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(12) (B1)

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(21) 10 - 1999 - 0036188  
(22) 1999 08 30

(65) 2000 - 0017629  
(43) 2000 03 25

(30) 1998 - 245908 1998 08 31 (JP)

(73) 가 가 1 1 1

(72) 가 가 8가 가  
가 가 8가 가  
가 가 8가 가

(74)  
:

(54)

(12a) (12) ArF (193nm) , (10)  
가 ( 1 (b)). (12) (15) ( 1 (c)). (10)  
, (13) (15) (14) ( 1 (d)). ,  
1 (e) , (16) (12a) . (

1

, , , , ,

1 1 .

2 1 .

3 ArF .

4 ArF .

5

, , , , ,

6

, , , , ,

7 2 .

8 2 .

9 ArF .

10 3 .

11 4 .

12 5 .

10 :

11 :

12, 71, 101, 111, 121 :

13, 17, 73, 103, 123 :

14, 18, 72, 104, 124 :

15, 108 :

16, 109 :

19 :

20 :

51 :

102, 122 :

106 :

105 :

107 :

102 : 가

113 : 가

, , .

, 가

, , .

, 가 가 .

, , 100 $\mu\text{m}^2$  , 10 $\mu\text{m}$  .

가 가 .

, , , .

, 가 가 .

가 .

가  
가

가

(2) ( 2)

가

2

1

1

1  
1  
1

1  
1

가

가

가 가

가

가

, . . . , 가 ; , ( ) ( ) , .

[ 1 ]

( ) ( )가 SOG 가 , ( 1, 2 , 1 .

0) , 1 (a) , SOG (12) , SOG (12) (11)가 (1 (12) (12) 가 ,

, 1 (b) , (12) (11) ArF (193nm) , (12a) (12) (14) (13) .

, ArF ( ) 가 , 3 . , 3 A .

, 1 (c) , 1% (10) , (10) 100rpm , (15) (15) , (10) (10) (15)

(10) 가 (15) (13) (15)  
 , 1 (d) , 1 (e) ,  
 (14) (14)  
 (16) (16) 가 (16) 가 (EL: EEP=  
 8:2 ) 가 4%

ArF (12) 4 2 (f) B (12b)  
 (12b) (17) (16) (17)

2 (g) 가 (19)  
 , (10) 100rpm , (19)  
 (10) 가 (19)  
 (19) , 2 (h) , (17)

2 (i) (20) (18)  
 (20) , 가 , 가

(16) (51) , 5 (a) , 5 (b) ,  
 (51) (51)

가,  
 (疏水) (16) 6 (a) (51)  
 (51) (51) 6 (b) (51)

[ 2 ]

가 가 , SOG 가 , ,  
 , , . , 1, 2  
 7, 8 , 2 , . , 1, 2  
 , 7 (a) , 1 가 , ,  
 (71) (10) . (71) , ,  
 ( ) , (EL: EEP=7:3 ) 4%  
 , (71) ArF (193nm) . , ArF  
 ( ) 9 .  
 , ArF ( ) C .  
 , (71) 9 D , .  
 ( ) )  
 C ( , 7 (b) , (71a) .  
 ArF (71b) , ArF , (73) , (71  
 a) (71b) (72) .  
 , 7 (c) , 1% (10)  
 , (10) 100rpm (10) , (15) .  
 , 7 (d) , (10) 가 , (15)  
 (15) (73) . (15) (72)  
 , 7 (e) , (16) .  
 가 (16) 가 가 .  
 (16) ( ) ,  
 (EL: EEP=7:3 ) 4% .  
 , 8 (f) , 가 , (19)  
 , 8 (g) , 100rpm , (19) 가 , (19)  
 (19) (19) , (72)  
 (19) (73) , 8 (h)  
 , (20) , (20) ,  
 가 , 가 .

, 1 가 , 1 .

, , 1 가 , .

