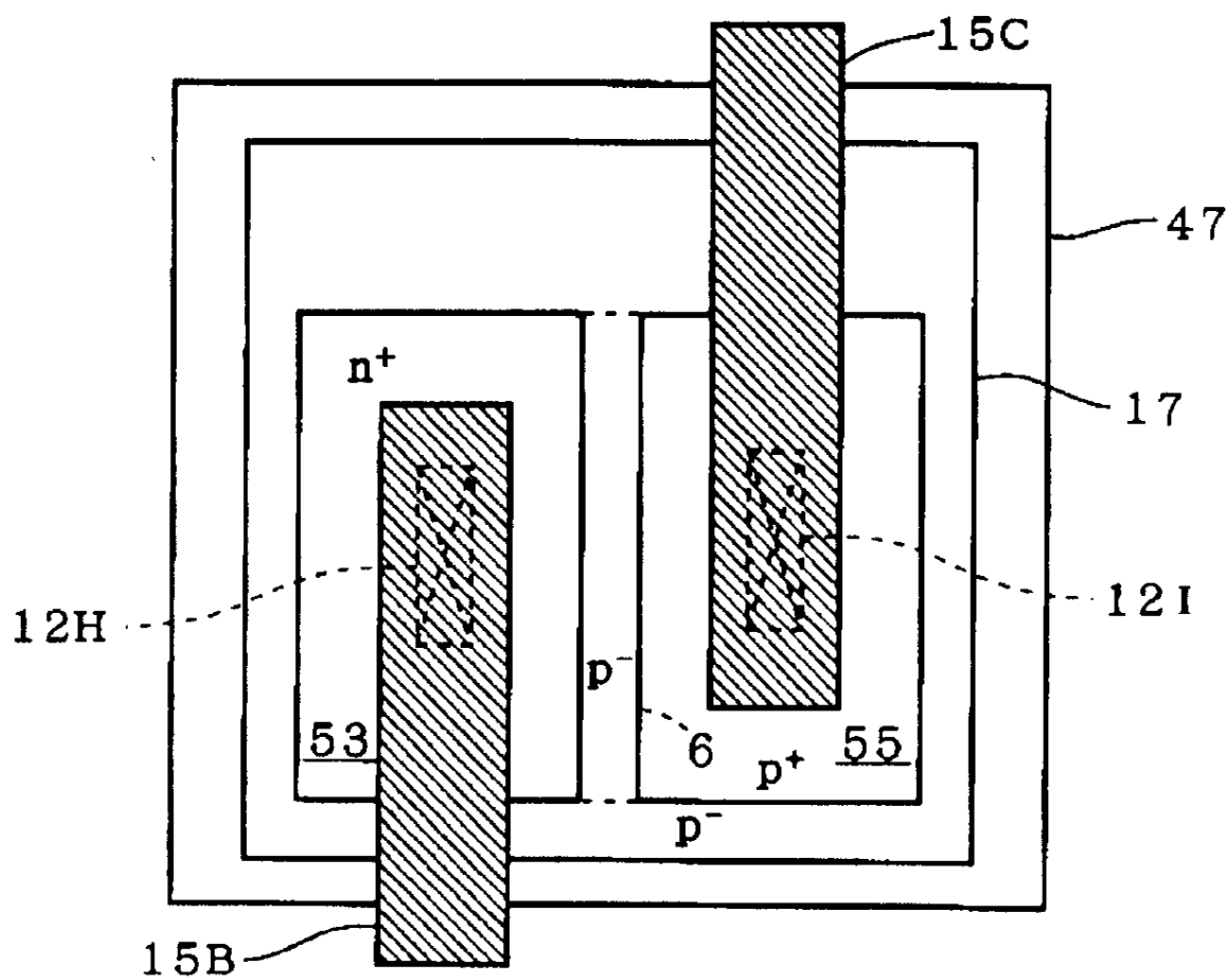


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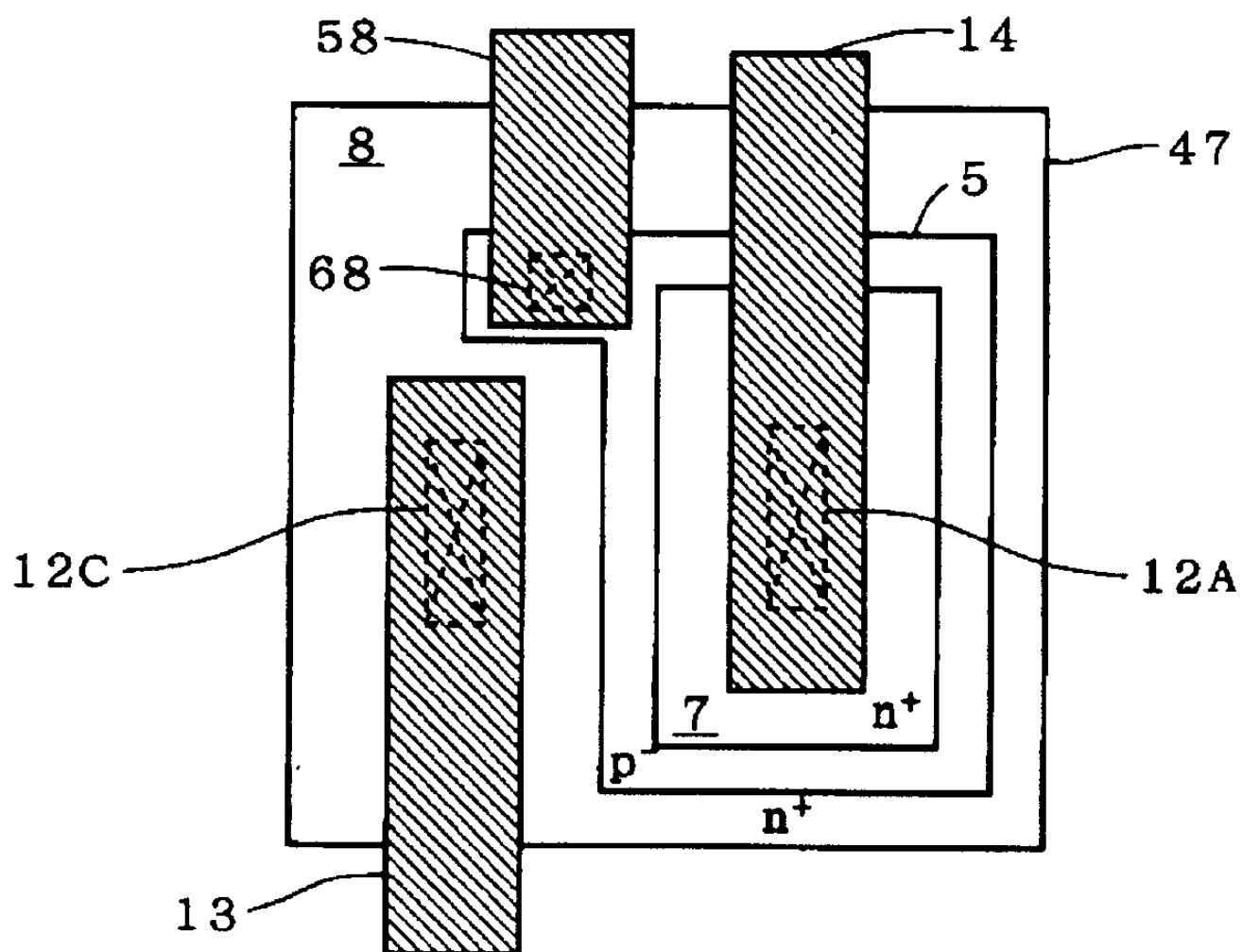




