

(19)
(12)

(KR)
(A)

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(43)

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2002 02 04

(21) 10 - 2001 - 0043981
(22) 2001 07 21

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

(71) 가
, 32819 9333

(72) 07470 8

(74)

:

(54)

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

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

(ground plane)
가
가 가 가 ,
가 / 가 가 ,

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

()
(112) 가
가 ; , 가 / 가
가 , 가 / 가
가

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

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

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

(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 / 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

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.

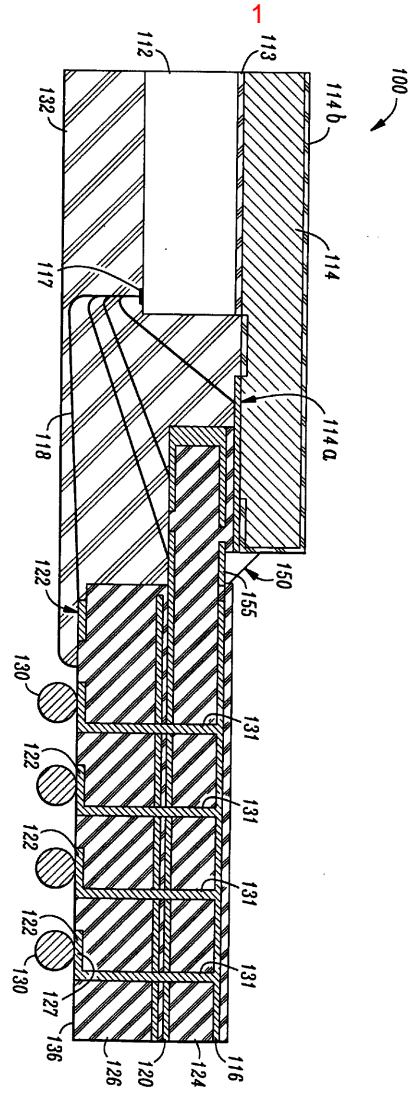
13 , , .

18.

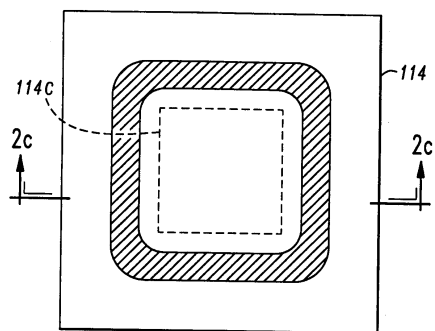
13 , , 가 , .

19.

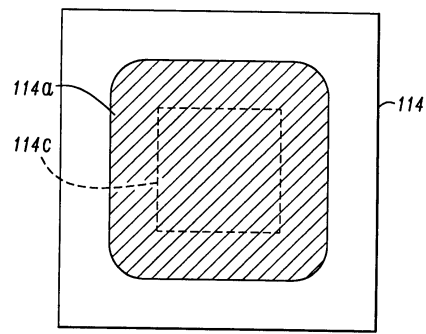
13 , , .



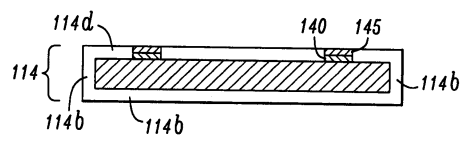
2a



2b



2c



3

