



2g

1 STI

2a 2g STI

\* \*

1, 11 : 2, 12 :

3, 13 : 14 : (Wall)

15 :

n: , 'STI' ) (Shallow Trench Isolation)

가 , 가 , 가

(LOCOS: Local Oxidation of Silicon)

가

: , 'STI' ) 가 , (Shallow Trench Isolation) 1 , STI

(1)

(2)

(3)

(3)

(4)

(4)

가

DUV(deep ultra violet)

(4)

(3),

(2)

(1)

(ST)

(4) (ST) ( )  
(1) (3) (2) , STI

STI ISO (mask) , STI Si (def  
ect) (trap charge) (furnace) (wall) SAC(sacrif  
icial) (1100 ) (wall) (800 ) Si (Si - reces  
s scheme) (HF)  
(void) 가 STI

(Liner) (High Density Plasma: HDP)  
( ) , (furnace) (densification) (annealing)

(Chemical Mechanical Polishing: CMP) (3)  
(STI)

(loss) STI (coner rounding)  
가 STI 가

가 가

1

(CMP)

2

가

가

가

50 100

가

가

800 850

(LP - CVD)

100 2000

730 780

$\text{Cl}_2$ )

1 (torr)

( $\text{NH}_3$ ) 가 DCS( $\text{SiH}$

$\text{O}$ )

( $\text{HF} = 100:1$ )

1

SC - 1 ( $\text{NH}_4\text{OH}/\text{H}_2\text{O}_2/\text{H}$

800

O)

1:50

2

( $\text{HF}$ ) ( $\text{H}_2$

1000 1500

2

가

1000

( $\text{H}_3\text{PO}_4$ )

2a

2

(11) (12) 50 100  
 (12) (Si<sub>3</sub>N<sub>4</sub>) (13) 1000 2000 ( 2a).

(13) ( )  
 가 DUV(deep ultra violet)  
 (13), (12)

(11) (ST)  
 2b STI 가

STI (top) ISO  
 (damage) (trap charge)가  
 (damage) (under cut)(  
 )

SC - 1(NH<sub>4</sub>OH/H<sub>2</sub>O<sub>2</sub>/H<sub>2</sub>O) (HF:H<sub>2</sub>O=1:50) , ST  
 (Si) (Wall) (800 )  
 I 100 150 가 (14)

(High Density Plasma: HDP) (15)  
 (15) (14)  
 (Ar) 가 (1)  
 4) (15) (14)

(Ar) (in - situ) (15) 2d

(Chemical Mechanical Polishing: CMP) (13)  
 (barrier) (CMP)

(HF=50:1) 1000 1500 가  
 (15) ( 2e).

2f 1000 (O<sub>2</sub>) 가 (dr  
 y oxidation) (top) 가

(furnace) (15) (densification) (annealing)

(H<sub>3</sub>PO<sub>4</sub>) 2g  
 STI

STI (Wall) (830 (Wall) SAC (DCS - based HTO)) (1100 (Wall) (800 (Ar) 가 STI

가 STI  $I_d - V_G$

(57)

1.

1 가

(CMP)

2

가

2.

3.

1

가 가 .

4.

1

,

800 850

50 100

5.

1

,

730 780

(LP - CVD)

100 2000

6.

5

,

(NH<sub>3</sub>) 가 DCS(SiH<sub>2</sub>Cl<sub>2</sub>)

1 (torr)

7.

1

,

1

SC - 1 (NH<sub>4</sub>OH/H<sub>2</sub>O<sub>2</sub>/H<sub>2</sub>O)

(HF = 100:1)

8.

1

,

800

9.

1

,

10.

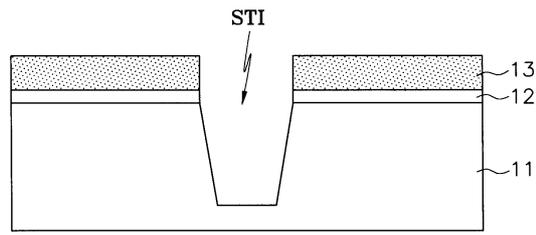
1

,

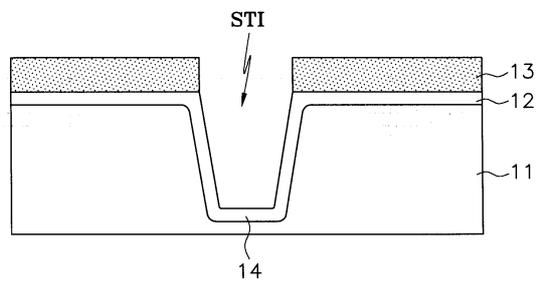
11.



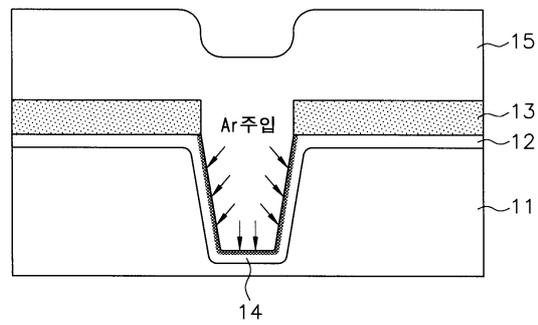
2b



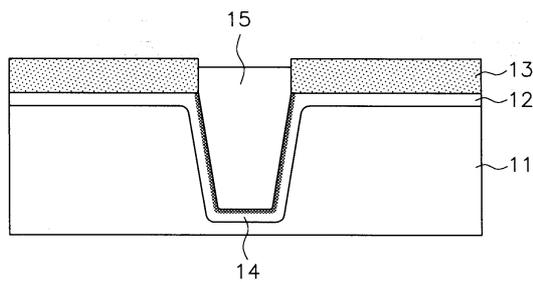
2c



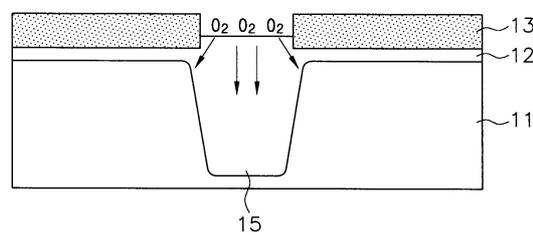
2d



2e



2f



2g