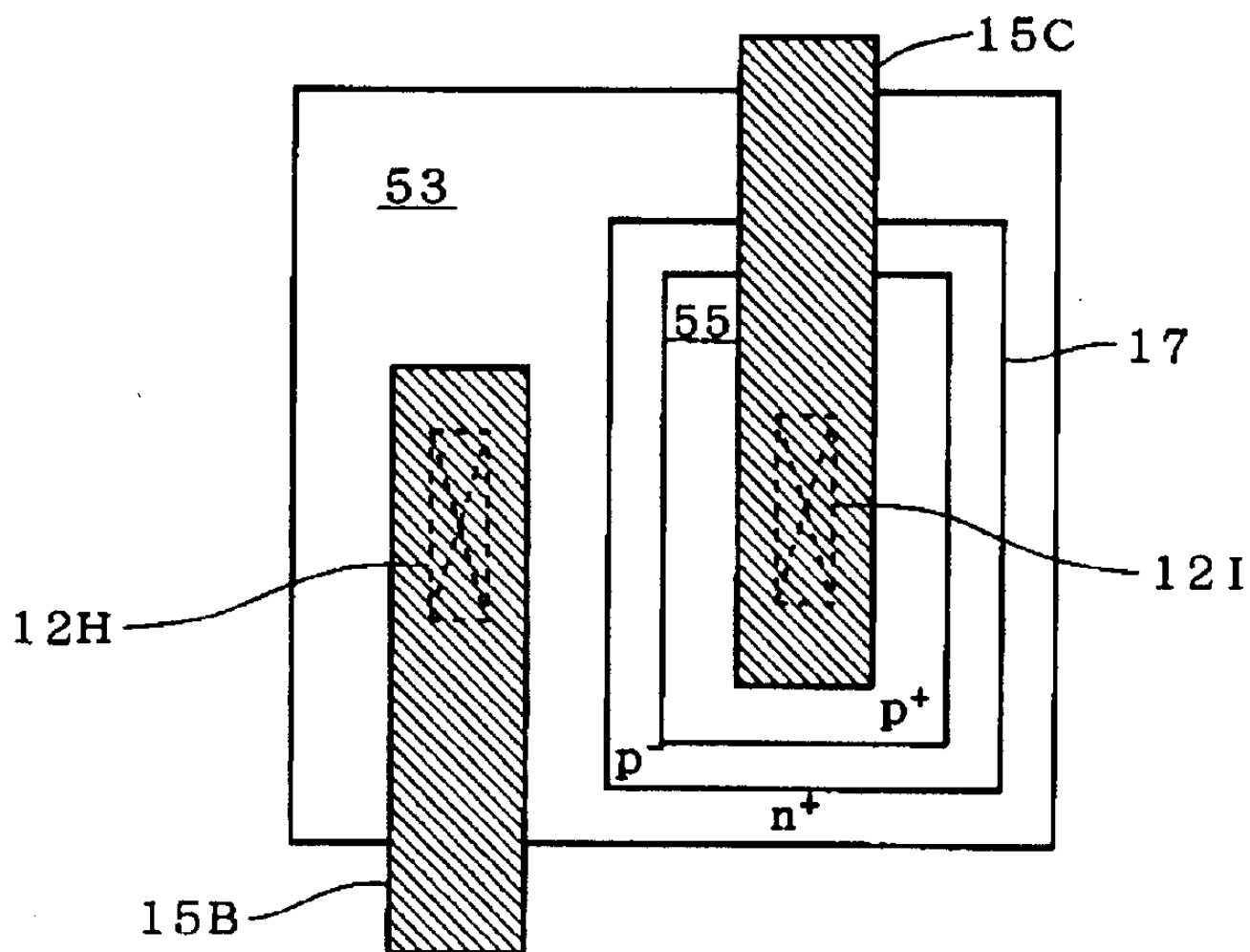
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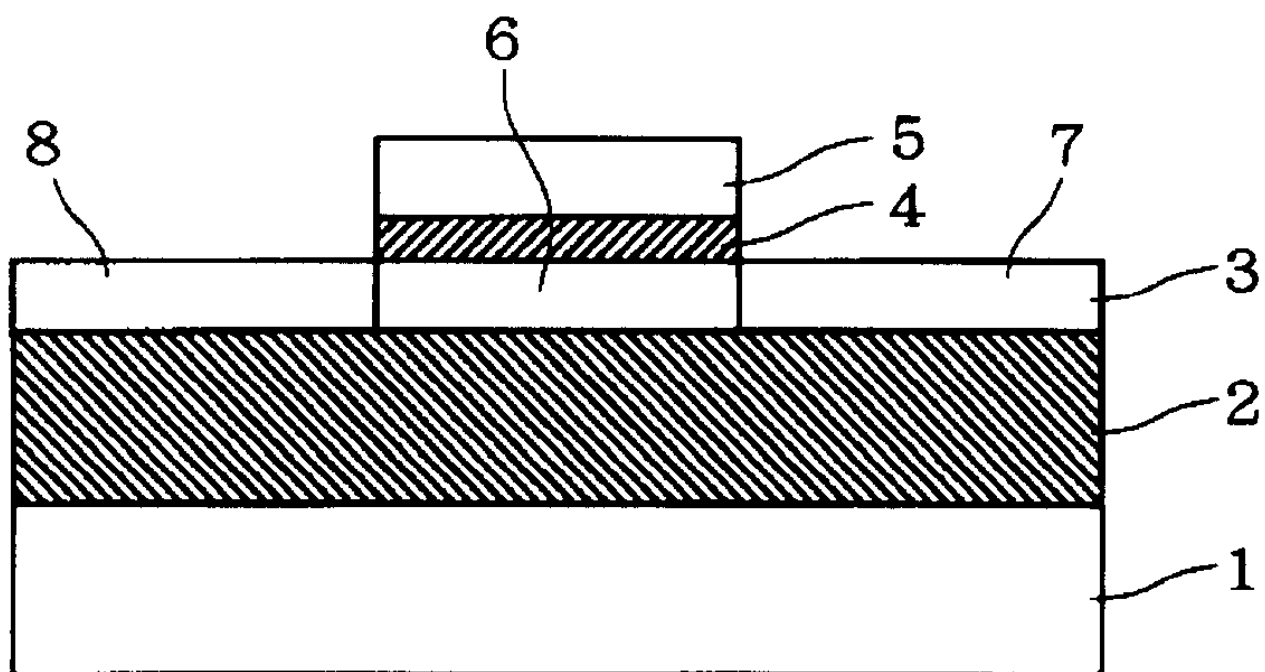
16

