

(54)

-

ASIC , ASIC (WUT) ASIC가 DUT (DUT)
 DUT ASIC , ASIC DUT , A
 SIC가 DUT DUT 가 ,
 ASIC DUT . ASIC
 IC . ASIC 가 가 . AS
 SIC 가 가 A

1a

1a
 1b () DUT () ASIC
 1c 1b DUT
 1d 1b ASIC
 1e () 2 DUT () ASIC
 2 ASIC DUT
 3a ASIC DUT ASIC 1d
 3b ASIC DUT ASIC
 ASIC
 3c DUT ASIC
 4 ASIC
 5 ASIC
 5a, 5b 5c ASIC ASIC
 6a 6b DUT
 6c 6b
 7 (1A)

< >
 100 : -
 102 :
 102a, 102b, 102c, 102d : WUT
 104 :
 106a, 106b, 106c, 106d :
 108 :
 110 :
 112 :
 114 : ()
 116 :
 118 :
 120 : ()

1995 5 26 08/452,255 ()
 PCT US95/14909
 1994 11 15 08/340,144
 PCT US64/13373
 1993 11 16 08/152,812 () 1995 1
 5,476,211)
 1995 9 21 08/526,246 (PCT/US95/14843, 1995.11.13);
 1995 10 18 08/533,584 (PCT/US95/14842, 1995.11.13);
 1995 11 9 08/554,902 (PCT/US95/14844, 1995.11.13);
 1995 11 15 08/558,332 (PCT/US95/14885, 1995.11.15);
 1995 12 18 08/573,945 (PCT/US96/07924, 1996.5.24);
 1996 2 15 08/602,179 (PCT/US96/08328, 1996.5.28);
 1996 2 21 60/012,027 (PCT/US96/08117, 1996.5.24);
 1996 2 22 60/012,040 (PCT/US96/08275, 1996.5.28);
 1996 3 5 60/012,878 (PCT/US96/08274, 1996.5.28);
 1996 3 11 60/013,247 (PCT/US96/08276, 1996.5.28);
 1996 5 17 60/005,189 (PCT/US96/08107, 1996.5.24)

(가)
 (Khandros) (Pedersen) 1996 11 13 60/030,697 1996 12
 60/- tbd- (known good die, KGD)
 (singulated) 가 (diced) (burn-in) [(etching), (masking), (d
 epositing) 6
 [(scribe street)]
 (sawing) 가
 가

가

가

(exercise)'
(WUT)

(devices under test,

DUT)

가

WUT

WUT , (WUT DUT)
WUT

W

UT

DUT

()

()

DUT
(application-s

2 DUT (mate)'
pecific integrated circuits, ASIC)

가

DUT

가

. ASIC (

가

, ASIC

가

(capture) ()

. DUT

ASIC

가

, ASIC

DUT

, ASIC

ASIC

ASIC

()

ASIC

, ASIC

, ASIC

()

WUT

- 가

. WUT DUT가

ASIC

. WUT

WUT

(WUT)

WUT

. ASIC

()

DUT

ASIC 가

, ASIC DUT -

, DUT

가 ()

1

, DUT

. DUT

, ASIC

, ASIC

DUT

DUT

DUT

)

ASIC (가)

/

DUT

-

DUT

ASIC

ASIC

가

, ASIC

'

DUT

()

DUT

가 DUT

, DUT

ASIC

가

DUT

DUT

, ASIC

, DUT

ASIC DUT

(

ASIC)

ASIC

가) (110) 0.0254 mm(4 mils) 가 DUT (DUT (ASIC)

1b (107, 90°) DUT(102a) DUT (24) (110) 가 (110a) DUT(106) (110b) DUT(106) (110c) 1 1 1 2 1 2 3 4 DUT(106) (110d) DUT(106) 1 2 2 2 2 4 1b 가 (110) (ASIC(106a) () DUT(106a) () DUT (107) () (110) DUT 1b

1c (110) DUT 1b DUT(102a) (107) 1d (110) ASIC(106) () (120)가 (DUT (107) 가 WUT 가 DUT ASIC , ASIC DUT ASIC(126, 가 DUT(102) , (108) DUT(102a) 1e 102b) (108) 가 (108) DUT ASIC(106) (116) 가 가 가 DUT ASIC 가 가 가 DUT ASIC 가 가 가 DUT(202)(102) (210)(110)) (ASIC(206)) (microbumps) ASIC DUT (captured)' , DUT ASIC 가 ASIC ASIC 가 3a ASIC(306)(106) (308)(120) DUT(302)(10 2) (310)(110) (topologic features) ASIC (capture)' - ASIC 3b (, 108) ASIC(106) (326) , D UT(322, 102a) (330, 110) DUT(322) DUT(332) () () (2) (328)() ASIC (322) (328) 가 (micromachini ng)

