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2002 02 28  
10 - 0315138  
2001 11 07

(21) 10 - 1997 - 0053978  
(22) 1997 10 14

(65) 1998 - 0063532  
(43) 1998 10 07

(30) 96 - 334326 1996 12 13 (JP)

(73) 가 가  
가 가  
가 22 22

(72) 633 300 - 5  
630 - 02 756 - 1 - 601

(74)  
:

(54)

1  
1  
1

2 1

3 1

4 2

5 3

6 4

7 5

8 6

9 7

10

11

12

13(a) 가 (假壓着)

13(b) (本壓着)

14(a) 14(k)

15(a) 15(i)

16

17 16

18(a) 18(j) 16

19

20

가 ( , T )가 CP(Tape Carrier Package)

(TCP) , 16 17 (134) (135) (110) 가 , (110) , (134) (1) (103,104) (2) (102) (111) , (135) (102) (Au)

(103,104) (101) (110) (102) (122)가 (potting)

(110) , (134) (normal bonding structure)

6 , 0.625mm, 8 , 0.725mm (ILB)

ILB ILB , (1) , (2)

ILB , ILB , 1 , 2

ILB , ILB

ILB

(1) (Au) 가 (2) 가 가 (Sn) 500 (共晶;eutectic) , 가 1 , 4 10

ILB , ( )

(meniscus)( 16 (110) (122))  
 2 10

(134) 17 18(i) (102) (135)  
 (101) (130) (103,104)가

500mm  
 35, 48, 70mm  
 (134) 18(a)

18(b) (134) (135),

18(c) (138) (134) (134)  
 (138) 18 μm, 24 μm, 36 μm (102)

18(d) (134) (138) (139)  
 (134) (134) 1 (138)  
 (135) (109)

18(d) (134) (138)  
 (139) (139a) 18(e)

18(f) (138) 2 (138a)  
 (138) (138a)) (139)  
 (109) 18(g) (138a)

18(h) (138) (103)  
 (104) (102) (101)

18(i) (101) (103,104) (102)  
 (138a) 0.2 μm 0.6 μm (130)  
 (whisker) 110 140 1 3

/ (open/short)

(110) (134)  
(reverse bond) 19 20 16

20 ILB 가 (under fill resin))(124)  
(110) (134)  
1) (134) (103) (102) (2) (1  
34) (104) (102) (101) (137)가  
가 (124)가 (137)가

가 (overhang)  
( 16, 17 19 ) (135) (102)가 (135)  
(110) (122)가 (122) 가  
100µm 300µm 가 (110)  
가

(1) (134)( ) (135) (102)가  
(102) 가 (102) 50µm (102) (fine pitch)  
(102)가 (102) 가

(2) ILB ,가 가  
(100) , ILB  
가 ILB

(3) , ILB (共晶)  
(共晶) 가 가 ILB , ILB 가

(4) ILB , CCD(Charge Coupled Device)  
, ILB , 500 가 , CCD  
(flame) 가 가  
가 가

(5) ILB , 18µm 36µm  
가

(6) ILB

가 가 가 가 가

(7) (post cure) ( ) 2 10 가 ( )

(銅)

(8) m 가 ( 16 ) 가 100 μ

(9)

(10)

가

(11)

가

(12)

( 20 ) (face down) , 16 19

3

20

19

가

가

( )

1

가

가

가

가

가

가

가

가

가

가

1

가

(bend)

가

가

가

가

가

가

가

가

1

1

(10)

(13)

(13)

(13)

(34)

(34)

(10)

(35)

(3)

(4)

(3,4)

(35)

(2)가

(34) , (3) (4)  
 (1) (1) , (2)  
 (1) , 가  
 ( , 200 ) .

(10) (Au) (11)가  
 (11) (13) (2)가 ( ) (22)  
 (10) (2)가 .

(22) , (20) ,  
 (Ni), (Au) (21) , (10) (13)  
 (22) (1) (10) (13)  
 , (2) (10) .

(13) 2 (10) (13)  
 (2) (10) ( ) (5)  
 (6)가 2 (6) .

3 (51)  
 (52) 가 (50) (50)  
 (52) (52a) (52c) , (54)  
 (53) (54) .

(54) , 3 (52) (53)  
 (3) (4)가 , (10) (5)  
 2) (53) .

(50) (52) ( ) 가 ,  
 가 .

3 , 가 , .

1 (10) (11)가 (22)  
 (2) (2)가 (1) ,  
 (10) (2) 가 .

4 (10) (11) (2)가  
 (13) , (10) (11) ( )  
 2)가 (22) , (21)  
 (20)( )가 .

5 (10) (11)( 1 )  
 (2) (10) (2) (22)가  
 (22) (21) (10) ( )  
 (2)가 .

