

(19)  
(12)

(KR)  
(B1)

(51) 。 Int. Cl.<sup>7</sup>  
H01L 27/108

(45)  
(11)  
(24)

2004 06 07  
10-0434704  
2004 05 25

(21) 10-2001-0087239  
(22) 2001 12 28

(65)  
(43)

10-2003-0056898  
2003 07 04

(73) 136-1

(72) 107-304

101-1002

(74)  
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(54)

AION TiON ; ; AION TiON ; ;  
TiON ; ; AION TiON ; ; AION

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1 11

12 22

[ ]  
11 : 13 :  
15 : 17 :  
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 31 : AION 33 : TiON  
 35 : TiN 37 :

TiON 가 , AION  
 가 AION TiON 가  
 TiON 가 , AION  
 ; AION TiON ;  
 ; AION TiON ;  
 ( )  
 1 11  
 (13) (13) (15) 1 (11)  
 , 2 (17) (17) (19)  
 , 3 (17) (19) (19) (15) (  
 )  
 , 4 (11) 1 (21) 1 (21) 1 (21) (23a)  
 ( ) 1 (21) (23a)  
 , 5 (25) (23a) 5000 20000 (25)  
 ARC SiON  
 , 6 (25) ( )  
 (23a) (19) 2 (27)  
 , 7 2 (27)  
 , 8 CMP (31) (25) AION (33)  
 ) 50 150  
 , AION (33)

0, 200 450, 0.1 torr 1 torr R.F. 1  
 500 W  
 (CH<sub>3</sub>)<sub>3</sub>Al H<sub>2</sub>O NH<sub>3</sub> 10 sccm 500 sccm, 10 sccm H<sub>2</sub>O NH<sub>3</sub> 500 sccm  
 NH<sub>3</sub> 9 N<sub>2</sub> 가 N<sub>2</sub>O

Im, RTA (rapid Thermal Anneal) 700 850, N<sub>2</sub>O 가 1 slm 10 s  
 60 180  
 가 PECVD TiON (35)  
 10 TiON (35)  
 TiCl<sub>4</sub> 170 190, 0.1 torr 1.2 torr  
 300 500  
 R.F. 10 500 W, 가 NH<sub>3</sub> 가 10 sccm 100 sccm  
 가 O<sub>2</sub> 가 10 100 sccm TiON (35) (C) N<sub>2</sub> 가  
 N<sub>2</sub> RTP

500 600, 5 60  
 TiON (35) TiN (37) (39)  
 11 TiN (37)

12 22

51) (53) (53) (55) 12 ( )  
 13 (57) (57) (59)  
 14 (57) (59) (59) ( )  
 ) (51) 1 (61) (57) (59) (55)  
 15 1 (61) 1 (61) (63) (63)  
 16 (63) 1 (63) (63)  
 (65) (65) 5000 20000  
 (65) ARC SiON  
 17 (65) ( )  
 (63a) (59) 2 (6)

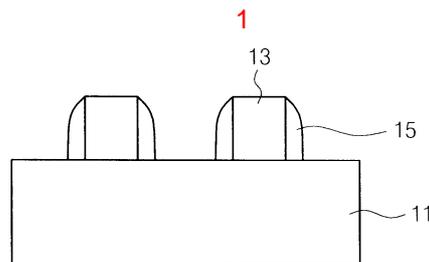
7) 18 2 (67) (69) (65)  
 CMP (69) NH<sub>3</sub> (nitridation)

NH<sub>3</sub>

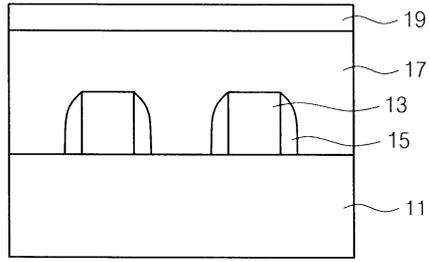
r, NH<sub>3</sub> 300 550, 0.1 torr 1.2 tor  
 W 10 600 NH<sub>3</sub> 10 sccm 500 sccm R.F. 10 500  
 19 가 PECVD TiON (71)  
 TiON (71)  
 TiCl<sub>4</sub> 170 190, 0.1 torr 1.2 torr  
 300 500  
 R.F. 10 500 W, 가 NH<sub>3</sub> 가 10 sccm 100 sccm  
 가 O<sub>2</sub> 가 10 100 sccm TiON (71) PECVD AION (73)  
 20  
 50 150  
 AION (73)  
 200 450, 0.1 torr 1 torr R.F. 1  
 0 500 W



