

(19)
(12)

(KR)
(B1)

(51) 。 Int. Cl.⁶
H01L 29/78

(45)
(11)
(24)

2004 11 03
10-0431709
2004 05 04

(21) 10-1996-0045169
(22) 1996 10 10

(65)
(43)

10-1998-0026661
1998 07 15

(73) 136-1

(72) 350-28

(74)
:

(54)

- 1.
2. 가 .
- 3.
4. (dynamic RAM)

도 1D

1 ,
2A 2G ,
3 .

*
11:
12:
13: 1

14:
15:
16,17: /
18: 2

(MOSFET)

가 ,

가

(short channel effect)

(hot carrier effect)

가

() 가

1 , 1 , 1

1 / 2 , 1

1 , 1 / 2 , 1 , 1

가 2 , 1 , 2 ,

1 , (13) , (11) , (11)

1 (14) (13) (15) 가 (13) , 1

3) / (16,17) 가 1 가 (11) (18) 1 (11) (1

12 .

가 가 (13)

가 / 가가 .

2A 2G 1 ,

, 2A 1 (201) 1 (202) , (202)

1 (203) . 1

(203) 가
 , 2B 1 (203) (SiN) (204) ,
 (204) (204a) (204) (204)
 (204a) 2 (203) (204)가 (204)
 2 (204)가 1 (205)
 , 2C (204) (203) 1 (203)
 , (206) (204) (204) 1
 , 2D (203) (204) 2 (207) (204) 1
 , 1 (203) (209) () (208) ,
 2E (210) (passivation layer)(211) , 2 (212)
 , 2F 2F 180° , 1
 , 2G (Chemical Mechanical Polishing) (222)
 (201) / (Etch stopper)
 1 (201) (213) ()
 214) 1 3 , 1
 3 , (16) (31)/ (32)/ (33) 1
 , (17) (34) ,
 34 , 35 2 ,
 3 (31) (Ta
 2 O 5) - (In-situ doped)
 가
 가 가
 가 3

(57)

1.

1 ;
 1 ;
 1 / ; 1 2

2.

1 , 1 가
 / ; 1 1
 ; 1 , 1 2
 ; ;

1

2

3.

1 ;
 1 ;
 ;
 1 ;
 1 ;
 , 1 1 ;
 ;
 1 , 2 ;
 1 2 ;
 2 2 1 ;

4.

3 , .
 1 ;
 1 ;

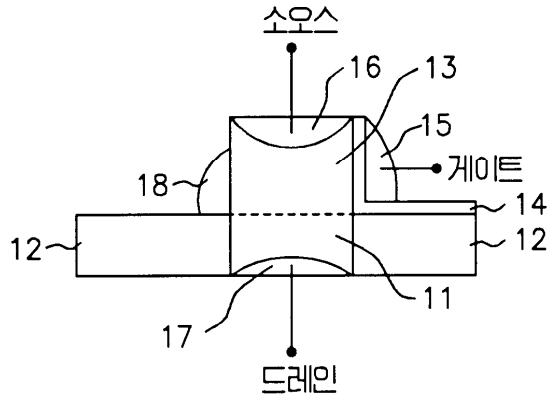
5.

1 ;
 1 ;
 ;
 1 ;
 1 ;
 1 ;
 , 2 ;
 1 1 2 ;
 2 2 ;

6.

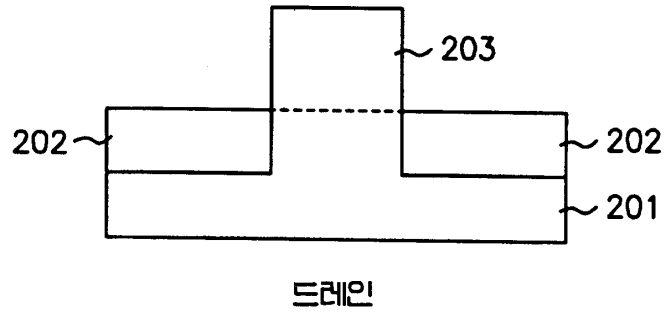
5 , .
 1 ;