(10) (11) , (10) 가 .



, 6 , (11)가 (2) , , ,  
 (2) (1) , (2) (11) 가 , , ,  
 , 7 (2) (1) (10)  
 (1) (8)가 (1) (8)가 1 (1) (10)  
 (1) (10) (22) , (10)  
 , (10) (1) , (10) (2) , ,  
 1, 4 7 (10) (13) , (22),  
 (21)가 (13) (20)가 , (10) (10) , ,  
 (10) (13) .  
 , (10) , (23) , 8 9  
 (23) (10) .  
 , 9 , 8 가 , (10)  
 가 , 9 가 400 μm (10)  
 .  
 8 9 , 1 (23)  
 (10) , 4 7 (10)  
 (23) .  
 , (13) , 10 , (10)  
 (5) (6)가 (6) (10)  
 (13) (ILB (12)) .  
 , (6), (34) (1)  
 (1) , (2), (3) (4)  
 (22) , , (6) (6)  
 2 .  
 (34) , (1) (34)  
 (6)가 - (see - through) .  
 , (22)가 가 , (2)  
 (22) , 11 , (34)  
 (35) (35a) , (22)( 11 )  
 , (2) (36)가 (13)

(36) , (10) (2) .

(13) , (2)가 (1) , (10) ,  
 가 (2) 가 , 12 , ILB (10)  
 (33) .

(2) 가 , (10) (11) 가,  
 (10) 가 , (10) ,  
 (peripherally) 가 .

1 , , 0.7mm , .  
 , 가 (10) (1) (34)가 ,  
 (10) , ,  
 가 .

(2)가 (1) (13)

13(a) 13(b) , (35) (22)가  
 (13) , (42) (13)  
 (42) (43) .

(22) , (10) 0mm 0.4mm , ,  
 (10) (10)  
 (2) , (22) (22) (1)  
 (22) (13) (sea

3) I type)

(11) , (22) ( (2) ) (10)  
 (11) 가 10 $\mu$ m , (22) 35 $\mu$ m , 가 15 $\mu$ m

(10) (11) , Au 10 $\mu$ m , ,  
 Ni 5 $\mu$ m , Au 0.05 0.2 $\mu$ m ,  
 , Ni Au (22) (10)  
 (13) .

15 $\mu$ m , 5 (10)  
 (10) (2) 가 ILB (10)  
 가 .

6 , (11) (2) (10) (2) 가  
 (11) (transfer) (2) Au .

(13) ILB , ILB가 ILB (13)

ILB (34) (13) , 13(a) (b) (42) (43) , 13(a)

13(b) , ILB (13)

(13)가 ILB

ILB (1) (2)

(full - dicing)

ILB

(1) (2) (13(a) (40))

CCD

13(a) (40) (10) (10) (40)

(41) ILB

13(a) (42) (13) 80 가 (13)

(13) (22)

(40) (10) (13) 가 (13)

(42) (22)가 80 가 3 가

가 (40) (10) 13(b) 가 (44) (44a)

(44) 10 (10) (13) (22)가 180 200 가 (44)

2kgf/ 8kgf/

(44) 가 (10) (13) (13)

가 가 (44) 10 (10) (13)

(22) , 가 (44)

(2)가 (10) (13) (10) (11) (13) (44)

(22) 가

(2) (10) (22) (21)

(2) (10) (500 ) 가 , CCD

(2) (10)

가

가 (44)

(22) 180 200

가 (44) (10)

(22)

(13)가

(42) 가

(22) 가

(42)

(22) 가

(4

2) 가

(22) 80 가

(2

2) 180 200 가

가

가

(22) 가

ILB

ILB

가 ILB

가

ILB

( )

3

(54)

(4)

(52)

(52a)

(52c)

(3)

(53)

(13)

(2)가

(1)

(10)

(13) 가

(10)

(13)

(13)

(1) 3

(34))

(2) 2

3

(13)

3

2 μm 가 75 μm, 35mm

1

3

(13)

3

1 :

(34)

(10)

(35)( )

2 :

(34)

(35)

(2)가

3 : (2) , (2) (1) .

14(a) , 가 ( , )

(34) , 14(b) (stamp out) , (35) , ,

14(c) (38) , (35) 15 μm . (34) (38) 15 μm, 24 μm, 36 μm 3 가 50 μm

(38) , (34) ( ) 가 가

14(d) (9) , (34) (38) , (35) (9) ,

14(e) , (38) (34) (39) , 14(f) (38) (34) 1 , 14(g)

14(h) (9) , (38) (39) , (38) (39)

(38) (1) .

(4) , (2) 14(i) , (38) (3) , (2) (1) (1) , ILB 가 ,

25 50 μm .

