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(11)
(24)

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10 - 0290884
2001 03 07

(21) 10 - 1998 - 0015954
(22) 1998 05 04

(65) 1999 - 0084302
(43) 1999 12 06

(73)

1

(72)

가 1190

102 - 705

50

(74)

:

(54)

2

1, 2

1

1, 2, 3

-

1,

5

1 NMOS (3) 가 2 가 가
Vss (4) .

NAND 1, 2 " 1" 3/4 , " 0"
1/4 .

1, 2 가 " 1" " 0" , " 1" .

1, 2 NMOS (3,4) - (Pull - Down Path) 가
NMOS PMOS .

2 2 - (NOR) .

2 NOR 2 PMOS 2 NMOS

가 Vcc 1 가 가 1 PMOS (5) ,
1 PMOS (5) 가 가 가 가

2 PMOS (6) , 2 PMOS (6)
가 가 가 Vss

1, 2 NMOS (7,8) .

NOR 1, 2 PMOS (5,6)가 - (Pull - Up)
1, 2 NMOS (7,8)가 - (Pull - Down) .

1, 2 " 1" 1/4 , " 0" 3/4 .

1, 2 가 " 0" " 1" , " 1" .

1, 2 PMOS (5,6)가 - 가 NMOS
PMOS 4 (Symmetric Swting) 가

3 1 NAND NMOS

3 (11) (12)
) , (13a,13b) , 1, 2 (13a,13b)
(16a) , 1, 2 (13a,13b) (11) LDD
1, 2, 3 n (17a,17b,17c) .

4a 4e 1 NAND NMOS

4a) , (11) (11) (12) (13)

(Patterning) (13) (Photo Resist)(14)

4b (12) 1, 2 (14) (13a,13b) (13)

4c (11) (14) 1, 2 (13a,13b) (11) LDD(Lightly Doped Drain) (15) (13a,13b)

4d 1, 2 (13a,13b) (11) (16)

4e (16a) (16) (Etch Back) 1, 2 (13a,13b)

(15) 1, 2 (13a,13b) (16a) / n (13a,13b) (11) LDD (17a,17b,17c)

3 4 n 2 NOR PMOS p

(Off) 가 가 가 가 (Operating)

가 가

, 1, 2 1, 2, 3

1, 2 1, 2, 3 1, 2

5 1 NAND NMOS

5 (21) (26) (1
) (27a,27b) , 1 (27a)
 , 2 (25) , 1, 2 (27a,27b)
 - 1, 2 (27a,27b) (21) (31a) ,
 (32a,32b,32c) , 1, 2, 3 n (32a,32b,32c)
 (30)

가 (25) NAND PMOS NMOS Vss
 , NOR Vcc 가

(30) /

6a 6i 1 NAND NMOS

6a (21) (21) (1 (22)
) 가 (21) (21) (21) 가 (Da
)

mage) 1 (22) 2 1 (22) (21) 가 (Da
 2 (23) 1 (24) 2 (23)
 1 (24)

6b 1 (24) 2 (23) 1
 (22) 2 (23a) 1 (22a)

6c - 1 (24) , 2 (23a) (21)
 - (Punch - Through) (Doping)
 - (25)

2~5e13/cm³ (Dose) NMOS (Boron) 20~50keV (Energy) 1e1
 1e12~5e13/cm³ , PMOS (Phosphorus) 60~100keV

- (Arsenic) 140~200keV 1e12~5e13/cm²

, - (Dopant)가 NMOS BF₂ In , PMOS
 Sb

6d 2 (23a) 1 (22a) , (21)
 (26) (27)

, (27) 2 (28) , 2 (28)

6e 2 (28) (27)
 (26) 1, 2 (27a,27b)

1 (27a) - (25) Vss 가 .

, PMOS 1 (27a) Vcc 가 .

6f 2 (28) , 1, 2 (27a,27b)
 (21) n 1, 2 (27a,27b)
 (21) LDD (29)

PMOS p LDD (29)

6g 1, 2 (27a,27b) (21)
 (Halo) LDD (29) (30)

0~30° (Tilt) NMOS BF₂ 100~160keV 1e13~1e14/cm³
 1e13~14/cm³ , PMOS (Phosphorus) 60~140keV
 0~30°

, NMOS B In , PMOS As Sb

6h 1, 2 (27a,27b) (21) 3 (3)
 1)

6i 3 (31) 1, 2 (27a,27b)
 3 (31a)

, 1, 2 (27a,27b) 3 (31a) (21)
 (21) / LDD (29) n 1, 2, 3 n 1, 2 (27a,27b) (32a,32b,32c) (21)

PMOS

/

p

가

(Gamma)

(Off)

가

Vss

Vcc

가

(57)

1.

, 1, 2 ;

1

- ;

1, 2

1, 2, 3

2.

가 NMOS

1

Vss

1
가

3.

가 PMOS

1

Vcc

가

1

4.

1

1, 2, 3

5.

;

;

-

;

1, 2

;

1, 2

1, 2, 3

6.

5

가 NMOS

20~50keV

1e1

2~5e13/cm³

7.

5

가 PMOS

6

0~100keV

1e12~5e13/cm³

8.

5

140~200keV

1e12~5e13/cm²

9.

