

(19)  
(12)

(KR)  
(B1)

(51) 。 Int. Cl. <sup>7</sup>  
H01L 21/316

(45)  
(11)  
(24)

2003 01 10  
10 - 0367740  
2002 12 27

(21) 10 - 2000 - 0047183  
(22) 2000 08 16

(65) 2002 - 0014095  
(43) 2002 02 25

(73) 136 - 1

(72) 61 - 9

(74)  
:

(54)

N<sub>2</sub>O O<sub>3</sub>

4d

1a 1d

2a 2d

3a 3d

4a 4d

5 SIMS

6

7

\*\*\*\*\*

\*\*\*\*\*

40 :

41 :

42 :

43 :

43a :

43b :

(DRAM; dynamic random access memory) 가

가

가

,

,

5V 1.8V

3.3V

1a 1d (dual step oxidation process)

1a (10)

1b (10) 1 (11)

11) 1c , 가 1 (10) (

1d (12)	1	(11)	(10)	2
3d			2a	2d, 3a
2a	2d			
2a	(20)			
2b	(20)	(21)	(21)	
(22)		(21) (20)	(22) (N <sub>2</sub> )	
2c		(21)	(22)	
(23b)	(20)	(23) (23a)	2d	
3a	(30)	3a	3d	
3b		(30)	(31)	
(32)		(31) (30)	(32) (F)	
3c		(32)	(31)	
3)	(30)	(30)	3d	(3
			(30)	

가

가 가 가  
가

가

가 가

가

, 500~900

850~1200

, 700~950

, 850 - 1200

, N<sub>2</sub>O 900 - 1200

5

O<sub>3</sub> 400 - 1200 5

1

, N<sub>2</sub>O 850 - 1200

5

, N<sub>2</sub>O 900 - 1200

O<sub>3</sub> 400 - 1200 5

4a (41) 200 (40) , 4b (40)

4b (42) (41) (42)

(40) 5 50KeV 5 x 10<sup>13</sup> /cm<sup>2</sup> 5 x 10<sup>15</sup> /cm<sup>2</sup>



7 " " , " " (Qbd) . 7

N<sub>2</sub>O O<sub>3</sub> Qbd가 가

가 , 가 , 가 p - MOS 가 가

가 .

(57)

1.

2.

1 , , N<sub>2</sub>O 900 - 1200 5

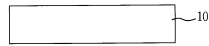
3.

1 , O<sub>3</sub> 400 - 1200 5

4.

1 , , N<sub>2</sub>O 850 - 1200 1

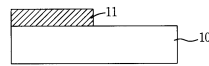
1a



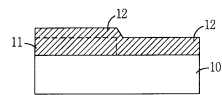
1b



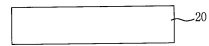
1c



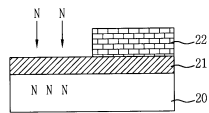
1d



2a



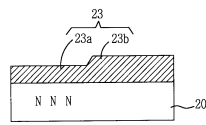
2b



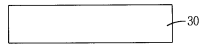
2c



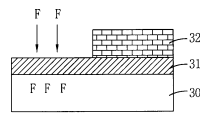
2d



3a



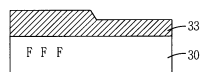
3b



3c



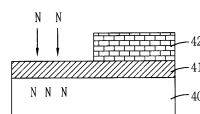
3d



4a



4b

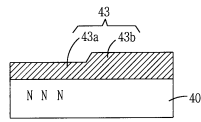


4c

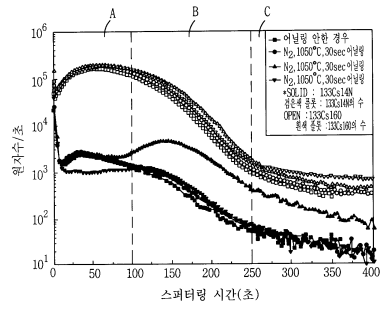




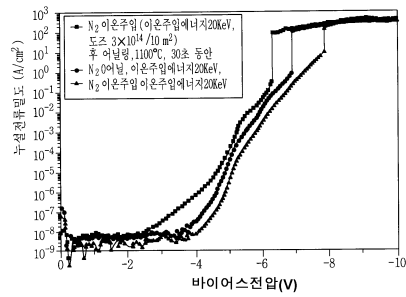
4d



5



6



7