14(j) , (9) . DMF( , NMP(N- ) )

14(k) (30) 0.4 μm 0.7 μm (2) , (3) , (4) (30)

110 140 1 2 (13) .

, 2 (34)) , 3 , (13) 가 , 2 (

2 (13) , 3 .

1 : (34) 1 , (10) .

2 : (1) .

3 : (2)가 (1) , (2)가 ,  
(34) (10) (35)

15(a) , (34) 1 (31)

15(b) , (31) (34) , (39)  
(39)

31) , 15(c) , (32) . , 15(a) ( (39) (32)

15(d) , (39) (39) (31) ,  
15(e) (32) (1) , 14 (4)가 .

15(f) , (32) , (3) (4)가 .

15(g) , (34) (35) (39)

(2)가 (34) , 15(g) , (35)

15(h) (34) (32) (39)

0.4 μm 0.7 μm (2), (3), (4) , (30) 110 140 1 2 (30)  
15(i) (13)가 .

, 2 (34) (32) ( ) (35) 가 ,  
, 3

가 , 가 ,

가 , 가 ,

가 , 가 ,

가 , 가 ,

가 , 가 ,

(57)

1.

, 1 , 가

2.

1 ,

3.

2 ,

4.

3 ,

5.

4 ,

6.

1 ,

가

7.

6 ,

8.

6 ,

9.

6 , .

10.

1 , ,  
가 1 .

11.

1 , .

12.

, , 1 , ,  
,

(solderless connecting) , .

13.

12 , .

14.

12 , ,

(a) , 가 (provisionally  
solderless connecting) 가 ,

가 가 가  
(permanently solderless connecting) .

15.

14 , 가 .

16.

1 ,

17.

16 , 가 2



18.

17 , ,

19.

16 , ,

20.

1

(1)

;

(2)

1 ,

가

;

(3)

,

21.

1

(1)

1 ,

,

(2)

;

(3)

가

,

가

,

22.

1 ,

23.

1 ,

가

,

24.

1 ,

25.

1 ,

26.

1 ;

;

가

,  
1

27.

26 ,

가 ,

28.

26 ,

가

29.

1 ;

;

가

가

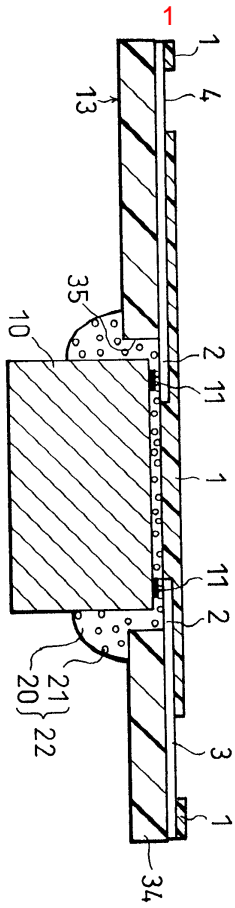
30.

1

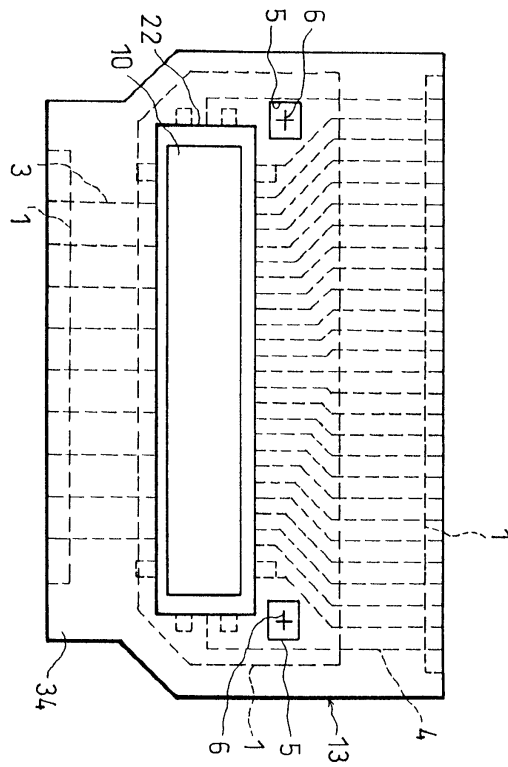
가

31.

