

(19)
(12)(KR)
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(22) 2002 03 06(30) JP - P - 2002 - 00004435 2002 01 11 (JP)
JP - P - 2001 - 00142164 2001 05 11 (JP)(71) 가 가
가 가 4 6
가 가
가 3 3274(72) 가 가 가 3 - 3274
가 가
가 가 가 3 - 3274
가 가

(74)

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(54)

가 - .

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가 ,

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1 (1) - .

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3 .

4 .

5 .

6 - .

7 - .

8 - 가 가

9 1 3 -

10 3 .

11 3 .

12 1 .

13 1

14 (2) -

15 2 가 가

16 (3) -

17	3	1	-	.
18	3	1	.	
19	3	1	.	
20	3	2	.	
21	3	2	.	
22	3	3		
23	3	3	.	
24	3	4	.	
25	3	5	.	
26		(4)	-	
27	4	1	.	
28	4	1	.	
29	4	1	.	
30	4	2	.	
31		(5)	-	
32	5		.	
33		(6)	-	
34	6		.	
35		(7)	-	
36	7		.	
37	7		.	
38	7		.	
39		(8)	-	

40	8	.	
41	8	.	
42	(9)	.	
43	42 A - A	.	
44	42 B - B	.	
45	(10)	-	
46	10	.	
47	10	.	
48	10	.	
49	(11)	-	
50	11	.	
51	11	.	
52	(12)	-	
53	12	.	
54	(13)	-	
55	(14)	.	
56	(15)	-	
57	15	.	
58	15	.	
59	15	.	
60	15	.	
61	15	,	

62	15	.		
63	15	.		
64		(16)	-
65	16	.		
66	16	.		
67	16	.		
68	16	,		
69	16	.		
70		(17)	-
71	17	.		
72	16	.		
73		(18)	-
74	18	.		
75	18	.		
76		(19)	-
77	19	.		
78	19	.		
79		(20)	-
80	20	.		
81	20	.		
82	20	.		
83		(21)	-

84		(22)	-	.
85	22	-		.
86	22	-		.
87	22	-		.
88	22	-		.
89	22	-		.
90	22			.
91	22			.
92	22			.
93				.
94		가		.
95	22	-		.
96				.
97				.
98		(23)	-	.
99	23	-		.
100		(24)	-	.
101	24	-		.
102	24	-		.
103	24	-		.
104	24	-		.
105	24	-		.
106		(25)	-	.
107	25	-		.

108	25	-	.
109	25	-	.
110	25	-	-

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1 :

2 :

3 :

3a, 3b :

4 : ()

5 :

6 :

7, 43 :

9 :

10 :

11, 27 :

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13 :

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16 :

17 :

18 :

20 :

21 :

22, 22a, 22b, 22c :

25, 25a, 31 :

26 :

28 :

29 :

30 :

30a :

32, 71 :

33, 44 :

35a, 35b, 35c : 가

37 :

38 :

40, 72 :

41 :

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60 :

61 :

LSI() ,
SON(Small Outline Non - Leaded Package), QFN(Quad Flat Non - Leaded Package) , (-
)

, . () ,
() .

,
(resin) (:) ,
.

, ()
(one - side molding)
(-)가 4 QFN 가
SON

2000 - 286376 , 4 ,

1 , 2
- 1 2
.

1 2 , ,
, 1 2 ,
() - ,
.

2000 - 216280 ,

가 , 가

가 , 가

가 , .

, 1

()

SON QFN

SOP(Small Outline Package) QFP

QFN

()가 , 가 1 , ()

(2000 - 286376) , () 가 (1 , 2)

4

가

가

1
(enclose)

(cantilever)

1

가 (: resin burr)

가

가 ,
가 ,

2

, 1

2

, 3

(4)

가

(2000 - 216280)

가

가

가

() ,가 (burr)가

2

(1) ()

가 가 ()

(fragment)

()

가 2

() ,

가

(2) (1)

() ()

()

(2)

가

()

가

(3) (2)

() (2)

(4) (2) (3)

() ()가

2

가 가 2

(1) , (a) - 2

(b) - 2

(c)

(d) (가) 가 ()

(e) 가

(f) ()

- (2) , (a) - 2
 , .
- (b) - 2 ,
 .
- (c) ,
 .
- (d) (가) 가 , ()
 - , .
- (e) , .
- (f) , ,
 , .
- (g) , 가 가 가 , 가
 , .
- (h) , , 가 .
- (i) , ,
 .
- (j) ,
 .
- (k) , 가
 , , .
- (3) , (2) 가 , (a) ,
 , , .
- (4) , (a) - 2 가
 , .
- (b) - 2 가 ,
 .

- (c) () ,
- (d) () (가) 가 . ()
- (e) ,
- (f) ,
- (g) , 가 -
- < >
- ,
- (1)
- 1 13 (1) - (33) (
-) 1 , 1 4 (1) (2)가 - (1)
- 1 , 1 2 , (3)
- () (: 4) (4) (2)
- 1 , (3) 2 (4)
- (: 4) , 0.5mm가 (4) (4)
- 0.15mm . 0.5mm (4) 가
- 0.35mm가 (3) (: 5)가 (5) (6)
- (3) , (4) (3) (7)
- (7) (3)
- (5) (4) (9) (9)
- (4) , (Ag) 가 , (5) (
- 9) 가 (4) , (5) (7)

가 (4) , (5) (4) (4) (2) .

[illegible]
$$\begin{array}{ccccccc} (9) & & & (5) & (9) & & (4) \\ & & & & & & \\ & & & (2) & & (4) & (1) \end{array}$$

가 (4) , (5) , (5) , (4) (7)가 (4) (2)

(4) (7)가 (: 10) 5 (11) .
(11) , (7) , (7) ,
Au , (11) , Ag , Au Pd .

(13) , (4) (: 12) (13) . (13) (1) (13) PbSn , (13) PbSn , 1 PbSn .

$$\begin{array}{ccccccc} & 1 & & (5) & & (4) & (3) \\ 2 & & & & & & \\ (7)가 & . & , & 2 & (4), & (2) & 2 & 3 \end{array}$$

6 1 (1) , (15) (1) (2) (17)가 (15) , (1) (17) (PbSn : 18) (1) (2)가 .

, 7 (a) , (20) .
 (20) 1 , (20) , 8 ,
 () , 3 8 24
 (20) ,
 7 Ag (11)(
 5) . (20) , 0.125 0.2mm .
 , 7 (b) 8 (20)
 (5) . (5) , 5 , Ag (9)
 (20) , (5) ()
 (9) , (9) , 30 100 μ m , (5) (20)
 () . (5)
 (20) , ()
 , ()
 , 7 (c) 8 , (5) (6)(3) , (5)
 (4) (7) . (7)
 ,
 , 7 (d) , (5) (7) ,
 , (20) (3a) . (3a)
 (5) (7) . (3a) (5)
 (7) , (3a) , 가 . (3a)
 ,
 , 7 (e) , (20) (13) . 7 (e)
 (13) 5 . (13) 5 20 μ m PbSn .
 ,
 , 7 (f) , (3a) (21) ,
 (20) (22) (20) , ()
 (4) . (22) , 4 , 15
 (4) . (22) , 0.65mm
 (4) (20)
 0 μ m , 1 0.5mm (5) (20)
 (9) . (3a) (5) (20)

, (3a) (5) (7) 가 , (21) (22) , (3a) (1)가
 , (3a) (21) (21) . XY 2
 , (22) ,
 , (4) , (3a) (21) (21)
 21) (3a) .
 , 7 (g) , (21) (3) -
 (1)가 2 . 1 (1) , (2)가 (1) 가 (
) 1 .
 (1) - () (2) 2 ,
 (2) 1 - , 1 1 가
 , 1 , 2 (2)
 , (33) (1) .
 (3) (1) (2) , (2) ,
 .
 (4) (2) ,
 (2) .
 (5) (2) (가) 가 , ,
 (2) , (15) - (1) ,
 (2) (: 17) ,
 .
 (6) () ,
 .
 (7) (1) (6) , , 가 -
 가 .
 , 1 . 9 11 1

가 (1) (2)가 3 3
(4) (7)가 (5) (4) 3
(7)가 (4) (2)
(5) (4)

12 1
12 (a) (4) , 12 (b) (20)
(20)
(4) (20) , 12 (a), 12 (b)

(5)가
가
(20)
(3a) () 가
(3a) 가
1 1
(20)
(5)가 (4) (7)
(7) (9) (5) (20)
(5) (2) 가 (2) (5)
(2) (5) (4) (7)
(4)

(20)
() 가
(4) () (20) 가
(25) () 1 (11) (4)
(33)
(1) (2)

, (20) (5) (7)
 , (20) (5) , (20)
 (1)
 , 1 ,
 1 ,
 ,
 (2)
 14 15 (2) - , 15 가 가 ,
 14 ,
 2 , 1 , (20) (25) . (25)
 5) , (20) , 1 . (2
 , (20)
 0.125 0.2mm (25) 2 , 1 가 (20) ,
 , (25) 50 μ m .
 , (22) 가 (25) ,
 , (22) , (22)
 ,
 2 (25) (20) - (1)
 14 (a) , 1
 가 (20) , (20)
 (25) , 15 , (25)
 4) (4) 1 가 0.5mm 15 (20)
 , (20) (5) , (7) (25)
 15 (25) (4) , (25)
 (5) (7) () (11) () .
 , (20) 1 가 (5)
 , 14 (c) (5) , (5) (4)
 (7) (15) .
 , 14 (d) , (5) (7) , (20)
 (3a) . (3a) , (5)
 (7) .

, 14 (e) (13) , 1 가 , (20) ((4))

, 14 (f) , (3a) (21) ,
 (20) (22) (20) . (22)
 (25) , (25) . (5)

, (22) (20) , (20) (3a)
 (20) (4) (4) . ,
 (3a) (3)가 .

, 14 (g) , (21) (3) -
 (1)가 .

2 , (25)
 , ,가 , 가 , ,
 가 .

2 .

(1) - () (2) 2 ,
 (2) .

(2) - , 1 1 가
 , 1 2 (2)
 , (3) (1) .

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

(4) (2) ,
 (2) .

(5) (2)
 (2) (가) 가 . , ,
 , (2) (15) - (1) ,
 (2) (: 17) .

(6) () ,

(7) (20) , (22) 가 (25) ,
 .

(8) (7) , (22) (22)
 , (1) .

(9) (1) (8) , 가 -
 가 .

2 , 1 가 가 가 , 1
 가 .

(3)

16 (3) -
 . 3 , (1) (20) 2
 (25) . 2 (25)
 (20) .

3 - 16 . 16
 (a) 1 2 가 (25) () , (25)
 (5) .

, 16 (c) (5) , (5) (4)
 (7) .

, 16 (d) (5) (7) , (20)
 (3a) . (3a) . , (5)
 (7) .

, 16 (e) , 1 가 , (20) ((4))
 (13) .

, 16 (f) , (3a) (21) ,
 (20) (22) (20) . (22)
 (25) , (25) . (5)

, (22) (20) , (20) (3a)
 (20) (4) (4) . ,
 (3a) (3)가 .

, 16 (g) , (21) (3) -
 (1)가 .

3 2 가 . 3 , 1 가
 가 가 , 1 가 .

17 19 3 1 , 17
 , 18 , 19

1, (20) (25) (22) , 17
 , 2 가 (25) (25)
 () (22) , (4)(: 2)
 () (22a) .

1, 18 19 , (2)
 , PbSn (2) .

20 21 3 2 , 20
 , 21 (4)(: 2)
 : 2) (25) 2 , 1 () .

2 , .

22 23 3 3 , 22
 . 3 , 23 (30) (20)
 , (25) , (30a) (30) .

22 (30a) (30) .

3 (3a) , (21) .

3 가 가 .

24 3 4
 4 (4) (3a) (31) (31) (3)
 가 , (4)(: 2) 가 ,
 (1) (4)(: 2) , .

25 3 5
 5 (3) (4) (3a) (32) (32)
 (1) 가 , (4)(: 2) 가 ,
 (4)(: 2) .

(4)

26 (4) -
 . 4 2 3 , (20) (25) 가 ,
 (20) (25) (20) (25) ,
 . (25) 50 μ m .

4 - 26 . 26
 (a) 3 가 (5) (26 (b)) . (25) (20) ,
 , 26 (c) (5) , (5) (4)
 (7) .

, 26 (d) , (5) (7) , (20)
 (3a) . (3a) . , ()
 5) (7) .
 , 26 (e) , 1 가 , (20) ((4))
 (13) .
 , 26 (f) , (3a) (21) ,
 (20) (22) (20) . (22)
 (25) , (25) . (5)
 .
 , , (22) (20) , (20) (3a)
 (20) (4) (4) . ,
 (3a) . (20) (3)가 .
 , 26 (g) , (21) (3) -
 (1)가 .
 1 4 가 2 가 3 가 , 4 가 ,
 .
 4 (4)(: 2) (25)
 , (4)(: 2) .
 27 29 4 1 , 27
 , 28 , 29 .
 4 (20) (25) (22) , 27 ,
 2 가 (25)
 25) () (22) , (4)(: 2) ((22b) .
 4 , (2)(: 4)
 , PbSn - , (4)(: 2) PbSn
 .
 , 4 1 , (2) (1) 3 .
 , (1) .
 30 4 2 . 4 2
 , 30 (a) 30 (d) , (20) (a), (25)
 (33) (b), (c), (d) . (25) (33)
 , (33) ,
 (20) .

(5)가 (25) (33) , (2)(
: 4) (5) , (25)
.
(5)
31 (5) - 3
, 32 . 5 (1)
(2) (4) (5) ,
, . (20)
, , ,
31 (1) . 32 (1) ,
(4)(: 2) .
, , 가 (5)
, .
(6)
33 (6) -
, 34 . 6 5 가
, (20) 가 , (4)
, 5
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(7)
35 38 (7) -
, 35 - , 36 , 37
, 38 .
7 (25)
(2) . 1 (25) .
(2) .
(8)
39 41 (8) -
, 39 - , 40 , 41
.
8 (1) 3 (4)
(2) , 4 (4) (2)
, A 3 (4) 4 (4)
, . 3 (20) A

(4) (4) (5) (4) (5) (5) (4) (5) (4) (4) (4) , 가 .