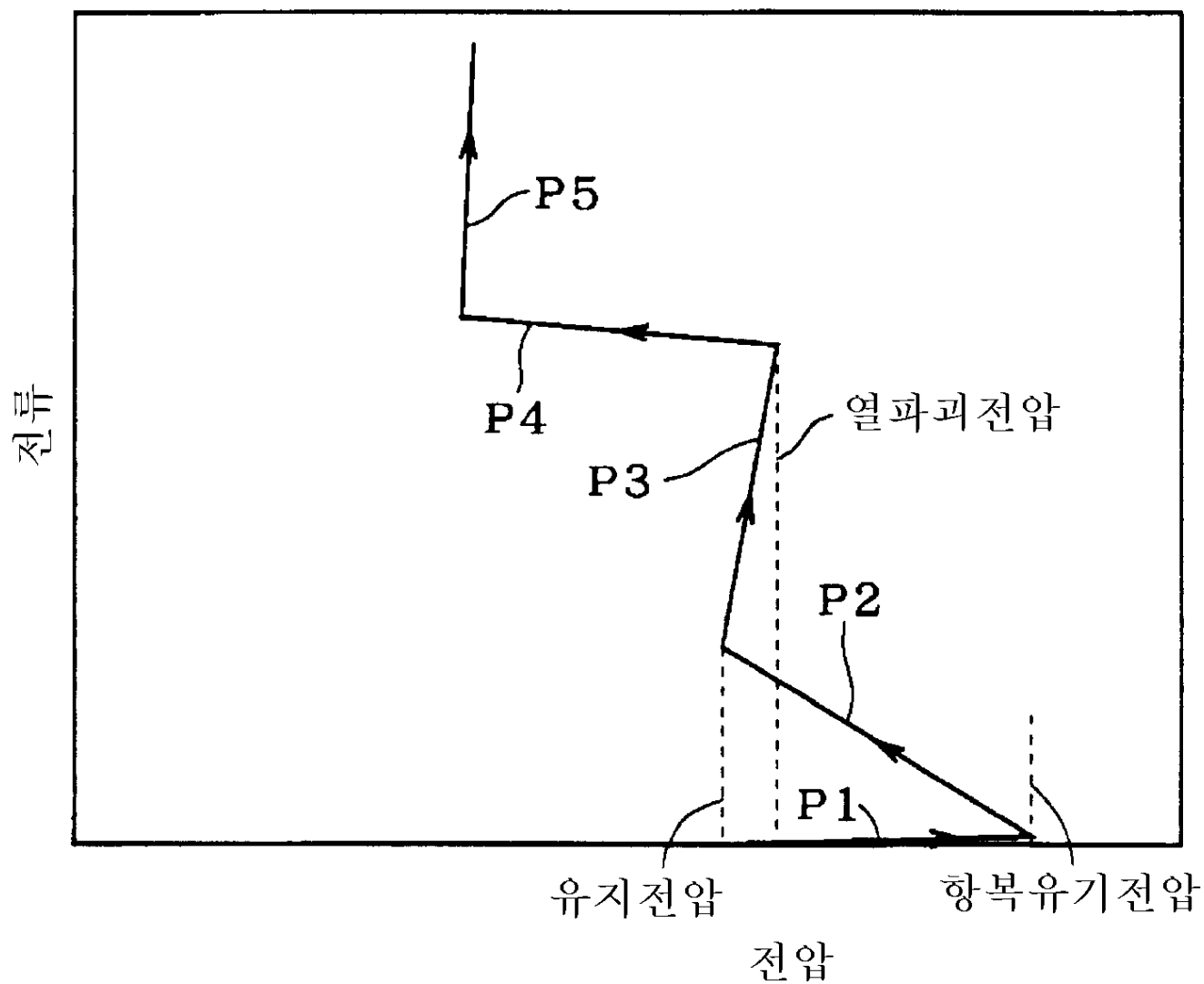


17

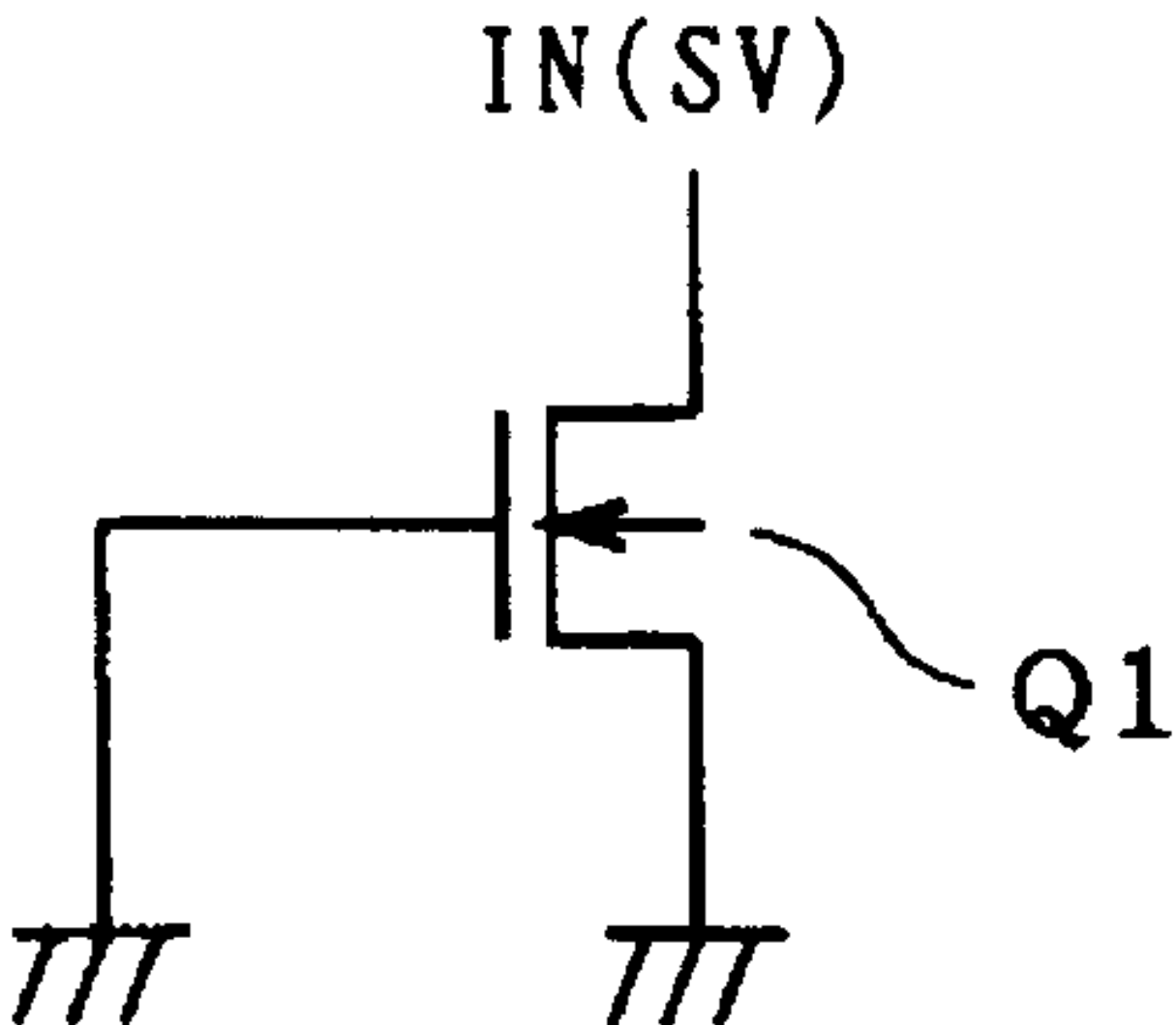


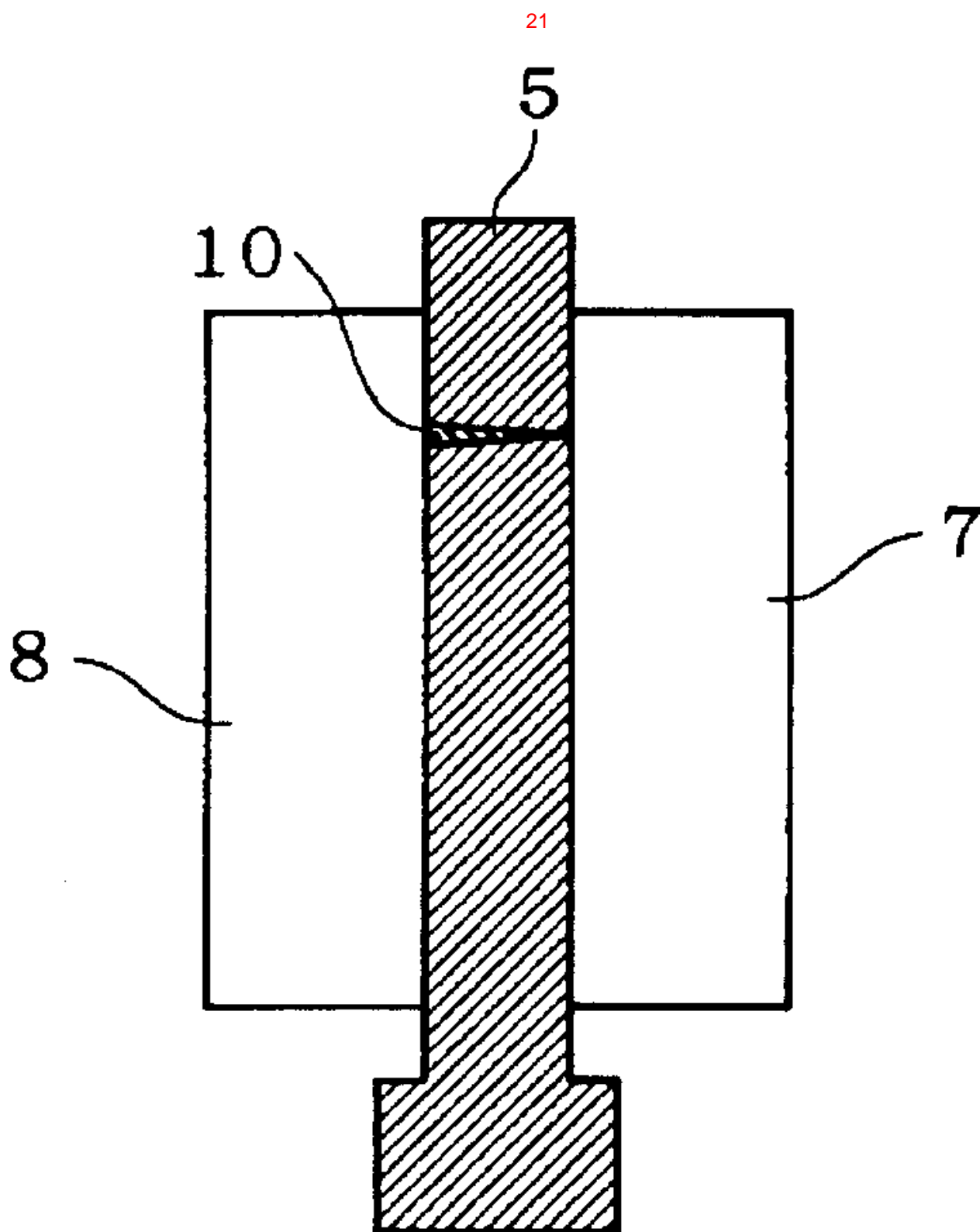
18



