

(19)
(12)

(KR)
(B1)

(51) 。 Int. Cl. 6
G02B 6/34

(45)
(11)
(24)

2002 05 13
10 - 0321955
2002 01 11

(21) 10 - 1997 - 0062991
(22) 1997 11 26

(65) 1998 - 0042768
(43) 1998 08 17

(30) 96 - 315774 1996 11 27 (JP)

(73) 가 가
가 가
가 22 22

(72) 220 - 101

가 4 - 6 - 12 - 102

(74)

:

(54)

(photoresist layer) , (waveguide) , 가
가 T 가 1 2 1 2 1
가 . 가 2 1 2 1 1
가 1 가 2 가 . 1 1 1
가 1 가 . 2 2 2 2

6

1 6

7

8

9 10

11a

11b 11a

12a

12b 12a

< >

11 :

12 :

13 :

14 :

15 :

19 :

20 :

22 :

23 : T

23A :

(waveguide device)

(, " (edge surface)")
가

가 .
(e) 4
- 159503). 11a , 11b 11a (e)
11a , (111), (111) (112), (112)
(113) (113) (112) 가
(114) (115) (113) (114)
(115) (112) 가 (114)
(115) (114) (113) 가 (114)
(115) , (113) 가 (114)
(115) , (113)

(114) (113)
(112) . 11b (115) (e)
(115) (長)
()가 , 가
(短) ()가 , 가
가 . , 가

12a 가 . 12b 12a (E)
(A) 가 (116) (113) (116)
(112) 가 (115)가 (116) (A)
(114) (115) (114)
(115)가 (116) (A)
(E) 가 ,

" " , (114) ()
(113) (115)

10 μ m 가 $\pm 2.5\mu$ m 90%
, " " $\pm 0.5\mu$ m

(19) (20) T (21)
 (20) (20) T (21) 1 (N)
 2 (M) 1 (N) 가 1 (N)
 1 (L1) 1 (N) 1 5
 14 2 (M) 2
 (L2) 2 (M) (5)
 (W1) 2 (M) (5) 2 (M)
 (W2) 1 (N) (5) 1 (N) 가 0.
 5mm x 0.5mm (1 (N)) 1 (L1)가 0.7mm
 (2 (M)) 2 (L2) 1mm , 1 2 (W1, W2)
 0.3mm (19) 가 200μm 300μm

T (21) (5 23A)
 가 (23A)(5)
 2 (14)(5) (L2)가
 3 (3) (19)(1 2) 가
 ation) (dicing oper

4 , T (21) T (2
 3)
 , 5 7 (14) (22)

5 (14) T (23) (20) 가 (22)
 T (23) (14) (14A) (23A)
 T (23) T (23) 가 (23A)
 T (23) T (23) ;
 (14) (15) (14) (14A)
 (14) (8 (C)) (15)가 (23)
 (14B) (14) 1 (24)())
 (22) (14) 가

(14) (22) (22)
 (14) (14)) (22)
 (roughness) (14) (an atomic order of magnitude)

6 (24)(5) (14) (14) ()
 25)(2) 가 (14) (14C) (14)
 (shadow)가 (25) 가 (25)
 0.5mm x 0.5mm (14) (14)
 0.2mm 가 (25)

(25) 30μm 가 (15)가 (23A)
3 (26) 2 (26) (15) T (23)

2 (26) (14) (14) (14) (15) T (23) (15)
(14) (14C) (15)가 T (23) (15) UV UV
(15) (14) (14C)

7 (15)가 (20) (resist remo
ver) (15)
N - - 2 - (N - methyl - 2 - pyrrolidone)
1165 (MICROPOSIT 1165 REMOVER)((SHIPLEY FAR EAST LTD)
)가 가

(15) (1) 가 (14) (14) (14) (13) (15)

8 (30)가 (11A), (30) (11B), (11B),
(12), (13) (12), (13) (12), (L)
(L) (14) (15) 가 (C) (12) (L)
(30) (T) (30) (L)

(2)

(14) 9 10 (14) T (23) 1 7

9 (13) (19) T (23) (20)
(23) 1 T (21) T (23) 1 (N)
(L1) 2 (M) 1 (N) (L2) 2 (

M) (10) (W1) 2 (M)
 (14)(10) (W2) 1 (N) (14)(10)

(14) 0.5mm x 0.5mm (L1)(1 (N)
) 0.7mm (L2) 1mm (W1 W2)
 0.3mm (19) 가 200μm 300μm

10 (14) (15) (14) 5 6
 (20) (15)가 , 가 (15)

(14) (15)가 (15) (14)
 (14) (14) (13)

(14) T (23) 가 (20) , 1 (N)
 (L1) 1 (N) (14) , 2 (M)
 2 (M) (L2) 2 (M) (W2) 1 (N) (W1)
 T (23) , (23A)가 , (14) T (23)
 (15)

(23A)가 (14) , 가 ,
 (15)가

가 (14) (14C)
 (14) (14) 가 (14)

(14) (25) 가 , (15)가 (

25) (14) (14C) (15)가 (14) (15)가
 (14C) (15)가 (14) (15)
 (15)가 (14) 가 (14)

(14) (15) , (14)
 (14) (14) (13) , 가 (1

4)

(20) 가 (22)
가 , ,

, , 가 , 가
.
가 가 . ,

(57)

1.

