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(12)

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H01L 27/108

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2003 07 04

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101-1002

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(54)

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

11

1 11

12 22

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11 : 13 :
15 : 17 :
19 : 21 : 1

23 : 25 :
27 : 2 29 :
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) (
) (11) 1 (21) (19) (21)
, 4 (21) 1 (21) 1 (21) (23a)
() 1 (21) (23a)
, 5 (23a) (25) 5000 20000 (25)
(25) ARC SiON (25) ()
, 6 (23a) (19) 2 (27)
, 7 2 (27) (31) (25)
, 8 (31) PECVD AION (33)
) 50 150
, AION (33)

0, 200 450, 0.1 torr 1 torr R.F. 1
 500 W
 (CH₃)₃Al
 H₂O NH₃ 10 sccm 500 sccm, 10 sccm H₂O NH₃ 500 sccm
 9 N₂ 가 N₂O

lm, RTA (rapid Thermal Anneal) 700 850, N₂O 가 1 slm 10 s
 60 180
 가 PECVD TiON (35)
 10 TiON (35)
 TiCl₄ 170 190, 0.1 torr 1.2 torr
 300 500
 R.F. 10 500 W 가 NH₃ 가 10 sccm 100 sccm
 가 O₂ 가 10 100 sccm
 N₂ RTP TiON (35) (C) N₂ 가

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

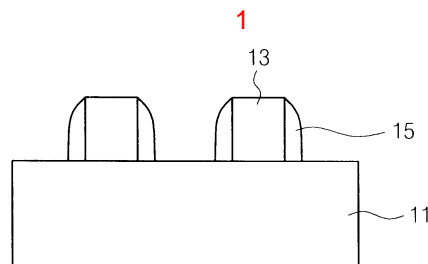
12 22

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

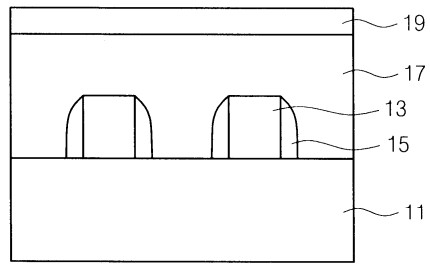
7) 18 2 (67) (69) (65)
 CMP (69) NH₃ (nitridation)

NH₃
 가 NH₃ 300 550, 0.1 torr 1.2 tor
 10 600 NH₃ 10 sccm 500 sccm R.F. 10 500
 19 가 PECVD TiON (71)
 TiON (71)
 TiCl₄ 170 190, 0.1 torr 1.2 torr
 300 500
 R.F. 10 500 W 가 NH₃ 가 10 sccm 100 sccm
 가 O₂ 가 10 100 sccm
 20 TiON (71) PECVD AION (73)
 50 150
 AION (73)
 200 450, 0.1 torr 1 torr R.F. 1
 0 500 W

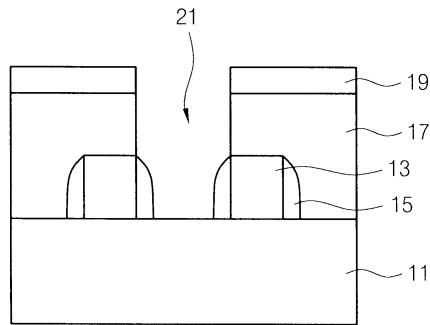
- 3 , TiON PECVD , TiCl₄ 170 19
 0 , R.F. 10 500 W 0.1 torr 1.2 torr , NH₃ 가 , 300 500
 가 O₂ 가 10 100 sccm 10 sccm 100 sccm , .
- 8. 3 , TiON (C) N₂ 가 N
 2 RTP
- 9. 8 , 500 600 , 5 60
- 10. 2 , AION TiON , TiO
 N , AION
- 11. 10 , TiON NH₃
- 12. 10 , TiON PECVD , TiCl₄ 170 1
 90 , R.F. 10 500 W 0.1 torr 1.2 torr , NH₃ 가 , 300 500
 가 O₂ 가 10 100 sccm 10 sccm 100 sccm , .
- 13. 10 , AION PECVD , R.F. 10 500 W 200 450
 , 0.1 torr 1 torr H₂O NH₃ , H₂O (CH₃)₃A
 10 sccm 500 sccm, 10 sccm 500 sccm NH₃
- 14. 10 , AION N₂ 가 N₂O
- 15. 14 , 60 180 700 850 , N₂O 가 1 slm
 10 slm ,
- 16. 14 , N₂O 가 AION 가 N₂
- 17. 16 , 5 60 , 가 N₂ , 600 850



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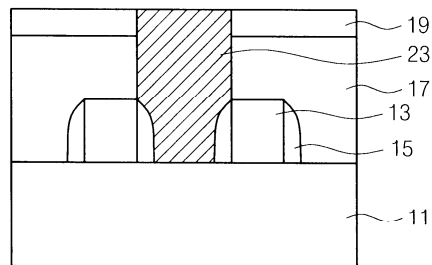


