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10-2004-0083726
2004 10 06

(21) 10-2003-0018296
(22) 2003 03 24

(71) 6 806

17-11 402

(72) 6 806

17-11 402

(74)

:

(54)

가

가 , 가

가

가

9f

- 1 (cantilever) (probe needle) (probe card)
- 2 (solder ball)
- 3
- 4a 4b , 4c
- 5
- 6
- 7
- 8
- 9a 9f
- 10
- 11a 11f (via hole)
- 12a 12d

가 (cantilever) (Microprobe)

e) (Semiconductor Integrated Circuit Device)

(pad) 가 (probe needle)

가

1 (5) (1) 가 (1) 6,087,840 (opening)(3) (1)

(5) (1) 가 32

(5) 65 μm 가 (5) (1)

가 6,114,864 2
 (21) (22)가 (23) (21) (2)
 5) (23) 가 (22) (23) (19)
 (solder ball)(27) (22) (25) (25)
 (25) (27) (21) (2) (25)

가 6,059,982
 3 (31) (41) (42)가 (43) (41)
 (44) (41) (stud)(45)가 (47) (48) (49) (51)
 (3) (3)

가 6,520,778 4a 4b
 (71) (60) (61) (70)
 (80) (73) (81),(82) (60) (81) 4c
 90) (91)가 (90),(92)가 (93) (95) (92) 가
 가 (95) (94)가 (95) (97)가 (82) (99)가 (95) (94)
 (98) (98) 4a 4c 가가 (soldering)

가 6,491,968 5
 (100) (101) (110) (111)가 (112)가 (111)
 (leaf) (113) 가 (113) (115)가 5
 4 (113)

가 (: 27658) 6
 (121) (123) (125) 가 (121) (125) (125)가
 (129)가 (127) (121) (125)
 6 (125) (125) (129)

가 7 , 7 (130) 4c

65 μm 가 가 μm 가
 32 가 가

가

가 , ; 가 가 1
 ; 1
 가
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 2
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 ; 3
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amethylammonium hydroxide), KOH, EDP(Ethyl Diamine Pyrocatechol) TMAH(Tetr

1
 가 1 ;
 ; 1
 .
 , / , .
 , .

8
 0) , , (200) 가 (30

(203) (207) (200) 가
 (215)가 (207) (215)
 (400) (401) (219)가 (200) (200)
 (300) (300) (207) (215)가 (2)
 00) 1 (pad)

(200) SOI(Silicon-On-Insulator) , SOG(Spin-On-Glass)

(207) (Cu) (Ni) ()
 (200) , TEOS(tetraethylorthosilane)

(215) (219) (Ni-W) (Ni-Cr) (W)

가 가 가 μm
 가 가 가

() 가
 100mN 100 100mN
 1 가

9a 9a 9f 10
 (200) (200)

9a SOI(Silicon-On-Insulator) , SOG(Spin-On-Glass)

(203) (203) (203) (200)
 11a (203) 11a 11f (200) (203)
 (203) 100 μm (203) 가 200 μm ~1000 μm (203)
 (205) (200) 2 (205) (205) (203) 1 (203)
 (207) (200) TEOS 가 (203) 2 (20)

5) 11b (200) (205)
 (204) (204) (Ti)/ (Au), (Ti)/ (Cu), (Cr)/ (Au), (seed) (204)
 (204) (204) (W) (Cu)

11c (204) 11d (200)
 (PR) (207a) (207a), (Cu)
 () (204) (204) (204) (20)

) (Ni) (204) (203) (207a) (204) (20)

3) (204) (207a)

7) (215) .
 , (215) (218) (215) (219) 3 ,
 . , (215) (217) (219)가 (215)
 9e , (219)가 , 9d (217) (215)
 (211) (215) (215) (211) . (215)
 (215)
 9f (200) , (211) (215) , (215) (215)
 (200) (215) (221) , (203) (215)
 가 (215) (219) (200) (215)가 가 100mN .

hechol) TMAH(Tetramethylammonium hydroxide), KOH, EDP(Ethyl Diamine Pyrocat
 (Inductively Coupled Plasma: ICP) (Reactive Ion Etching: RIE)

, (215)가 (200) 1 ,
 10a 10d (SEM)
 , 8 () , (300)
 , 8 (401)가 , (219), (400) (401) (215) (219)
 (300) (215), (207) () (300) (400)
 가 , 가 100mN 가
 가 가 , 가 μm
 가 가 .
 , 32 가 , 가
 , (flip-chip bonding)

가 , 가 , 가 . ; 가 .
, , , 가 가 .