8 , (5) (4) (2) .
가 가 .

(9)

42 44 (9) - , 43 42 A - A
, 42 ,
, 44 42 B - B .

9 , (20) , (25) (40)
(25) (40)
, () 가 . ,
가 .

43 44 (4) (41) . 42
(41) .

(10)

45 48 (10) - , 46 , 47
, 45 - , 48 .

10 , (5)가 (4) (5)
(42) , (5) ,
(5) .

, 4 (20) , (4)
(4) (: 42)

, 48 10 (a), (b), (c) . 48 (a) 48 (c)
, (20) (a), (b), (c) . 48 (a)
(4) (4) (: 42) .

(11)

49 51 (11) , 4
9 , 50 , 51 .

11 8 가 (5) (4) (2)
. 51 (a) 51 (d) , (20) (a), (4)
(b), (c), (d) .

11 , 51 (a) (25) (20) , (20)
 (5) () , 51 (b) (5)
 (2)가 (5)가 (4)
 (43) .
 , (43) (9)(49) (5) (20)
 . (43) 49 50 11 ,
 50 (5) (4) (43)
 (2) .
 , 51 (d) , 4 가 가
 49 50 (1) .
 11 , 8 가 (5) (2) .
 , 가 .
 (12)
 52 (12)
 , 53 (a), (b), (c) . 53 (a) 53 (c)
 (20) (a), (b), (c) .
 12 (25) (20) , 53 (a) (5)
 (5) (25) (44) , , 53 (b) (5)
 , (5) , 53 (c) (5)
 (4) (7) . 11 가 ,
 52 (1) .
 12 , (5)가 (25) (44) ,
 (2)(: 4) (5) ,
 (25) (44) (9) , (25) ,
 (13)
 54 (13) -
 .
 13 (25) (5) (20)
 (5) (1) , (2)
 (4) .
 (14)
 55 (14)
 14 (3a) ,
 .

(20) . 55 (a) , (25) (20) (25) (20) , (20) , 4 가 (5) (55 (b)).

55 (c) (4) (7) (5) , (5)

55 (d) , (45) (46) (20) (7) , (20) (5) (7) . 가 . , (5) (7) , (20) 가 , (20) 1 (45) .

(46) (3a) , 55 (e) (7) (3a) (5) (7)가 , (5) (46) (5) (7) (squeezer) 가 . , (46) UV () .

55 (e) , (20) (13)() .

55 (f) , (3a) (21) , (20) 2 (20) . , (25) () (22b) (25) (4) , (25) (22) () . (25) (3a) (3)가 .

55 (g) , (21) (3) - (1)가 .

14 3 .

(15)

56 63 (15) .

15 , , 가 .

15

2

60

60 (a)

(20)

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(20)

가

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(51)

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(11)

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61

(20)

, 3 7

21

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21

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(5)가

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(5)

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60 (b)

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60 (c)

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(56 57).

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60 (d)

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(d)

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가

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(52)

가

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(57)

(3a)

(60 (d)).

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60 (e)

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59)

, 60 (f) , (3a) (21) , (20)
 (20) .
 (22) , (52) 가 . , (52)가 (51)
 , 2 () ()
) , () (50) .
 , () ()
) (50) , (3a) . (3a)
 (1)가 , (5) (7) (3a) (3)가 . (3a)
 (21) XY 2 ,
 (21) .
 , 60 (g) , (21) (3) -
 (1)가 . 56 59 , (1) . 56
 - , 57
 , 58 , 59 .
 (1) , 58 , (51) , (51)
 2 (2)가 .
 15 (1) (2) (2)
 (2) (51) .
 15 - (1) 가
 .
 , 15 (2) (52) 가 ,
 , , . (2) 가
 .
 , 15 , (52) 2 ,
 가 가 1 (52) (2) 가
 .
 (16)
 64 69 (16)
 16 , 15 (51) (52) ,
 4 . , 4 .
 16 , 68 (20) , 69
 . 68 69 .
 16 , (20) , 4 (50) (52)
 (60) (61) (6

1)

0) (7) , . 68 , 가 (61) , (20) (50) , (6

68 (20) 15 가 (1) . (52)

, (61) (2)

, (60) , .

, 64 67 (1)가 . 64 , 65

, 66 , 67

. 65 66 , 4 (2)가 .

16 , (2) (52) (61) ,

, (2) 가

.

16 - (1) , 가

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(17)

70 72 (17) , 7

0 , 71 , 72 .

17 , 71 , (5) (51)

. (5) (20)

.

(18)

73 75 (18) , 7

3 - , 74 , 75

.

18 17 가 18

(2) (3) 3 (2)가 .

18 (2) .

(19)

76 78 (19) , 7

6 - , 77 , 78

.

19 , (5)가 () (52)

, (3a) (5)가 ()

(3b) .

19 (1) , , (51) (3b) , (51)
 .

(20)

79 82 (20) , 7
 9 , 80 , 81
 , 82 .

20 3 3 , (20) (4)
 . , , (20) (5)가 (25)
 (5) , (5) , 가
 (4) 가 .

, (20) (4) .

(21)

83 (21)
 .

21 15 , (51) , (51)
 (3b) . 21 (52) 4 1 (52) 3
 (2) .

21 (1) , , (51) (3b) (51)
 .

(22)

84 97 (22) - .
 22 10 가 (5) (42) ,
 (25) (20) .

, 22 (1) (3) (2)
 () .

, (: 4) (42) 1 (26)가
 . (3) , () , (26)
 , (1) . , (42)
 , 가 .

, 22 (1) . 84 87
 , 88 94 - .

84 , (3) (42) , 86
 , (42) 3 (2)가
 .

(42) 1 (26)가 . (42) (2)
 (: 4) (25) (: 4) .
 (5)가 (9)(87) (42) (5)
 . (5) (2) (3) (7)
 (85, 87).

5) , , 87 84 , (3) ()
 (2) (42) . (2)
 (2) (42) (27)
 , z , 10 100 μ m가 . (2) ()
 (1) (2)가 ()

22 (1) 88 (a) 88 (g) .
 , 22 (1) , 89 (20) (20)
 , 가 (35a, 35b, 35c, 35d, 35e) 가 (35a,
 35b, 35c, 35d, 35e) (20) 가 . (2)
 0) 2 , 12 (37) . (37)
 (1)가 . (37)
 (25a) . (25a) (38)가 . e, f가

90 (37) , 91 (37)
 . 90 , (42) (4) 1 (26)가
 . (42) 3 (2) (4)
 . (4) (25) .

88 (a) , (42)
 (4) (5) .

88 (a) , (2)가 (4)
 (5) (7) .

88 (c) , (5) (7)
 (3) . 92 93 (a) (20) .
 , (3) (38) , (25a) .
 (38)가 .

88 (d) , (28) (20) (25)
 (4) (2) (42) . 93 (b) (3)
 . (25, 25a) (3) ()
 . (20) , (38), (2) (42)
 가 . (38) 가 , (38) (3)
 . , (20) (4) (38) (3)
 가 .

, 88 (e) (42) (27) (3) PbSn (2) (27)
10 100 μ m (3) (2) (42) ,
() .

93 (c) (3) (38) 94 가 (3) (38)
가 (3) (38) .

, 88 (f) (3) (21) (42) (3) (2)가 (22)
(3) 93 (c) 94 ,
(3) .

, 88 (g) (3) (21)
(1) .

22 , 88 (a) (42) (4)
(5) 가 가 ,
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, 88 (b) (20) () (5)가 (29)
(42) (4) (2)가 (4)
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(1) (3) (42) (1)
(5) 가 (42) , (1)

, (25) (4) (2) (42) ,
(20) (4) (88 (d)). , 88 (e) (, PbSn 가
) 가 (20)
. , 가

95 97 22 96 (5) (42) 95 97
. , 가 .

(23)

98 (23) -
99 - .

23 22 , (25) (25a)() (20)
(1) . 98 (a) 98 (g)
88 (a) 88 (g) .
가 .

(24)

100 105 (24) - .
100 103 - , 100 (1) , 101
(1) , 102 (1) , 103 .

104 (a) 104 (g) , 105 (a), 105 (b)
(20) (37) , 105 (a)
, 105 (b) .

24 , 105 , (20) (37) , (42)
() 가 (71) . 104 (a) 104 (g)
, (4) (30)[104 (d)
] , 88 (a) 88 (g) 22 .

105 (a), 105 (b) , (42) (71) ,
, (30) , ,

, (42) 가 (71)
, , (1)

, (4) , , (42)
(71)가 , (71) .
(71) 가 , (42) 가 .

(25)

106 110 (25) - .
106 109 - , 106 , 107
, 108 , 109
, 110 25 - .

25 22 , 107 108 (2) 가 , u , (2)

가 (2) , 110 (17) , (1) (16) (15) : 15 ,
 가 (2) , 가 (16) 72 (15) (15)
 가 (2) 가 (16) (72) (2)

(2) ,

22 25 - (2)
 (3) , (2) , (3)
 (2) , (2)

, 87 (2)가 A (B)
 , B (3) , (2) (3)

가 B (2) (20) (25) , (20)