5

가 NMOS

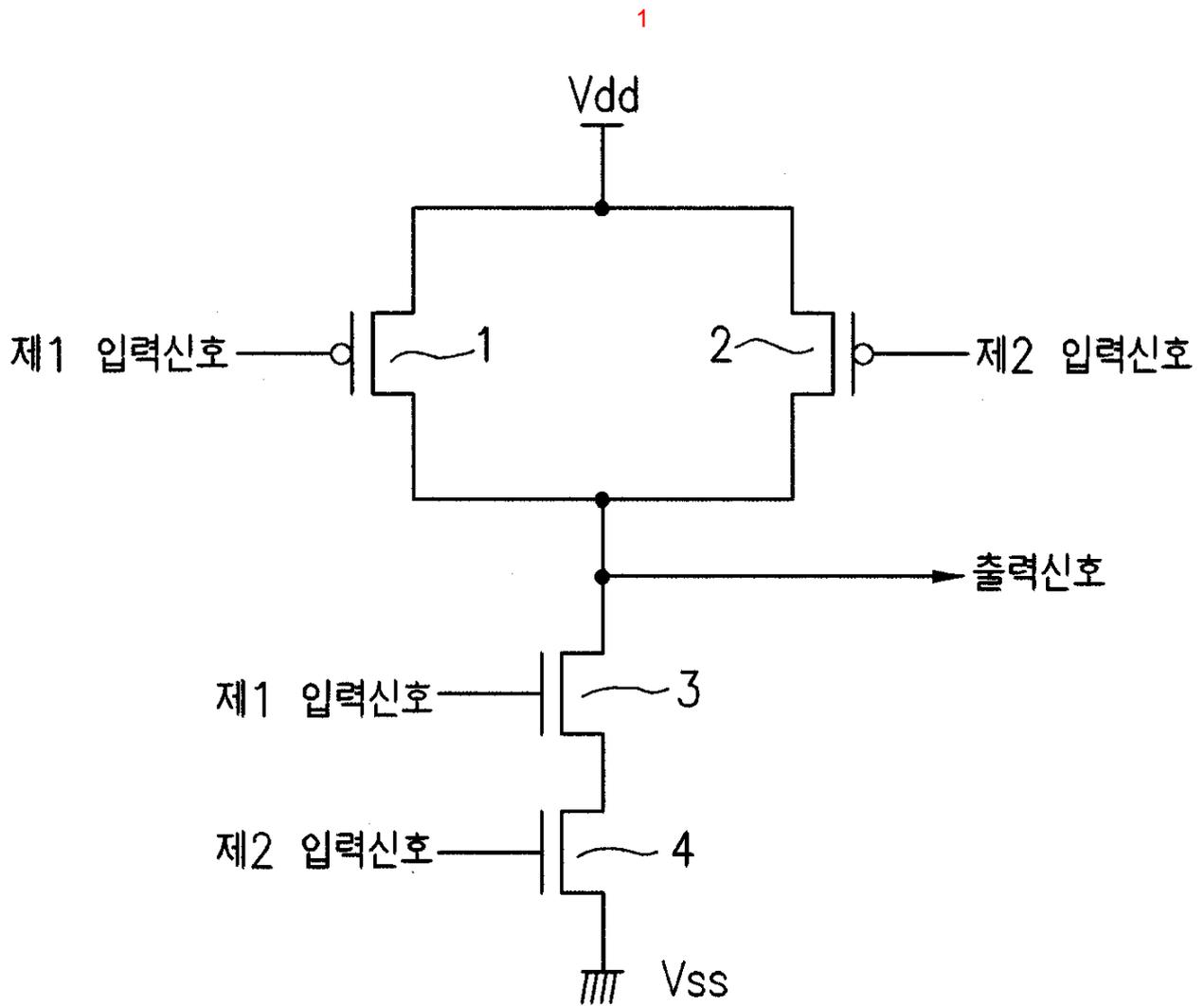
BF₂

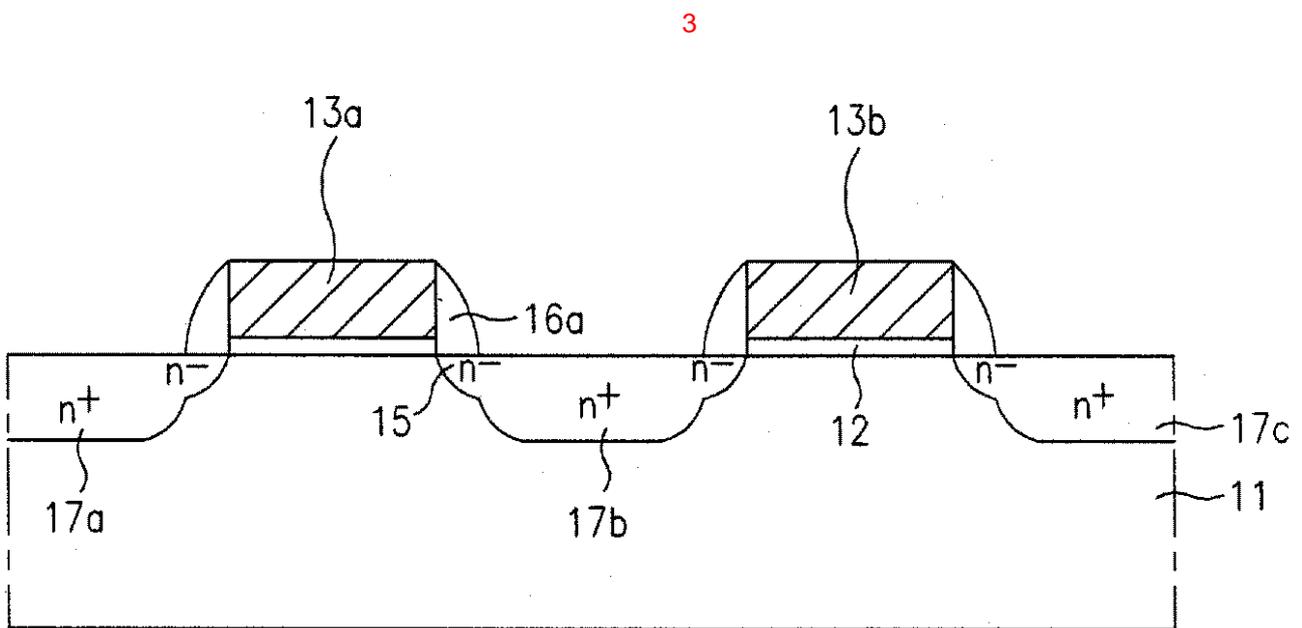
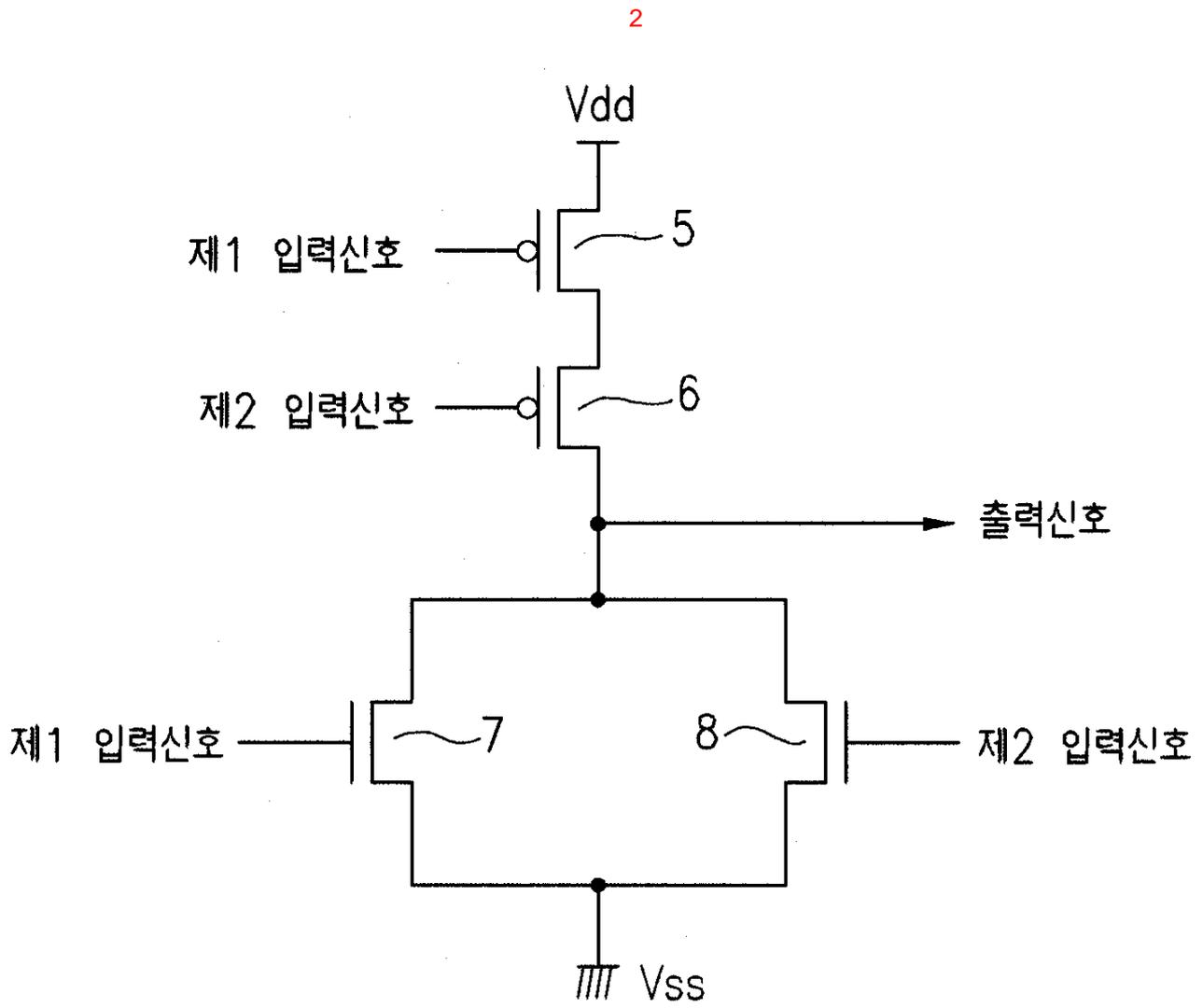
In

10.

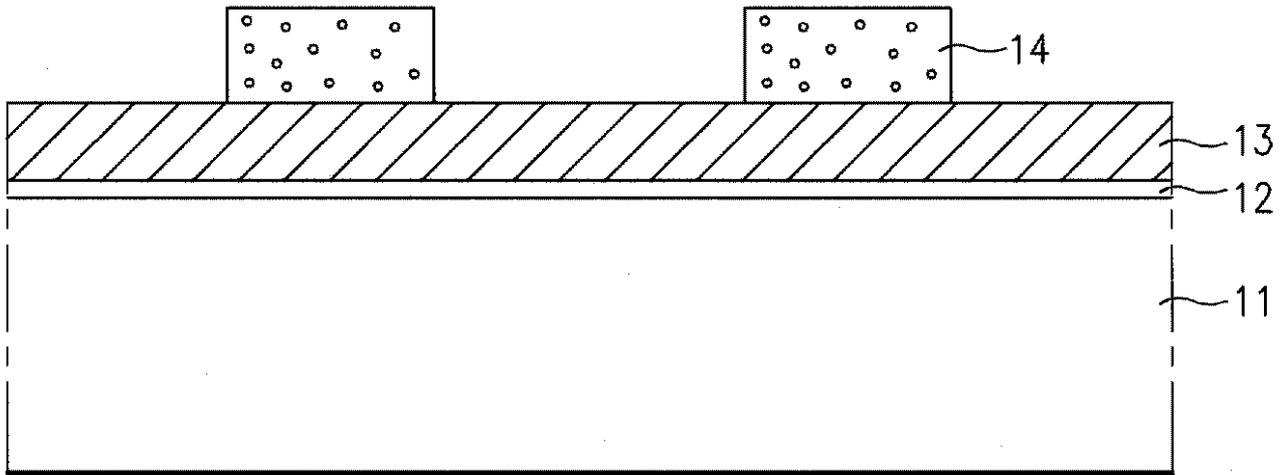
5

-		가 PMOS	Sb
11.			
5	,		
1, 2, 3			
12.			
11	,		
1e13~1e14/cm ³	0~30 °	가 NMOS	BF ₂ 100~160keV
13.			
11	,		
3~14/cm ³	0~30 °	가 PMOS	60~140keV 1e1
14.			
11	,		
		가 NMOS	B In
15.			
11	,		
		가 PMOS	As Sb