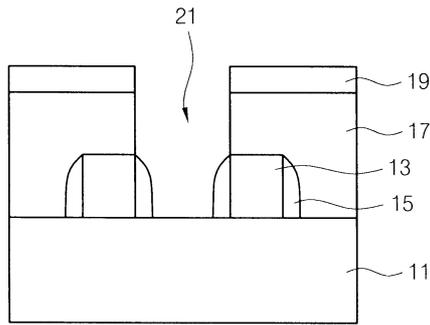
- 3 , TiON PECVD , TiCl<sub>4</sub> 170 19  
0 , R.F. 10 500 W 0.1 torr 1.2 torr , NH<sub>3</sub> 가 , 300 500  
가 O<sub>2</sub> 가 10 100 sccm 10 sccm 100 sccm , .
- 8. 3 , TiON (C) N<sub>2</sub> 가 N  
2 RTP .
- 9. 8 , 500 600 , 5 60
- 10. 2 , AION TiON , TiO  
N , AION .
- 11. 10 , TiON NH<sub>3</sub> .
- 12. 10 , TiON PECVD , TiCl<sub>4</sub> 170 1  
90 , R.F. 10 500 W 0.1 torr 1.2 torr , NH<sub>3</sub> 가 , 300 500  
가 O<sub>2</sub> 가 10 100 sccm 10 sccm 100 sccm , .
- 13. 10 , AION PECVD , R.F. 10 500 W 200 450  
I 10 sccm , 500 sccm, 10 sccm H<sub>2</sub>O NH<sub>3</sub> , H<sub>2</sub>O , (CH<sub>3</sub>)<sub>3</sub>A  
NH<sub>3</sub> 500 sccm .
- 14. 10 , AION N<sub>2</sub> 가 N<sub>2</sub>O
- 15. 14 , 60 180 700 850 , N<sub>2</sub>O 가 1 slm  
10 slm , .
- 16. 14 , N<sub>2</sub>O 가 AION 가 N<sub>2</sub>
- 17. 16 , 5 60 , 가 N<sub>2</sub> , 600 850  
 , .



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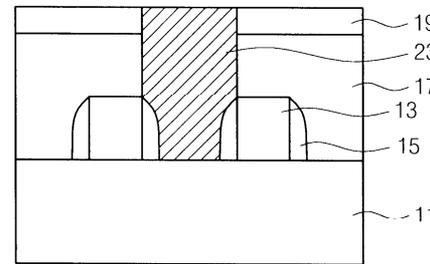


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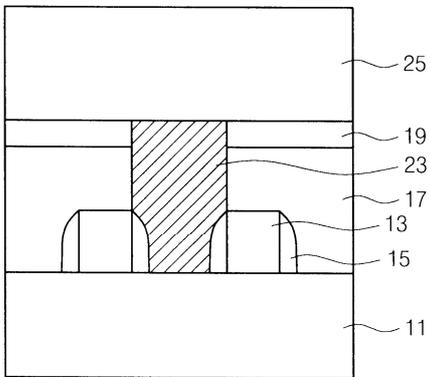