, , 가 ,
, ,
1 1 2 T
,
2 2 2 1 , 1 2
,
1 1 1 2 1 1 , 2
2 2 2 ,

2.

1 , , 가

3.

2 , 가
가 (probe)

4.

2 , .

5.

3 , .

6.

1 , .

7.

1 , .

8.

1 , .

9.

1 , .

10.

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,

1

1

2

T

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2

2

2

1

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1

1

1

2

,

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1

1

1

1

,

2

2

2

2

,

11.

10 , .

12.

10 , .

13.

12 ,

14.

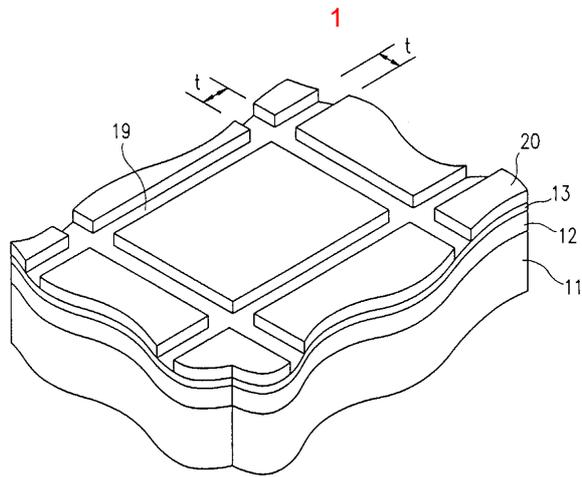
10 ,

15.

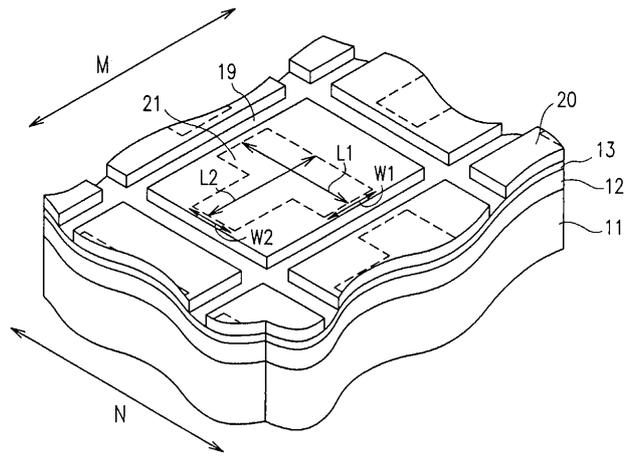
10 ,

16.

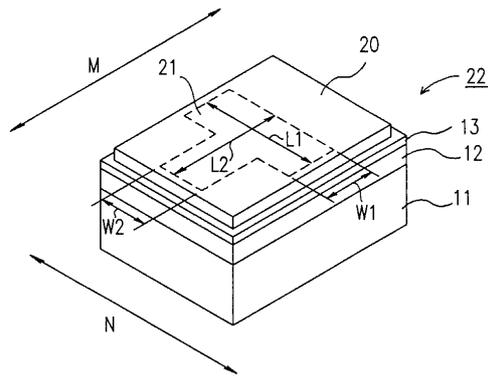
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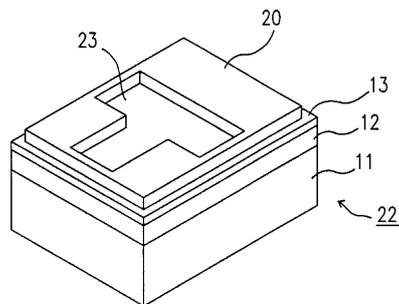
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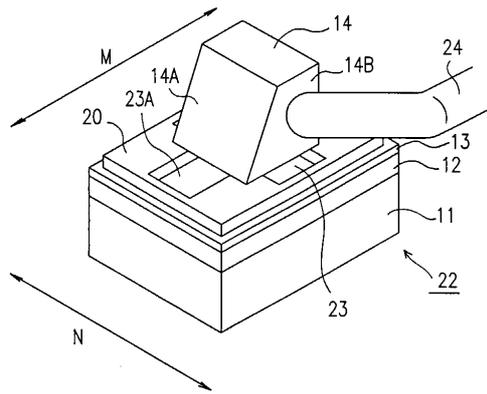
3



