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(43)

10-2003-0029398  
2003 04 14

(73) 136-1

(72) 825 2402

899-1 102 1303

(74)  
:

(54)

1500 BPSG 2000 3000 7000  
LPCVD UHVCVD  
1000 3000

13

1 4  
5  
6  
7 8  
9 13  
\*

SEM

\*

41 : 43 :  
45 : 47 :  
49 : 1 51 :  
53 : 55 : 2

(SEG) 가  
가  
(CMP)  
0.16 μm  
(gap-fill)  
가  
(CMP) (silicon recess etch)  
가  
(SEG; selective epitaxial growth)  
(SEG) )  
(SAC; self-aligned contact)  
(SEG) (selectivity), (thermal st  
ress)  
(facet generation)  
(LPCVD) 850  
가 (thermal budget)가 가  
1 4  
( ) (3) 1 (3) (1)  
(5) (5) (1)  
( ) (3) (7) (5) (1) (7) CMP  
(7)  
2 (7) ( ) (9),  
3 (9) (9) (7)  
(9) (11) CMP (9) (  
) (11a)

0.16 μm  
(high aspect ratio)  
가

5  
 (27) (29) (23) (21) (25)  
 (31) (21)  
 (33) ( )  
 5 가

가 가

6 'A' T (100) (110)

7 8 SEM 7 (100) SEM  
 8 30 8 30

가 T T  
 가 T

가

LPCVD 3000 7000 BPSG  
 UHVCVD 1500 2000  
 1000 3000

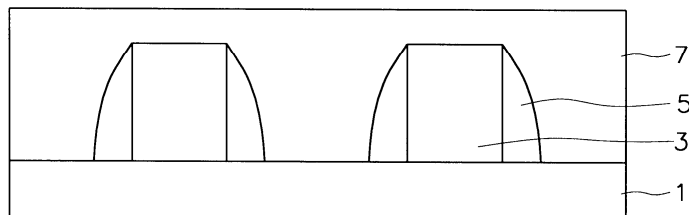
9 13  
 41) ( ) ( )