(57)

1. 가 , ;
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1 가 ; 가
가 .

2. , 가 , - , - , , 가
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3. , 가 , , - , - , , 가
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4. ,
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5. , / , / , / , /
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6. ;
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6 7. , ;

2

7 8.

8 9.

6 10.

10 11.

11 12.

6 13.

13 rocatechol) 14.

13 15.

6 16.

16 17.

3

TMAH(Tetramethylammonium hydroxide), KOH, EDP(Ethyl Diamine Py

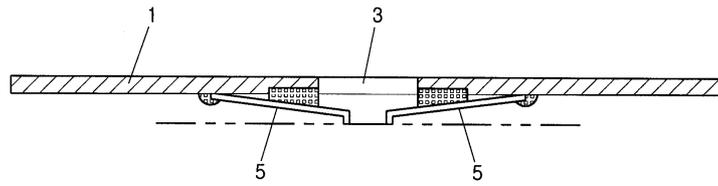
가

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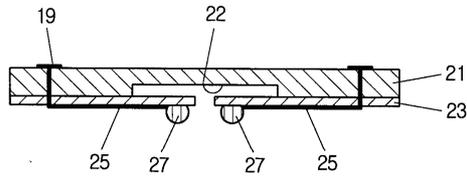
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1

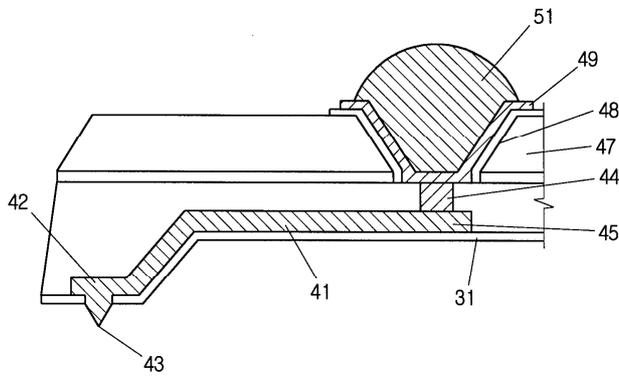
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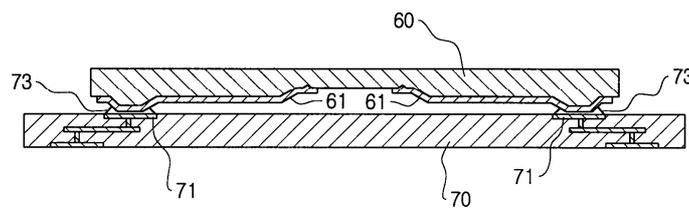
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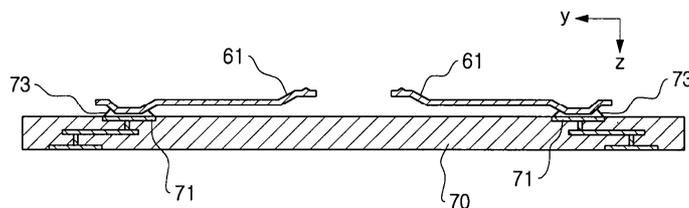
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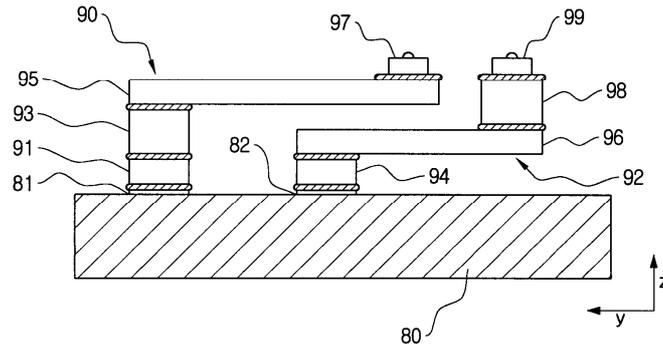
4a