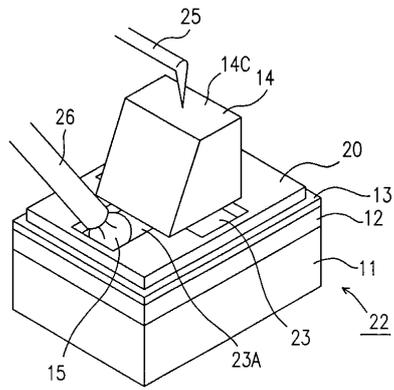
4



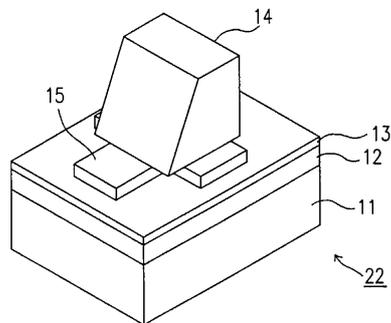
5



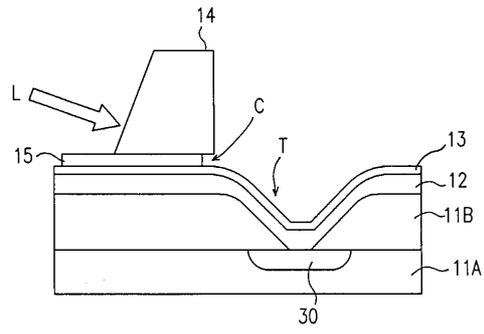
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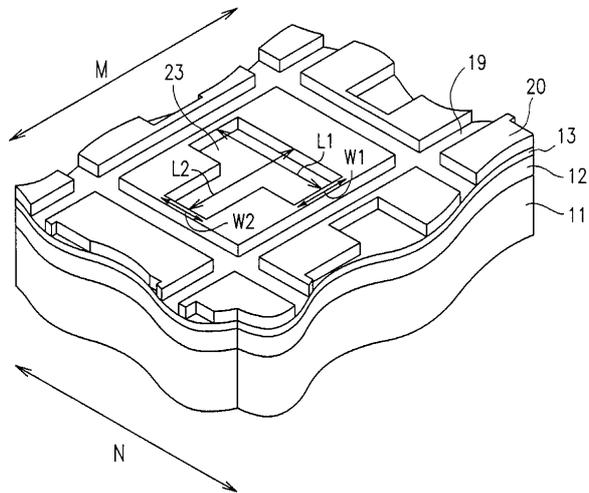
7



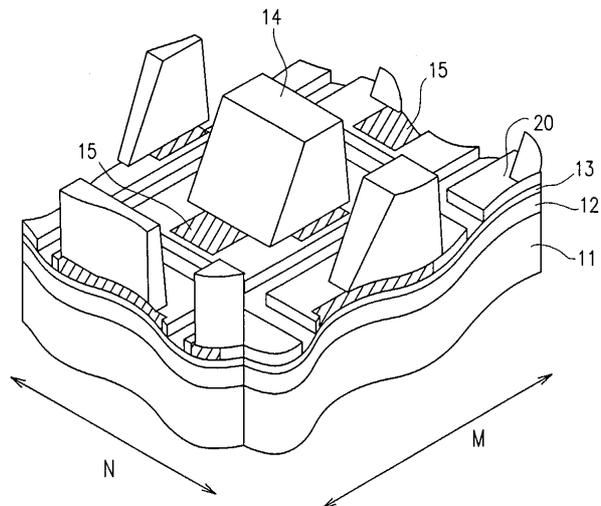
8



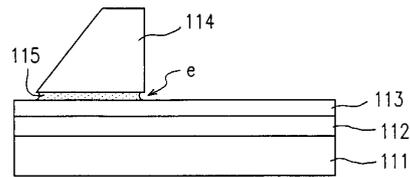
9



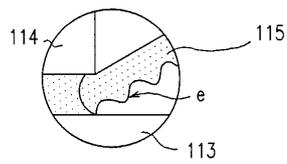
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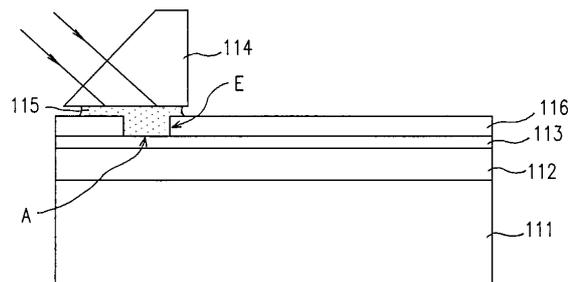
11a



11b



12a



12b