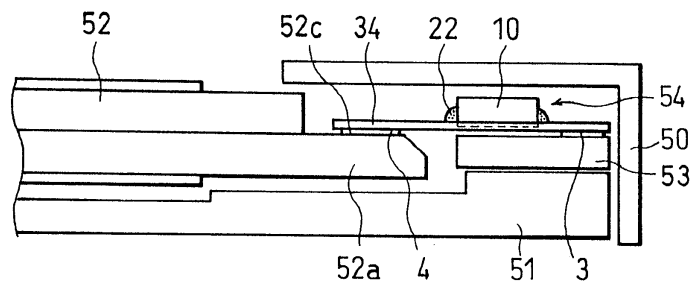
가

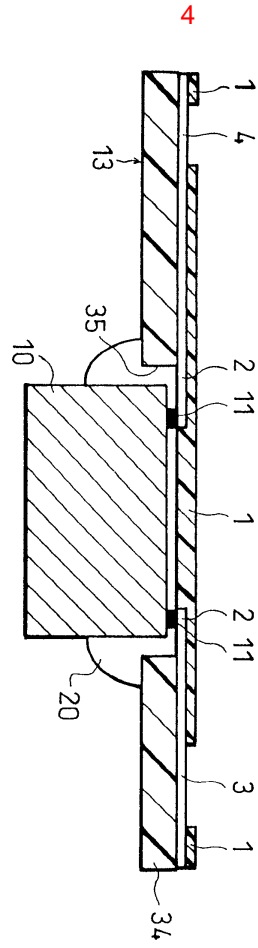


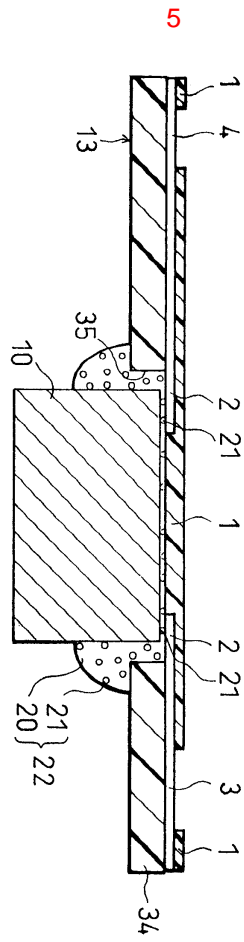
2

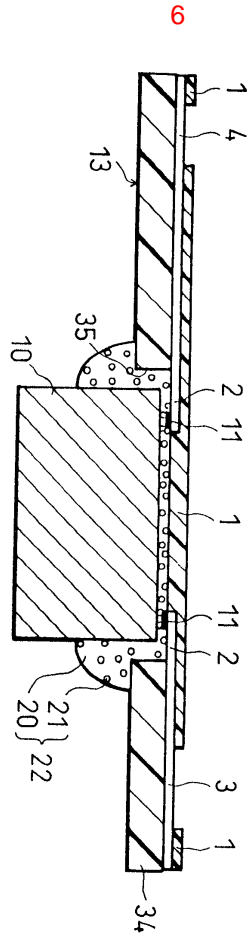


3

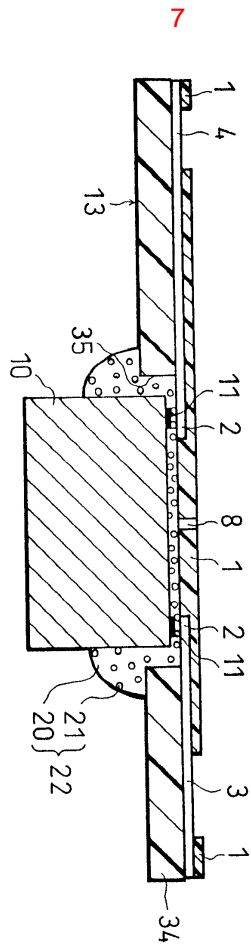