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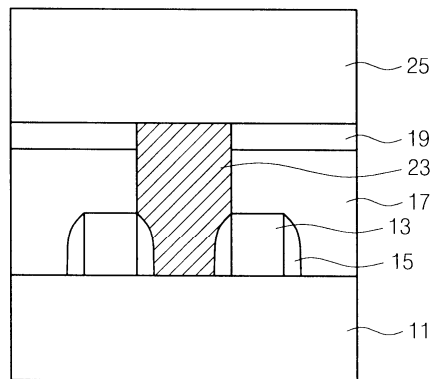


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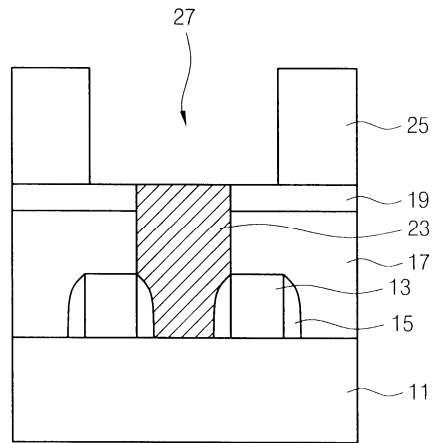
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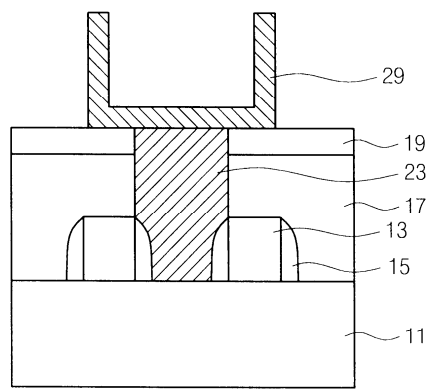
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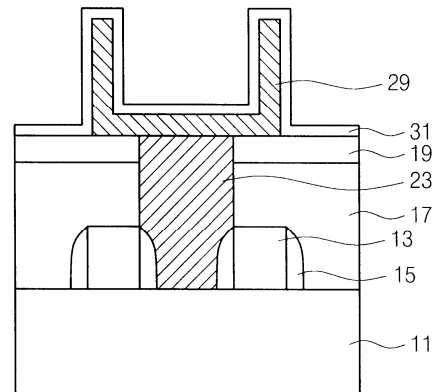
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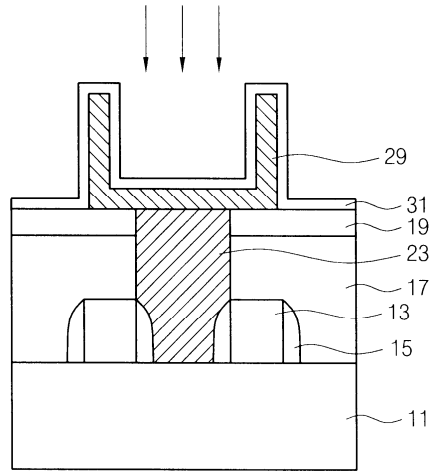


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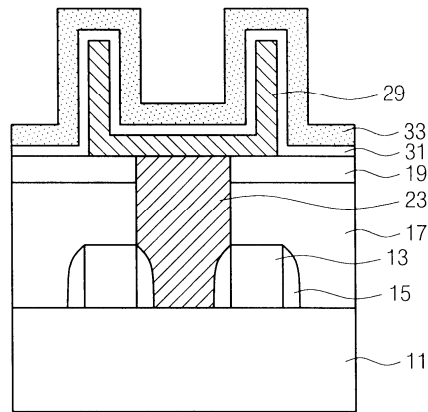


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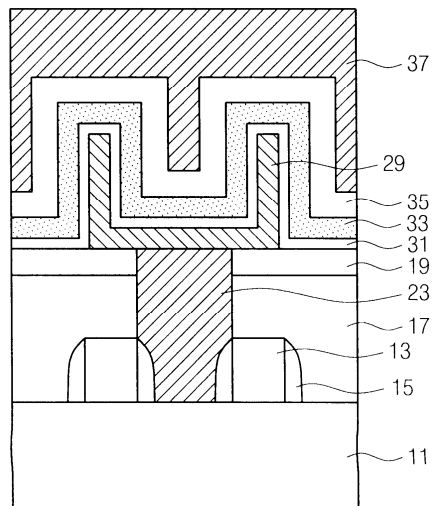
N₂O 플라즈마 아닐링