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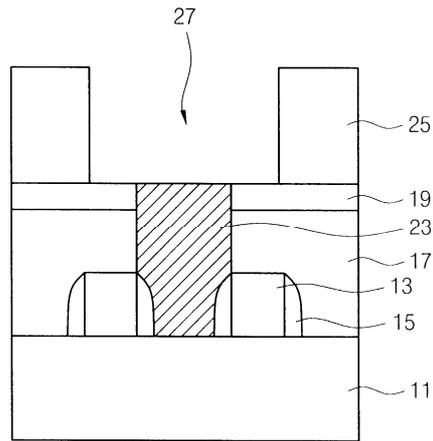
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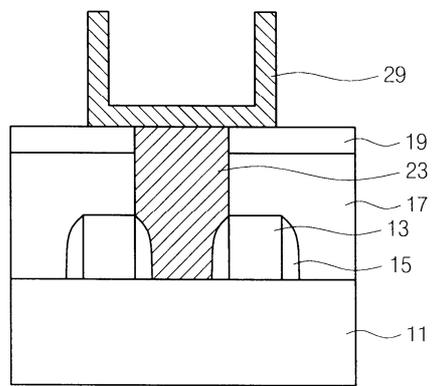
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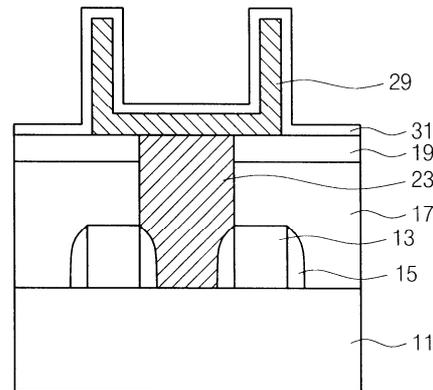
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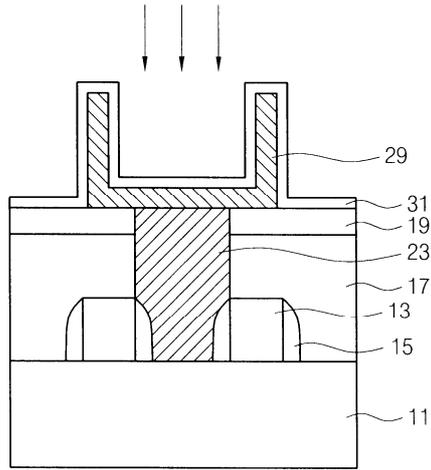


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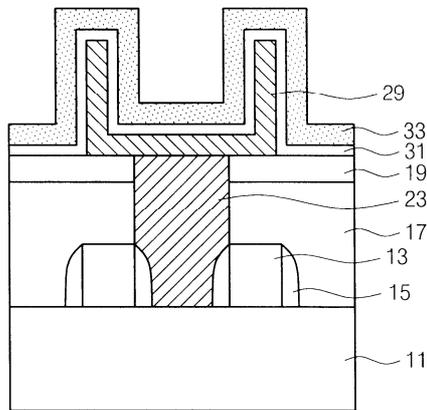


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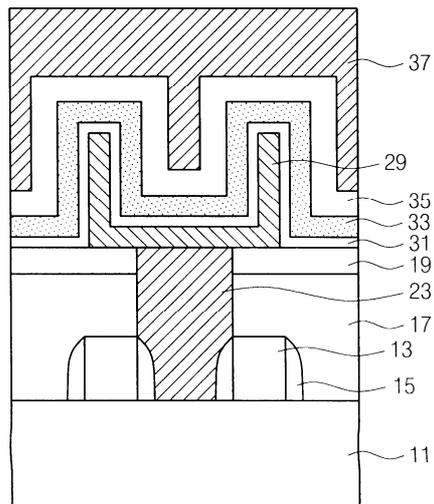
N<sub>2</sub>O 플라즈마 아닐링