, (20)
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, 가 가 ,
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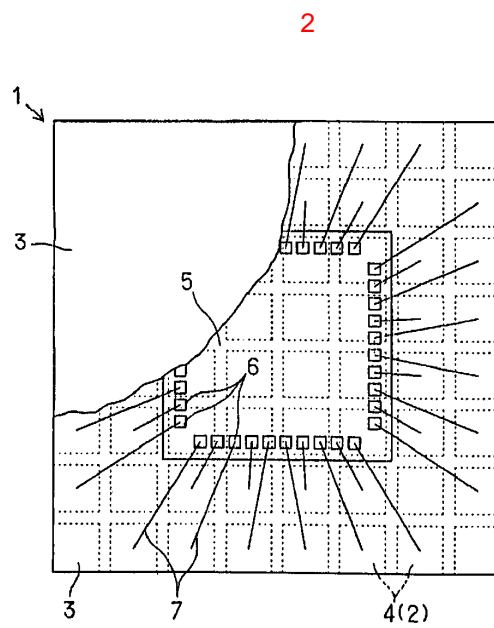
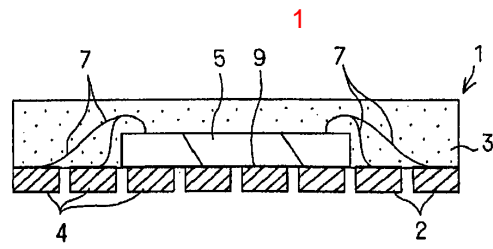
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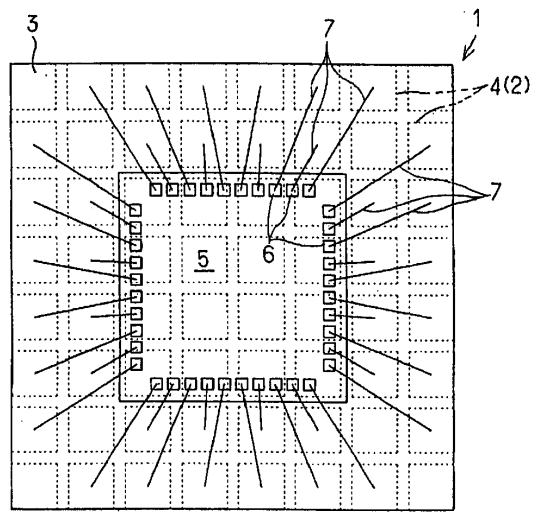
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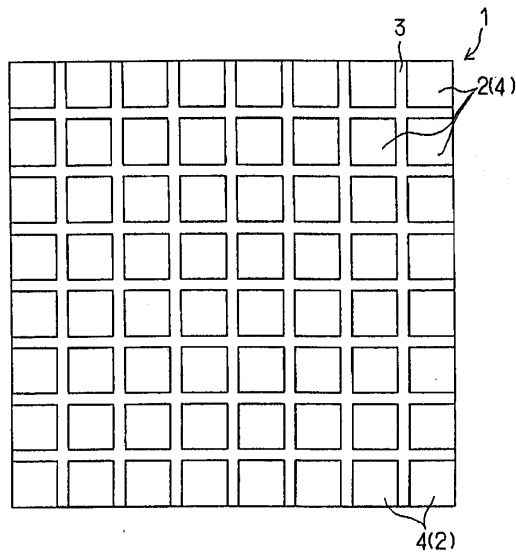
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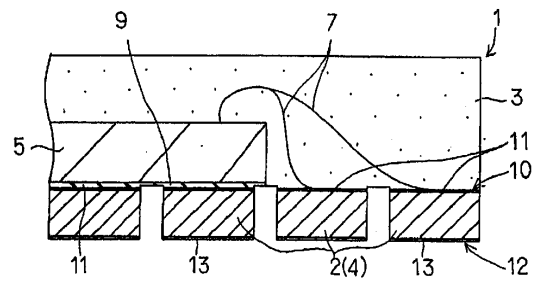
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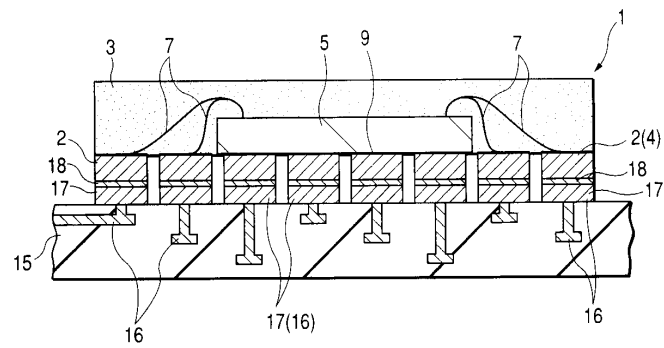
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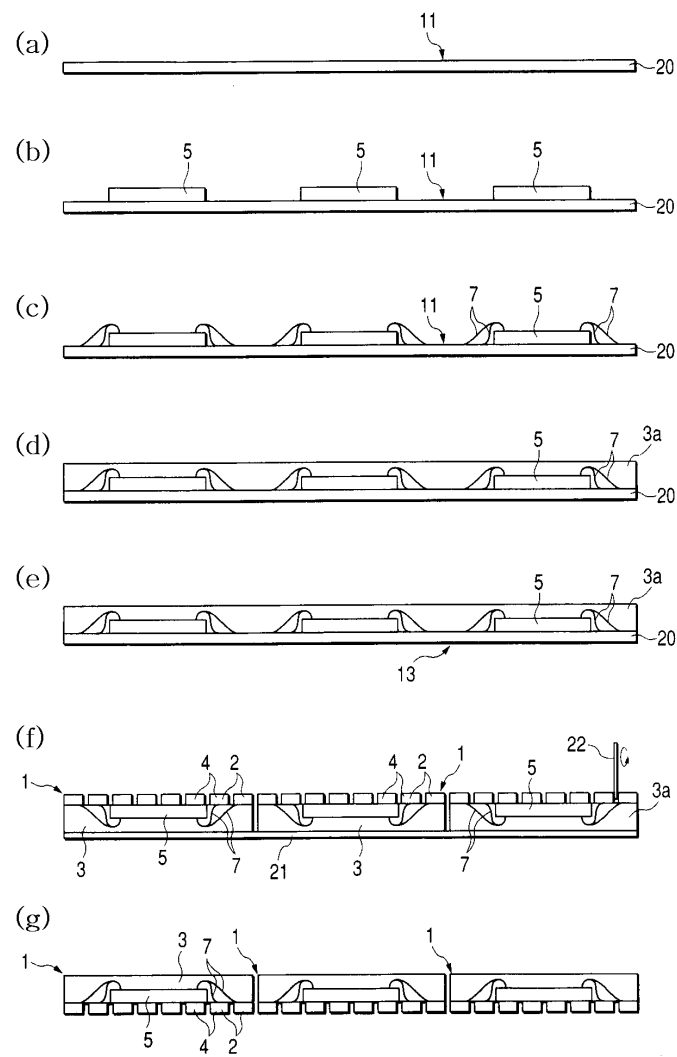
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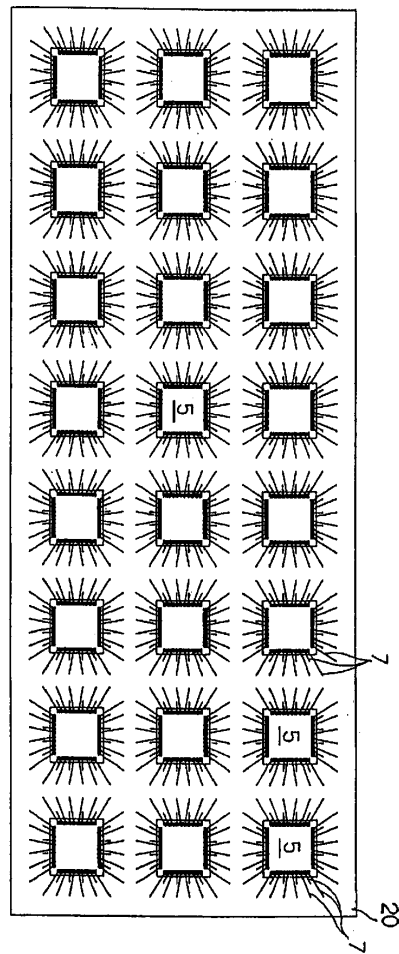
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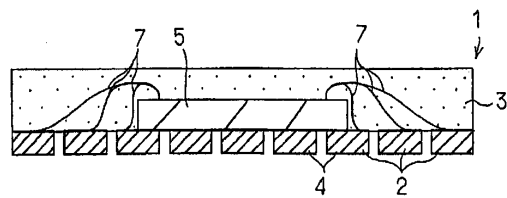
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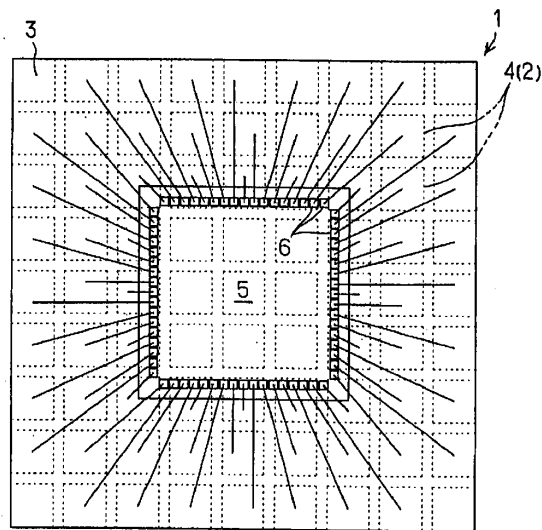
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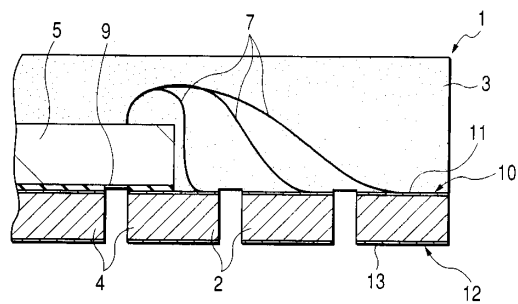
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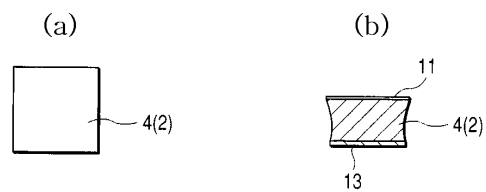
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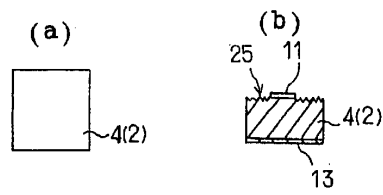
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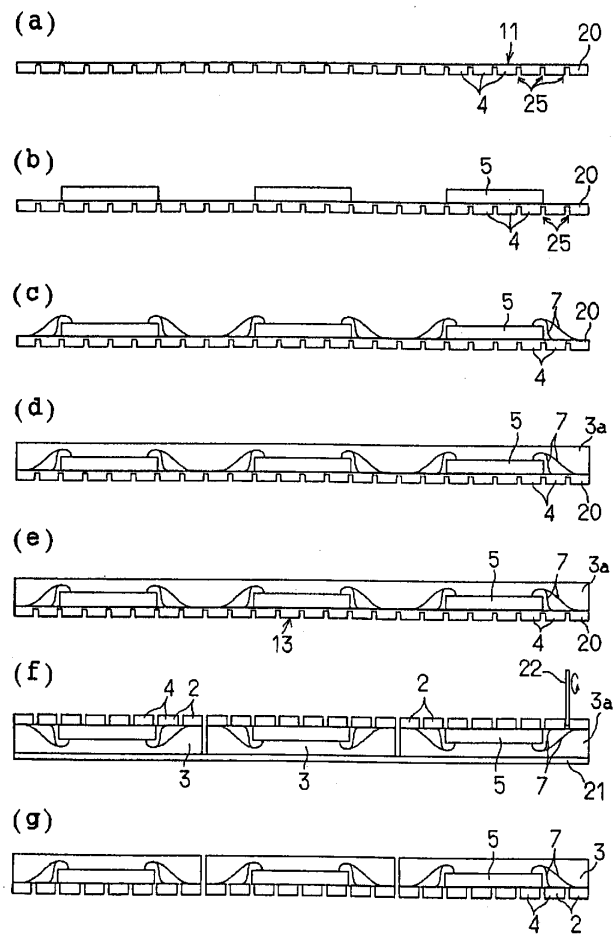
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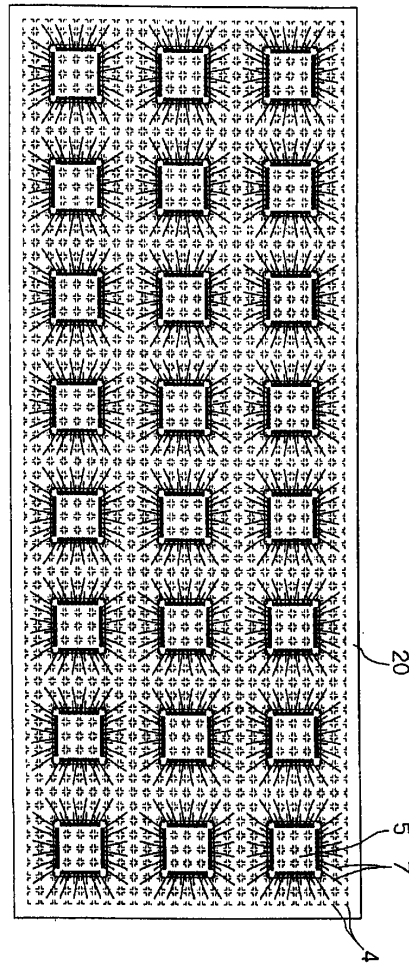
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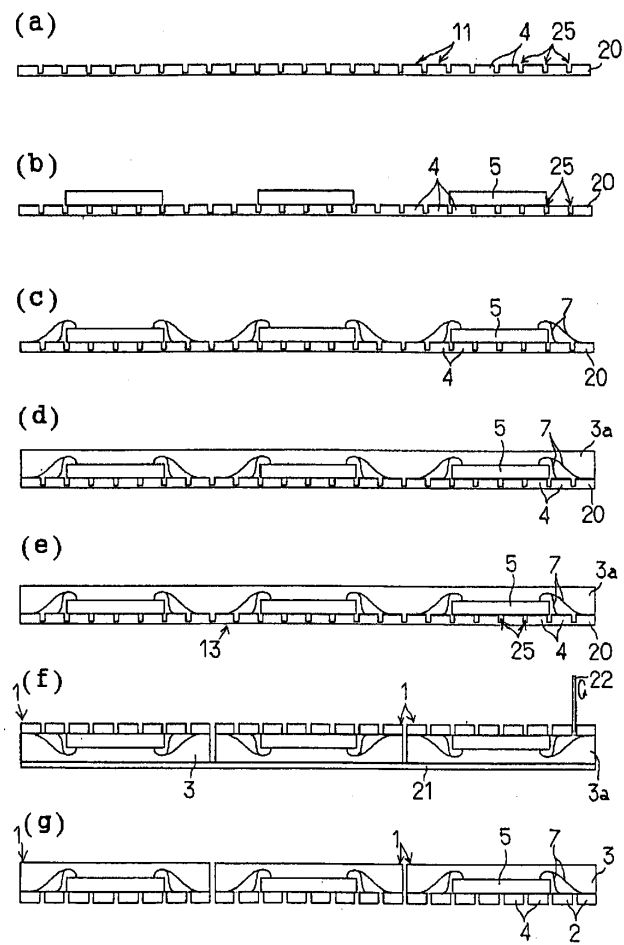
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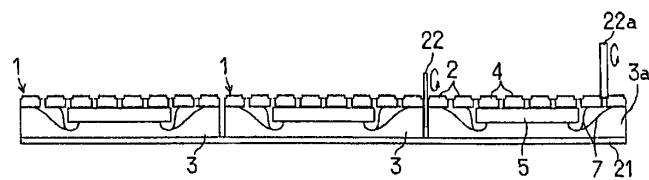
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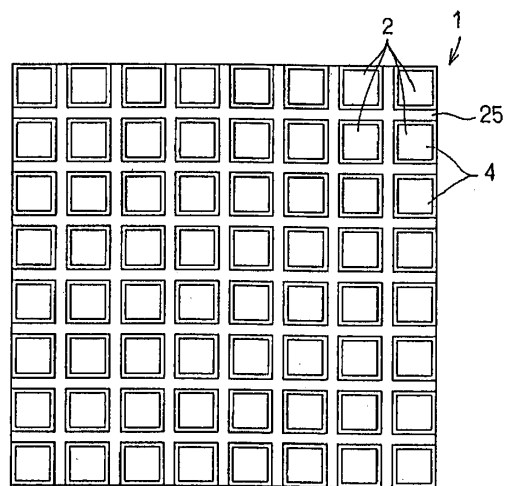