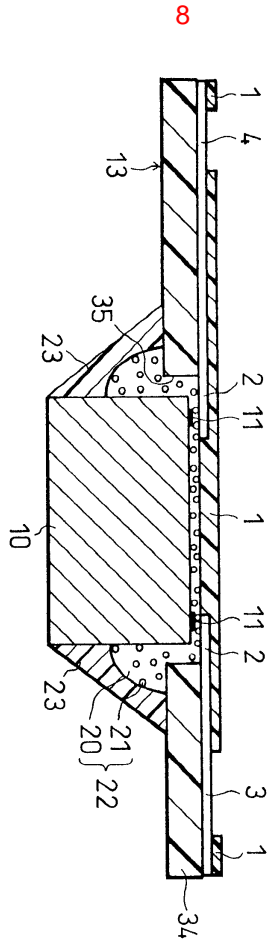




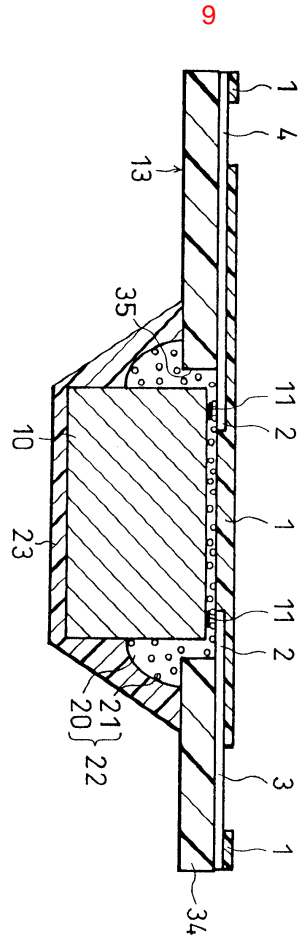
6



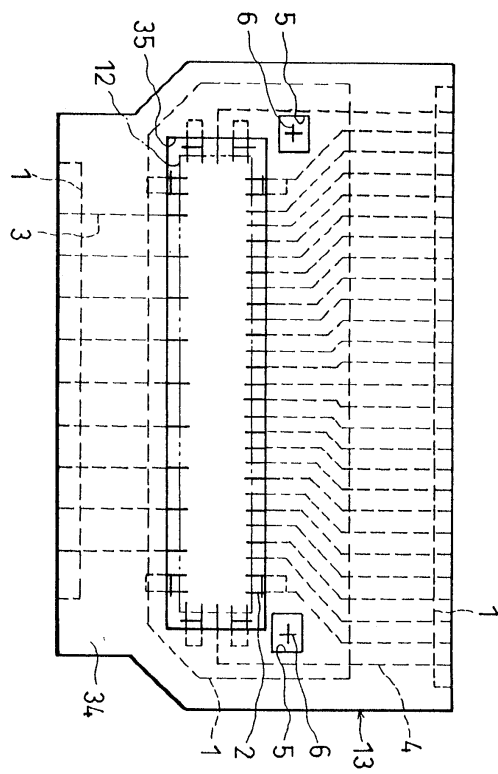




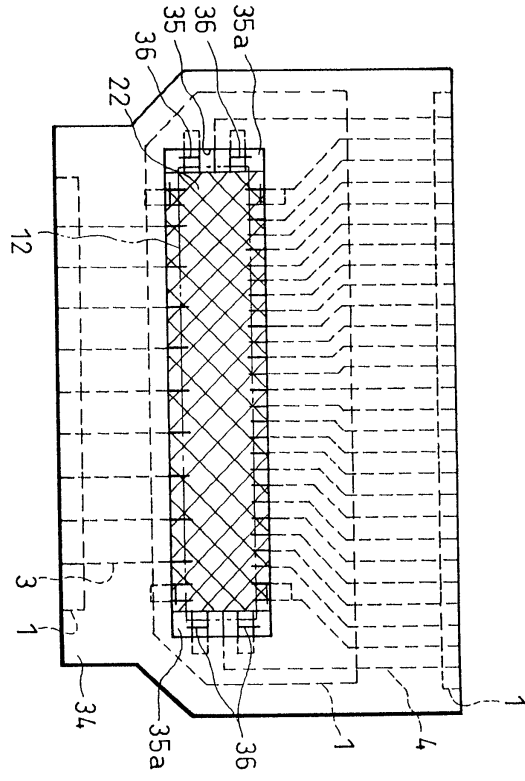
8



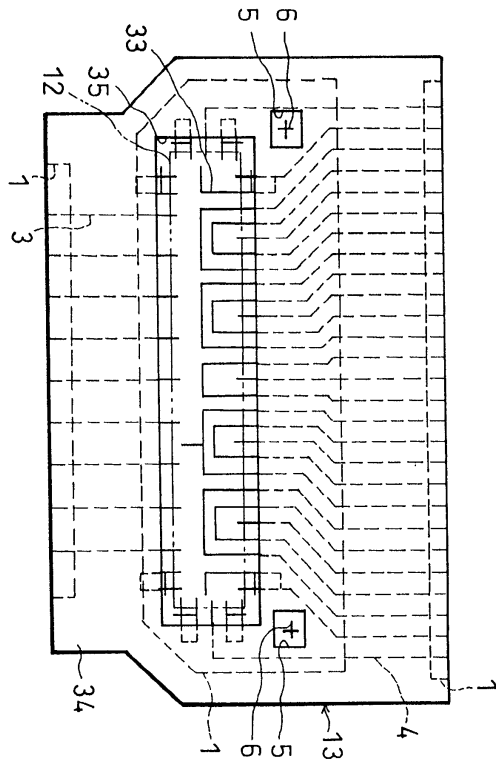
10



11



12



13

FIG. 13(a)