[ 3 ]

- , , , , ,

10 , 3 . , 10 , 1, 2 , .

, 10 (a) , (10) SOG , (101)  
 . (101) (102) 1nm ,  
 가 (102) , (102) 70 ,

, 10 (b) , (102)  
 , (102a) . (102a)  
 , 10 (102a) (103)  
 (102) , (104) .

, 10 (c) , (102) (106)  
 (107) , (108) . (108) (106)  
 (10) , (10) , (106)  
 (105) (10) , 40 $\mu$ m .  
 (108) 가 .

, (10) 가 , (108) .  
 , 10 (d) , (103) (108)  
 (104) , 10 (e) ,  
 (109) .

, 가 ,



SOG

가

,X

가

[ 4 ]

가

11

4

11

10

11 (a)

SOG

(111)

,가

(112)

가 (113)

가 (113)가

(111a)

(111a)

85

(111a)

가 (113)가

(101)

11 (b)

3

가

(111)

(108)

(10)

가

(108)

(108)

(108)

11 (c)

(109)

가

가

가

(109)

(

)

(EL: EEP=7:3

4%

가

[ 5 ]

,가

, 12 , 5 ,

, 12 (a) , (10) SOG , (121)  
(121) (122) 1nm

가

, (10) , 3,4  
(122) 가 85

, 12 (b) , (122)  
(122a) , (122a)

, 10 , (123)  
(122) (122a) (124)

, 12 (c) , 4 가 , (108)  
(122) (107)

, (10) 가 , (108) (108)  
(123) (124)  
, 12 (d) , (109)

가 가 가  
(109) ( )  
(EL: EEP=7:3 ) 4%

가 가 ,X

SOG

, 가 . , X

, , , , .

, , 가 가 .

, 가 , , , .

(57)

1.

2.

가 , 1 2 , 1

1 2 1 1 , 1 2 ,

1 1 , 1 , 1

1 1 2 2 , 2 2 ,

3.

2 , , .

4.

2 ,

5.

2

(上方)

6.

2

가

7.