(328) ()가 가 , ASIC(326) ()
 , ASIC(326) DUT(322)가 가 , (330) (328)
 , ASIC (가 가) (가 (330)
 (328) ())
 326) (2 가) ()3c , ASIC(346)(
 가) (348)(328) ()3c(344)가 (2
 (350) ASIC(346) , ASIC(346)
 (328) , (350) (348) .
 , (348) , ASIC DUT() 가
 , ASIC(346) (340)(330)
 (350) .
 ASIC
 (120 308 344) 0.5 mil 1.0 mil ()
 ,) . ()328) .
 _____ , ASIC 가 .
 , ASIC)
 ASIC 가)
 4 (408)(108) (가) ASIC(406)(106, 206, 306, 346)
) (328, 348) (400) , ASIC(406) (, , (41
 2) ASIC(106) (412) (412)가 , (41
 (414)가 . (414) 가 (408) ()
 (306))
 (412, 414) 가 ASIC(406) (408) 가
 (' ') . ASIC (412) (414)
 , 3 mil 5 mil , 4 mil .
 ASIC(406) (408) , (412, 414) [(ball
)](420)가 (412) (414) (408) ASIC(406)
 , (420) (412, 414) (408) , 2 + 1 mil
 (408) () ASIC(406) ()
 , ()가 (, ASIC)
 , ASIC (silver-filled epoxy) ,
 ASIC ()
 PCT/US96/08117 (, 622) (, 620)
) 가 , (, ASIC (, 10 mil X 20 mil
) 가 , (-
 ASIC .
 _____ ASIC
 , ASIC
 WUT WUT DUT , DUT - ,
 , WUT , ASCI ' ASIC
 5 (, 510) (508)(108) ASIC(5
 06)(106, 206, 306, 326, 346, 406) . DUT()
 , DUT - .
 , ASIC . ASIC
 DUT(, 102) (, (110))
 , 1 .

()

ASIC

5a, 5b 5c ASIC (500)

5a ASIC(106, 206, 306, 326, 406, 506) , ASIC(526) (526a) (528b)

ASIC(526) (가) (522) (522)

ASIC(306) (308) ASIC(406) (412)

(522a)((522) 1) ASIC(526) (526a) ASIC(526)

((522b)((522) 2) ASIC(52

6) (526b) 2 (522b) 1 (522a)) ASIC(52

522a, 522b) 가 ASIC (526)

5b ((524a) 1 (522a)) 1 2

b) 2 (522b) , 1 (524a) 1 (522a) 2 (524

(524a, 524b) ASIC(526) (526a, 526b)

(522a, 522b) ()

((524a, 524b)

5c ((528) () , (, ASIC

ASIC ()

1 (110) 2 (210)

PCT US95/14909 PCT 08/452,255

(,) , (,)

6a 6c

6a (600) (602)

(604, 606, 608) (612) (602)

가) (, 608, 606) 가 (, 606, 604)

(614)

(620)가 (6b 가) (412)

(620) (620) (602) 4c 가

6a 6b (620) (620) (602)) x-

y (622) z

DUT - (, ' (infant mortality)')

가 가 가 가 가 가

() 가 - (furnace) 가 가

가 96 125 가

- 가 10 , DUT 150 - 1

160 -

가 가

ASIC DUT - 가 가

150 . DUT가 가 가 DUT(

ASIC)

(DUT) DUT

, ASIC(106) WUT(102)

, WUT(102) DUT (104)

ASIC가 DUT (110) DUT ASIC (104) 가

7 (700; 100) ASIC(706; 106)가 () (708; 108)

DUT(702; 102)가 ASIC (710; 118) (718; 118) ASIC(706) (710; 1

10 DUT (710) DUT(702))

(716; 116) (708) ASIC(706) (708) 가 ASI

) ASIC(706) 가

C(706) 7 DUT (716) ()

IC , 4) (DATA OUT), (716) () , AS

(MASTER RESET) (CLOCK)

ASIC(708) ASIC ASIC

(FOUR) ' (common)' (DUT)

(708) (,)

(+V) (GROUND) 가

) (,

DUT (VOLTAGE REGULATOR)

ASIC(706) ASIC (VOLTAGE REGULATOR)

ASIC (716) ASIC ASIC

(,) 가 DUT , ASIC

ASIC ASIC DUT 가

(non-trivial) DUT(16M DRAM) , (,)

(2) , (4) DUT(1) , 30,000 (4) (30,000

), (connection count)'가, 가

8 60 , ASIC DUT 500 16M DRAM 30,0 가 30,0

00 . ASIC () , (,)

(2) ASIC ASIC

DUT DUT

ASIC DUT

DUT ASIC WUT ASIC DUT

(at-speed) () (WUT)

가 (paracitics)가 , 가

) . () , (,

가 가

가

가

C , - ASIC 가 ASI
 , () ASIC ASI
 , ASIC 가 (,
 가) , .