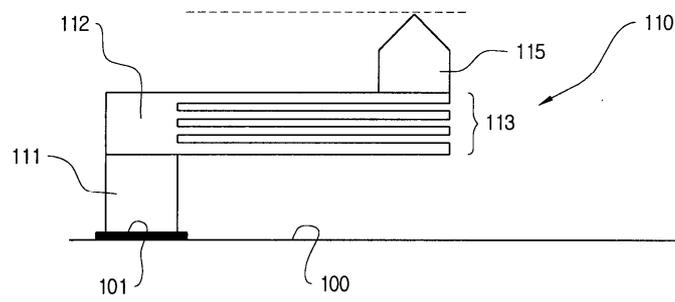
4b



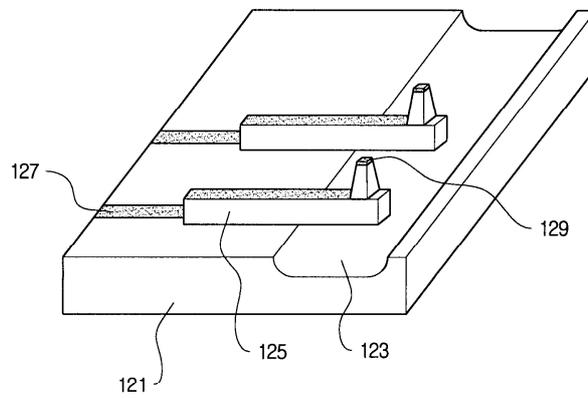
4c



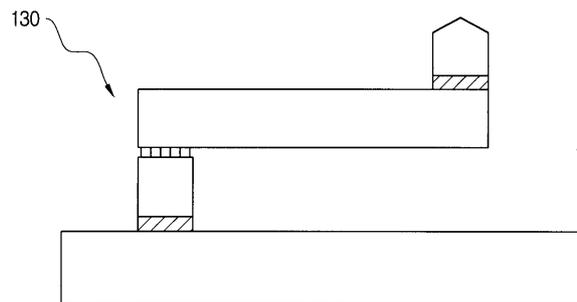
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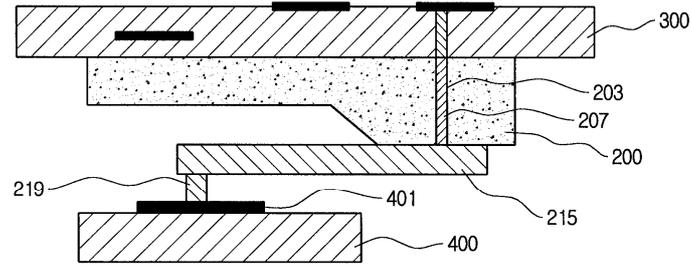
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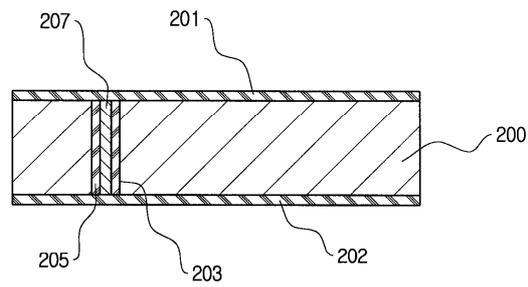
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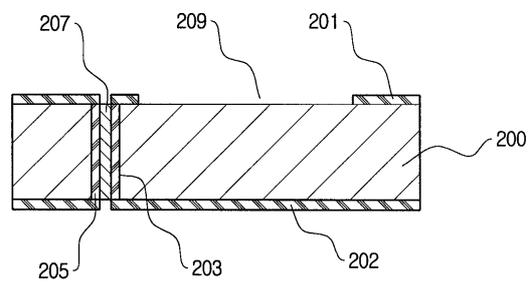
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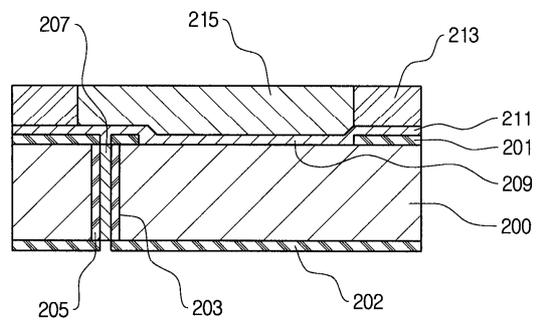
9a