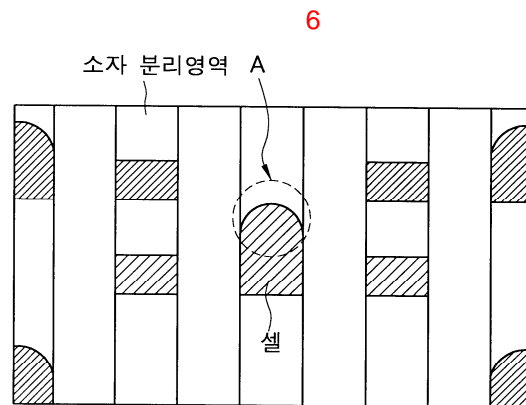
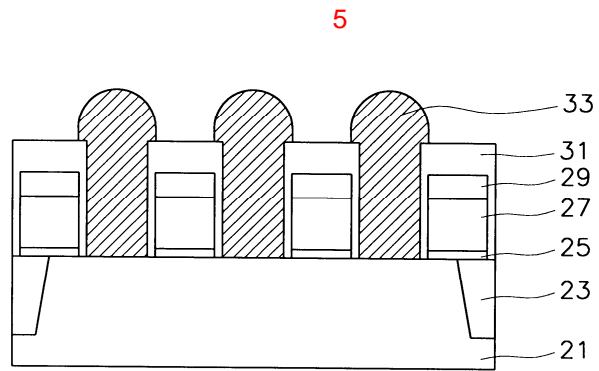
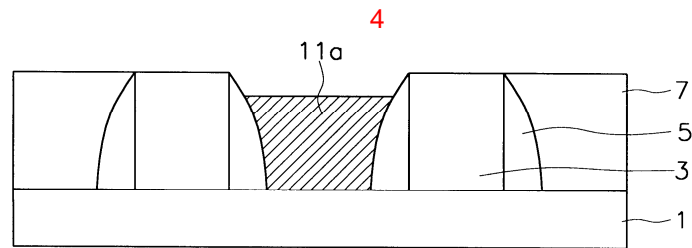
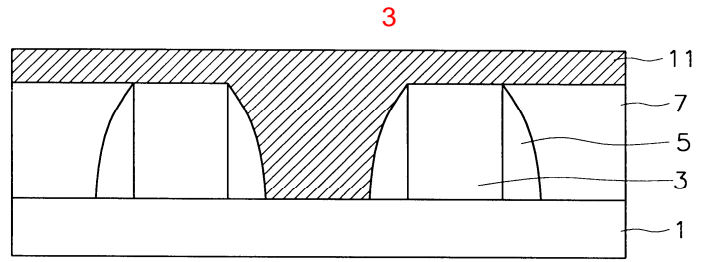
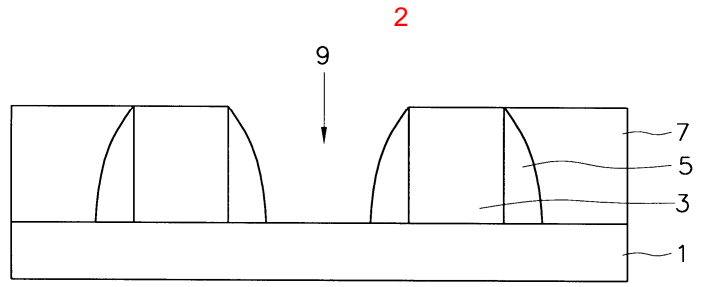
9 (45) (41) (43) (41) ( ) (43)  
 (47) (43) 500 1500 (41) 500 1500  
 (43) (13) (14)  
 10 (27) (41)  
 UHV CVD 1 1500 (49) 2000 1 (49) LPCVD  
 (49) 가 1 (49) 1500 2000  
 가  
 LPCVD 1 (49) , 800 1000 1 5  
 , 5 Torr 300 Torr SiH<sub>2</sub>Cl<sub>2</sub> 가 HCl 가  
 10 500 sccm  
 , UHVCVD 2 (49) , 400 800 0.1 mTorr 2  
 0 mTorr , 400 800 0.1 mTorr 100 Torr  
 Si<sub>2</sub>H<sub>6</sub> Cl<sub>2</sub> 가  
 11 (51) 1 (49) (51) , LPCVD PECVD 3000 7000  
 , HDP CVD BPSG  
 (51) ( )  
 ( ) ( )  
 12 (49) (53) ( )  
 ( ) 1  
 13 (53) 1 (49) 2 (55)  
 , 2 (55) 2 (55) 1 (49)  
 , 2 (55) LPCVD  
 가  
 가 (gap filling) 가  
 가 가

- (57)
1. BPSG 3000 7000 ;  
 ;  
 LPCVD UHVCVD 1500 2000 ;  
 ;  
 1000 3000

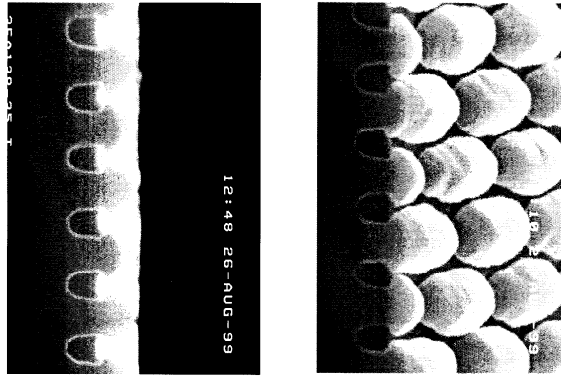
- 1 2.
- 2 3. 500 1500 500 1500
- 2 4. 1000 3000
- 4 5. LPCVD PECVD
- 2 6. 100 500
- 6 7. LPCVD PECVD
- 8.
- 9.
- 1 10. LPCVD , 800 1000 1 5
- 1 11. SiH<sub>2</sub>Cl<sub>2</sub> 가 HCl 가 LPCVD , 5 300Torr  
10 500sccm
- 1 12. UHVCVD , 400 800 0.1 2  
0mTorr
- 1 13. UHVCVD , 400 800 0.1mTorr  
100Torr SiH<sub>2</sub>Cl<sub>2</sub> 가 Cl<sub>2</sub> 가
- 14.
- 15.
- 16.