가 -

(57)

1. (die) (unsingulated) , ,

2.

3.

1 , 1 2

4.

5.

1 , ,

6.

1 , ,

7.

6 , ,

8.

7 , ,

9.

1 , ,

10.

1 , ,

11.

10 , ,

12.

1 , ,

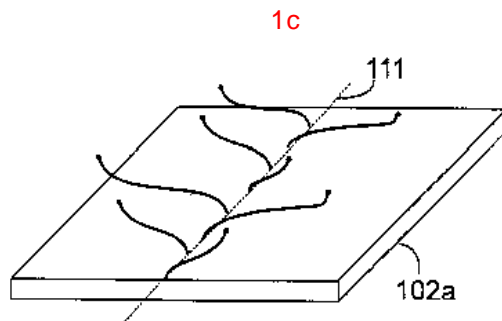
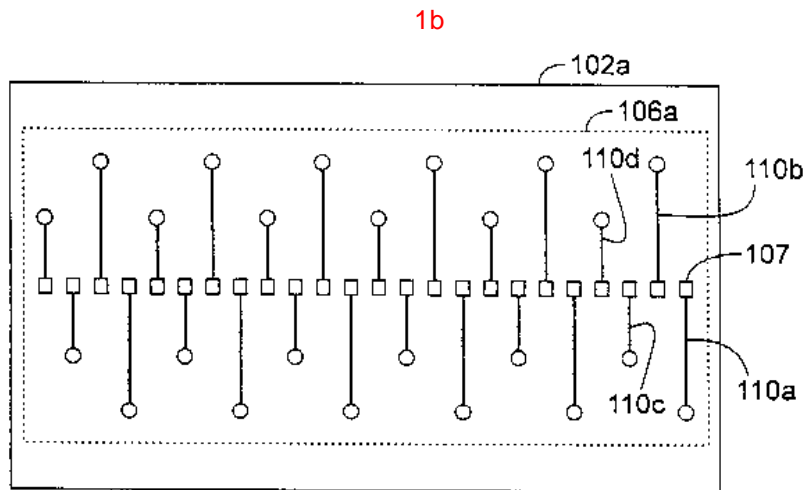
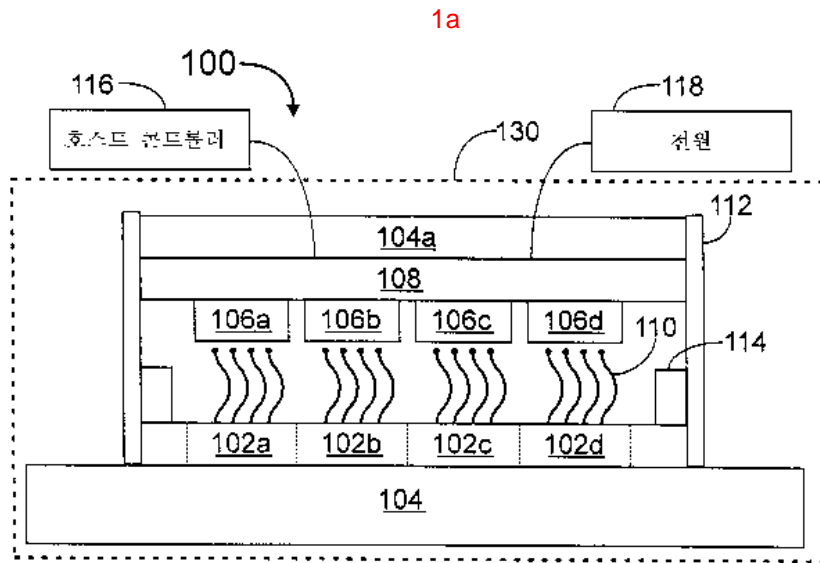
- 13. 1 ,
- 14. 1 ,
- 15. 14 ,
- 16. 15 ,
- 17. 1 ,
- 18. 1 ,
- 19. 18 ,
- 20. 19 ,
- 21. 1 ,
- 22. 21 ,
- 23. 21 ,
- 24. 23 ,
- 25. 23 ,
- 26. 1 ,
- 27. 1 ,
- 28. 1 ,
- 29.
- 30.
- 31. 29 ,