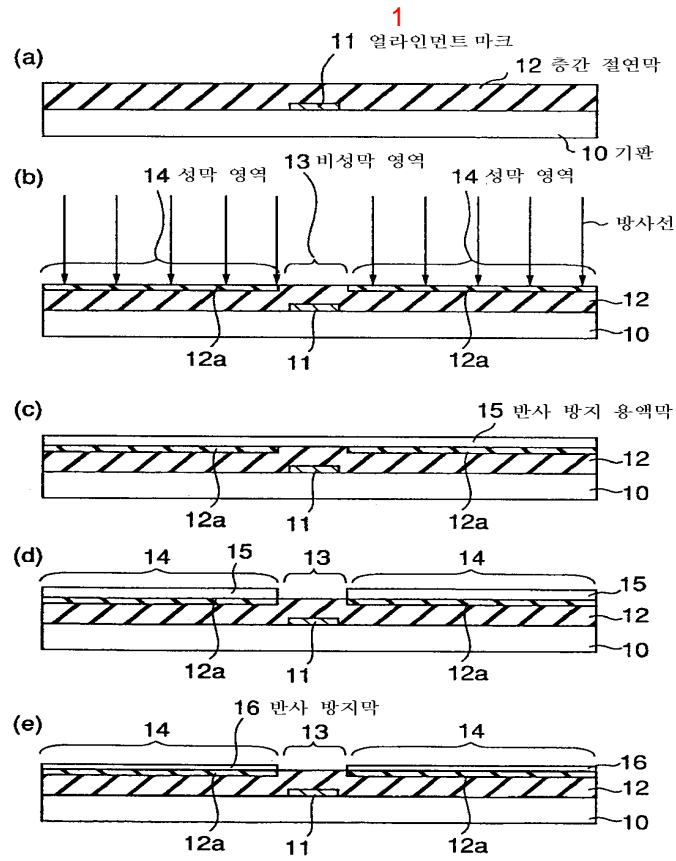
2

가

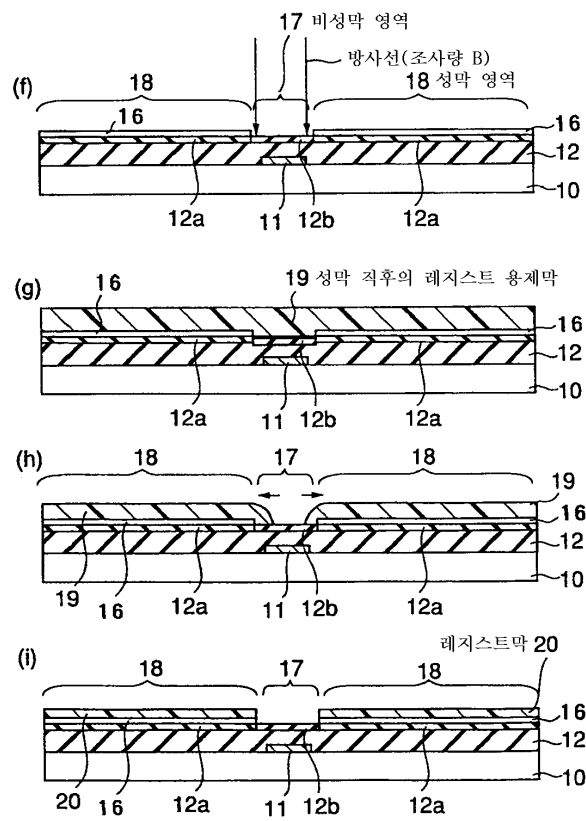
8.

