

(19)
(12)

(KR)
(B1)

(51) 。 Int. Cl. ⁷
H01L 21/52

(45)
(11)
(24)

2002 12 31
10 - 0366009
2002 12 11

(21)	10 - 2001 - 7008990	(65)	0000 - 0000000
(22)	2001 07 16	(43)	0000 00 00
(62)	1997 - 0709581		
	: 1997 12 20		1998 03 02
	2001 07 16		
(86)	PCT/JP1996/01886	(87)	WO 1997/02595
(86)	1996 07 08	(87)	1997 01 23

[illegible]

(30) JP - P - 1995 - 00171154 1995 07 06 (JP)

(73) 가 가 가

2 1 1

(72)	,		
	305		3 - 4 - 3 - 303
	,		
	305		3 - 4 - 3 - 304
	,		
	308		511 - 1
	,		
	316		4 - 3 - 2
	,		
	305		1 - 14 - 3
	,		
	316		4 - 46 - 24
	,		
	318		2565 - 17
가	,		
	352		5 - 5 - 8 - 303
가	,		
	244가 가	가	2456 - 47

(74)

:

(54)

1.5 % , 1.0 % , 3.0 % , 250
10 MPa , . ,

1

, , , , ,

1 , .

2 , .

3 , .

1 :

4 :

6 :

7 :

9 :

,

.

[1(b)]. (1) (熱盤) (7) (5) (6) (4)
, 100 250 , 0.1 20 , 4 200gf/mm² .

(6) (1) (8) 가 () [1(c)
]. , 100 350 , 0.1 20 , 0.1 30gf/mm² , 150 250 ,
0.1 2 , 0.1 4gf/mm² , 150 250 , 0.1 1.5 , 0.
3 2gf/mm² 가 .

9. [1(d)] , [1(e)] .

가

自己 支持性)

1, 1.5 vol%, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 8

2, 1.0 vol%

3, 3.0 wt%

4, 250, 10 MPa

6. , , 가 0.5 kN/5 mm × 5 mm

1.5 vol%
3.0 wt%

1.0 vol%
10 MPa

250

가

1.5 vol%
0 vol%

4

250

10 MPa

가 0.5kgf/5mm × 5mm

3

3.0 wt%

5

가

10%

IC, LSI, VLSI

가

가, 5mm

가 5mm

3

(40)

(41)

3

2

(1) 1.0 vol% 3.0 wt%

(2) 1.0vol% 가 0.5 kgf/5mm × 5mm

(3) 3.0 wt% 가 0.5kgf/5mm × 5mm

(4) 1.0 vol% 3.0 wt% 가 0.5kgf/5mm × 5mm

(1) (4)

가

, 1, 2 - () (),
 1, 3 - () (), 1, 4 - () (), 1, 5 - () (),
 1, 6 - () (), 1, 7 - () (), 1, 8 - () (), 1, 9 - () (),
 1, 10 - () (), 1, 12 - () (), 1, 16 - () (),
 1, 18 - () (),
 , 3, 3', 4, 4' - , 2, 2', 3, 3' - , 2, 2 - (3, 4 -
) , 2, 2 - (2, 3 -) , 1, 1 - (2, 3 -
) , 1, 1 - (3, 4 -) , (2, 3 -) ,
 (3, 4 -) , (3, 4 -) , 3, 4, 9, 10 - ,
 , (3, 4 -) , 1, 2, 3, 4 - , 3, 4, 3', 4' -
 , 2, 3, 2', 3 - , 2, 3, 3', 4' -
 , 1, 2, 5, 6 - , 2, 3, 6, 7 - -
 , 1, 2, 4, 5 - - , 1, 4, 5, 8 - - , 2, 6 -
 - 1, 4, 5, 8 - , 2, 7 - - 1, 4, 5, 8 - ,
 2, 3, 6, 7 - - 1, 4, 5, 8 - , 1, 8, 9, 10 -
 , 2, 3, 5, 6 - , 2, 3, 4, 5 - , 2, 3, 3',
 4' - , 3, 4, 3', 4' - , 2, 3, 2', 3' -
 , (3, 4 -) , (3, 4 -)
 , (3, 4 -) , 1, 4 - (3, 4 -) , 1,
 3 - (3, 4 -) - 1, 1, 3, 3 - , p - (),
 , 1, 2, 3, 4 - , - 1, 4, 5, 8 -
 , 4, 8 - - 1, 2, 3, 5, 6, 7 - - 1, 2, 5, 6 - ,
 - 1, 2, 3, 4 - , 2, 3, 4, 5 - , 1, 2, 3, 4 -
 , ([2, 2, 1] 2, 3 -) , ()
 2, 2, 2) - - 7 - - 2, 3, 5, 6 - , 2, 2 - (3, 4 -)
 , 2, 2 - [4 - (3, 4 -)] , 4, 4' - (3, 4 -
) , 1, 4 - (2 -) (),
 1, 3 - (2 -) (), 5 - (2, 5 -)
 - 3 - - 3 - - 1, 2 - , - 2, 3, 4, 5 -
 , 2 .