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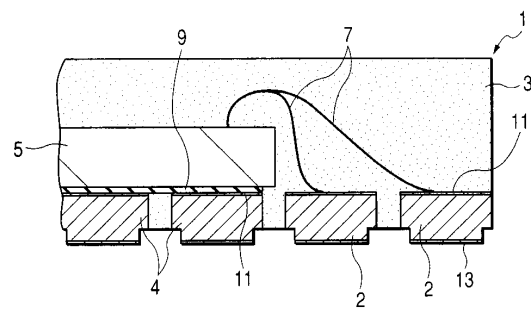
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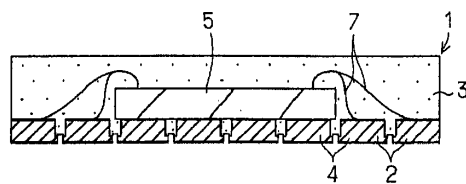
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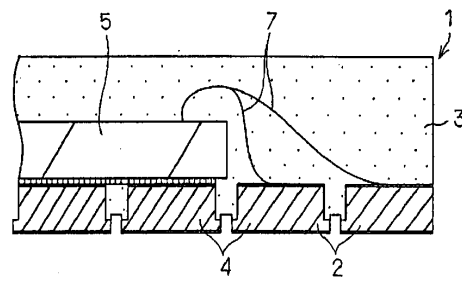
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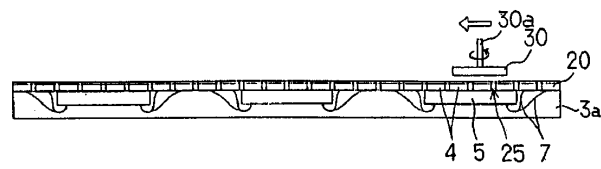
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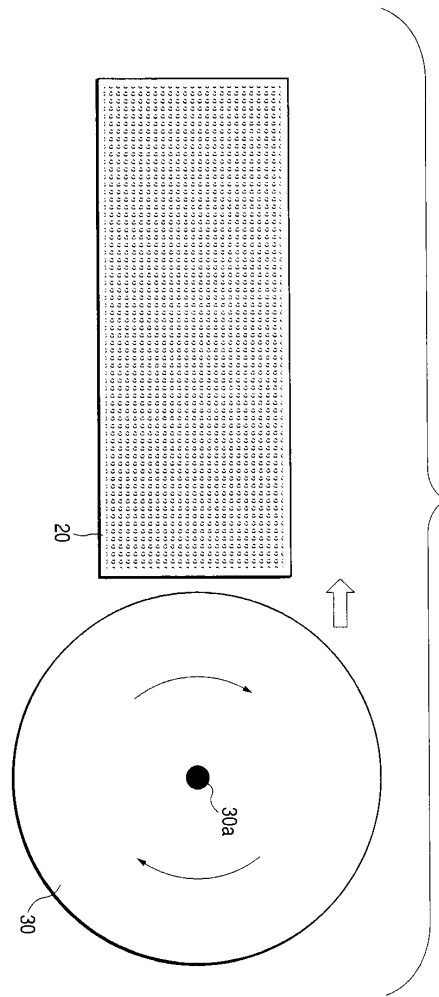
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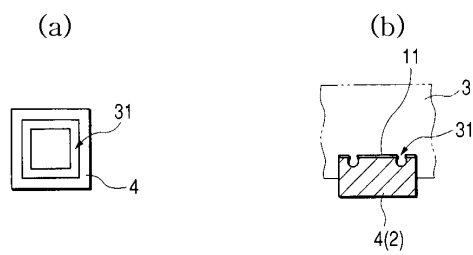
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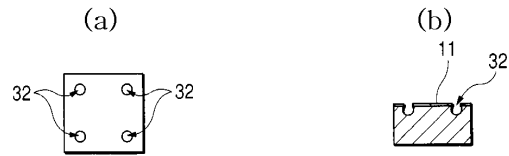
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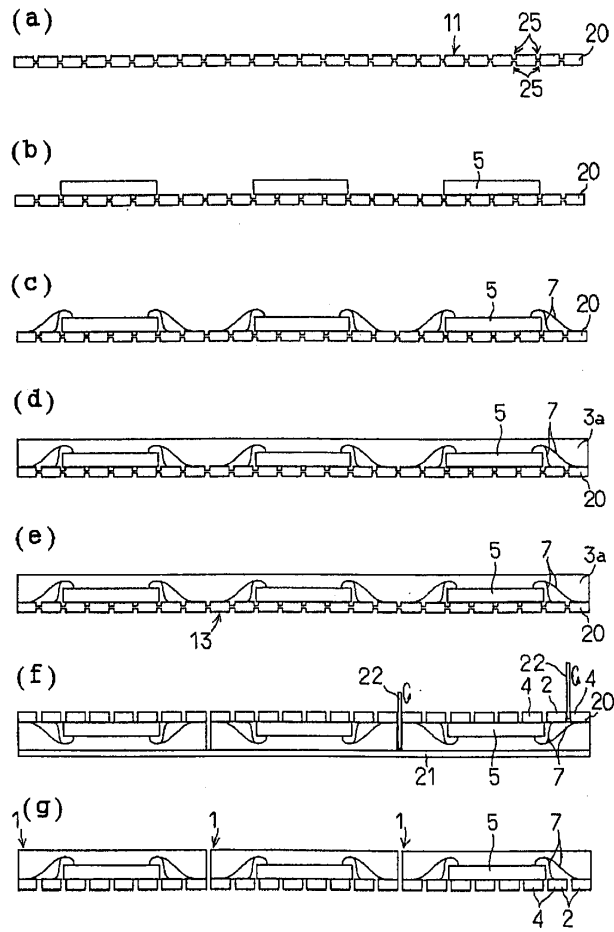
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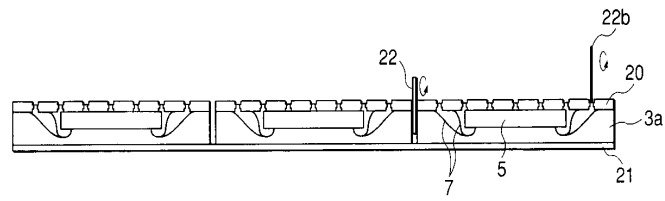
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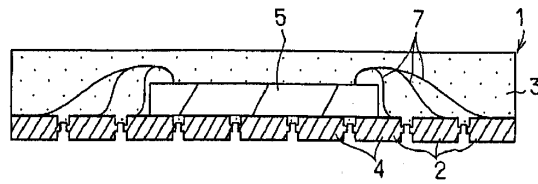
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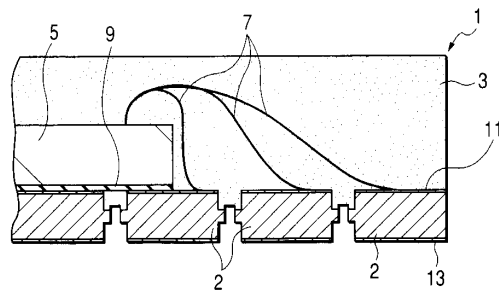
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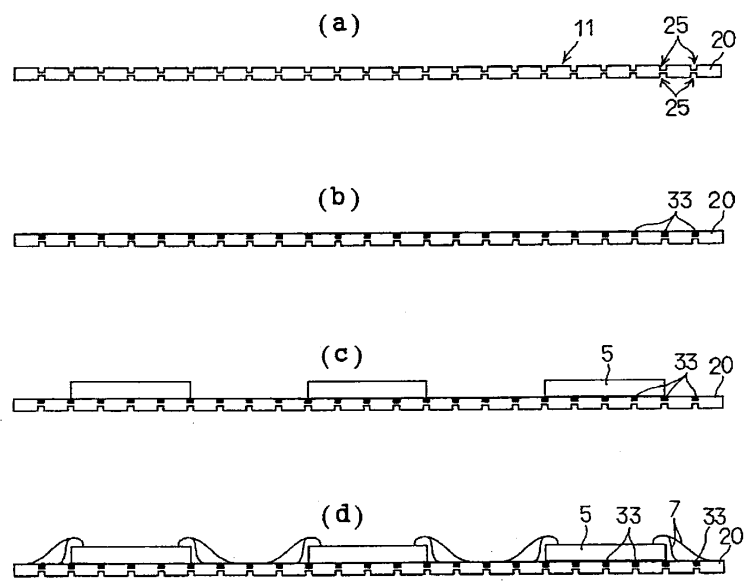
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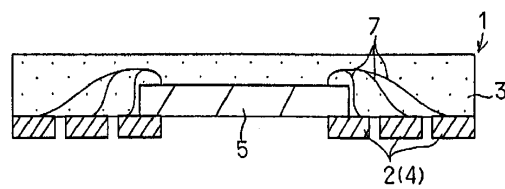
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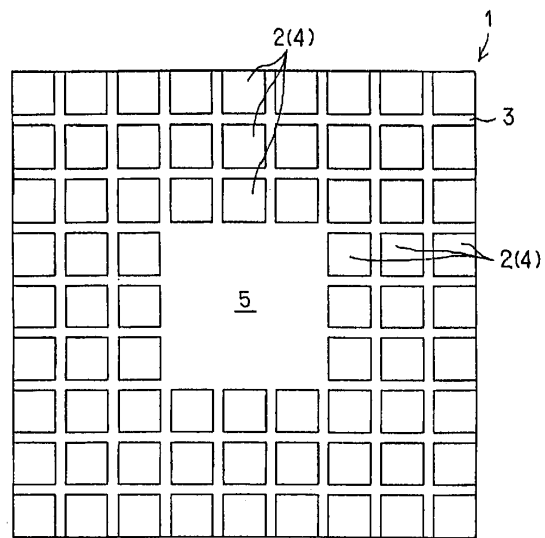
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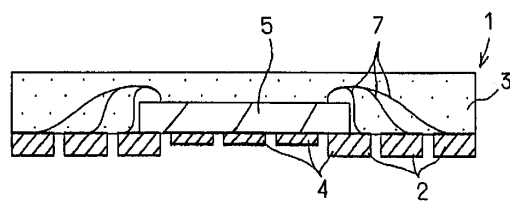
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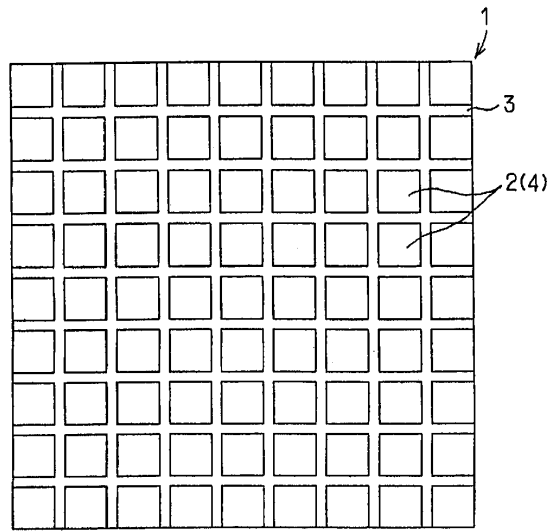
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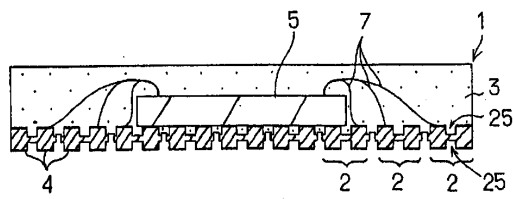
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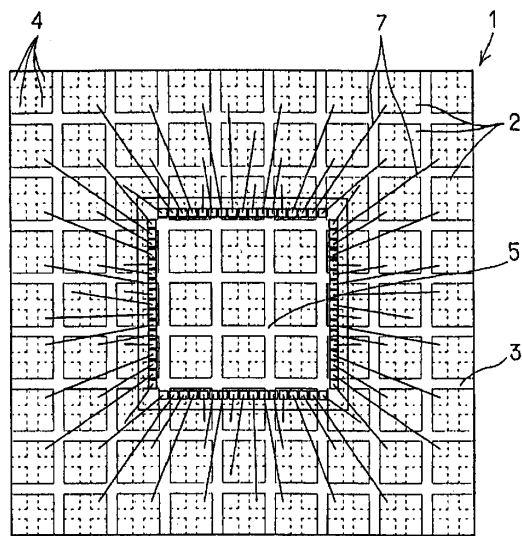