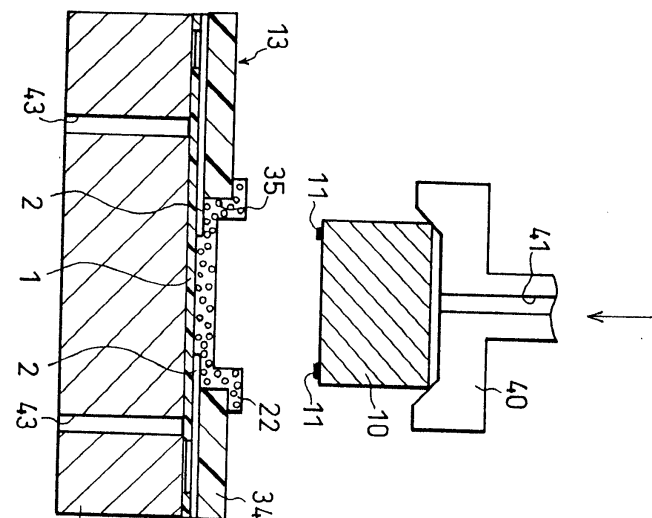
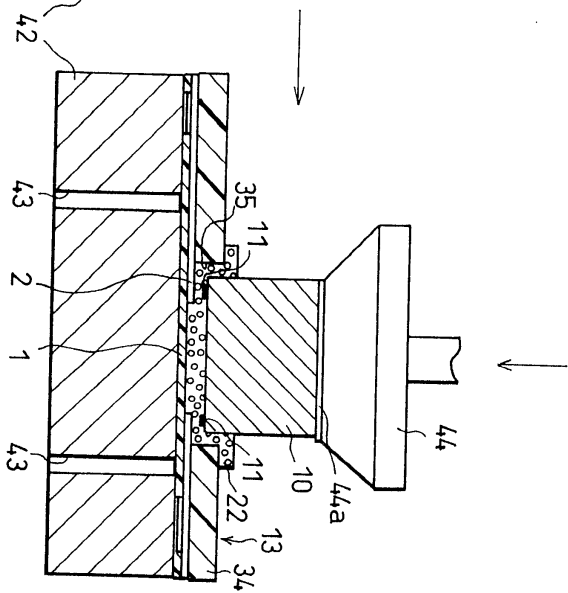
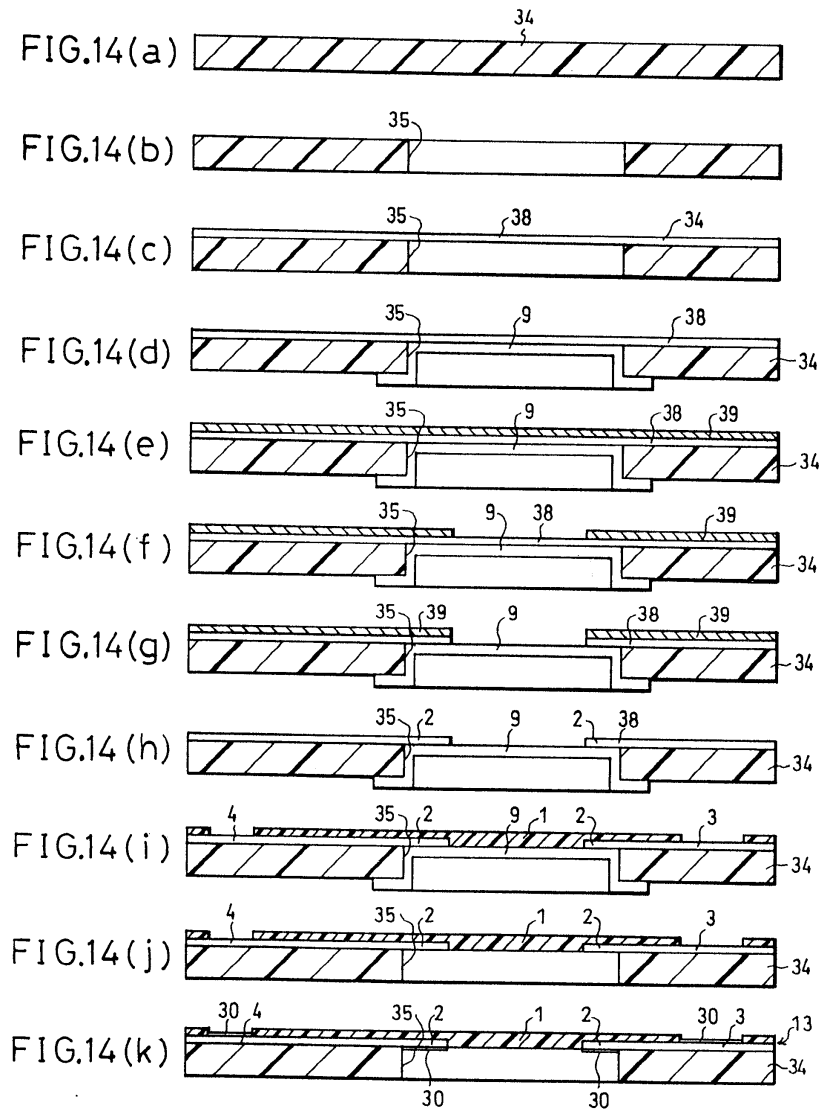


