

(19) (KR)  
(12) (B1)

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(24) 2001 11 09

(21) 10 - 1992 - 0024445 (65) 1993 - 0014960  
(22) 1992 12 16 (43) 1993 07 23

(30) 809,359 1991 12 17 (US)

(73) .  
75265 13500

(72) .  
77459 8115  
75240 13215

(74)  
:

(54) ,

, (30) 가 (32) (28) (30)  
(34, 36) (32) , (28)  
(38, 40) (28) .

1a

1a 1c

2a 2e

2f 2e

2g 2f

3a 3g

10 : 12, 30 :

16, 28, 46 : 20, 38, 40, 62 :

26 : CMOS 32 :

34, 36 : 52, 54 :

56, 58 : / 39, 41, 89 : (seal)

가

" - (epi - fill)"

n npn  
(n+)

n

( n - )  
n " - "  
- "

p

"

" - "

가

( )

nnpn

p

(n+) n " - "  
( )

가

- "

" , - " 가

가 . ,

(MOS)

가 . , , 가

가 .

가

가 .

가

, / (" - ")

가 .

(sealing) .

1 3 ,

1a 1c , (10) 가 " - "

(12) n+ (14) (10) (12) p (16)

n+ (14) 가 n-

(18) (10) n+/n- (18) (16) (20)가 (20) ,

(16) (18) (16)

1b , (20a) (22) , (20a)

(20b) (22) (18) (22)

/ , , 가 가

(24), npn (10) p 가 (2

(18) (24) (10) 가 .

Ob)

1c, p (24) n (18) .  
 1 1050 . p (24) , (20b)  
 (16) (18)  
 (20b) . , (22) ,  
 (20)가 .

, 1a 1c (18) (18) (16)  
 . (18) 가 , (16)  
 (18) 가 .

2a 2g , (CMOS) (26)  
 . CMOS p n  
 . CMOS , p n 가  
 ,  
 ,  
 가 ,  
 .

2a , (28) (30) p - . (28) (3  
 2a 32b) . p - (34) n - (36) ( )  $10^{15}$   $10^1$   
 $8 \text{ cm}^{-2}$  . (32a 32b) p  
 , (32a) , n (32b)  
 . , n (32a 32b) , (32b)  
 , p (32a) . , (38)  
 p - (34) (32a) (28) . (40)  
 (32b) n - (36) (28) .

2b , (38 40) (39 41) . (38 40)  
 (39 41) " (densified)"  
 (38 40) 1 750 (38 40)  
 가 (34 36)  
 (38 40)  $\text{SiO}_2$   
 " (seal) (39, 41)" . ,  
 (KOH), .

(38 40) , (42) (44)가 ( (44)  
 n ) , 2 (46) .  
 (46) .  
 - , (44)  
 .

2c, (34 36) / (48 49)가  
 (46) ., (50)  
 (44) ., n / (52) (50)  
 ( 10<sup>19</sup> cm - 3 n+) (48) p- (34) .  
 , p / (54) n- (36) (49)  
 ( 10<sup>19</sup> Cm - 3 p+) ( )  
 가 0.6 μm ( )  
 (52 54) /  
 가 . (52 54) (34 36)  
 (38 40) , / (52 54) / (30)  
 ., (38 40) (39, 41)  
 (38 40) .

2d, / (56 58)  
 / (56) n / (58) p . n / (56)  
 [ (46) (50) p ] (60)  
 ., p / (58)  
 (62) ( ) -  
 ., n ( ) p ( 10<sup>19</sup> cm - 3)  
 ) (56 58) (56) p+ / (58) 가 .

2e, n p CMOS  
 (64) ( )  
 ., / , / / (56 58)  
 1  
 / (58) (Vdd) (68) p /  
 (58) n / (56) (56) OV (Vss) . (70)  
 n / (56)

1, 2 (72) .,  
 (72) CMOS (68)  
 ., 2 (74) .  
 2, / , / / .

(44) . (44) ( ) n p  
 ( 2g ).

2f 2e 2 (76)  
 n (36) . (76) / (56 58)  
 . (76) n (36) n+ (76) (46)  
 . CMOS

, p / (58) , (Vdd) .

(1  $\mu\text{m}$ )가 / , / 가 가 CMOS

2g 2f (64 72) (66 70 74) (44) (26)

3a 3f npn (78) 3a , (78) p - (80) (80) n+ " " (82) , n+ (82) (84) 가

3b (84) (82) (86) (86) (84) n - (88) , ( ) (89) /

3c , (n+) (90) (90) (78) 가 p - (92)

3d , n+ (94) (92) (94)

3e (78) (94) 2 (96) (96) (96) n - n+ (94) 가

3f (92)( 3d ) (98) (98) 3e 가 (98) (78) ( ) (92) (78) 가 (78) 가

CMOS , (78)

(89)

가

가 , 가 가

(57)

1.

(30, 80)

(26, 78)

,

(28, 84)

;

(32a, 32b)

;

(34, 36, 86)

-

(38, 40, 88)

-

;

(densified oxide)

(39, 41, 89)

(sealing)

.

2.

1 ,

1 750

.

3.

1 ,

.

4.

3 ,

2

.

5.