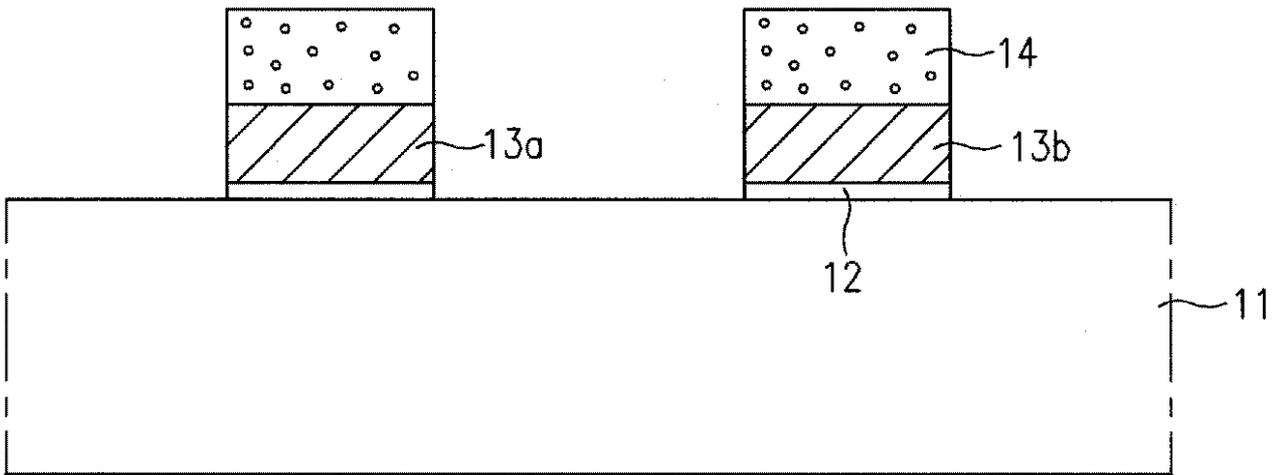




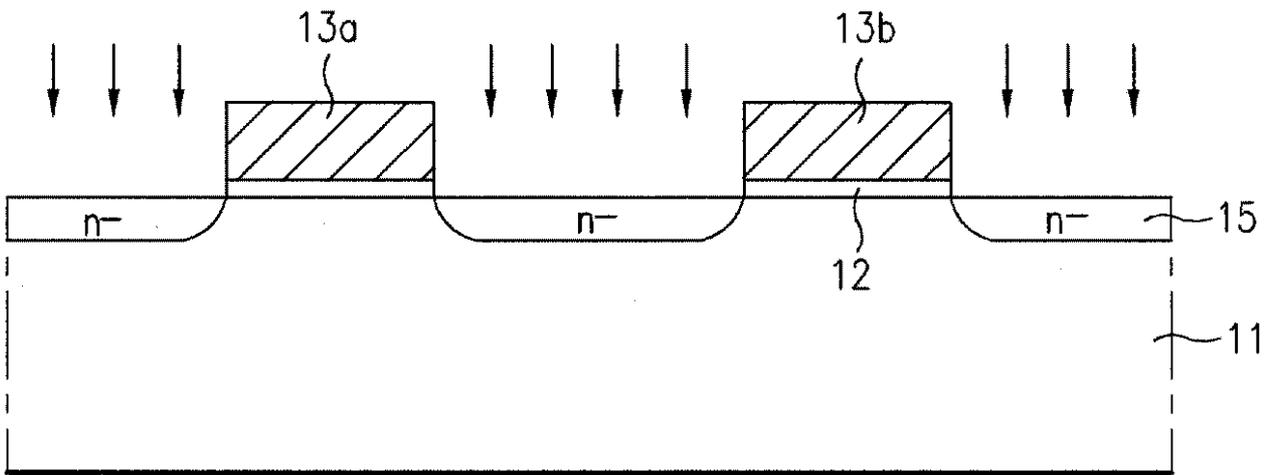
4a



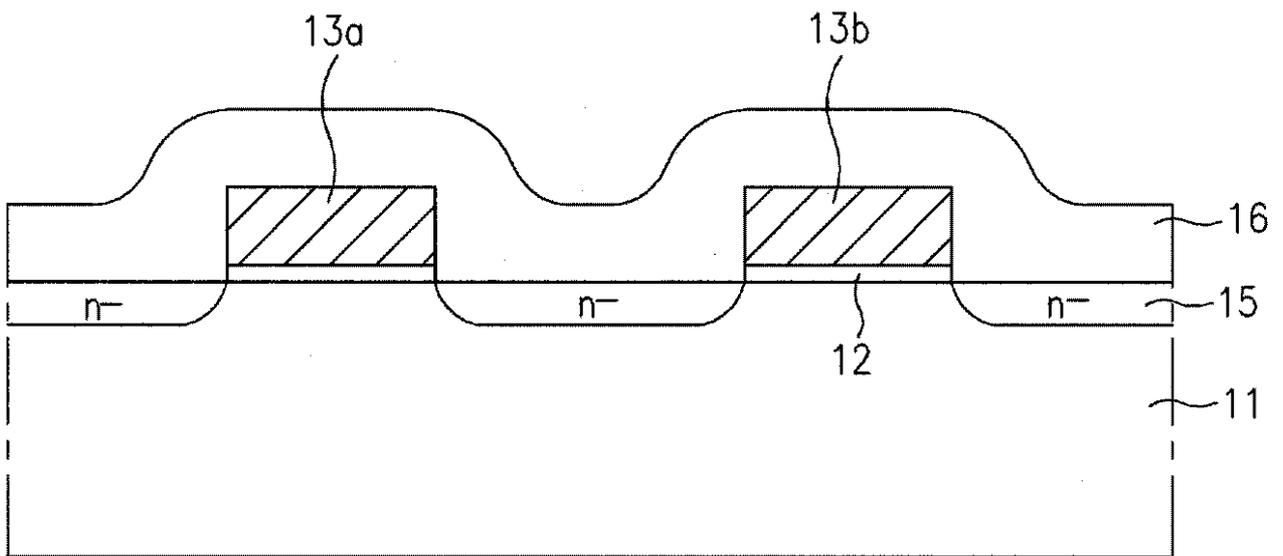