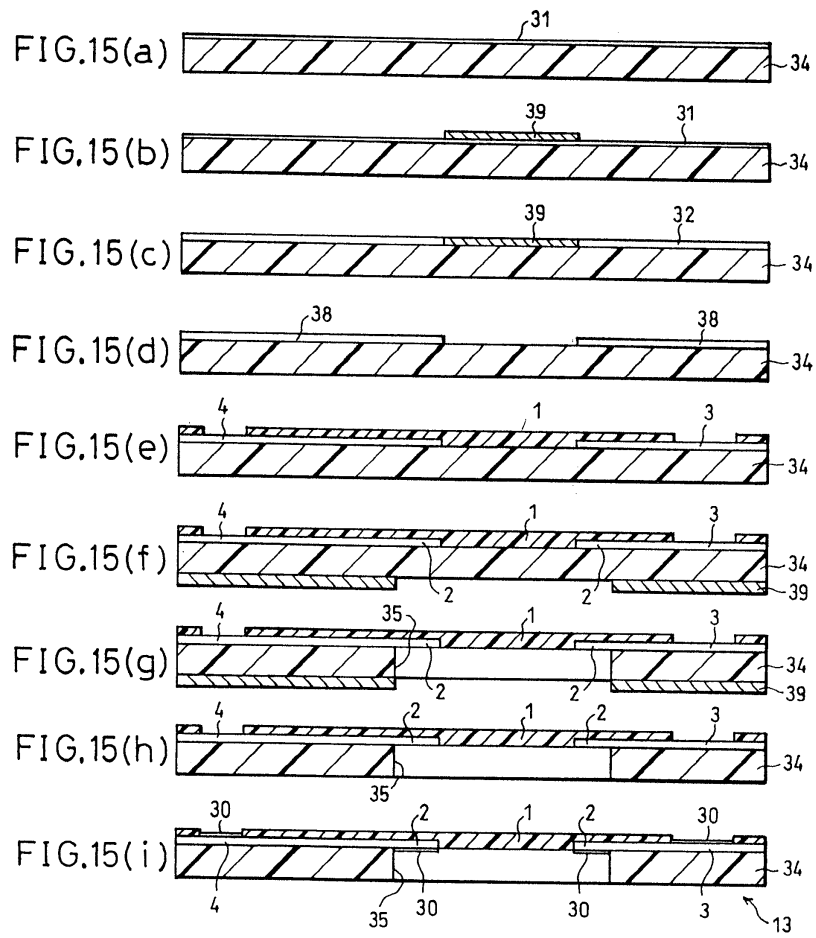
FIG. 13(b)



