

(19)
(12)

(KR)
(A)

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H01L 21/28

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(43)

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2005 01 07

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(22) 2003 06 30

(71) 136-1

(72) 106-802

(74) :

(54)

2 , , 1 , , 2 ,
1 , , 2 , , 1
2 , , 2 , , 1
가 , 가 , 가

7

, , ,

1 7

< >

11 :

13, 17 :

15, 19 :

27 :

29 :

31 :

NAND

(trench-first dual damascene process)

CMP

, NAND
(contact-first)

, - (contact-first)

(capacity)가 가

(delay)

가 가

1

, 2 , 2

1
2

, 2

1

가

1 7

1 , 가 (11)
 300~700 1 (13) , 5000~10000
 (15) , 300~700 2 (17) , 1000~3000
 (19) (19) (13, 17)
 (15) (19)
 TiN (19) SiN SiON (21)
 (21; anti reflection coating) (21)
 (21)
 (23) 1
 2 , 1 (23) (21)
) , (19) , 2 (17) (T) 1 (21)
 T) (15) 가 (T)가 , 1 (23)
 3 (T)가 (A; 4) 2 (25)
 (11)
 4 , 2 (25) (1)
 5) (A) 2 (11) , 2 1 (1)
 13) (25) (A) (27) 2
 , 2 (25)
 100~300 2 (27) (27)
 (19) (27)
 (10) 20~60nm (27)
 5 (27) (11) (blanket etching),
 (vertical) (A) 1 (13)
 (11) (27) (19)
 (27) (21)
 (T) (15) , 1000~1500
 (19)
 (19) (27) (27-1)
 (19) (27-1)
 (A) (27)
 6 , Ti/TiN
 (29) (29)
 (31)
 7 (19) (CMP)
 (31) (29) (15) (31-2)
 (31-1) (15) (11)
 가 (19) (27-1)

가
가

(57)

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

가

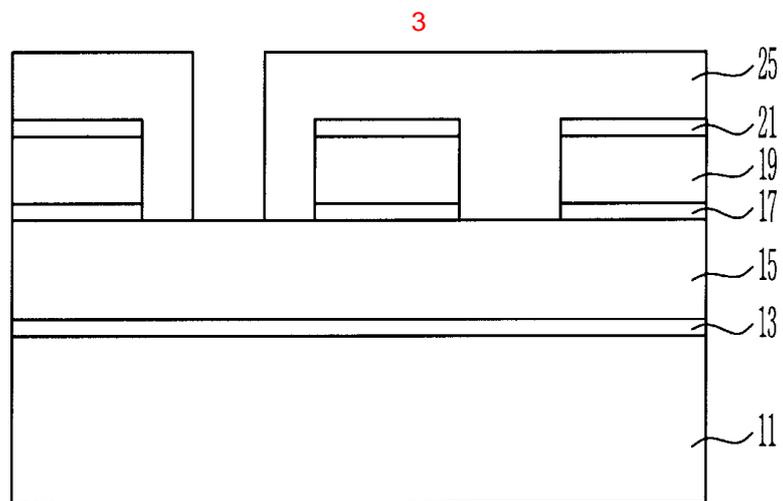
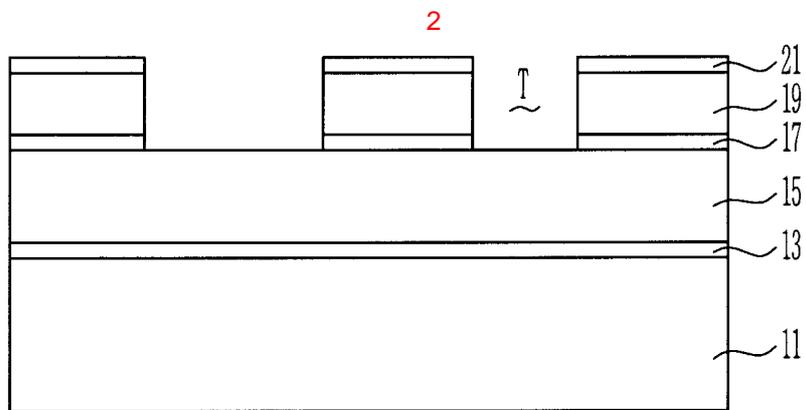
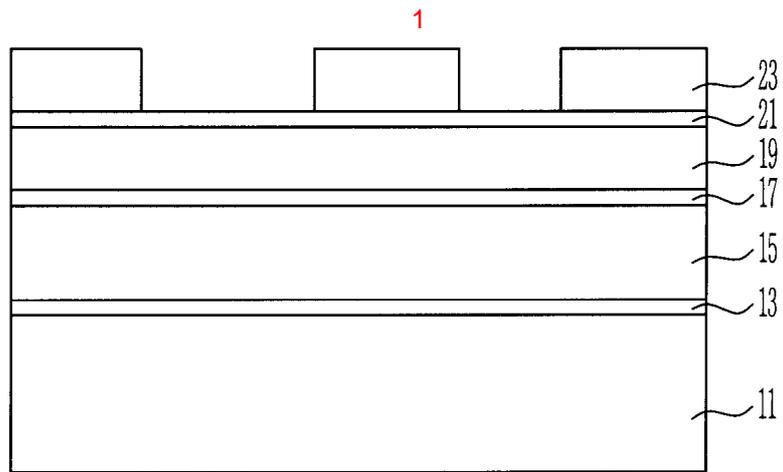
2. 1, 2, 300~700, 5000~10000, 300~700
 1000~3000