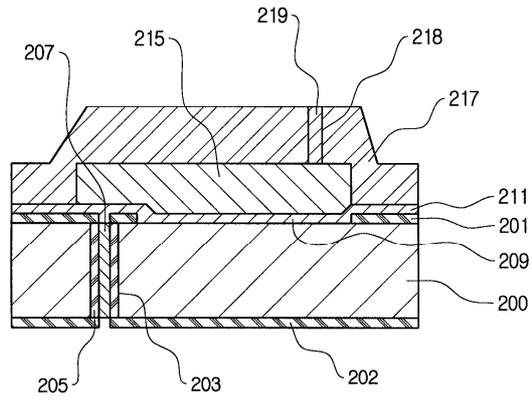
9b



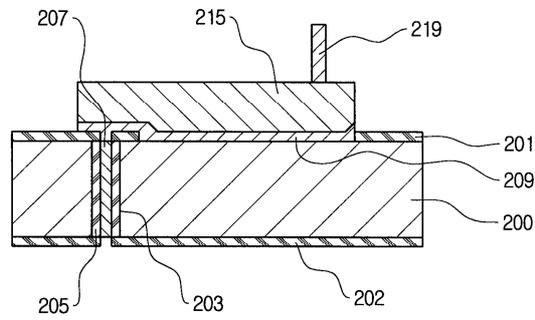
9c



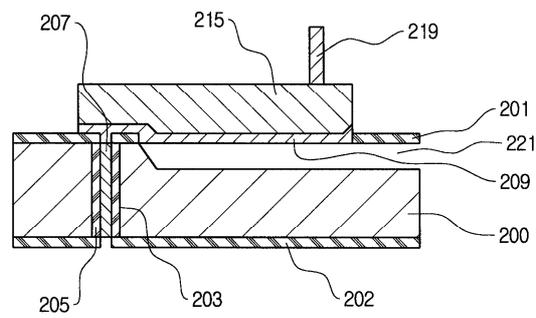
9d

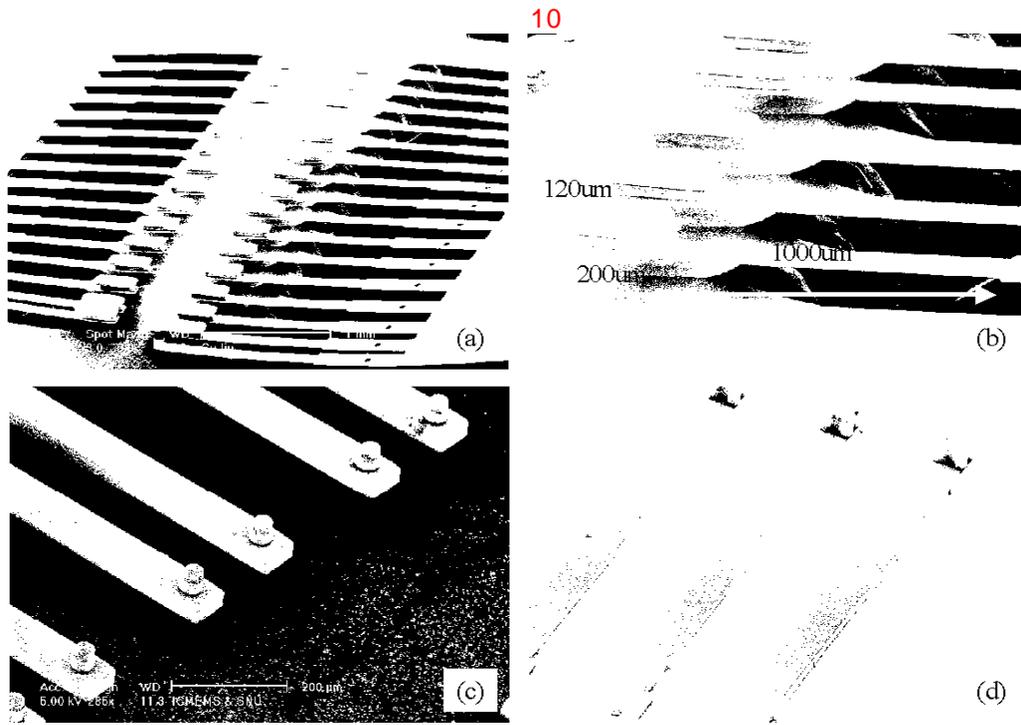


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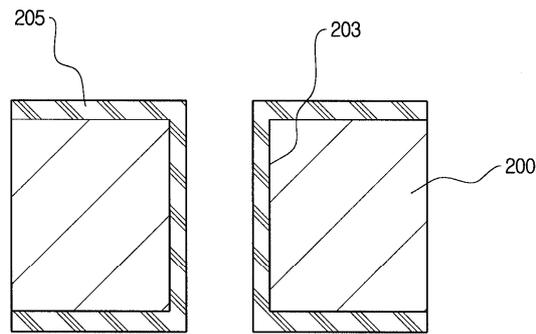