2

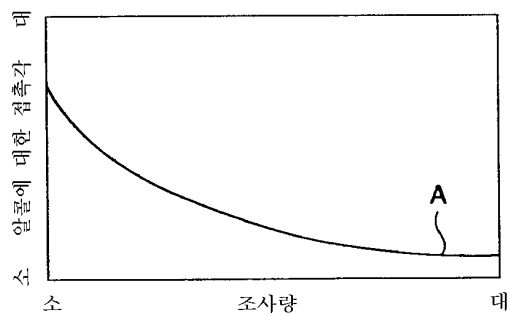
가 가



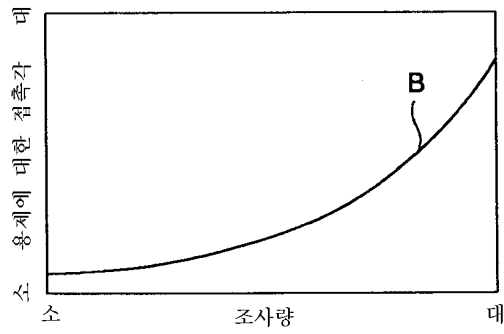
2



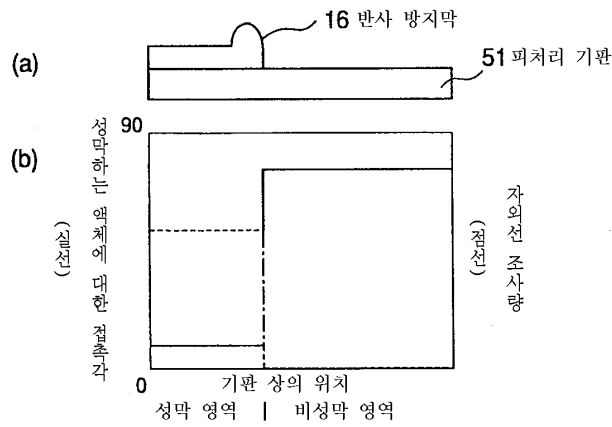
3



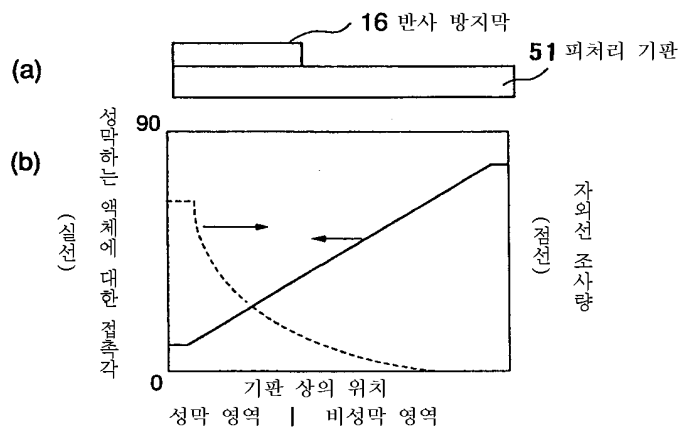
4



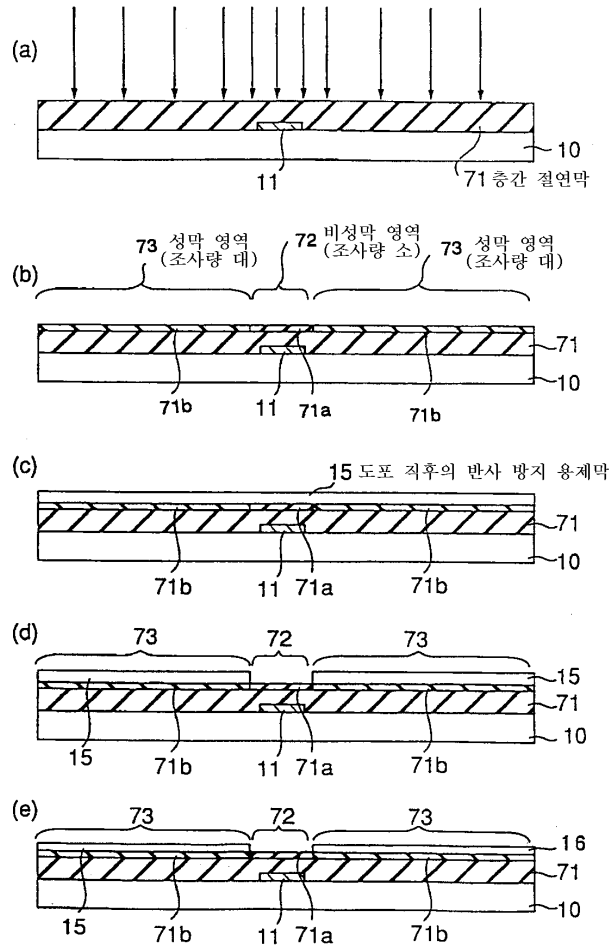
