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(12)

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(A)

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(43)

2002 - 0010489  
2002 02 04

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(22) 2001 07 21

(30) 09/628067 2000 07 28 (US)

(71) 가  
, 32819 9333

(72) 07470 8

(74)

:

(54)

가  
on) 가 , (electrical performance degradati  
가 /

1

, BGA(Ball Grid Array), (heat sink),

가

1 ;

2a 2b (heating spreadi  
ng conductive slugs) (top view) ;

2c 2c - 2c 2a

3

circuits) ASICs (Application Specific Integrated C  
(heat sink) 가 ,  
(conductive substrate)

ASICs (high lead count)  
가 , BGA (BALL Grid Array) (solder balls)  
(solder reflow)  
(interconnctions) BGA  
, BGA

(Ball Grid Array Package) 3  
(12) (10) (14)  
(13) (14) (12)

(bond pads) (16) (18) (1  
6, 20, 22) (conductive traces)  
(printed wiring board technology) (24, 26,  
27) (14) (solder balls)

(30) (31) , (24, 26, 27) (18) (30) (28) (16) (encapsulant) (32) (conductive through holes) (12)

(10) (thermal reflow) (cavity down configuration) 16, 20 22 가 (36) (motherboard) (38) (30) (ground),

(ground plane) 가 가 / 가 가,

(top view) (112) 2a 2b (100) 1 (heat sink) / (114)

( ) (112) 가 ; , 가 / 가

(114) / (114) ( ) (114)

(114) , (114)가 , ( ) 114b 114d  
(114) . (114d) (inner surface)(114c)  
(114b) Ni . ,

(114a) (114) , (114)  
(114a) (112) (114) (electrical cou  
(114a) (112) (114c) ,  
(114a) 2a 114c  
, 2b .

(114a) (114b) (applying) 114a (masking)  
(114a) (112) (114a)  
(145) 가 , (140) (114a) , ( )  
114b) , 가 .

(112) (thermally conductive die attach adhesive medium)(113)  
114c (114)  
124, 126 . (114) ,

(116) , (155) (150) , (150) (114)

(114) , (114) (130)  
114) (155) , (155) (116) (150) ( )  
(131) (130) .

16, 120, 122) (117) (118) (1 )  
, 가, , , 가

(118) (131) (114) (140)  
, 가 , 가 , 가 , 가,  
, 가 / 가

(116) (130) (solder mask)(136)가 (conductive traces) (1  
 31) (130) (116) (112) (1  
 24 126) (epoxy encapsulant)(132) (112)  
 (118)

(thermal reflow) (130)

(ground plane)  
 가  
 가 / 가 가,  
 가

(57)

1.

;

;

(conductive element) ,

2.

1 ,

3.

2 , 1 1

4.

3 , 가 2 2  
,

5.

4 , 1 2 ,  
.

6.

4 , 3  
,

7.

2 , , .

8.

7 , (circuit board) , .

9.

2 , 가  
,

10.

1 , , .

11.

1 가 , , .

12.

1 , (heat sink) , .

13.

:

;

;

가 ,

14.

13 , , .

15.

14 , , .

16.

13 , 가 , .

17.

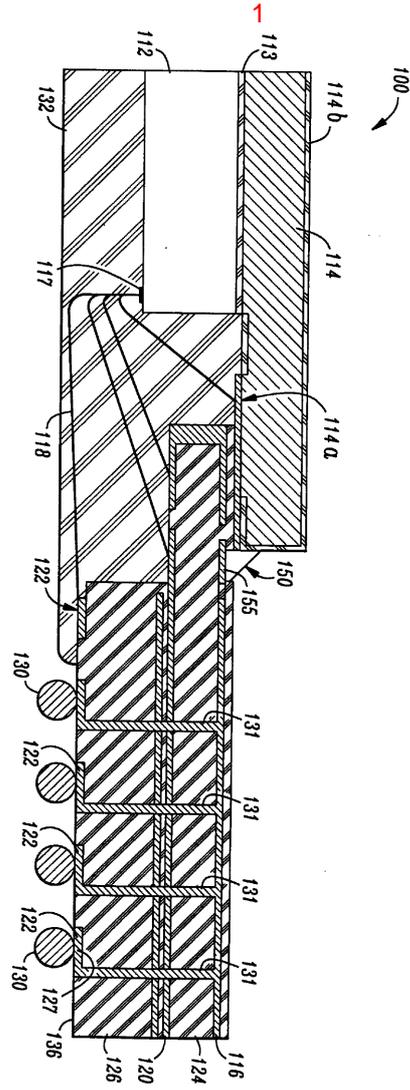
13 , , .

18.

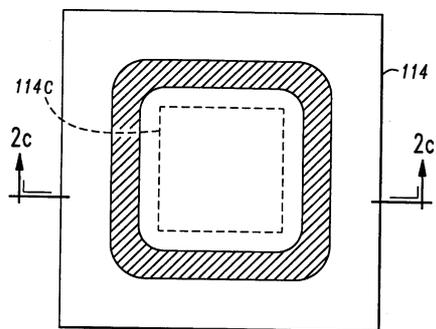
13 , , 가 , .

19.

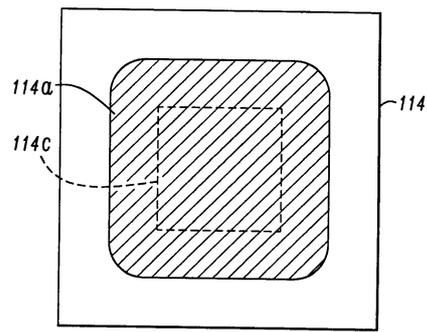
13 , , .



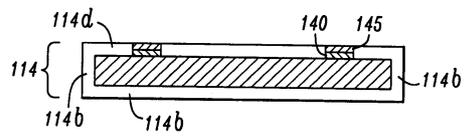
2a



2b



2c



3

