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(12) (A)

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(22)	2003 11 28		
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(86)	PCT/US2002/010019	(87)	WO 2002/98582
(86)	2002 04 01	(87)	2002 12 12

(30)	09/871,421	2001 05 31	(US)
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(71)	55144-1000		
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(72)	55133-3427	33427	
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	55133-3427	33427	
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(74)			
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(54)			
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가

3

3

1

3

가

5,815,306 (Sheridon)

(Built-Up Multilayer; BUM)

Charles E. Bauer ['Using Chip Scale Packages', Advanced Packaging 5(4), July/August 1996, pp. 8-10]; Howard Green and Phillip Garrou ['Introduction to Large Area Substrate Processing', Advancing Microelectronics 24(2), March/April 1997, pp. 10-15]; Charles Lassen ['Build-Up Multilayers', Printed circuit Fabrication 20(6), June 1997, pp. 22-24]; Darren Hitchcock ['Microvias, High Speed, and Flex', Proc. IPC Natl. Conf. on Flexible Circuits, 19-20 May 1997(Phoenix, AZ)]

$\pm 50\%$ $\pm 12.5 \mu\text{m}$ $25 \mu\text{m}$ $25 \mu\text{m}$

3,689,346 (Rowland);

4,576,850 (Martens);

4,414,316 (Conley);

5,175,030 (Lu Williams);

WO 9015673(Kerr Crouch);

EP-130659(Brown);

4,810,435 (Kamada).

b.

3

c.

d.

가

, a d

a.

b.

3

c.

d.

a.

b.

3

0.05 mm

가

a.

b.

3

가

가

가

e -

가)

(e -) , (uv

(original)

가 (large scale predictable dimensional stability)'
150 가 60 , 가 가
100 ppm , 60 ppm

('e - ') ,

가 , , ,
가 .

4,576,850 (Martens) 2

1 , 가

5 4 , , 가 (nm)

6 4 , . 가 (nm)

1) . COPPERBOND™ 1 COPPERBOND™ (가 37 38 μ m ,

, (14) 가 10 μm , 가 50 μm , 가 50 μm , .

A diagram of a rectangle. The bottom horizontal side is labeled "1 m". The top horizontal side is labeled "2 cm". The left vertical side is labeled "1 m". The right vertical side is labeled "2 cm". The top-right corner of the rectangle is labeled "가".

가

COPPERBOND

Ed.], E.P. Plueddemann, Plenum Press, New York, 1991]가

YNCHRO-ELECTRIC (100 rpm 6 1000 cps 5000 cps) , 20 HAT S) , 20 (14)

(14) .
0.05 mm
(14) γ ,

'COPPERBOND™ 1

37 38 μ m

'COPPERBOND™ 2

70 74 μ m

'PHOTOMER™ 6010'

1500

'PHOTOMER TM 6210'	1400		
'SR 285'	SR 285	156	
'SR 238'	SR -238	226	
1,6-			
' A' PHOTOMER 6010	SR 285	80:20	
' B' PHOTOMER 6210	SR 238	80:20	

가

COPPERBOND TM 1

, 125 mm x 200 mm 3 , 5 ,
 105 mm x 150 mm ,
 500 g 4
 3 , 1, 2, 4 5

MICRO HARDNESS TESTER

1 μm

d

10

150

1

가

가

1 COPPERBOND TM 1

3

1

'1-3'

2 3 3

1 3

1

4 2 3
5 3

5 1
m (82) (81) , 가 100 ppm 100 pp
 5 ppm , 가 0 100 ppm (,)

[1]

			(mm)	(mm)
	가 (mm)	가 (mm)		
1-2	151.768	151.767	-0.001	0.001
1-3	91.758	91.757	-0.001	0.002
1-4	105.584	105.580	-0.005	0.002
1-5	182.783	182.781	-0.002	0.001
2-3	93.873	93.973	0.000	0.002
2-4	187.078	187.079	0.001	0.001
2-5	107.804	107.802	-0.002	0.001

3-4	93.228	93.229	0.001	0.002
3-5	91.101	91.009	-0.001	0.001
4-5	150.426	150.431	0.005	0.003

1 3

1 3 2

75 μm

COPPERBOND 1

1

(

)

(1

,

0.1 m/

300 kV, 120 kGy

2

1 3

WYKO

2

ELECTROCURTAIN TM

[2]

1	90 ° V 50 μm	B	(μm) (μm)	50 24	(μm) (μm)	50 22
2	90 ° V 300 μm	B	(μm) (μm)	353 175	(μm) (μm)	354 171
3		A	(μm) (μm) (μm) (μm)	770 170 136 132	(μm) (μm) (μm) (μm)	770 163 146 131

1 2

(.)

