

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

(51) 。 Int. Cl. <sup>7</sup>  
 H01L 21/331  
 (45) 2002 03 21  
 (11) 10 - 0315410  
 (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)"

npn  
n (n+)

n

p  
(  
n " - "  
- "

p

" - "

가

( )

n " - "  
(n+)            ( )            npn            ,            p



$$1c, p \quad (24) \qquad n \quad (18) \\ 1 \qquad 1050 \qquad . p \quad (24) \qquad , \qquad (20b) \\ (20b) \qquad (16) \qquad (18) \\ (20) \text{가} \qquad , \qquad (22)$$

, 1a 1c (18) (18) 가 . , (16)

$$(38 \quad 40) \quad . \quad , \quad 2 \quad , \quad (46) \quad (42) \quad (44) \quad (44) \\ n \quad ) \quad (46) \quad - \quad . \quad , \quad (44)$$

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

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

$$\begin{array}{ccccccc}
 1 & , & & & 2 & (72) & \\
 & (72) & & , & & / & \\
 , & (72) & CMOS & & & & (68) \\
 . & , & 2 & , & , & , & \\
 2 & , & & / & , & / & \\
 & , & & & , & & \\
 & & & & & & \\
 & & & & & & (74)
 \end{array}$$

$$(44) \quad . \quad (44) \quad ( \quad ) \quad , \quad n \quad p$$

$$(\quad 2g \quad ).$$

$$, \quad p \quad / \quad (58) \quad , \quad (\nabla d)$$

( $1 \mu\text{m}$ ) 가  
가  
가 / CMOS

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

3c , , (n+) (90) (90) (78) 가 p - (92)

$$3d_{\frac{1}{2}}, \text{ n+} \quad (94) \quad (92) \quad . \quad (94)$$

3e (78) (94) 2 . , (96)  
      , (96) , (92)  
      , (96) n- n+ (94)  
      . , , n- n+ (94)  
      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)

(28, 84);

,

(30, 80);

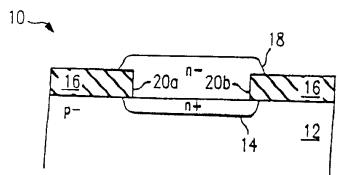
(38, 40, 88)

(34, 36, 86);

(39, 41, 89)

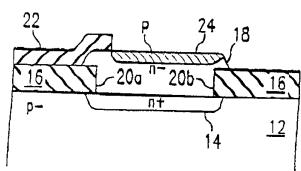
1a

(종래 기술)



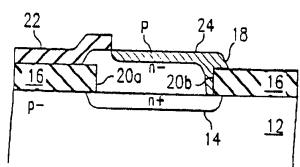
1b

(종래 기술)

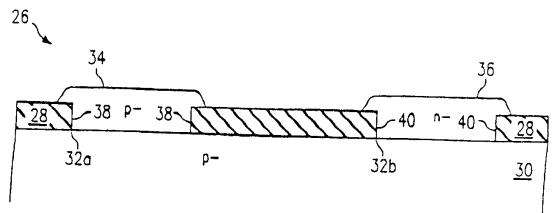


1c

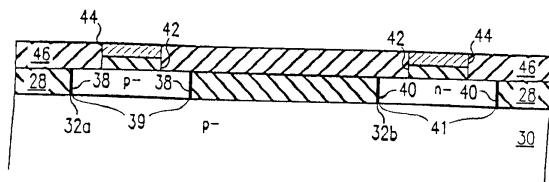
(종래 기술)



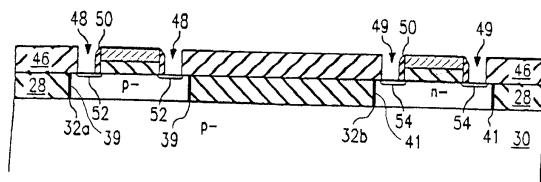
2a



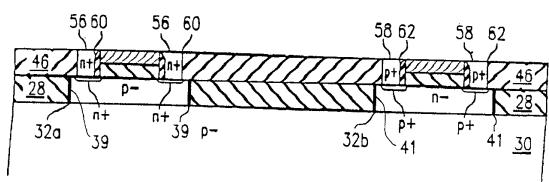
2b



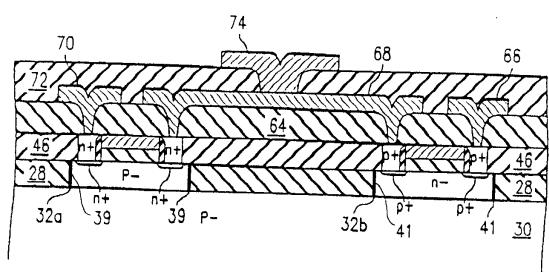
2c



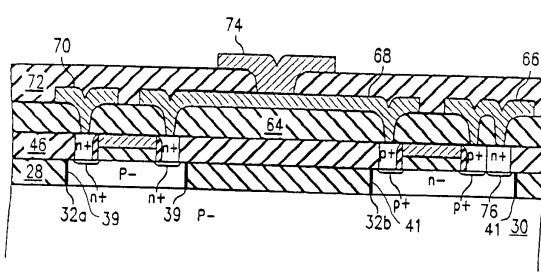
2d



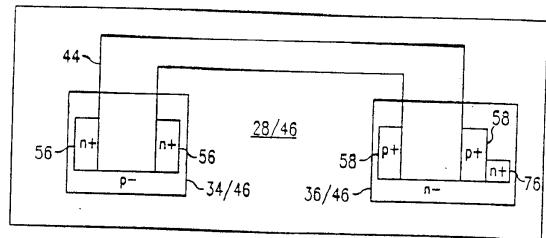
2e



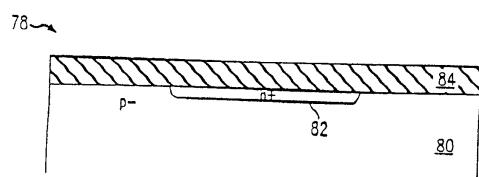
2f



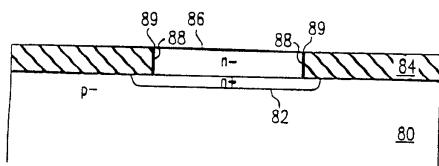
2g



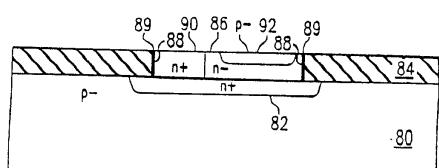
3a



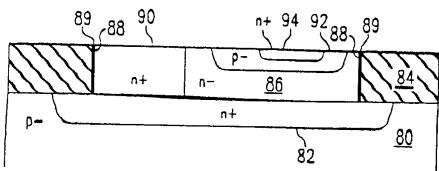
3b



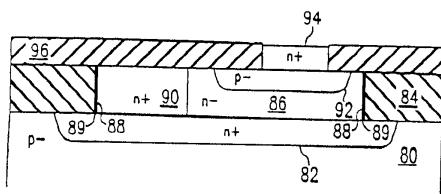
3c



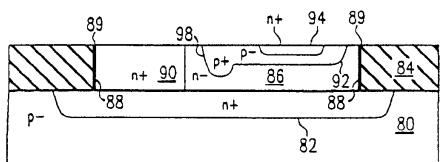
3d



3e



3f



3g