(26, 78) ,

(30, 80);

(28, 84);

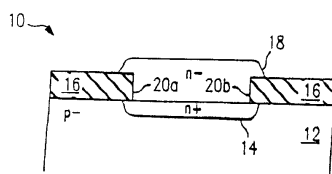
(38, 40, 88)

(34, 36, 86);

(39, 41, 89)

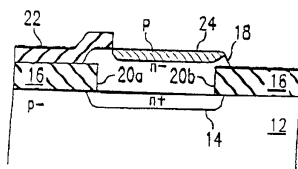
1a

(총래 기술)



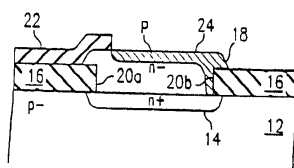
1b

(종래 기술)

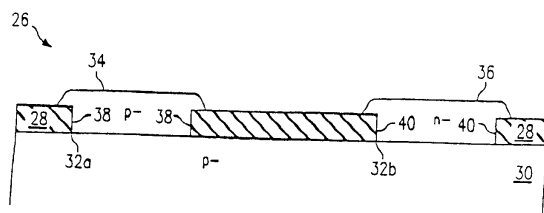


1c

(종래 기술)

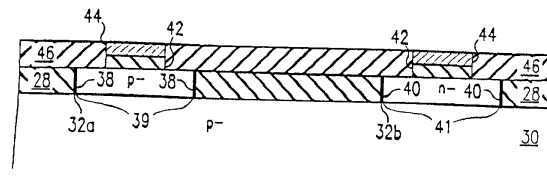


2a

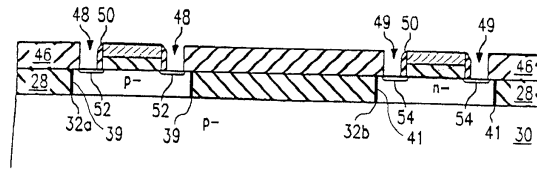




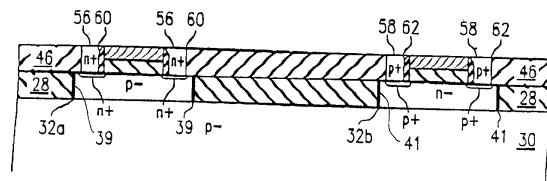
2b



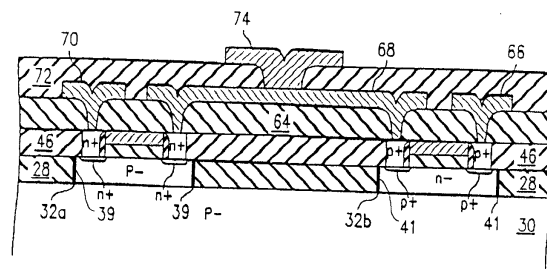
2c



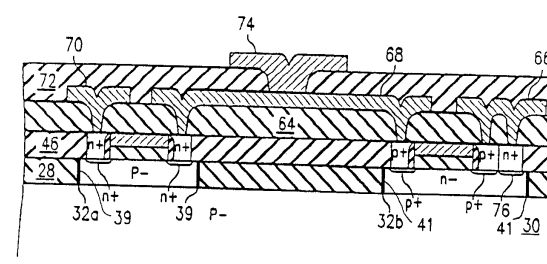
2d



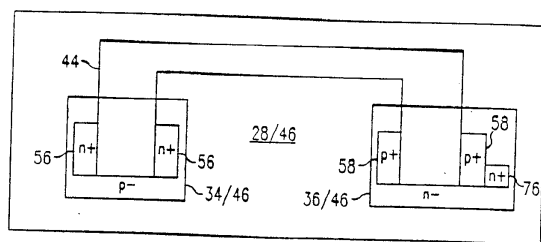
2e



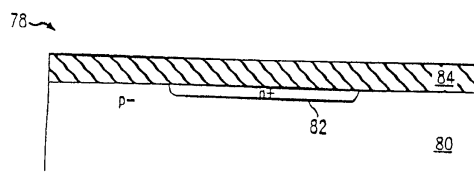
2f



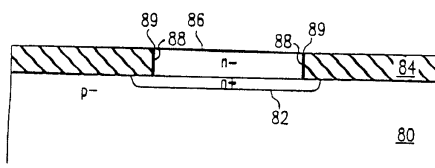
2g



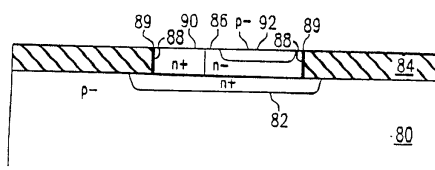
3a



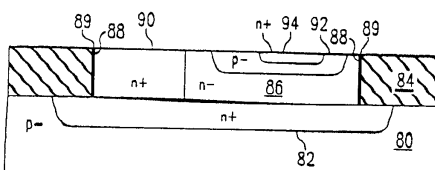
3b



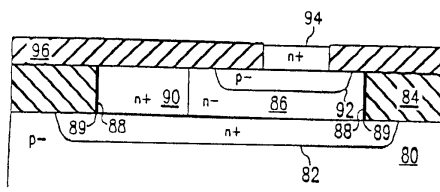
3c



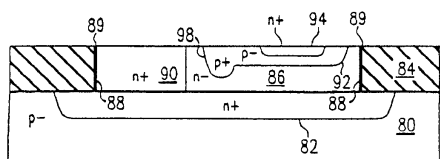
3d



3e



3f



3g