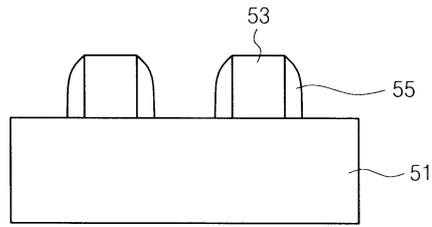
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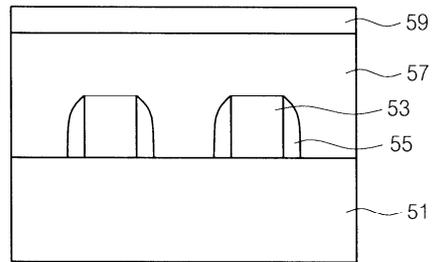
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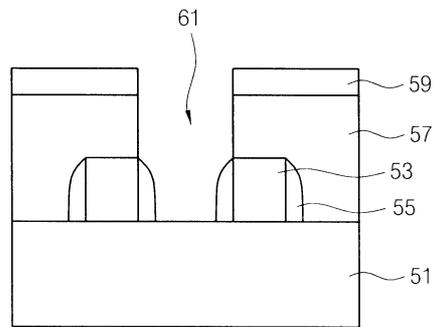
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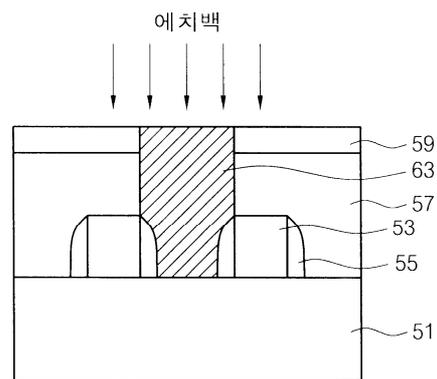
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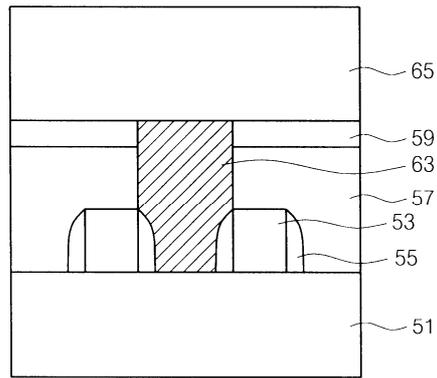
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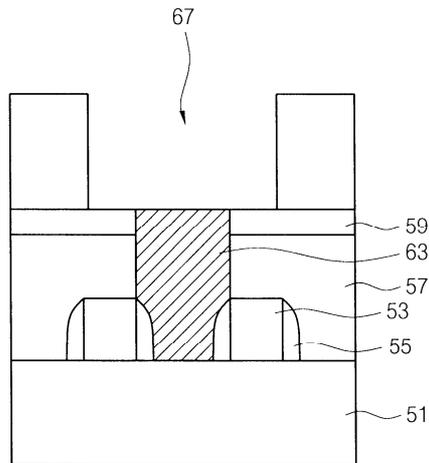
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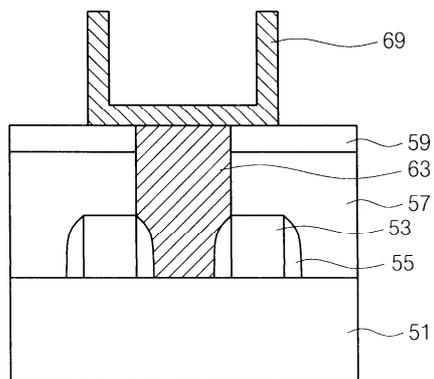
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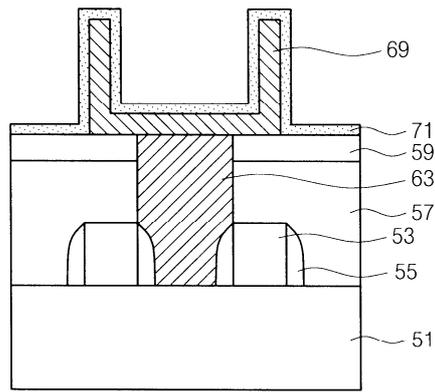
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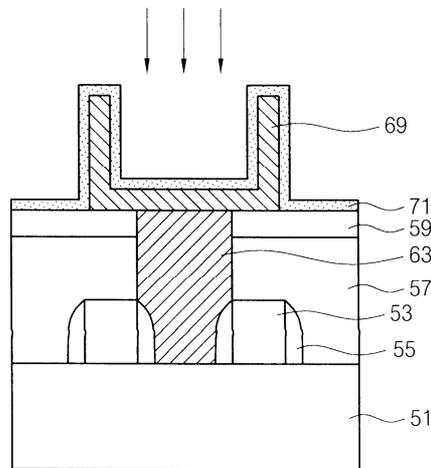


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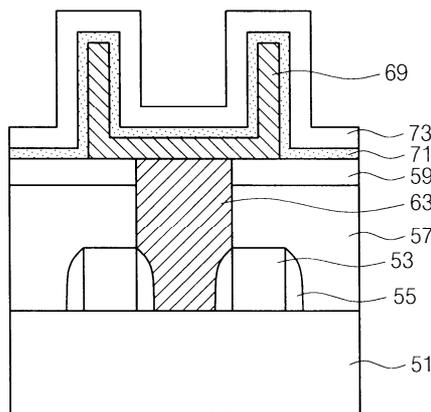


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N<sub>2</sub>O 플라즈마 아닐링 / 퍼니스 N<sub>2</sub>아닐링



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