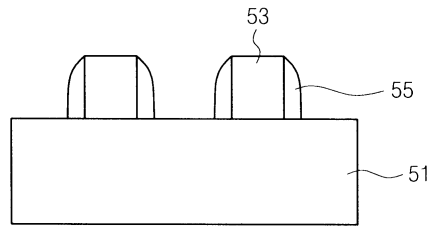
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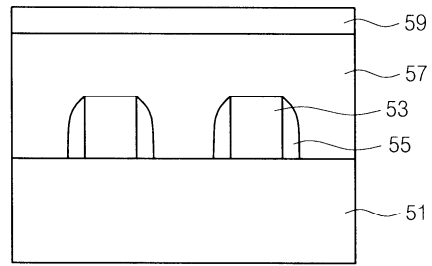
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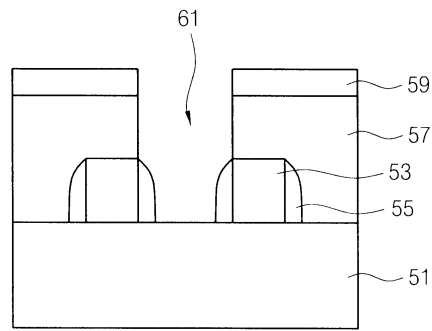
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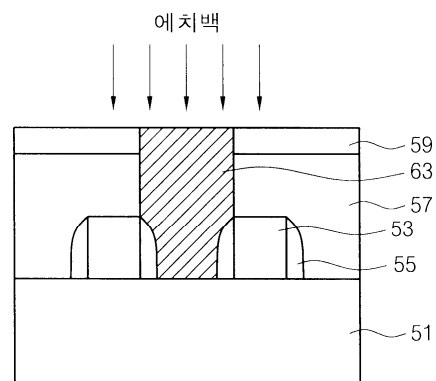
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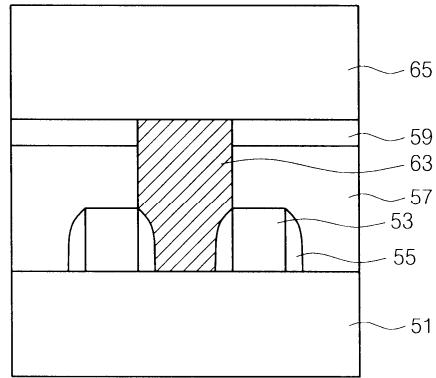
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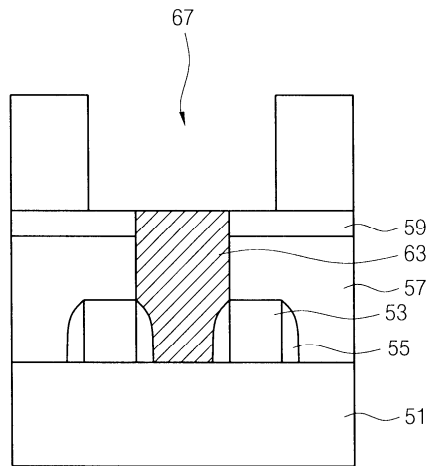
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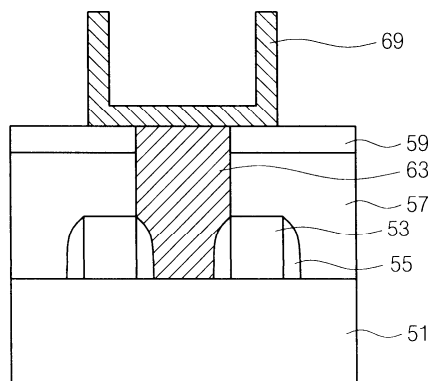
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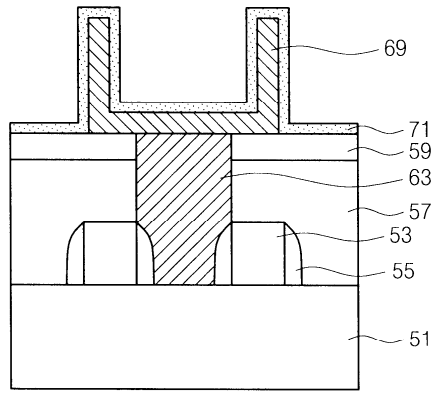
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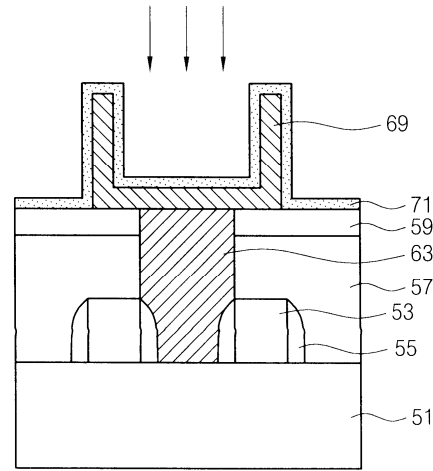


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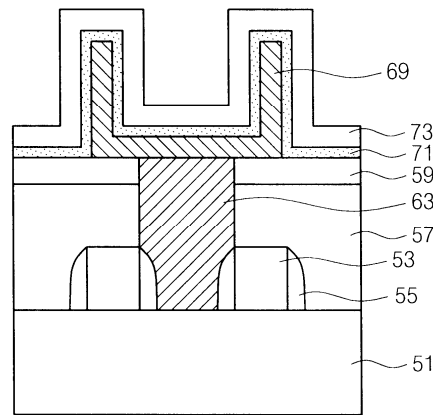


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N₂O 플라즈마 아닐링 / 퍼니스 N₂아닐링



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