5



6

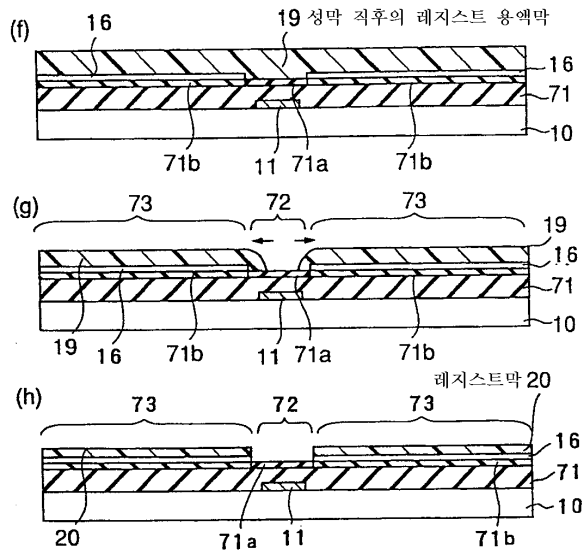


7

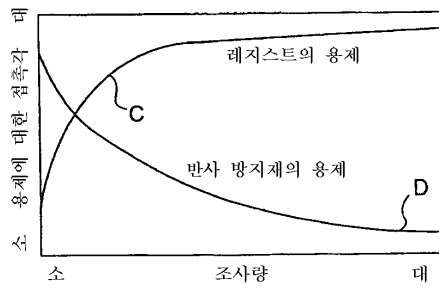




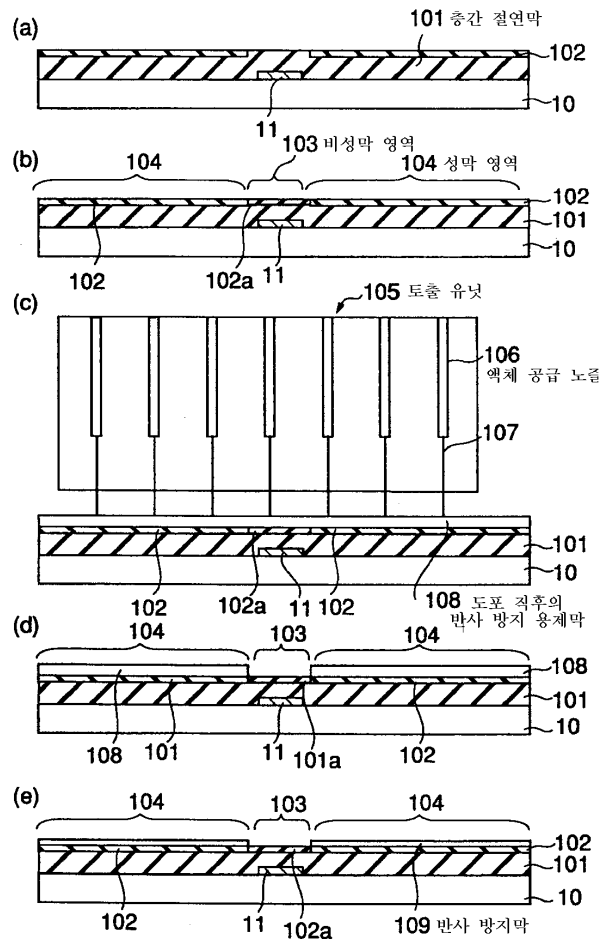
8



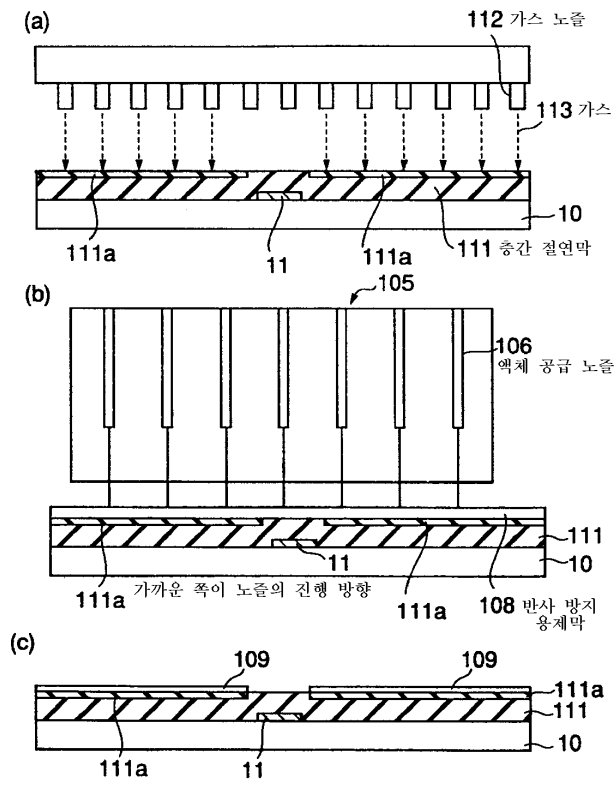
9



10



11



12