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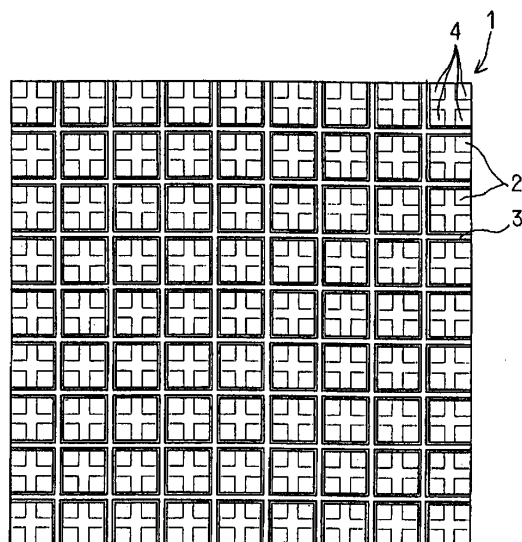
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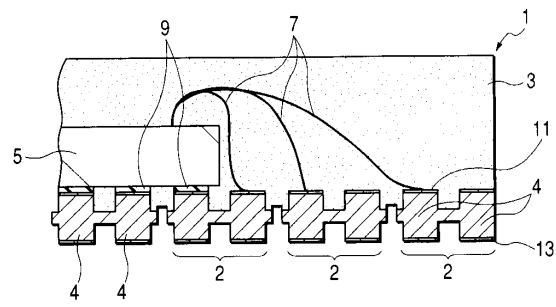
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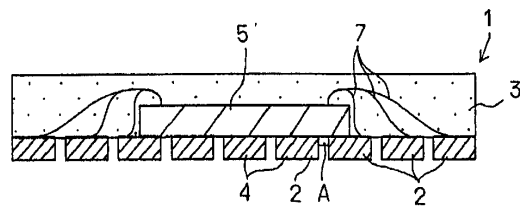
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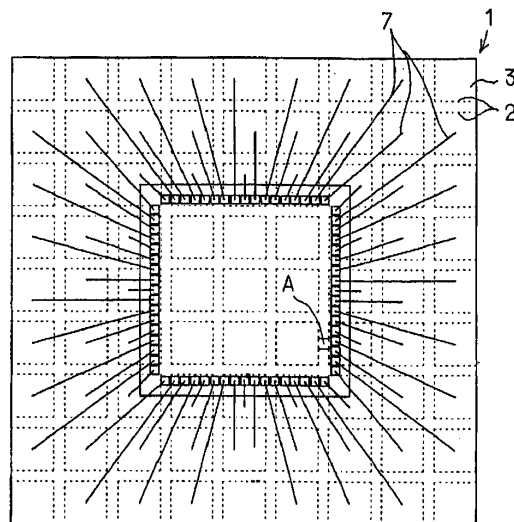
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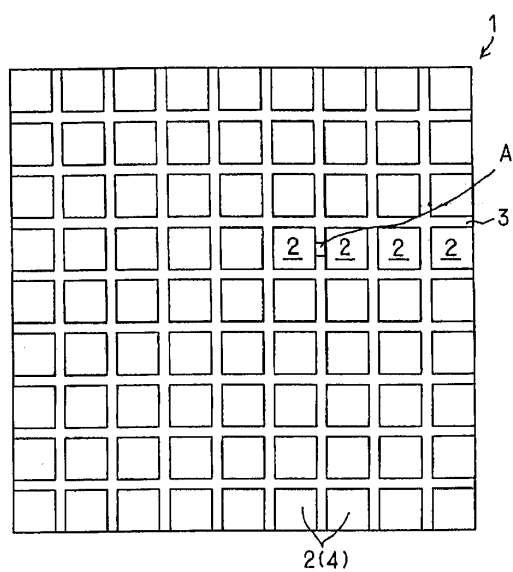
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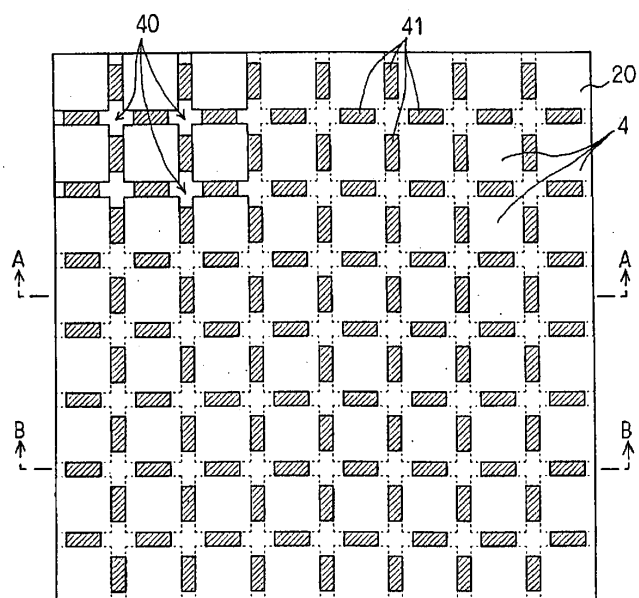
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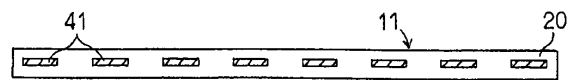
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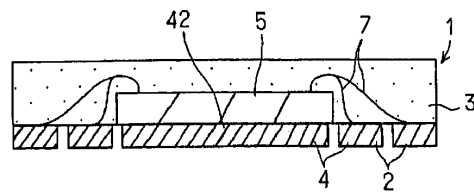
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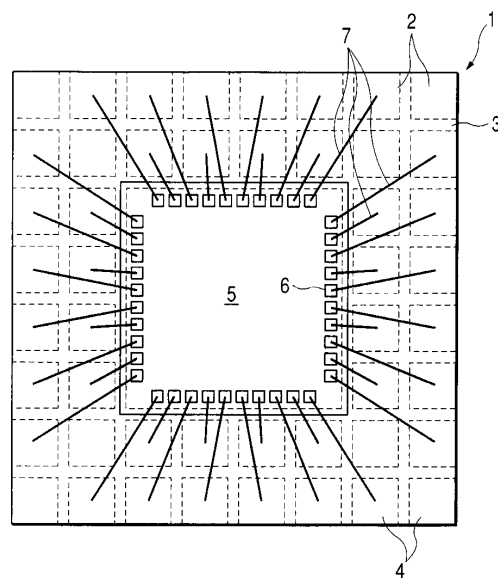
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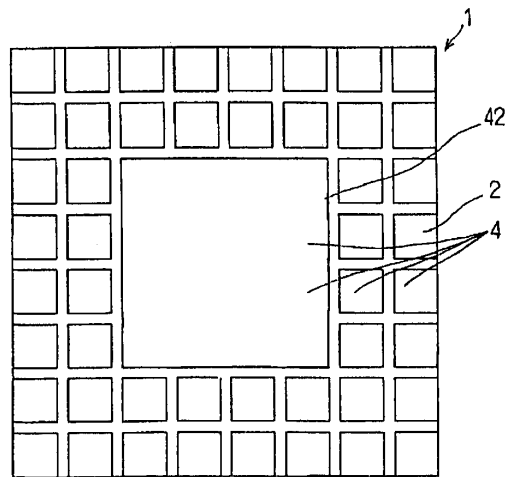
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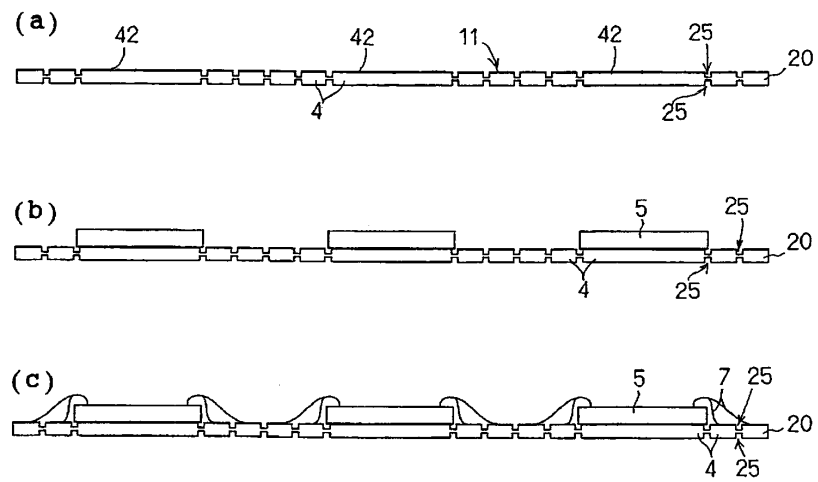
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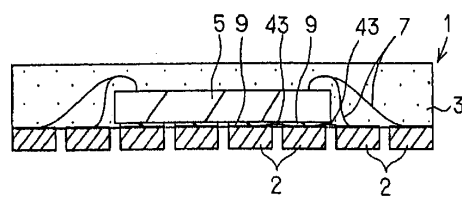
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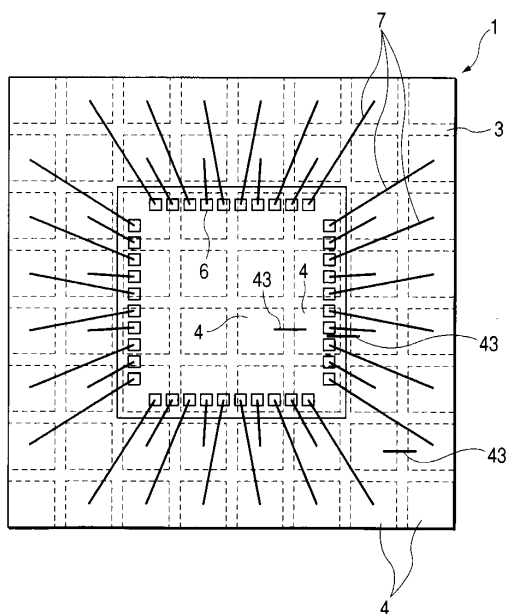
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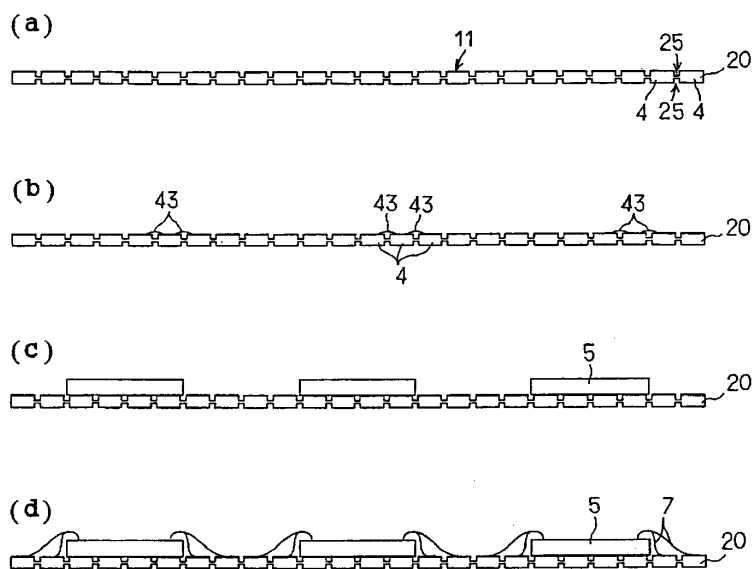
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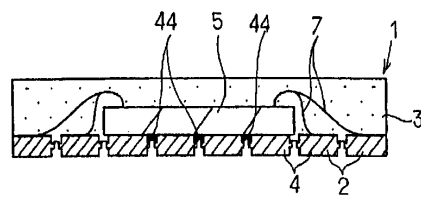
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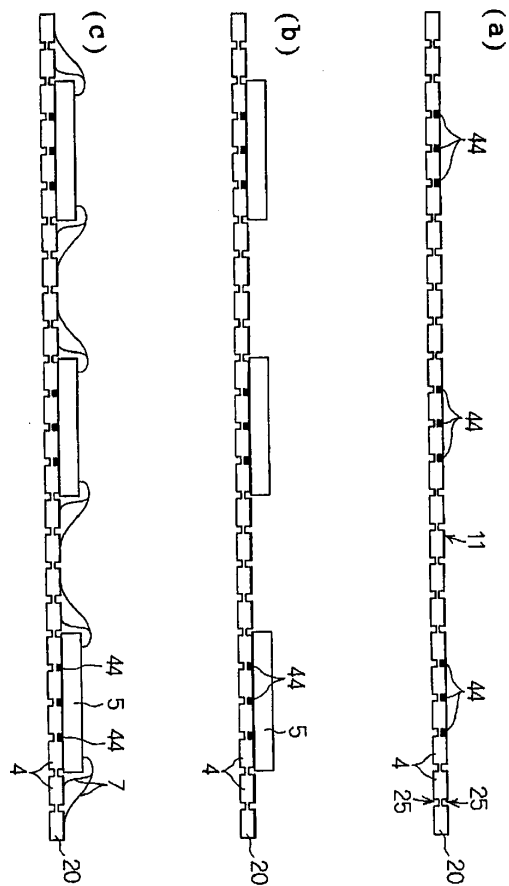
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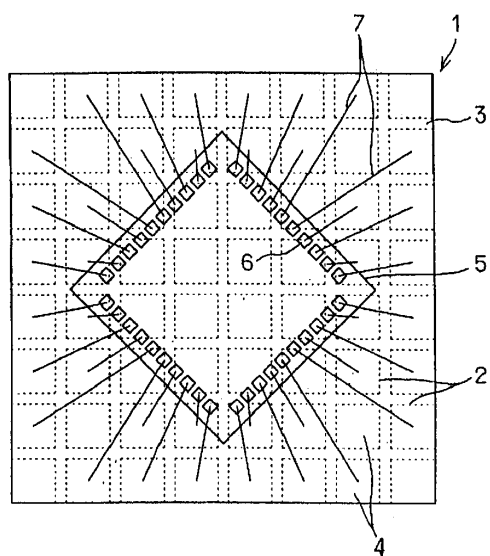
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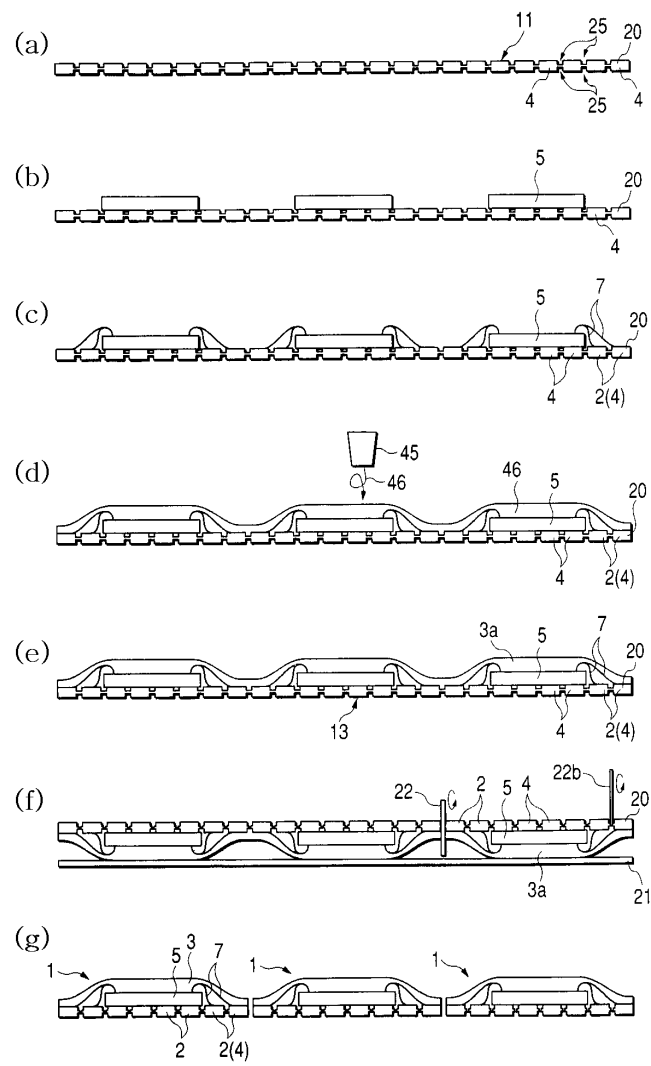