3. 1, SiN, SiON, TiN

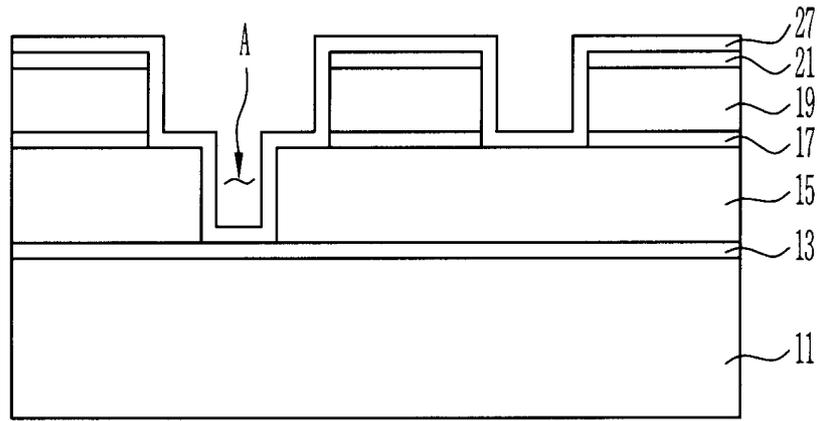
4. 1, 100~300

5. 1, 1000~1500

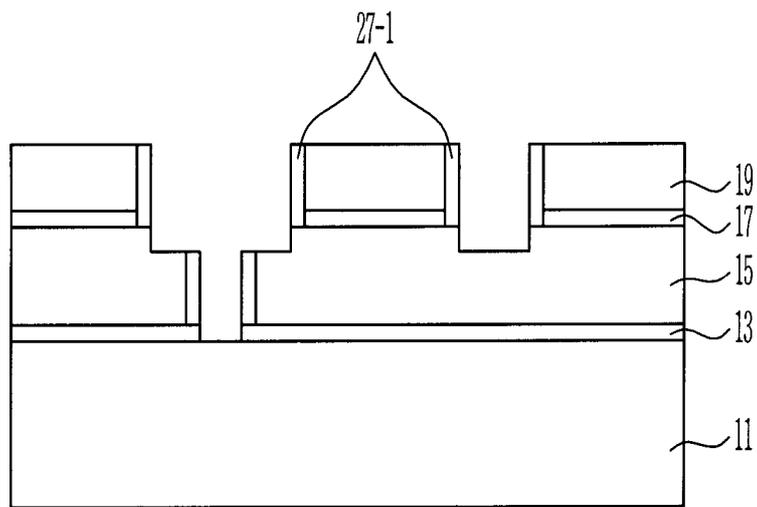
6. 1,



4



5



6