9f

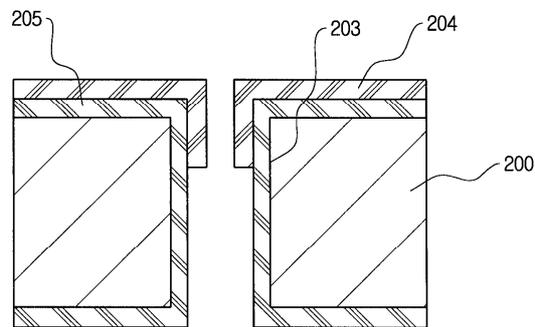




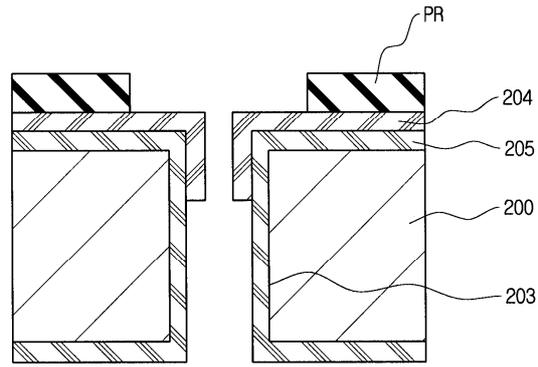
11a



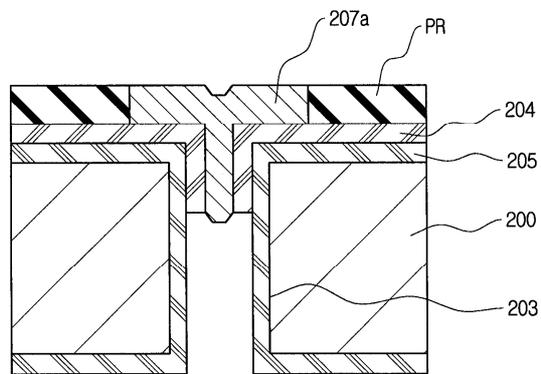
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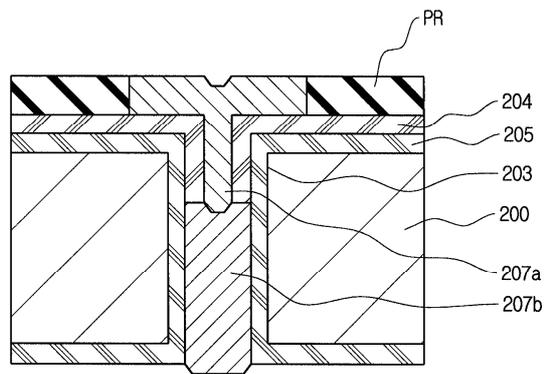
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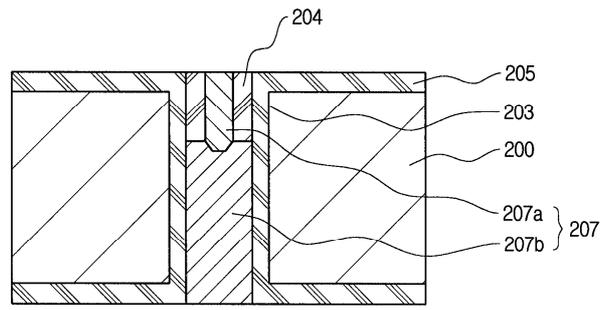
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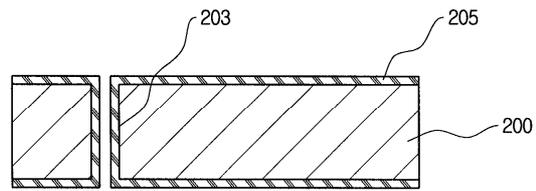
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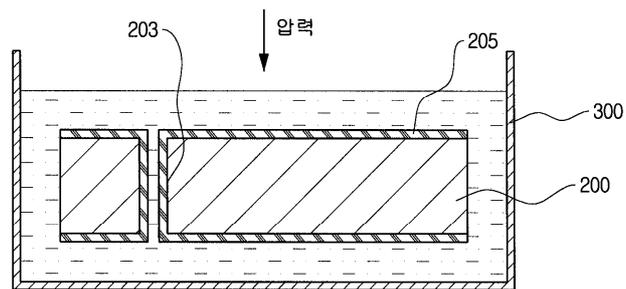
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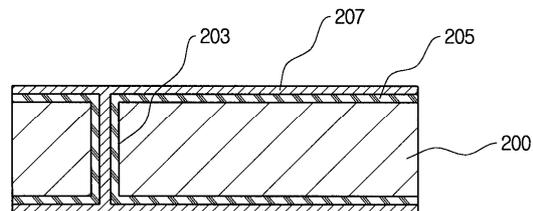
12a



12b



12c



12d