1

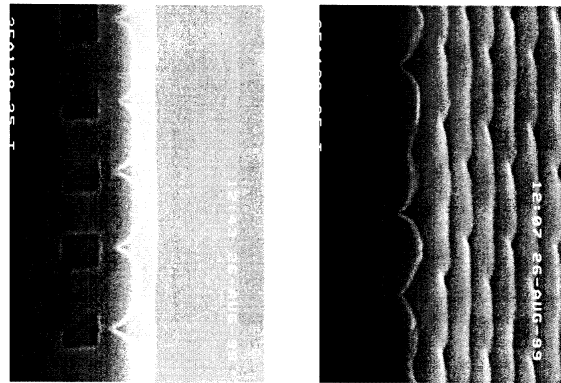




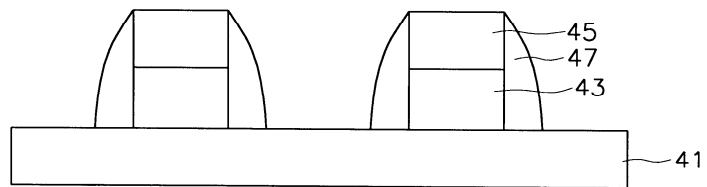
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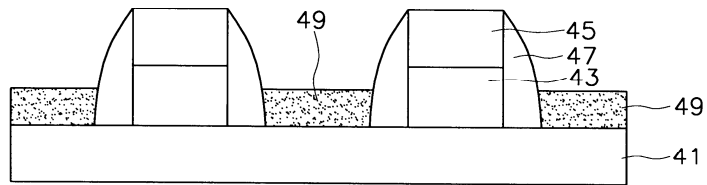
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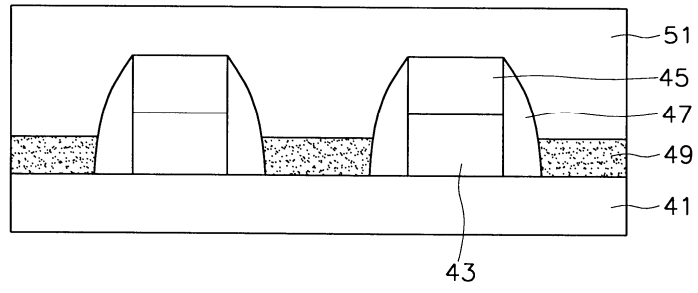
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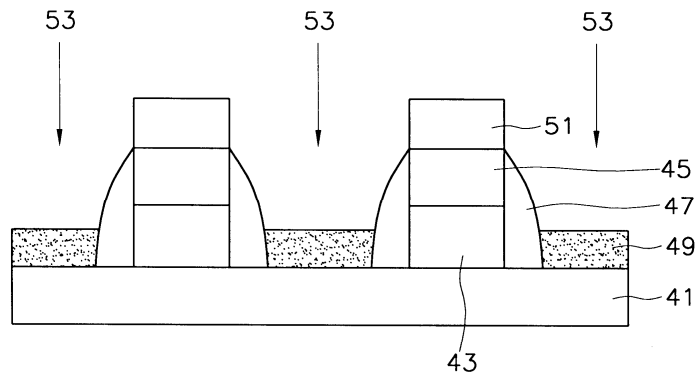
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11



12



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