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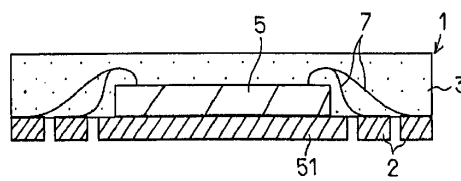
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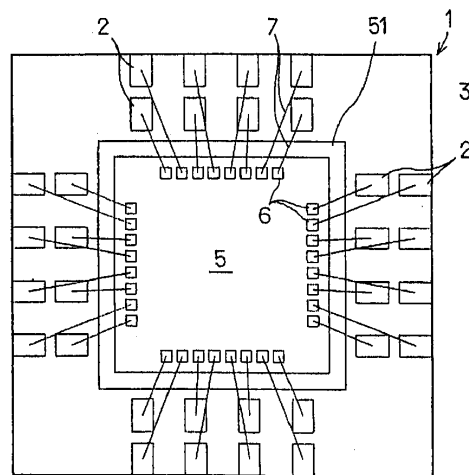
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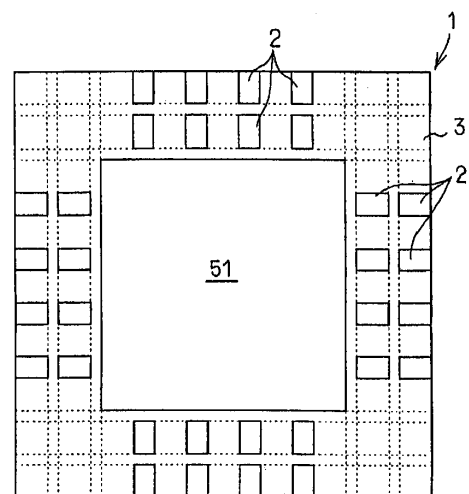
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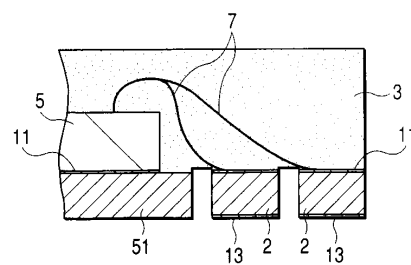
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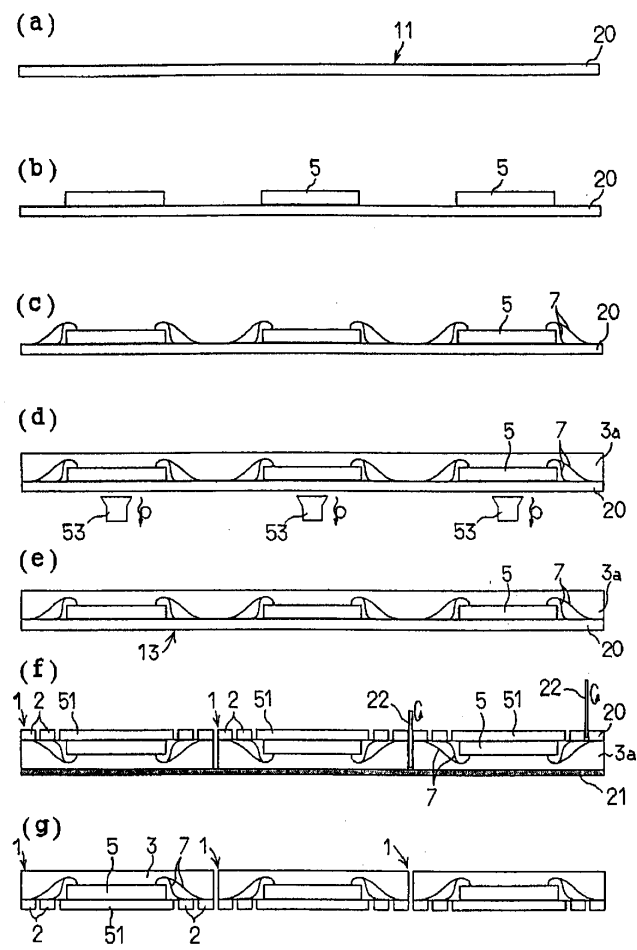
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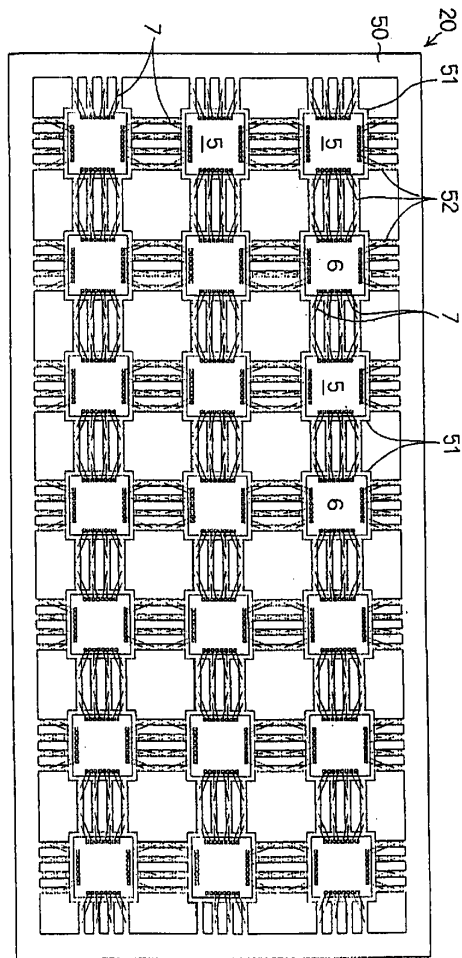
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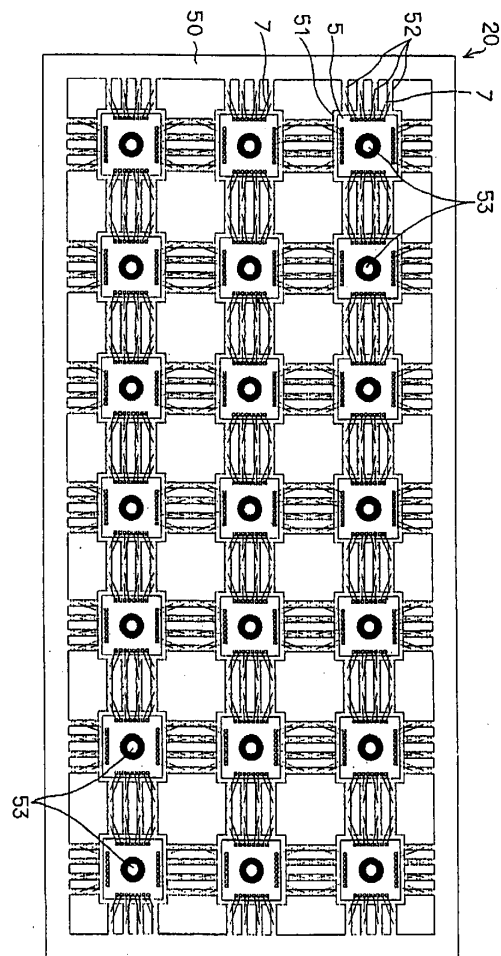
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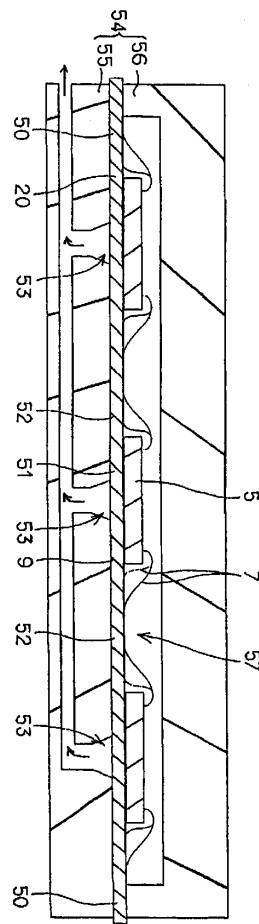
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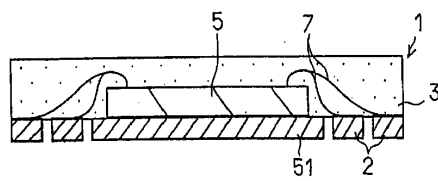
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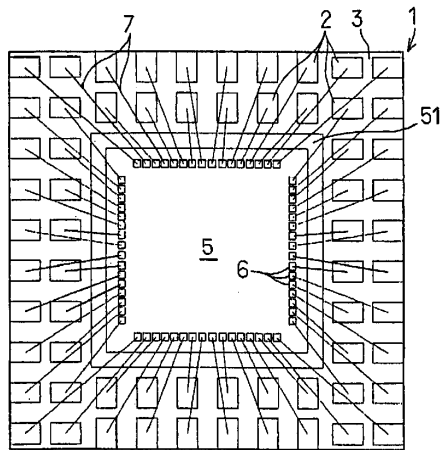
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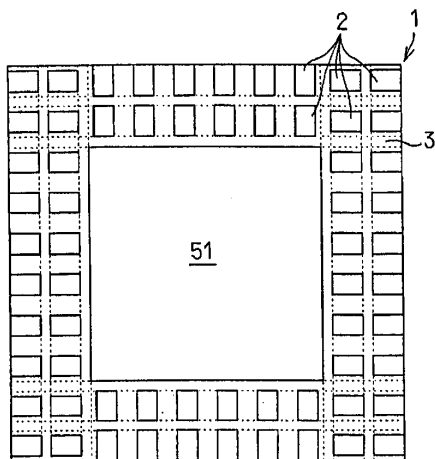
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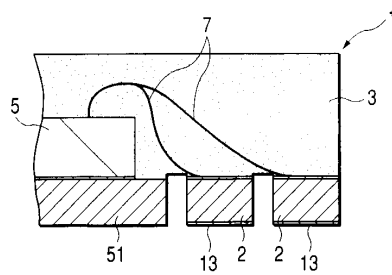
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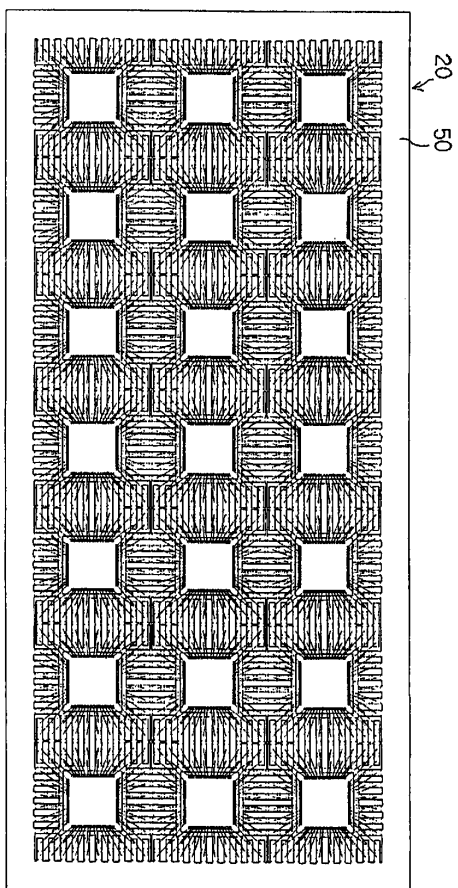
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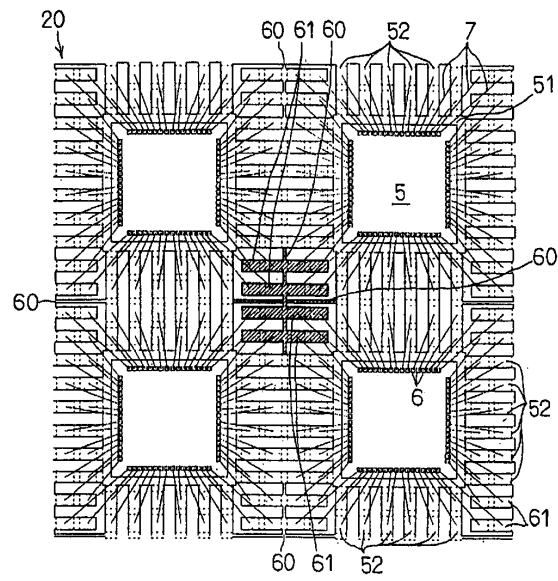
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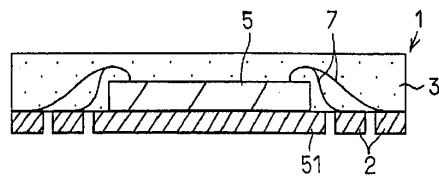
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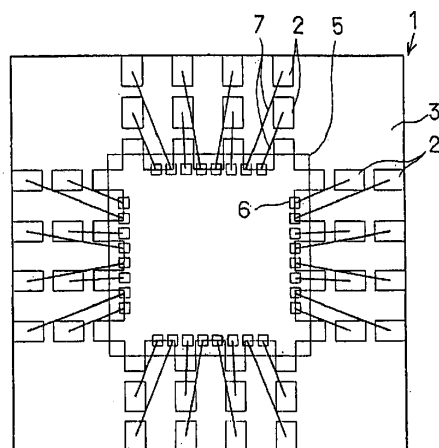
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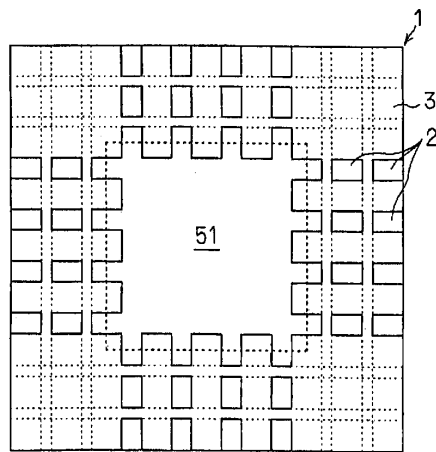
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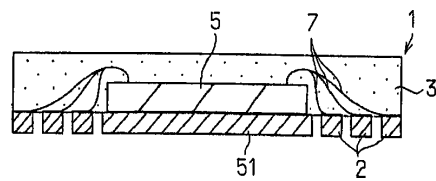