4b



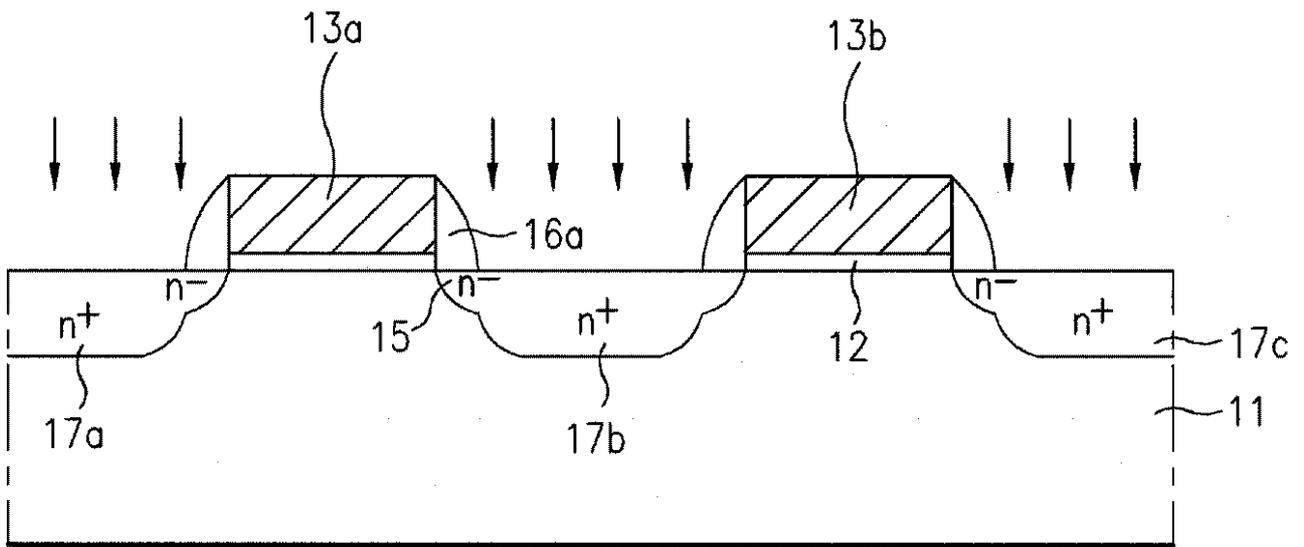
4c



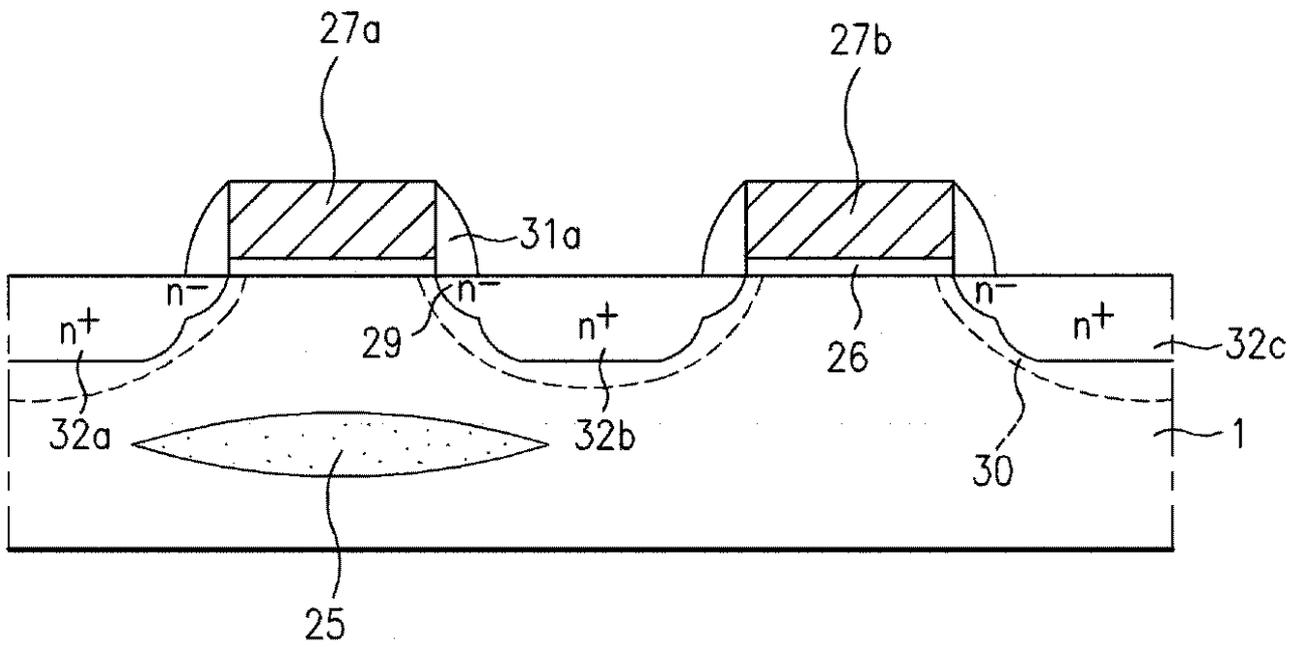
4d