1

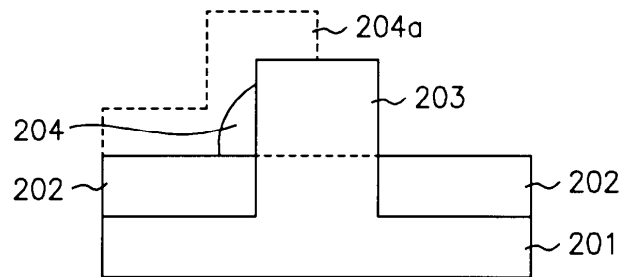


2a

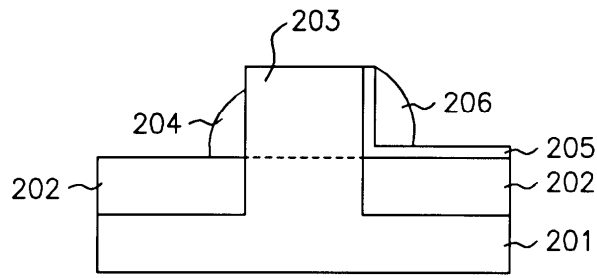
소오스



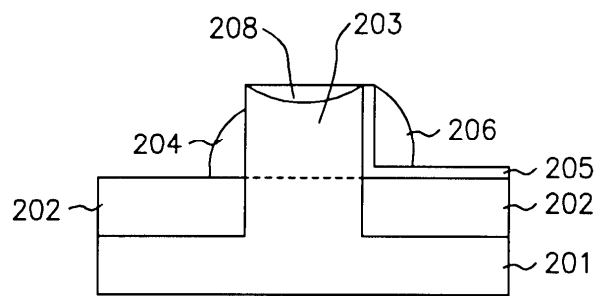
2b



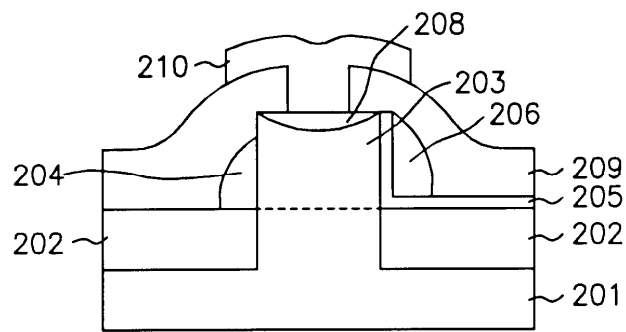
2c



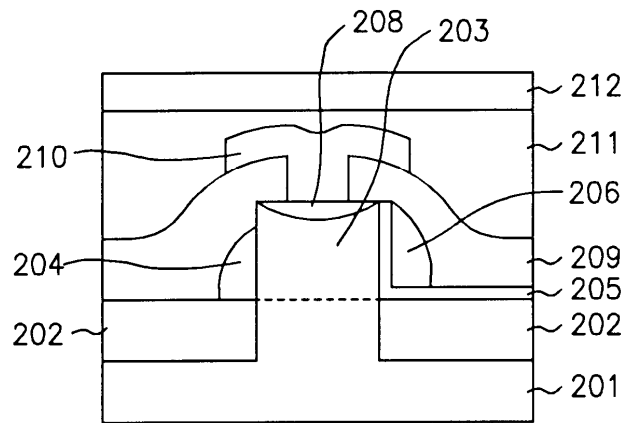
2d



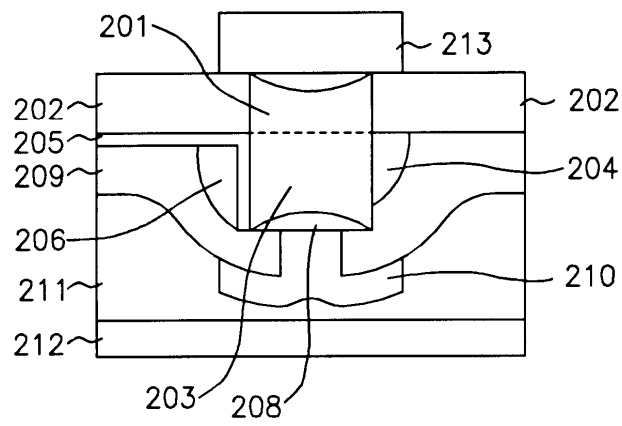
2e



2f



2g



3