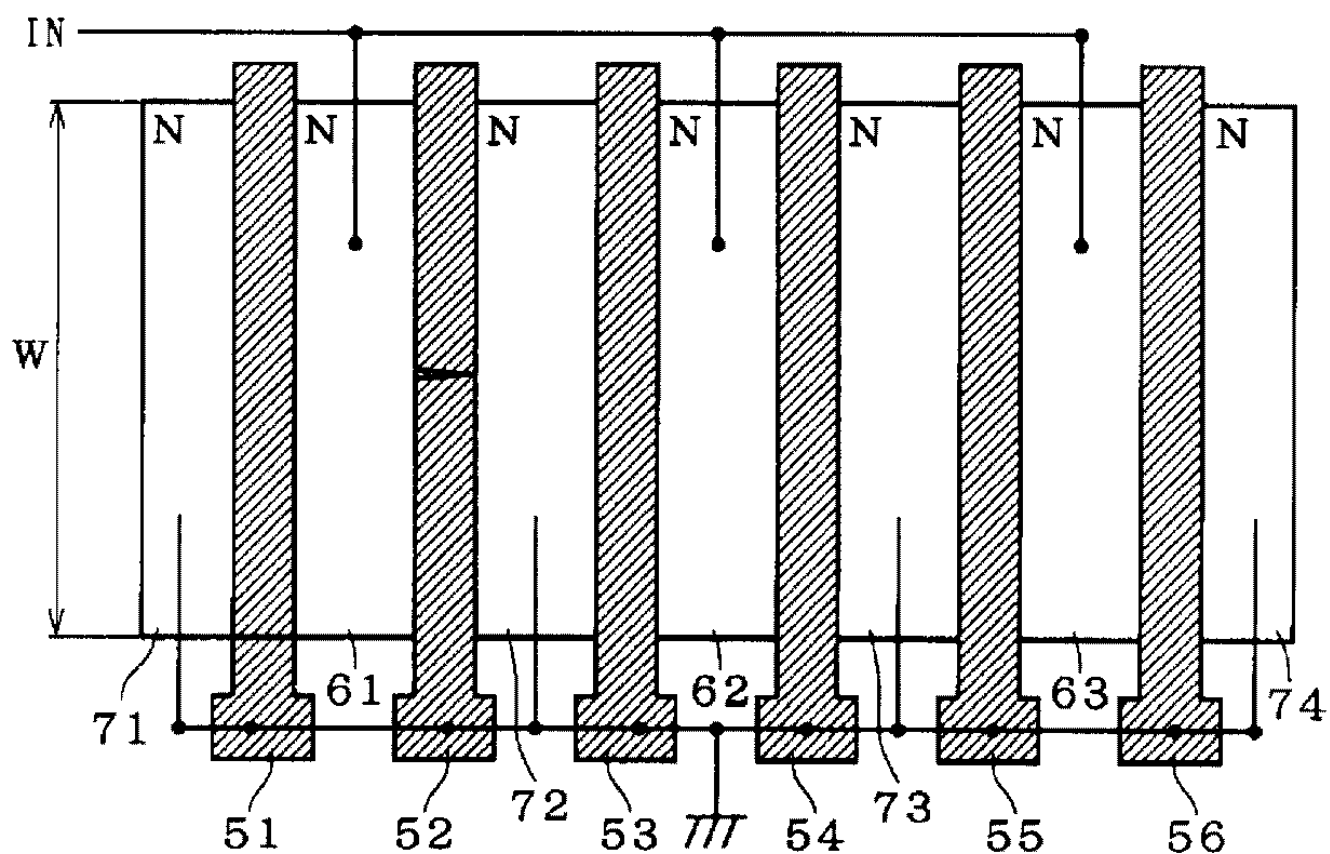


20

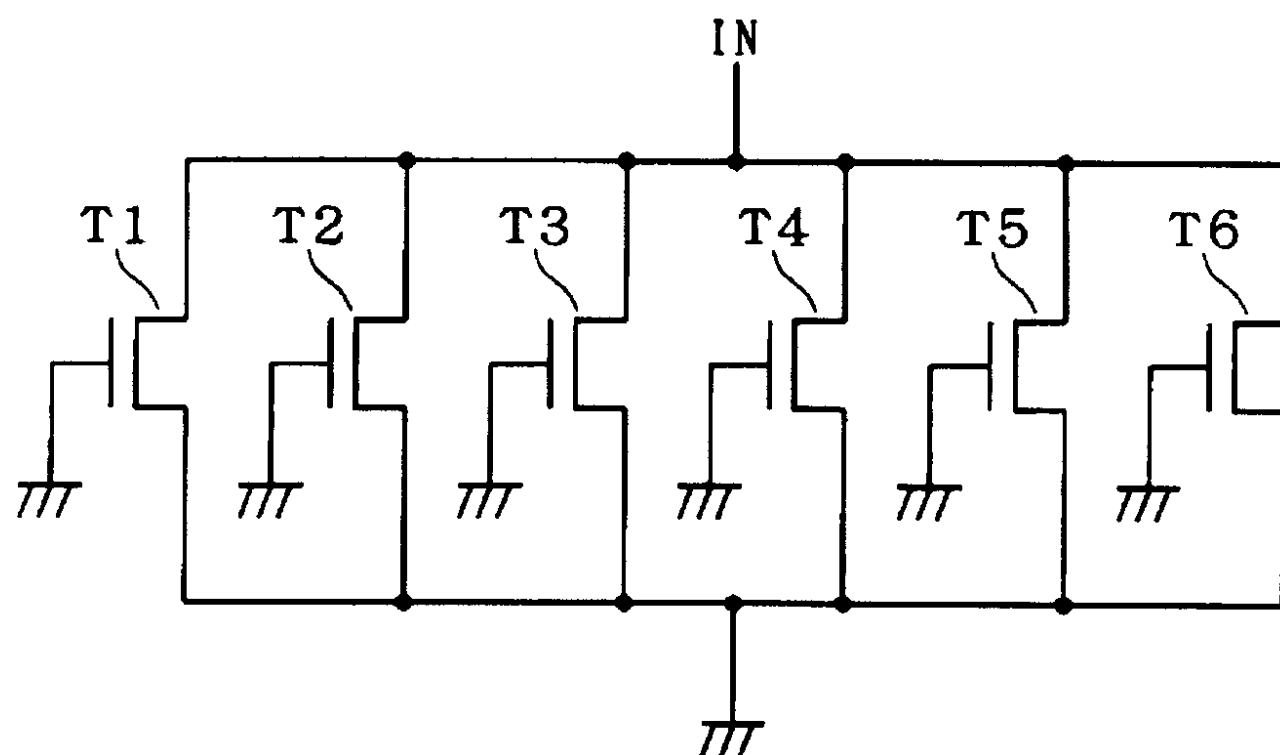




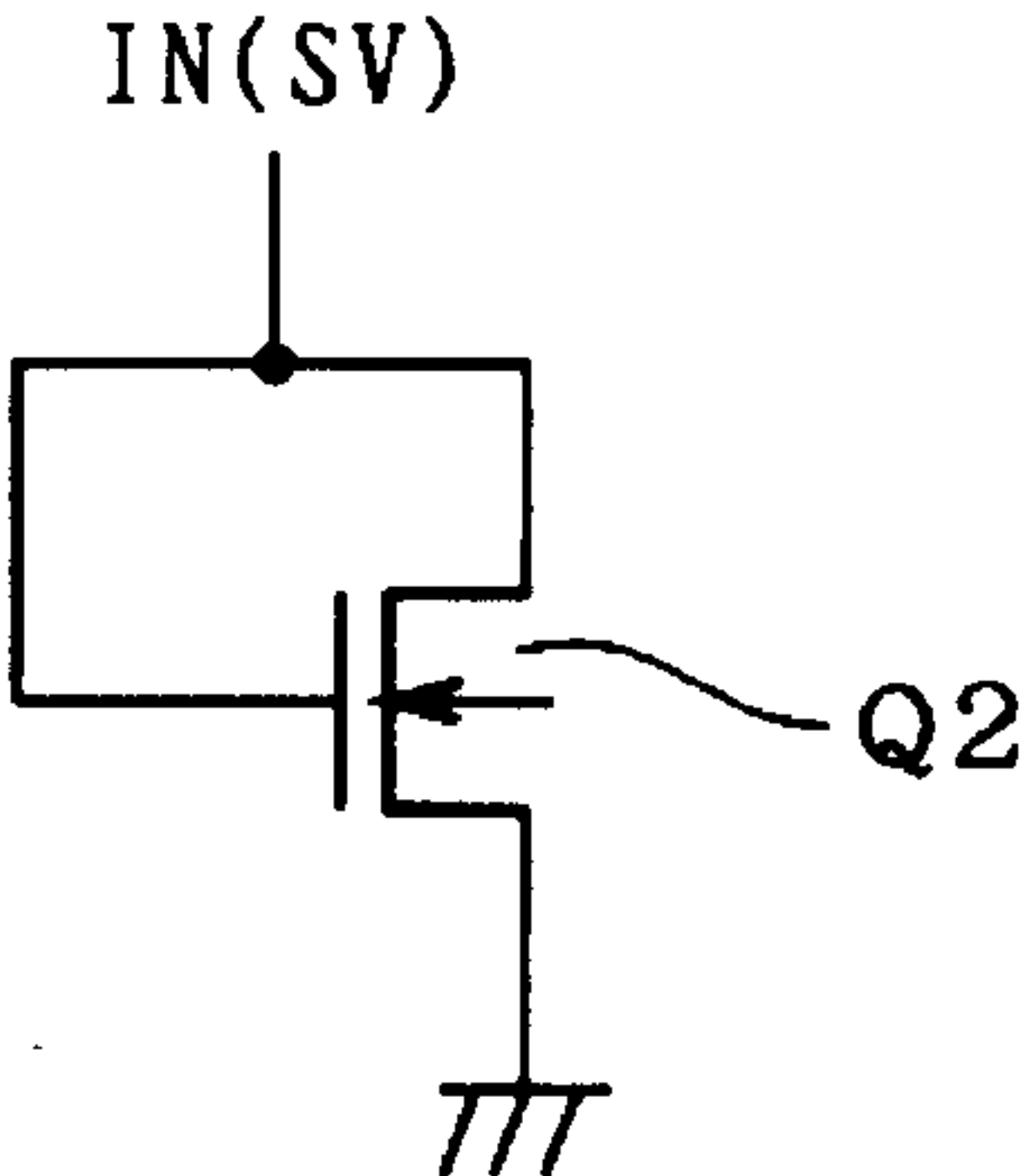
22



23