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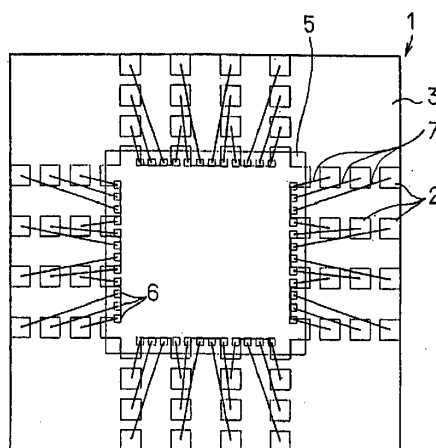
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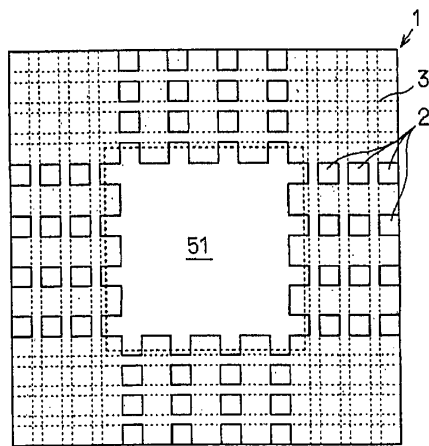
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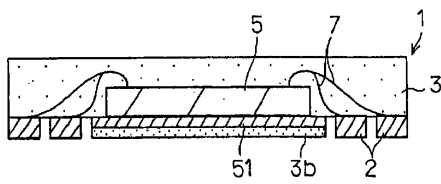
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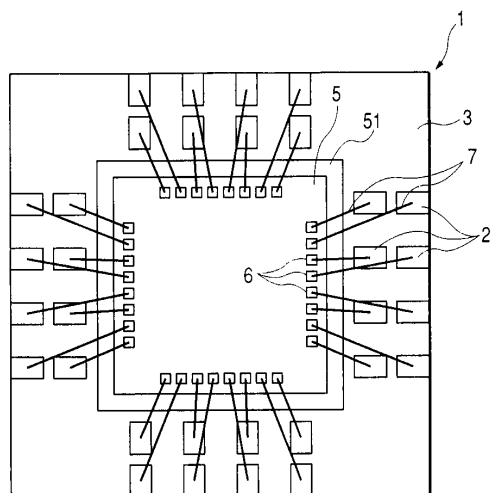
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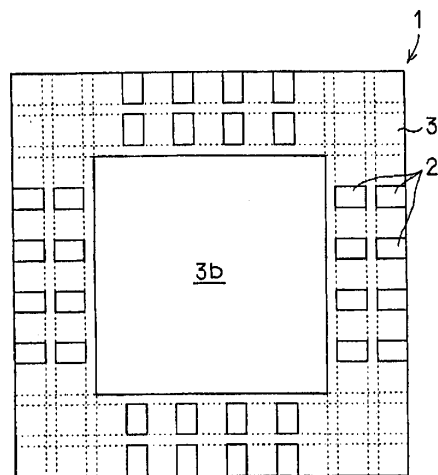
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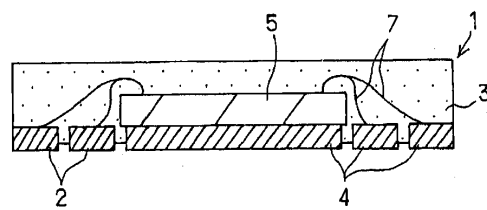
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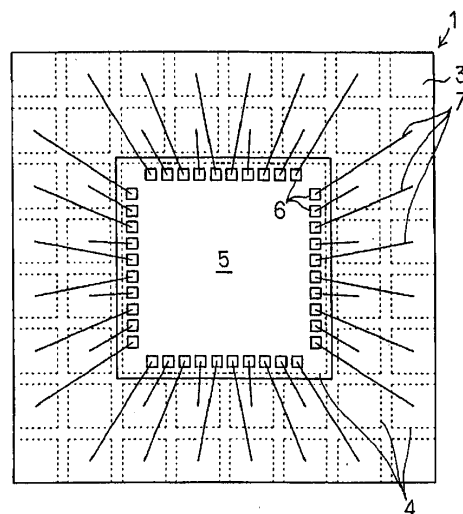
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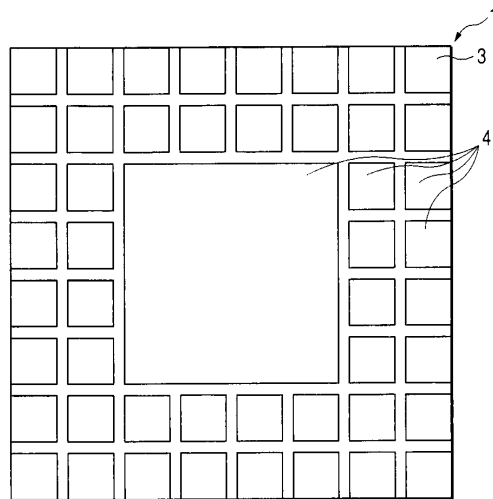
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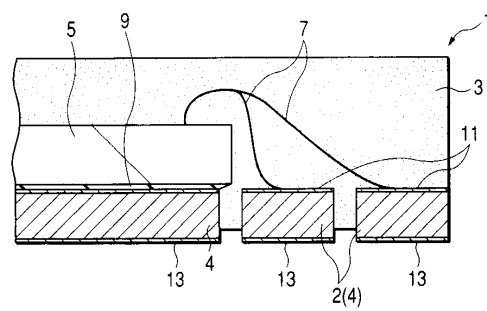
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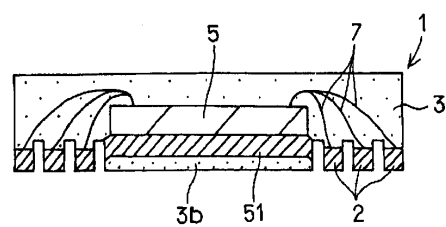
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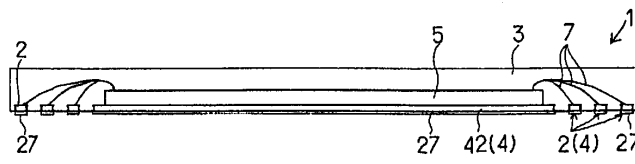
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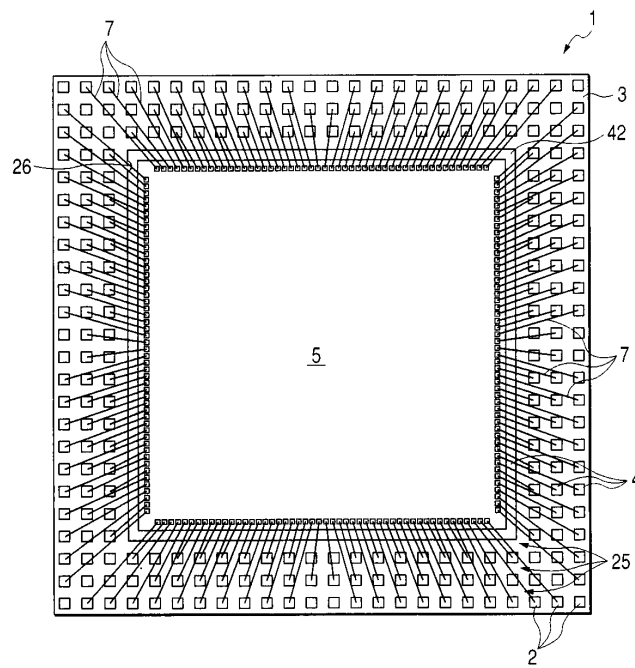
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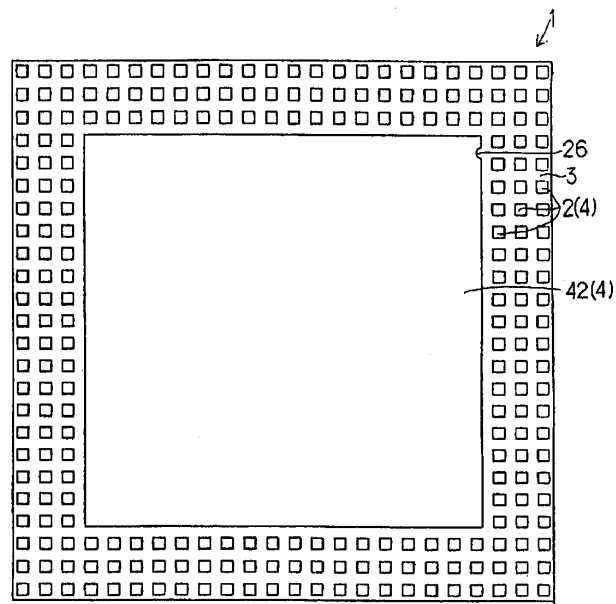
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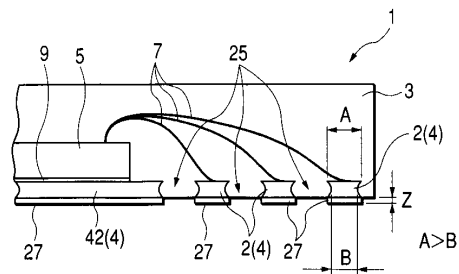
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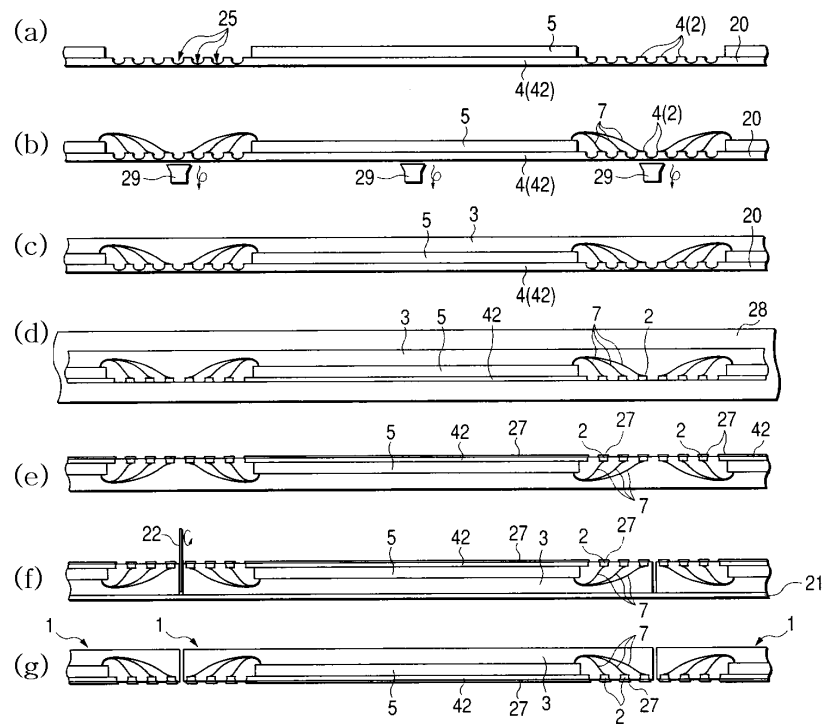
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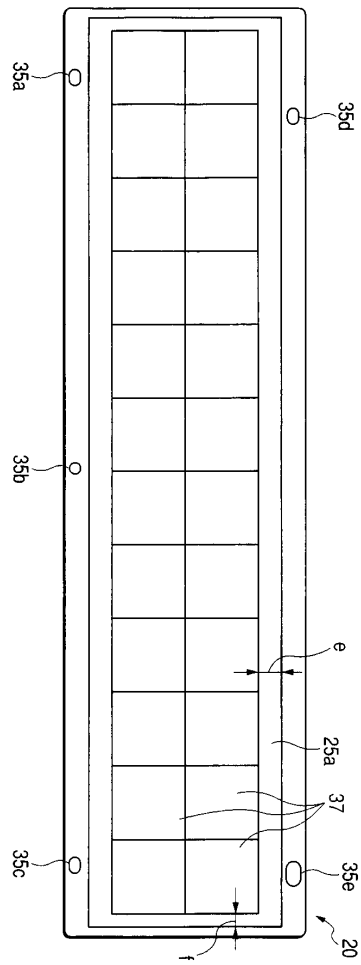
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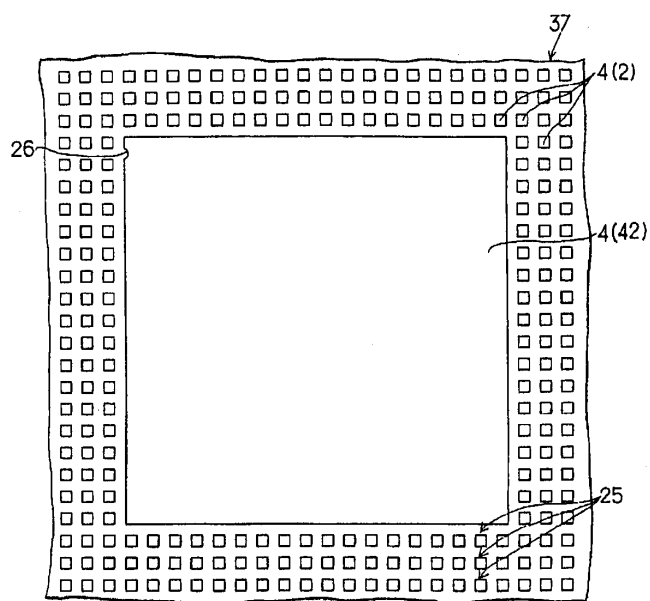
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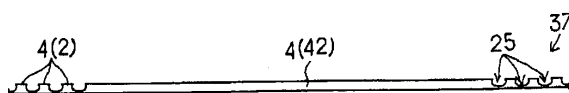
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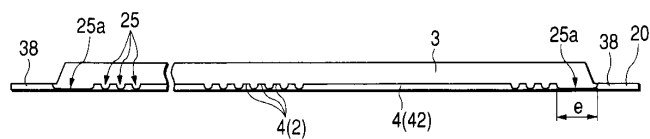