14

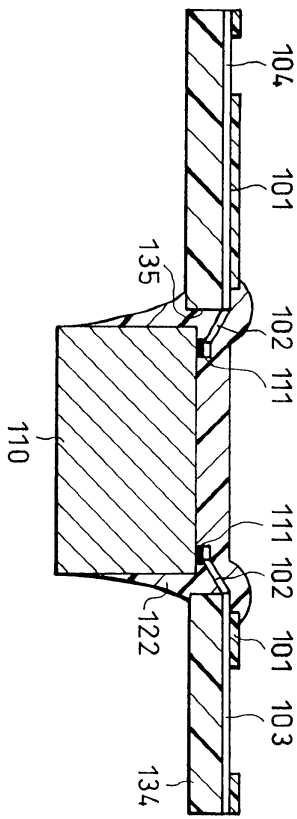


15



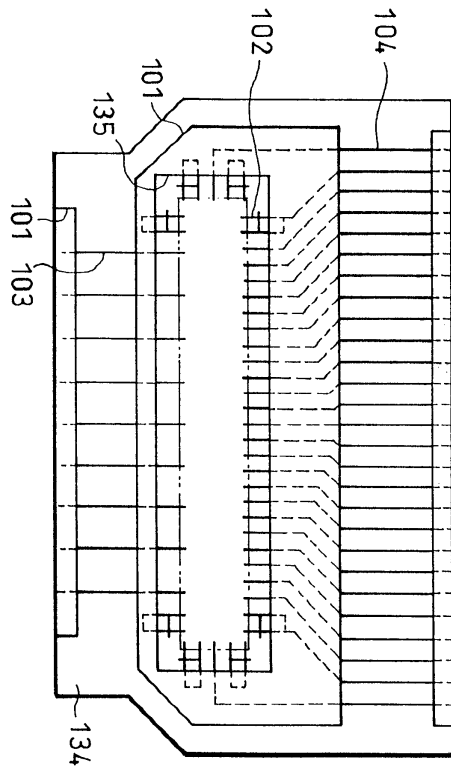


16



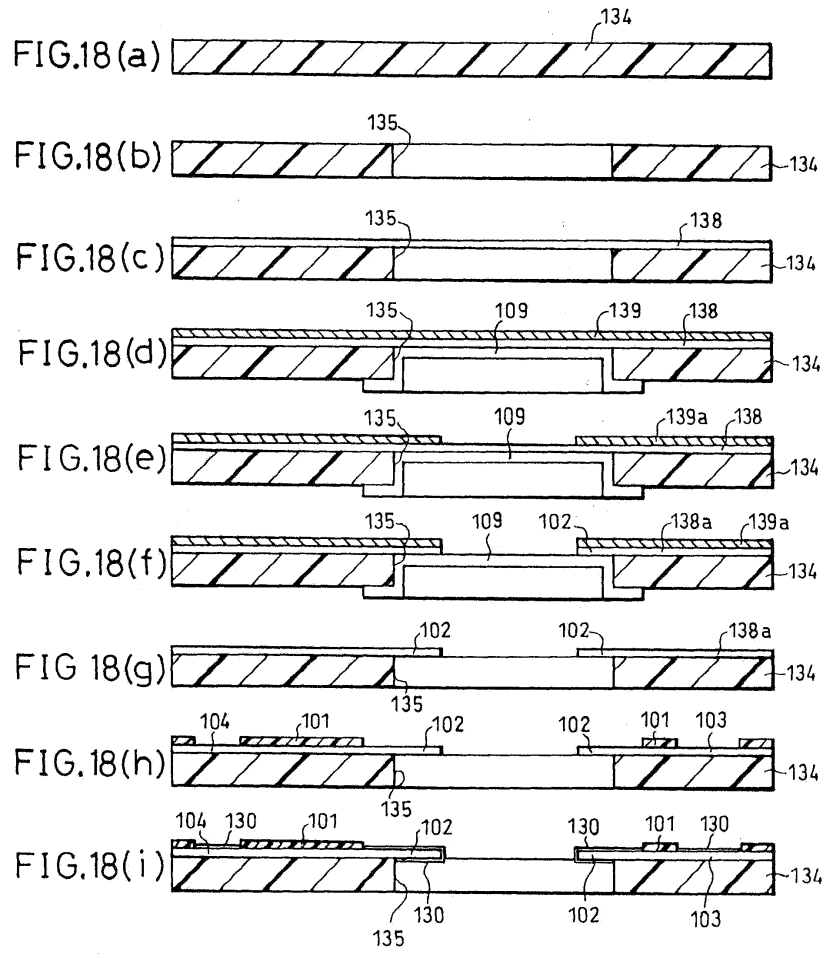
(종래 기술)

17

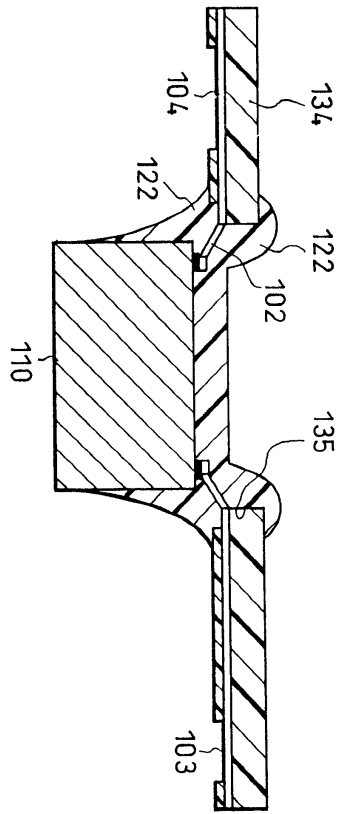


18

(종래 기술)

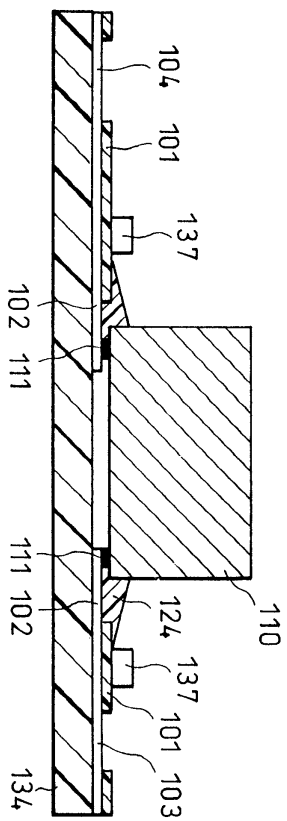


19



(종래 기술)

20



(종래 기술)