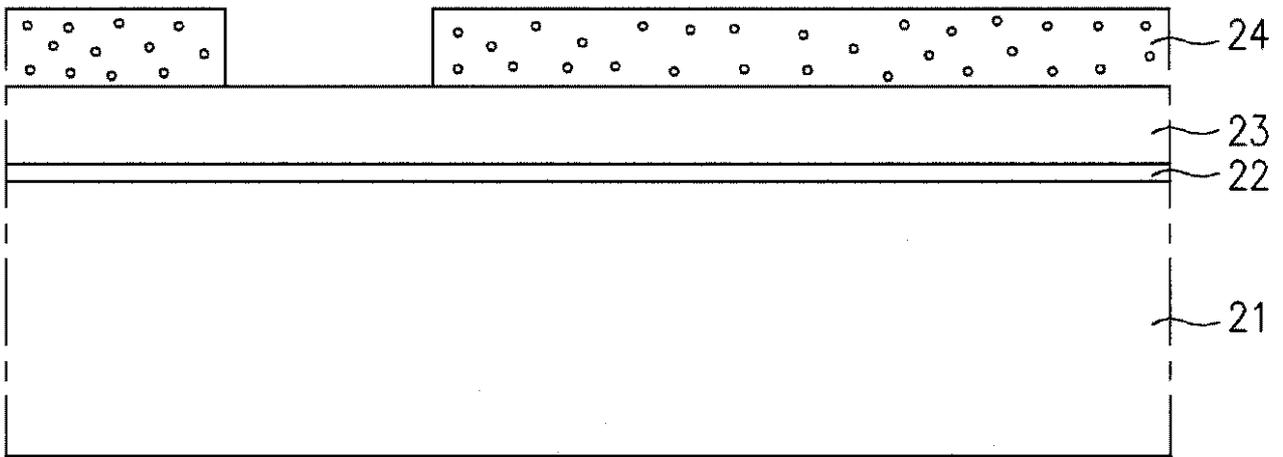
4e



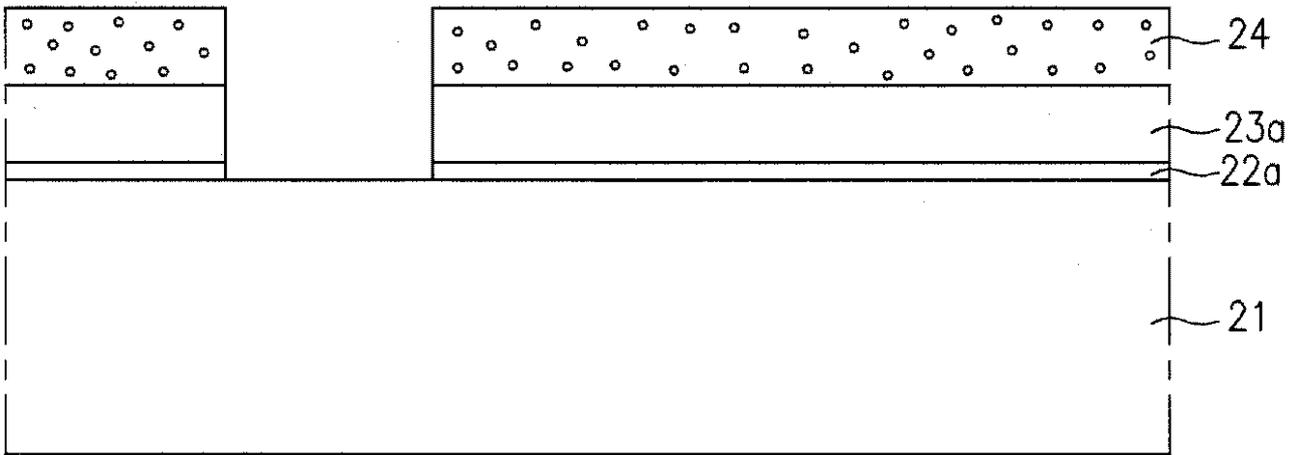
5



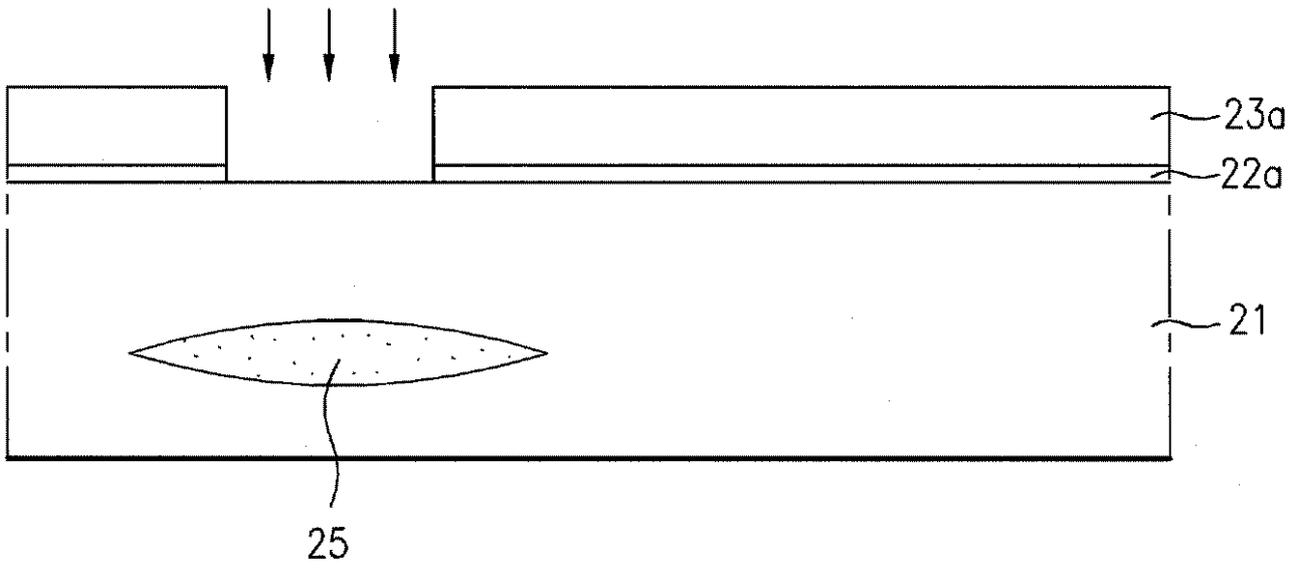
6a