3

가

(original)

4

TM , 105 mm 3 가 () , 200 x 125 mm 2 COPPERBOND 1 , 1000 g 200 x 125 mm 1

COPPERBOND TM 1 COPPERBOND TM 3 75 μm 가 B , 1 , 1

150 1 3 가 , 1 3

1 3

1 '1-3'

2 3 3

4 2 3
5 3

[3]

			(mm)	(mm)
	가 (mm)	가 (mm)		
1-2	104.514	104.515	0.001	0.002
1-3	74.237	74.232	-0.005	0.005
1-4	105.389	105.383	-0.006	0.007
1-5	145.552	145.543	-0.009	0.004
2-3	77.928	77.927	-0.001	0.004
2-4	150.135	150.130	-0.005	0.006
2-5	105.238	105.232	-0.006	0.003
3-4	72.216	72.212	-0.004	0.002
3-5	71.393	71.390	-0.004	0.001
4-5	103.068	103.060	-0.008	0.009

6 3

가

100 ppm

(81)

100 ppm

(82)

100 ppm

5

A 1 COPPERBOND™
50 μm
300 kV

2 COPPERBOND™ 75 μm

IMPACT™ 400
MUL
800 820 c
215 kGy (TI-BOUNCE HART
m⁻¹

ATR-FTIR

1 COPPERBOND™
100 kGy
300 kV) 2 COPPERBOND™
e-
가 50 μm

6

KAPTON
WO 20/00563A1/2
z-

75 μm

4

가

1 3

4

A

가

/

[4]

(μm)		
	5	13
	14	22
	27	27
	18	18
	10	11
	13	5
	22	13

7

3

5 x 30

(

4 x 24 mm

)

MICRO RIE SERIES 800

300 14

1 x 10⁻⁶

9.5 kV

SEC 600 DUAL PHASE CRYO TORR SYSTEM

CHA

1.2 μm 0.02 μm

3

2

6

10⁻¹²

6

3

(through vias) 가

가

가

가

(57)

1.

a.

;

b.

3

;

c.

;

d.

가

(large scale predictable dimensional stability)

14.

8 13

,

15.

14

,

.

16.

14

,

.

17.

a.

;

,

b.

3

,

;

c.

;

d.

,

가

18.

a.

;

b.

3

,

;

c.

;

d.

,

가

19.

a.

;

b.

3

,

,

가

20.