150

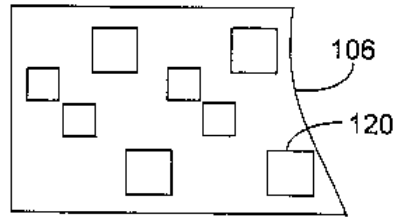
가

가

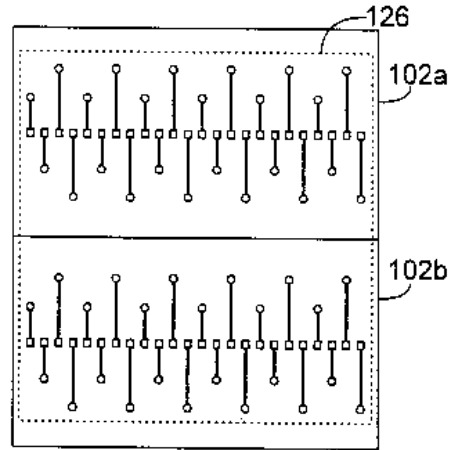
29	32.	,		,
32	33.	,		
29	34.	,		
29	35.	,		
35	36.	,		
29	37.	,		
29	38.	,		
38	39.	,		
39	40.	,		
29	41.	,		
29	42.	,		
42	43.	,		
43	44.	,		
29	45.	,	가	가
29	46.	,		
29	47.	,		
29	48.	,		
1	49.	,	가	,
			가	
3	50.	,	1	,
				2
29	51.	,		1
				2
51	52.	,	1	,
				2
	53.			



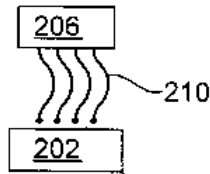
1d



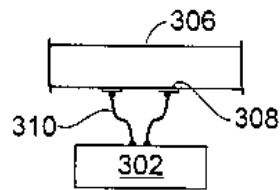
1e



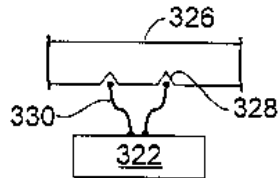
2



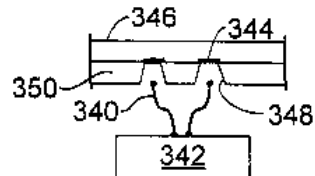
3a



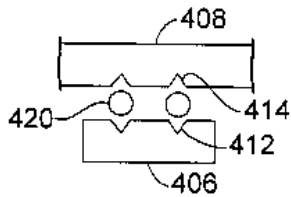
3b



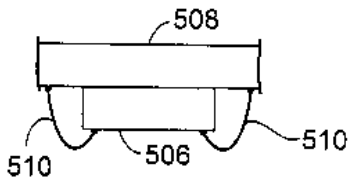
3c



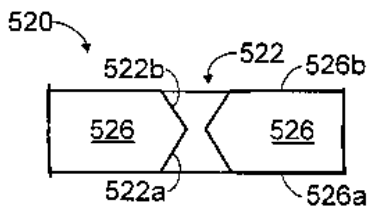
4



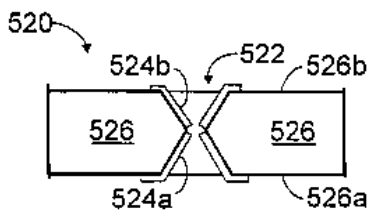
5



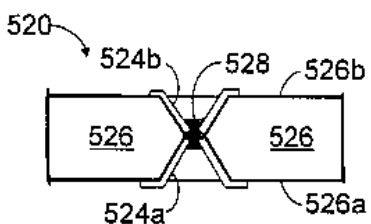
5a



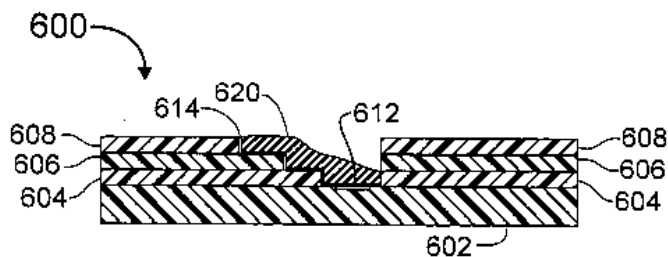
5b



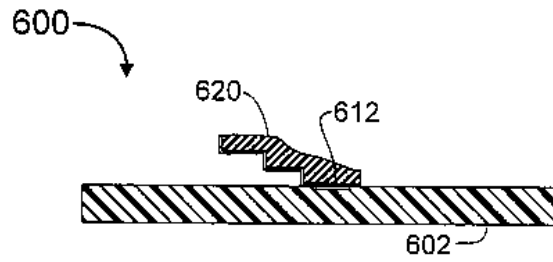
5c



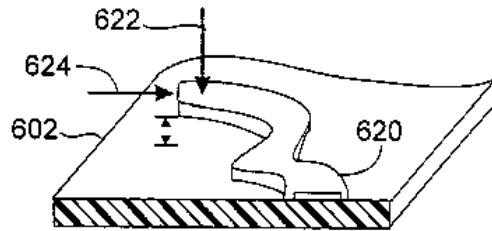
6a



6b



6c



7