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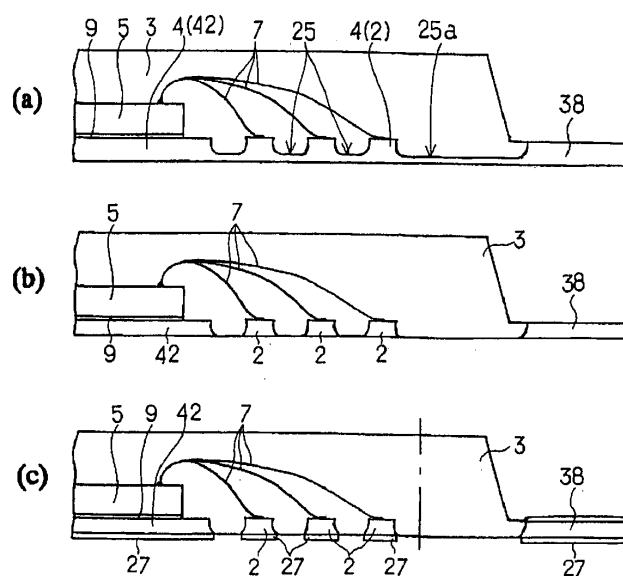
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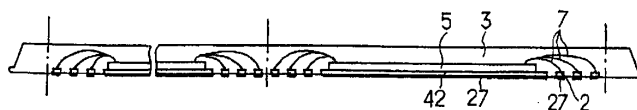
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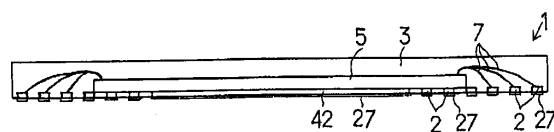
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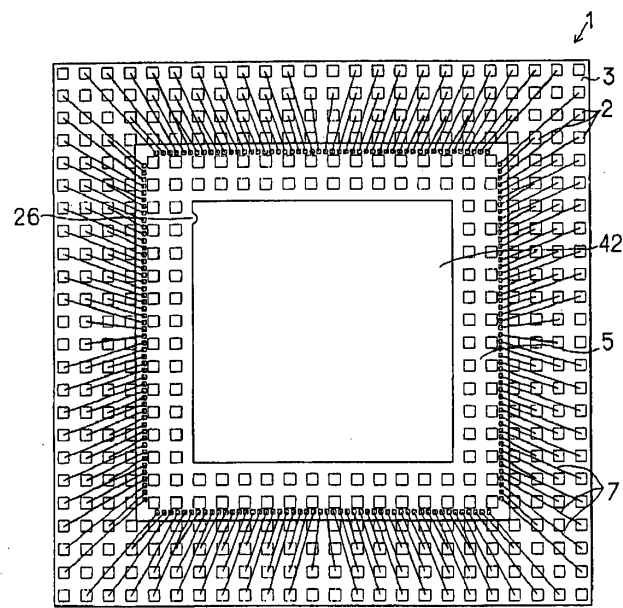
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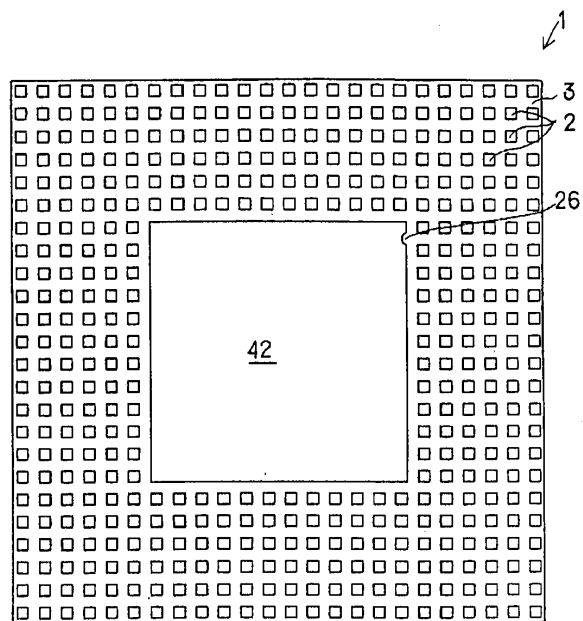
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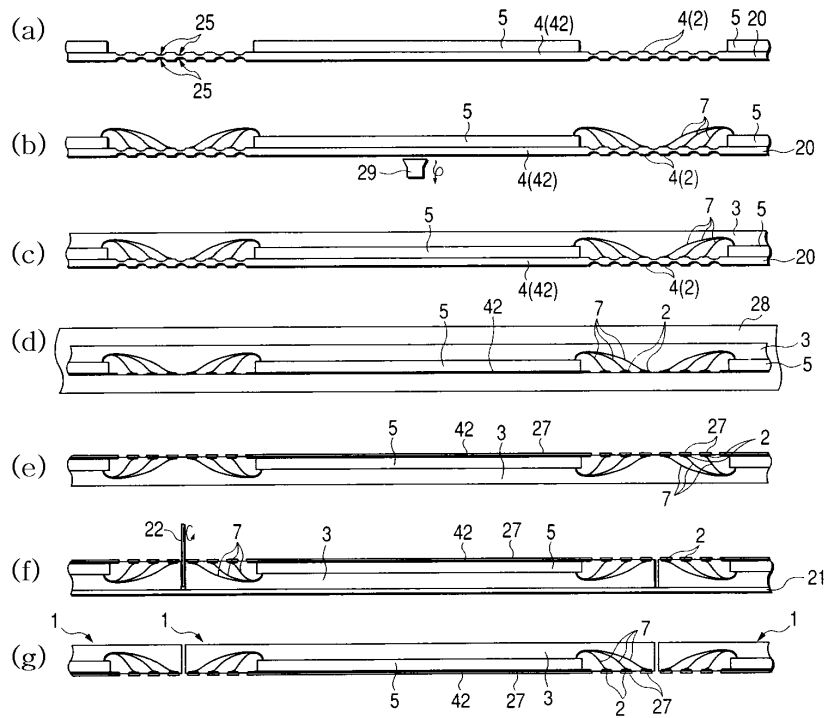
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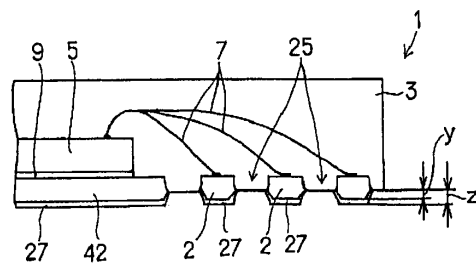
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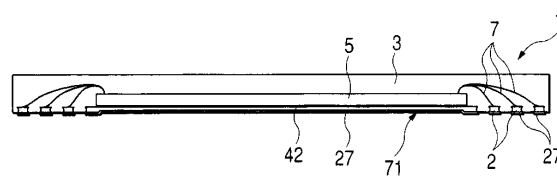
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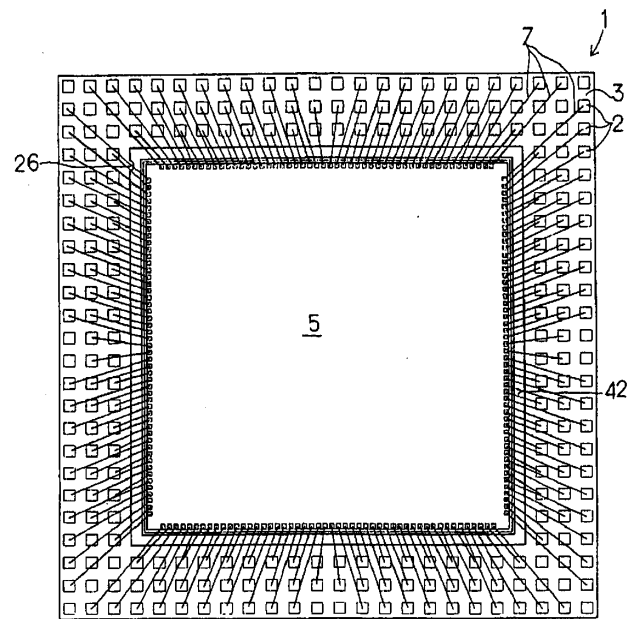
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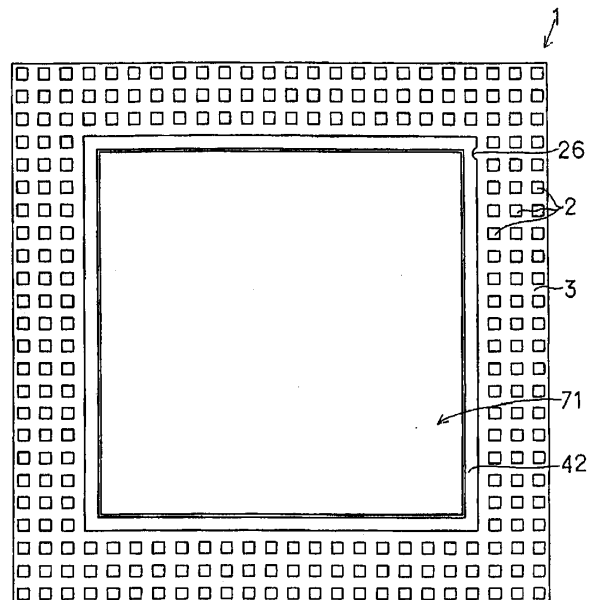
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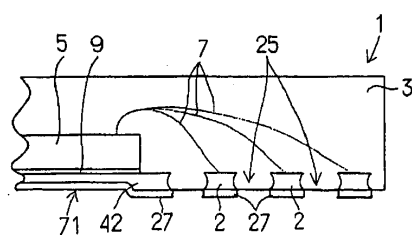
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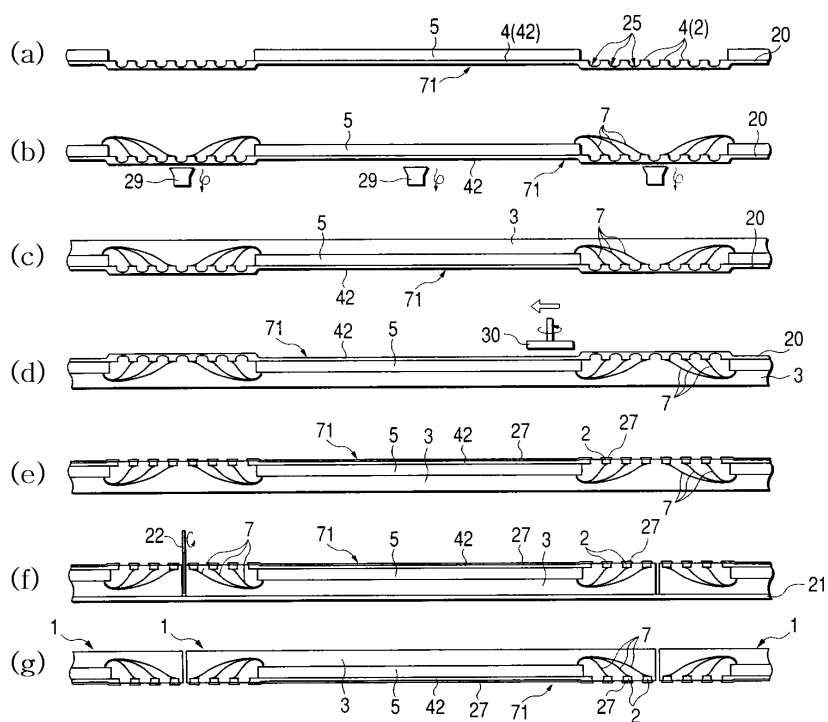
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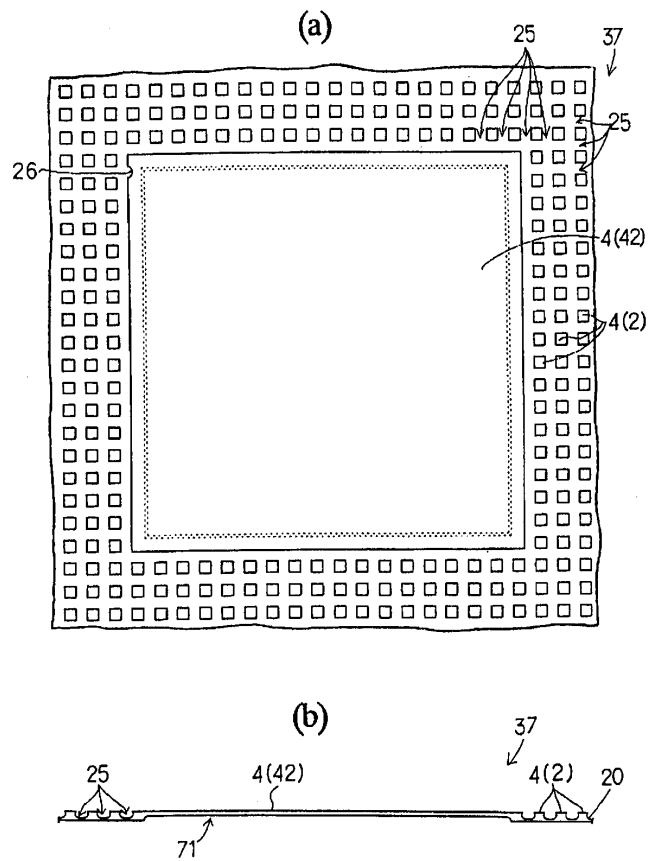
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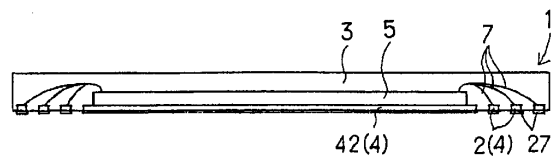
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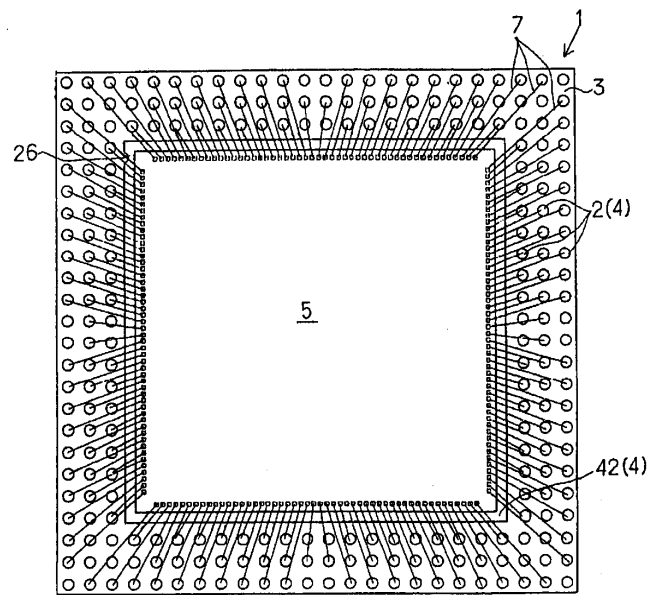
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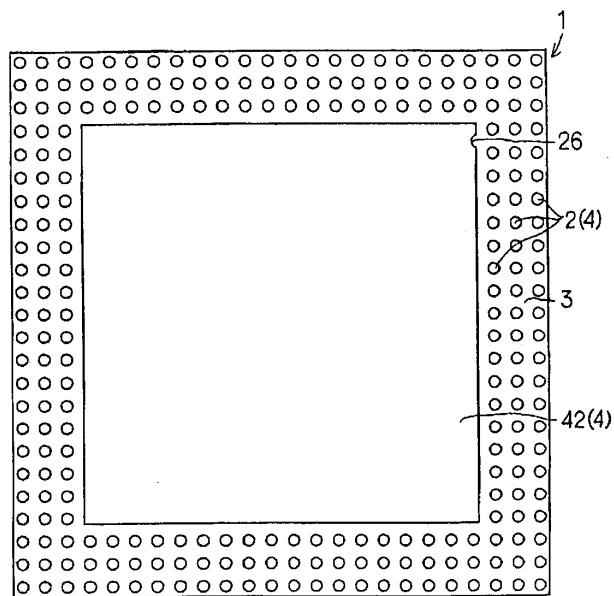
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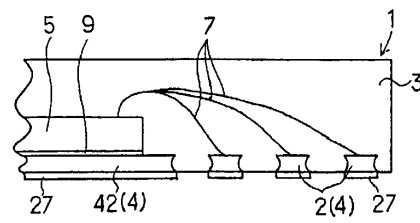
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108



109



110