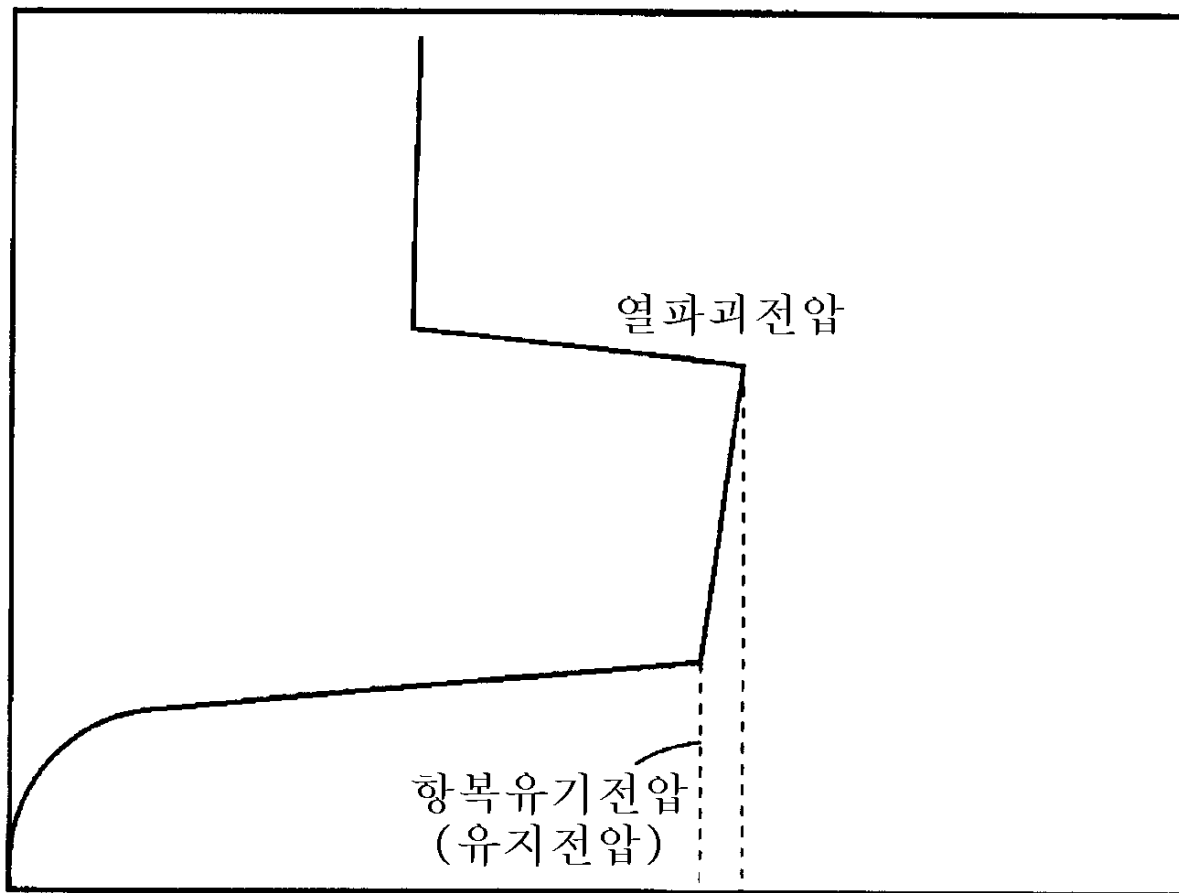


24



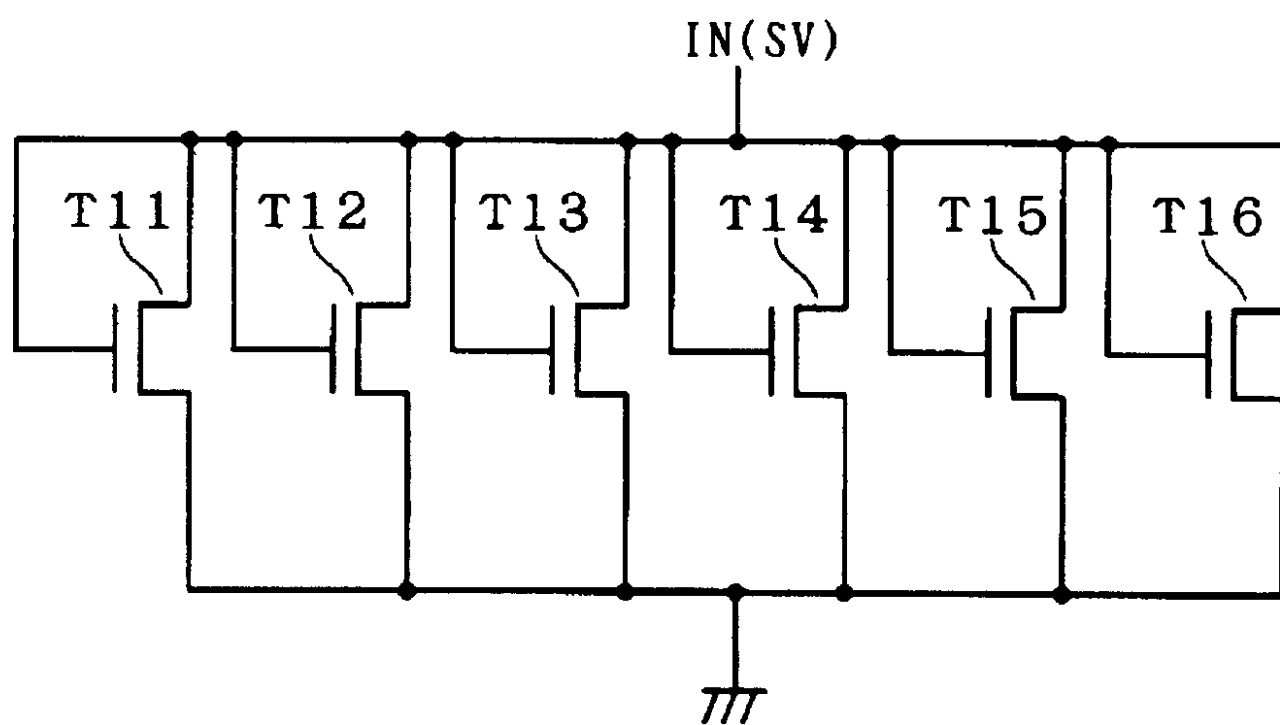
25

전류

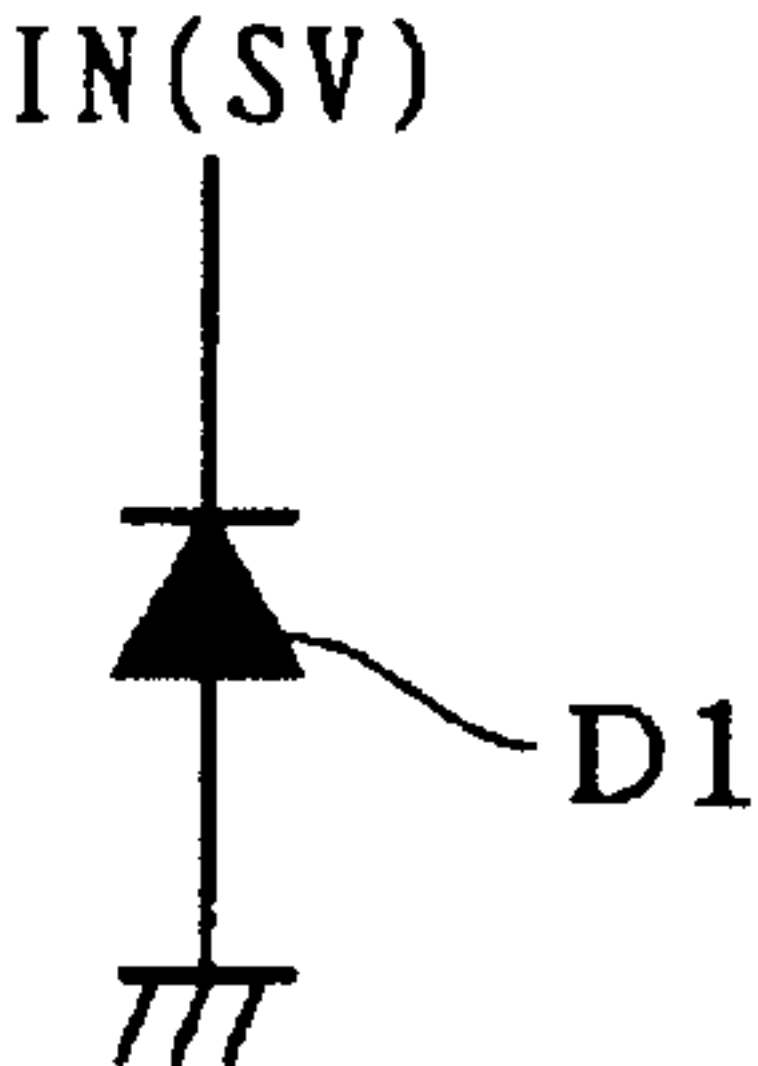


전압