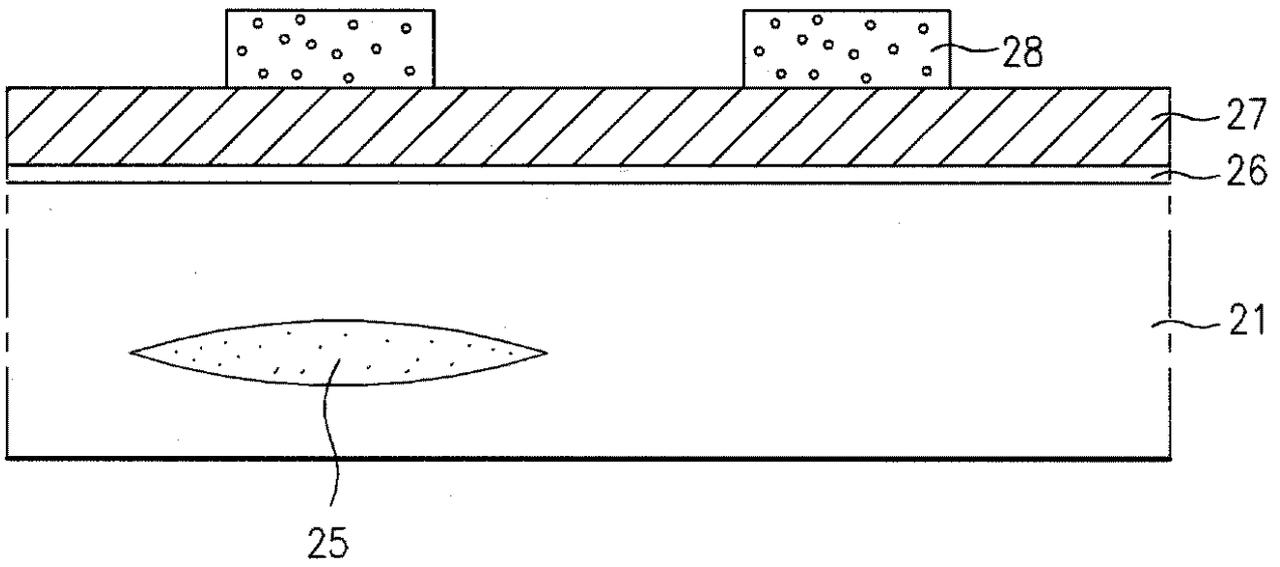
6b



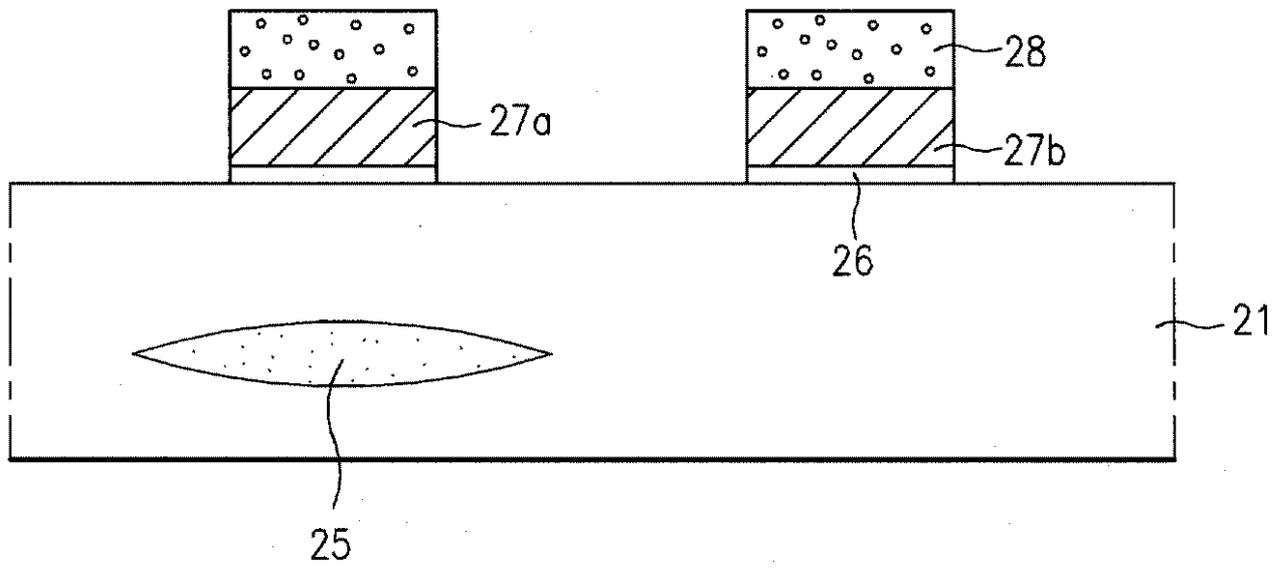
6c



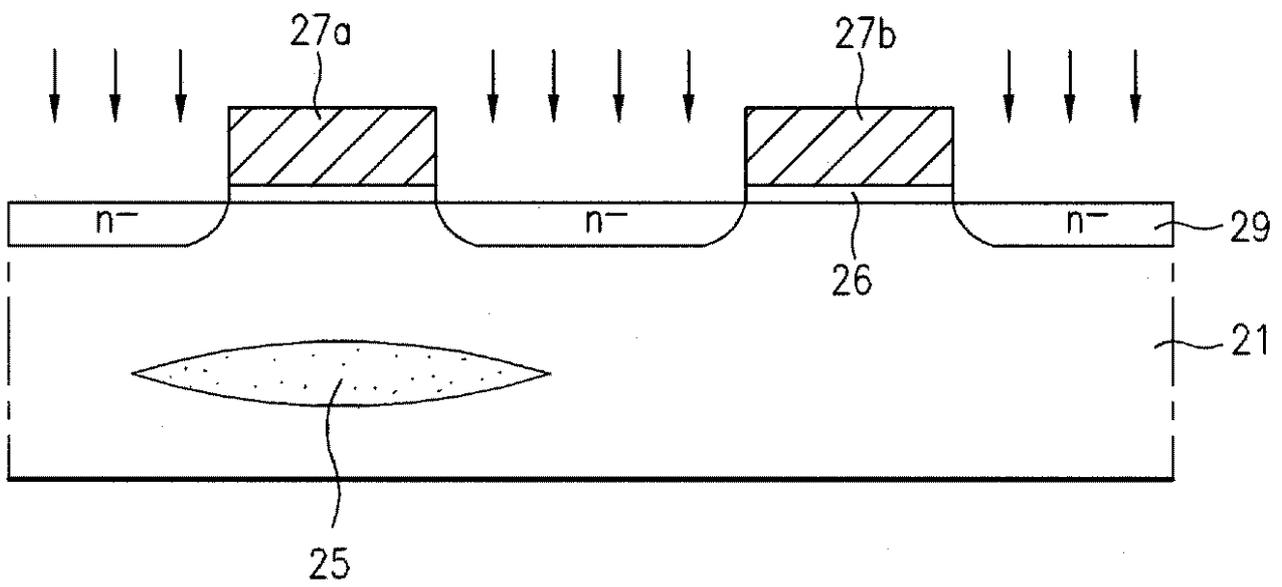