8 15

,

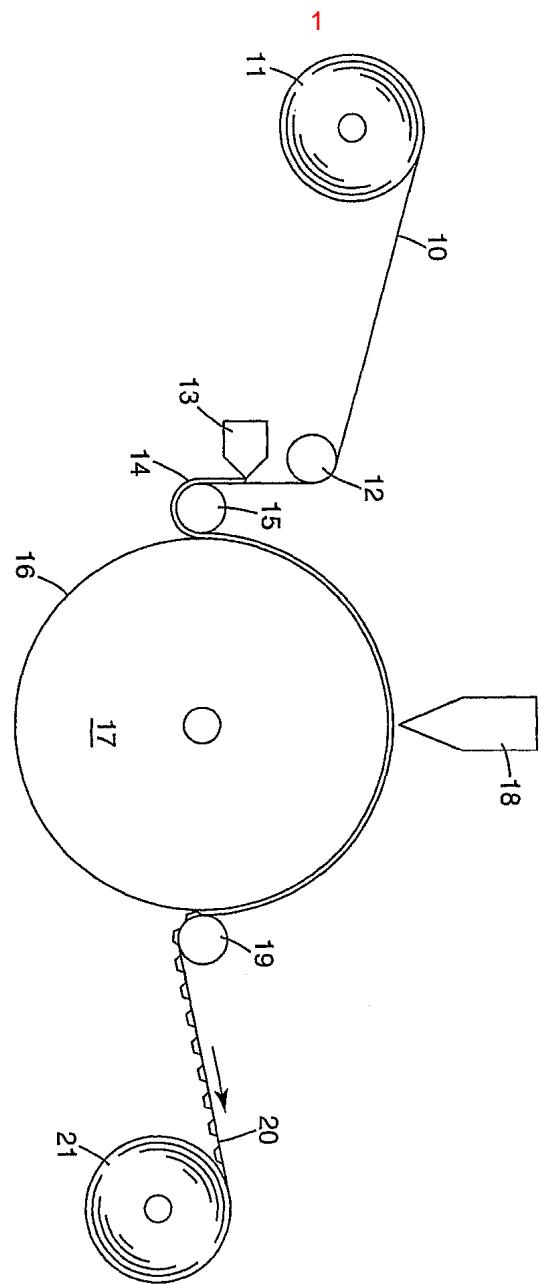
가 100 ppm

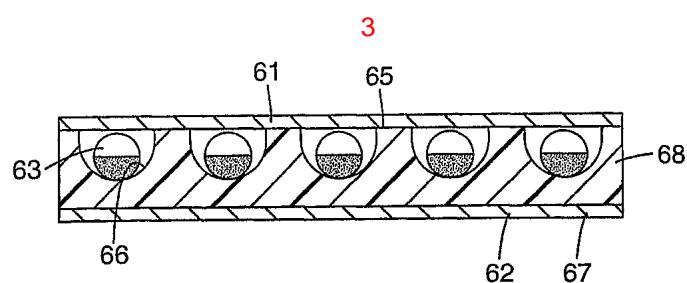
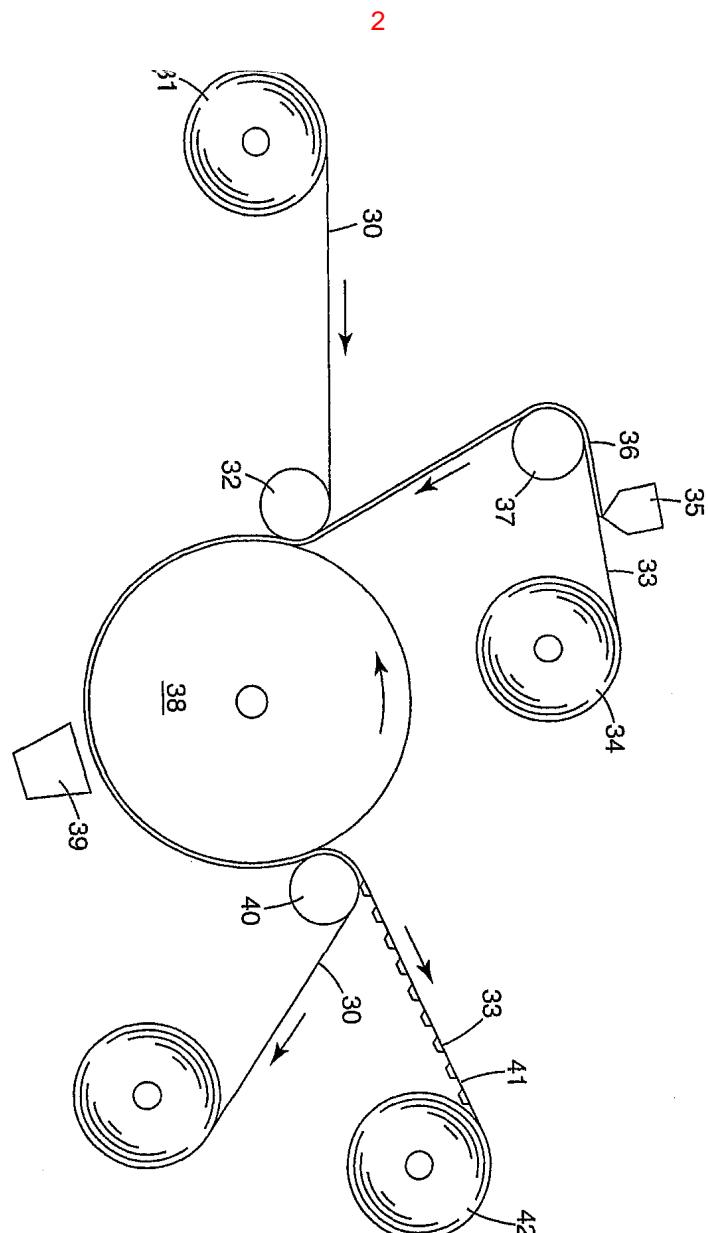
21.

19

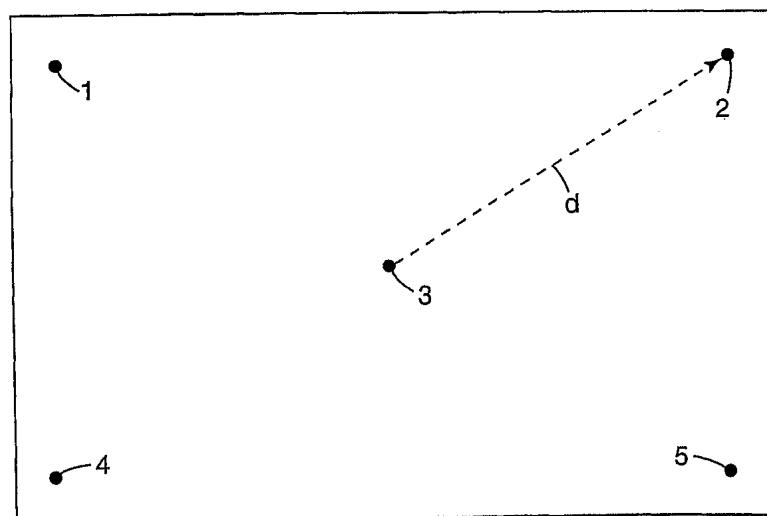
,

가 100 ppm





4



5