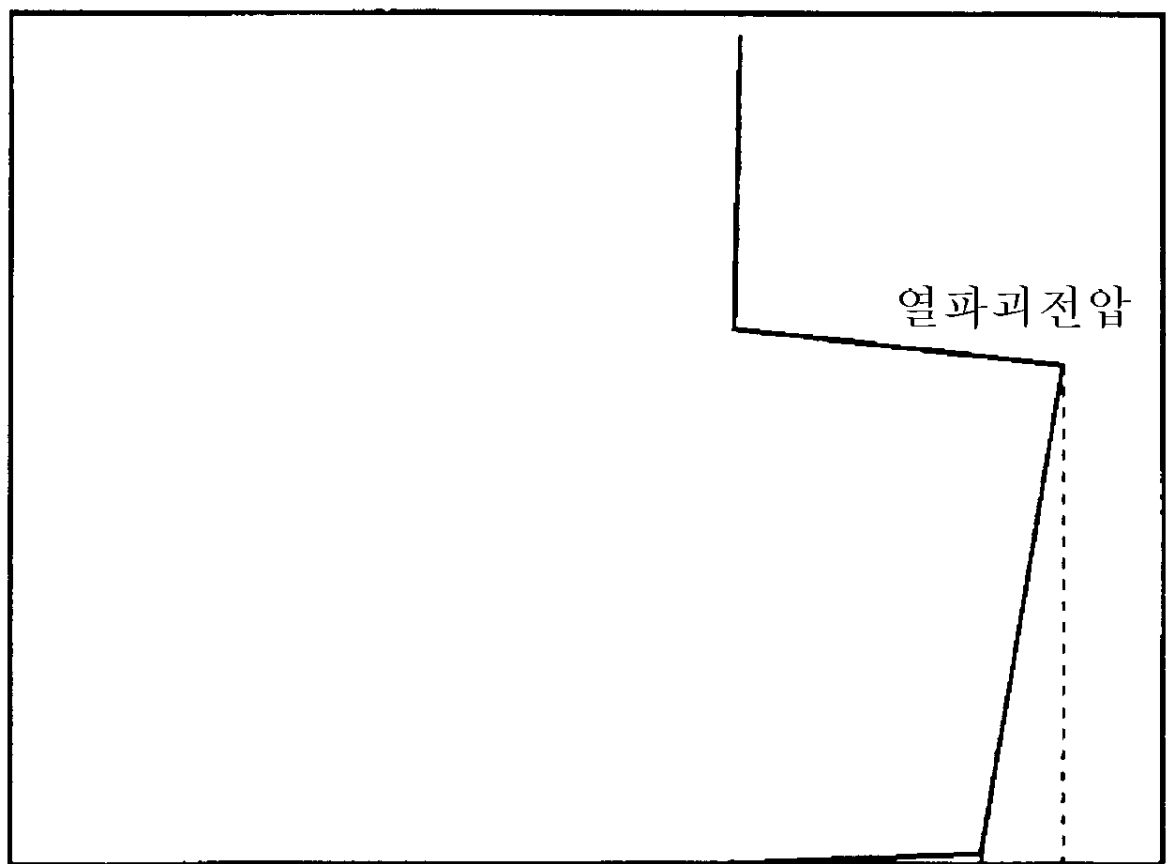
26



27



부진

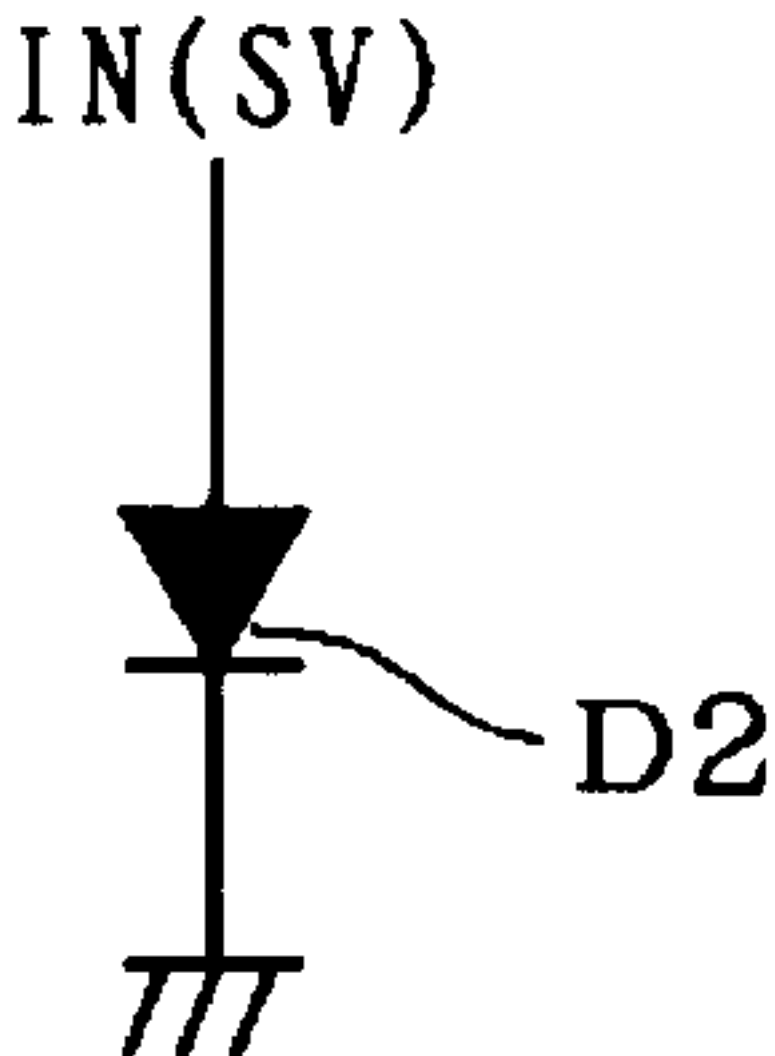


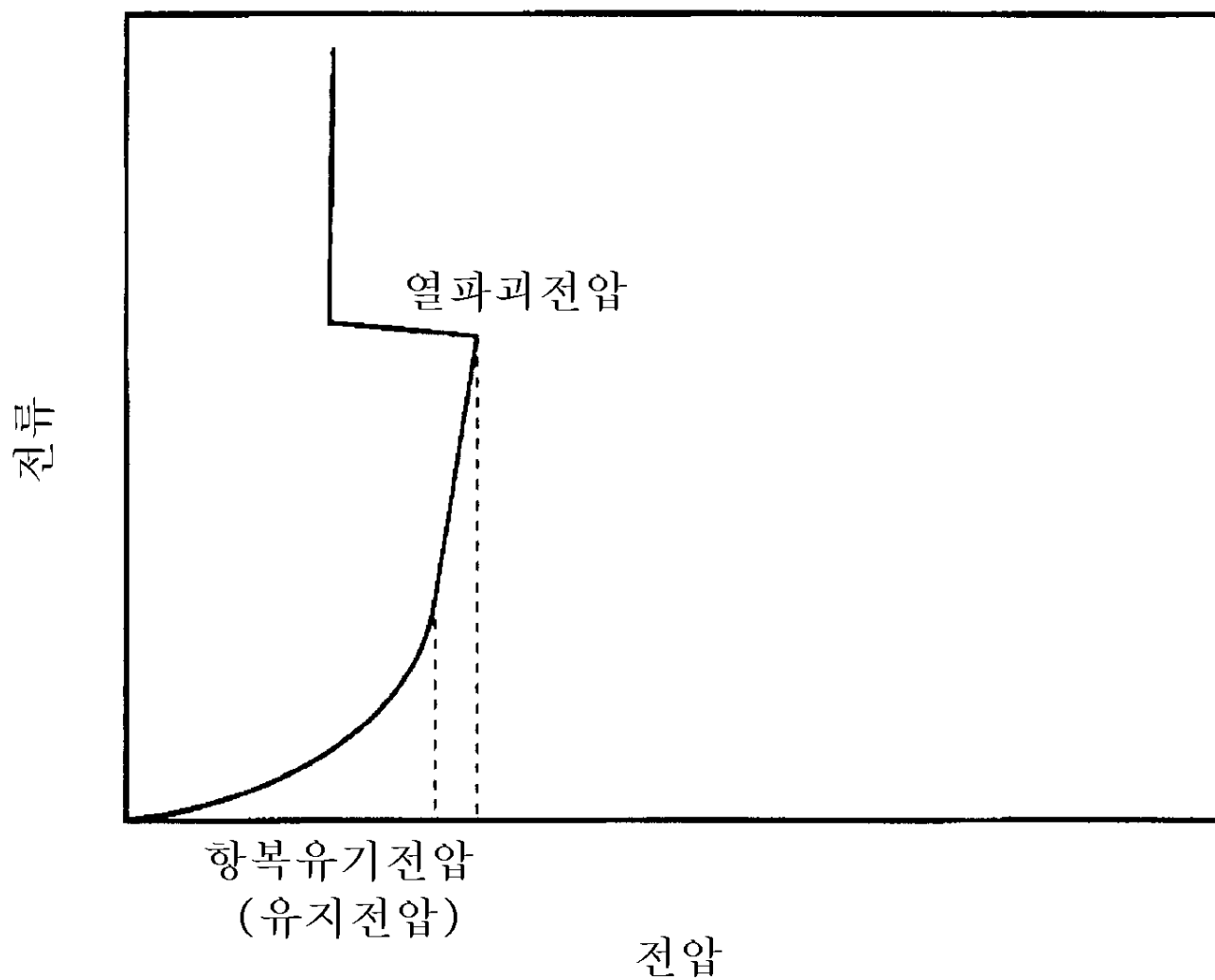
열파괴전압

항복유기전압
(유지전압)