6d



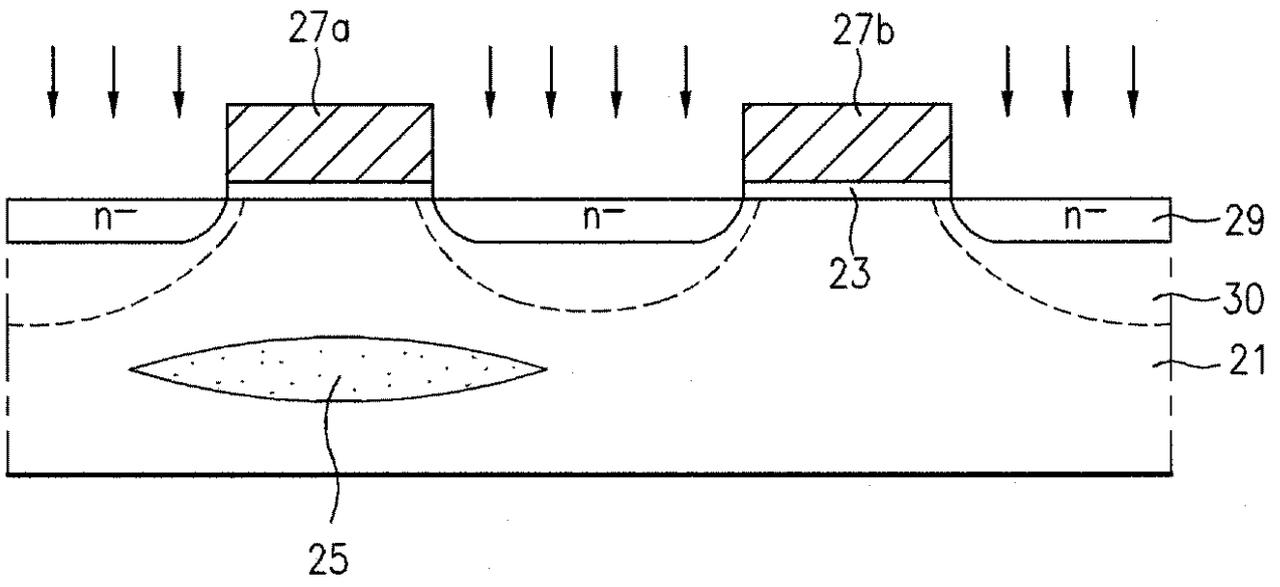
6e



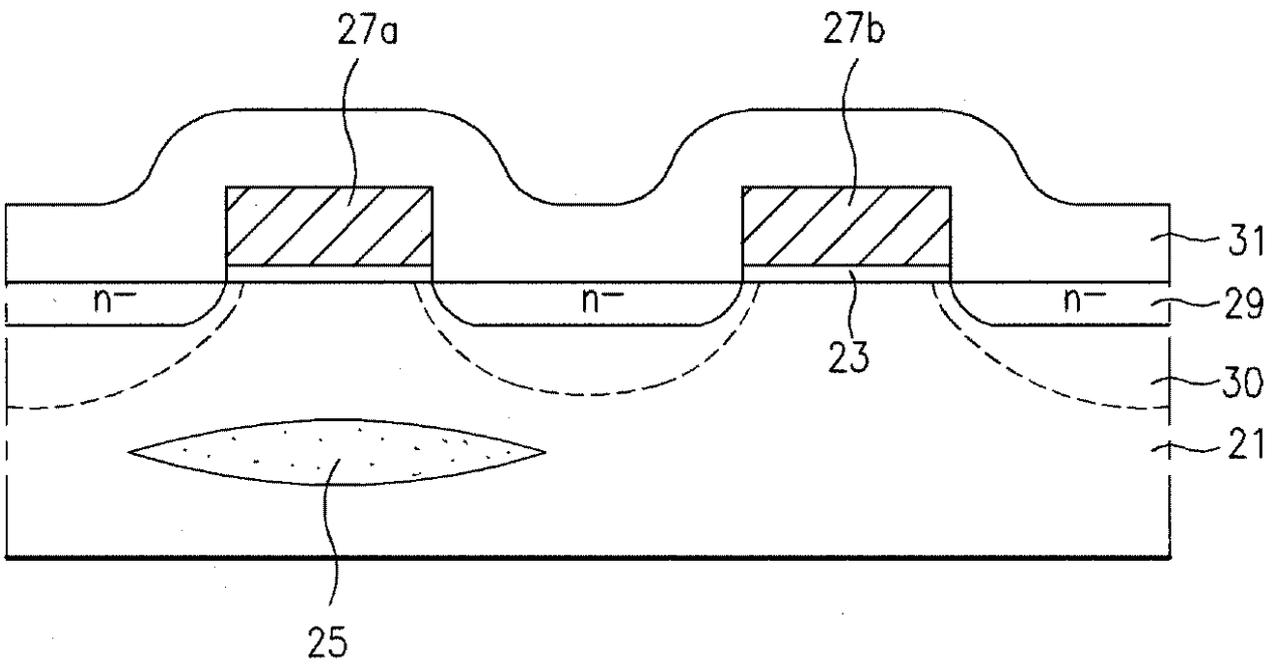
6f



6g



6h



6i