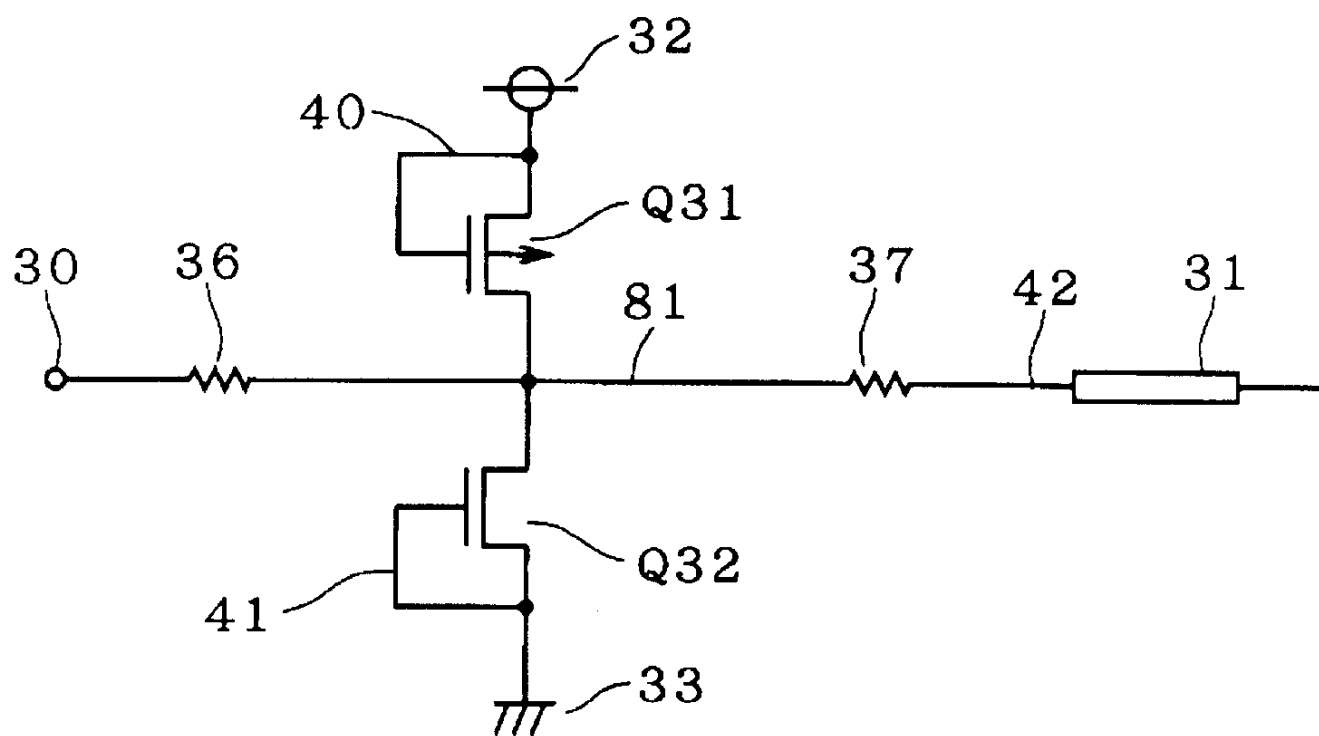
전압

29

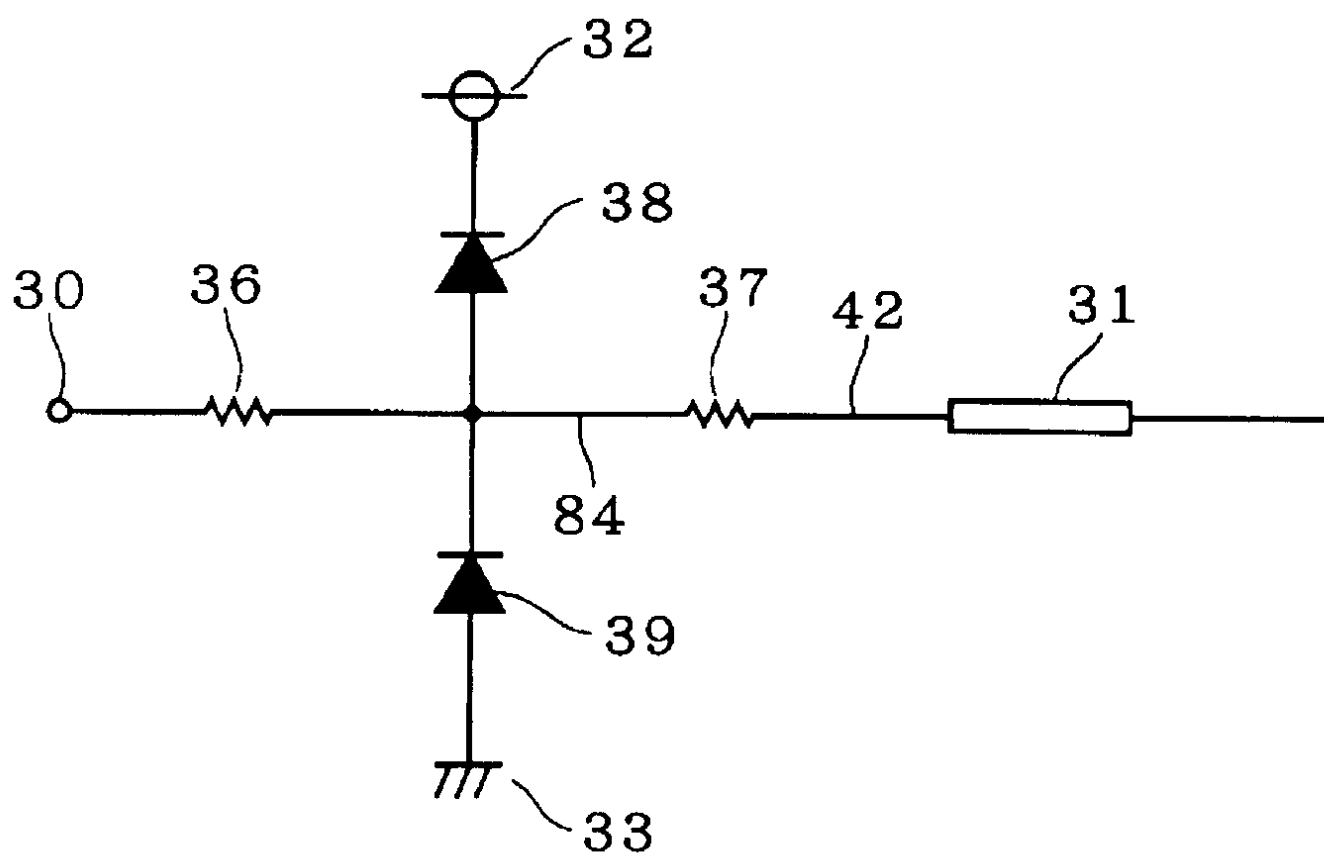




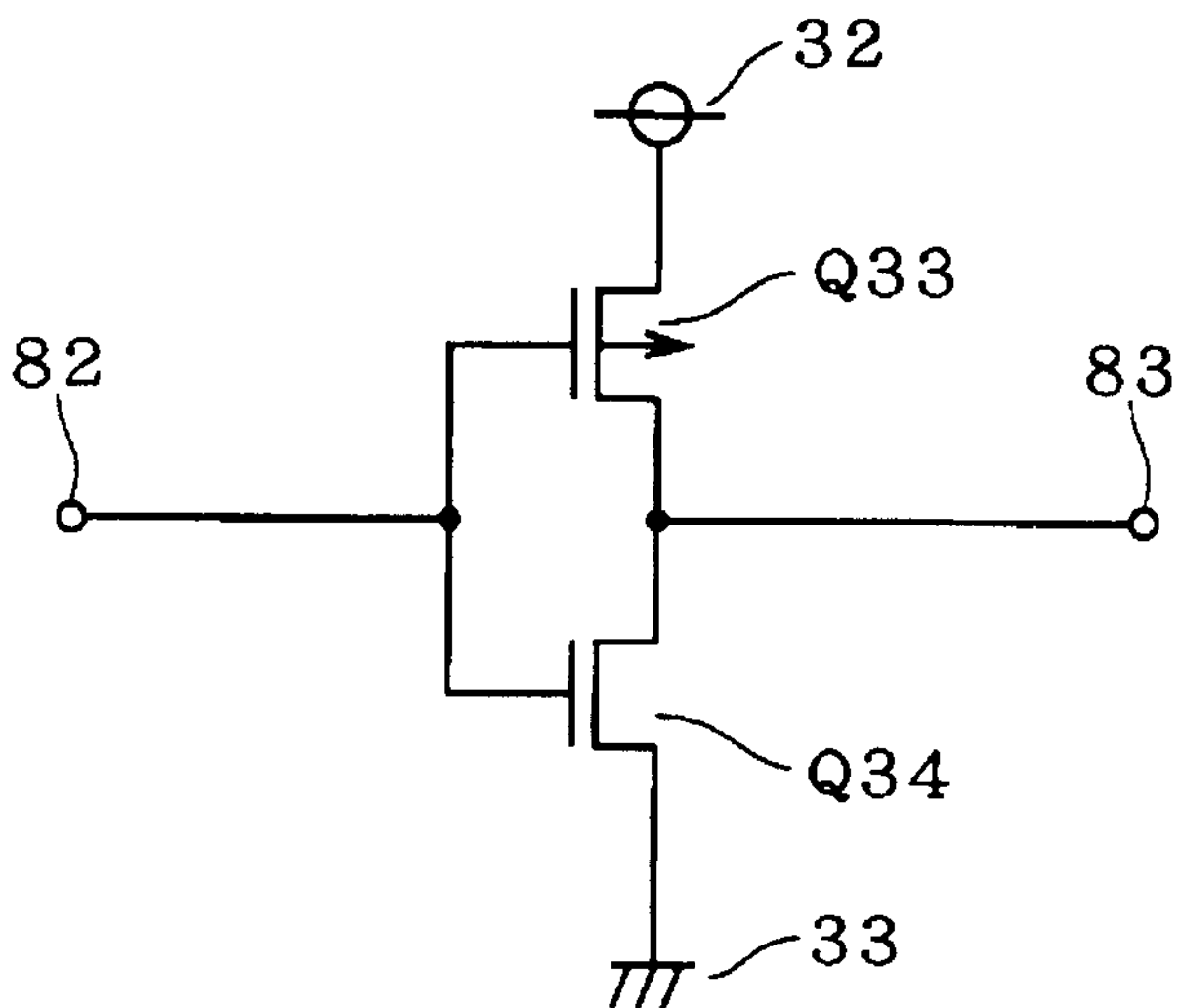
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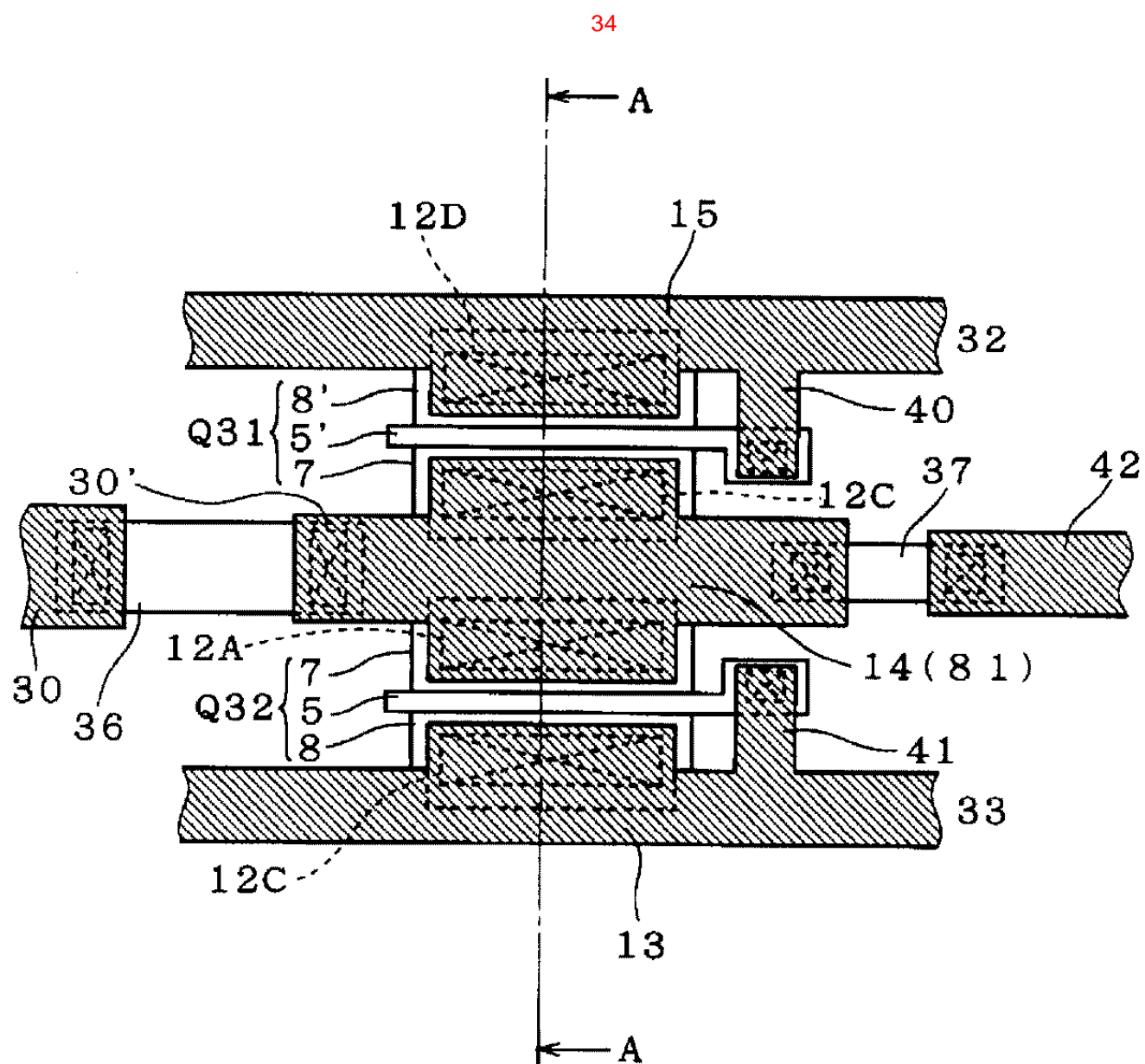


32

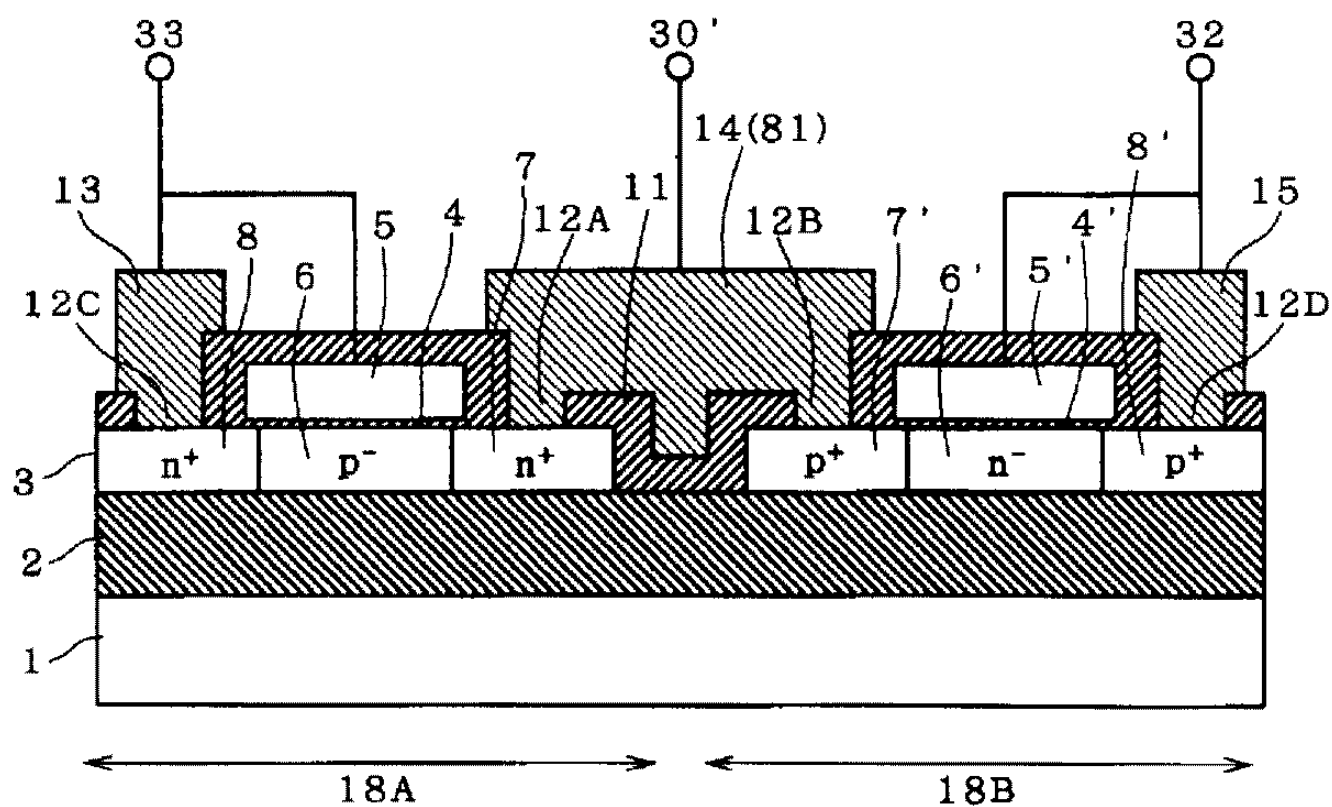


33





35



36