, o - , m - , p - , 3, 3'
 - , 3, 4' - , 4, 4' - , 3, 3' - , 3,
 4' - , 4, 4' - , (4 - - 3, 5 -) , (4 - - 3, 5
 -) , 3, 3' - , 3, 4' - , 4, 4' -
 , 3, 3' - , 3, 4' - , 4, 4' - , 3, 3' - , 3, 4'
 , 3, 4' - , 4, 4' - , 3, 3' - , 3, 4'
 - , 4, 4' - , 2, 2 - (3 -) , 2, 2' - (3, 4' -)
 , 2, 2 - (4 -) , 2, 2 - (3 -) , 2, 2 - (3, 4' -
) , 2, 2 - (4 -) , 1, 3 - (3 -) , 1, 4
 - (3 -) , 1, 4 - (4 -) , 3, 3' - (1, 4 - (1 -))
 , 3, 4' - (1, 4 - (1 -)) , 4, 4' - (1, 4 - (1 -))
 , 2, 2 - (4 - (3 -)) , 2, 2 - (4 - (4 -)) , 2, 2 - (4 - (4 -
 3 -)) , 2, 2 - (4 - (4 -)) , (4 -
 (3 -)) , (4 - (4 -)) , (4 - (3 -)) ,
 (4 - (4 -)) , 1, 2 - , 1, 3 - , 1, 4 -

10 - , 1, 5 - , 1, 6 - , 1, 7 - , 1, 8 - , 1, 9 - , 1, 11 - , 1, 12 - , 2

80 , 0 50 . (가), 가 ,

120 250 () (脫水 閉環) .

가

0.1 30gf/mm²가 , 150 250 , 0.1 2 , 100 350 , 0.1 20 , 150 250 , 0.1 1.5 , 0.3 2gf/mm² 가 , 0.1 4gf/mm² ,

2 , 0.1 4gf/mm² 250 10 MPa , 150 250 , 0.1 (, 0.5kgf/5mm × 5mm) .

가
A , 1, 2 - () () (4 - -3, 5 -)
B , 1, 2 - () () 4, 4' -
C , 1, 2 - () () (4 -
-3, 5 -)
D , 1, 2 - () ()
E , 1, 2 - () () 1, 10 - () ()
2, 2 - [4 - (4 -)] , F , 1, 10 - ()
() 2, 2 - [4 - (4 -)] .

< 1

1 100g 10g , 280g . ,

(OPP :) , 가 , 1 ,

1 160 가 , , 300 , 12.5 gf/mm², 5 , ,

(Flat Package) 14mm × 20mm × 1.4mm, CEL - 9000) , [QFP (Quad 8 × 10mm, 42] .

10 가 85 , 85% RH 168 , IR (爐) 240

(%) 가

(/) × 100 = (%)

가 1

[1]

no.						Ag (wt%)	(%)	(%)
1234567	A	B	C	D	E	80808052600	2.01.91.81.51.2	100100100000
8910	E	F	F	F	F	6004080	1.00.90.80.70.4	0000
							1.7	100

(, .)

50mm × 50mm , 120 , 3 (desiccato
r) (放冷) , M1 24 ,
M2

[(M2 - M1)/(M1/d)] × 100 = (vol%)

, d

< 2

2 100g 10g , 280g ,

(OPP :) , 가
2 ,

, 2 160 가 ,
, No.1 6 , 300 , 12.5 gf/mm², 5 , No.7 10 ,
230 , 0.6 gf/mm², 1 ,
, CEL - 9000) , (QFP 14mm × 20mm × 1.4mm,
8mm × 10mm, 42).

가 85 , 85% RH 168 , IR 240 10

(%) 가

$$\left(\frac{\quad}{\quad} \right) \times 100 = \quad (\%)$$

가 2 .

[2]

no.						Ag (wt%)	(%)	(%)
1234567	A	B	C	D	D	80808080604	1.71.51.41.00.80.	10010010000
8910	D	F	F	F	F	00605240	60.50.40.30.2	00000
							1.2	100

100mm, 120, 3, M1, 85, 85% RH, M2, 가, M2.

$$[(M2 - M1)/(M1/d)] \times 100 = \quad (\text{vol}\%)$$

_____ d _____

 $\angle 3$

F 100g 10g 140g 140g
74g

120 가 , (OPP : 3) , 80
가 OPP 80 , 30 , OPP
가 :

3 160 가 ,
230 , 0.6 gf/mm², 1 ,
(CEL - 9000) , (QFP ,
14mm × 20mm × 1.4mm, 8mm × 10mm, 42).

가 . 85 , 85% RH 168 , IR 240 10

가 .

$$\left(\frac{\quad}{\quad} \right) \times 100 = \quad (\%)$$

가 3 .

[3]

no.	()	()	(wt%)		(%)
12345678 91011	80100100100100120120 140160140160	302410301075 10106030	6.54.94.23.83.53.02.2 2.01.51.20.7		100100100806 0000000
			15.0		100

(, .)

.

50mm × 50mm

200 2 가 , M2 , M1 ,

[(M2 - M1)/M1] × 100 = (wt%)

, .

< 4

D 100g 10g , 140g, 140g
74g , , .

120 가 , (OPP : 5) , 80

, 120 가 , OPP 80 30 , 가 .

, ,

.

(, 4 , 300 , 12.5 gf/mm², 5 , 160 가 , ,
 (, CEL - 9000) , (QFP , 1
 4mm × 20mm × 1.4mm, 8mm × 10mm, 42).

85 , 85% RH 168 , IR 240 10
가 ., , ,
(%) , 가 .

(/) × 100 = (%)

가 4 .

[4]

no.	()	()	(%)	(%)
1234567	80100100120120140160	3021010751030	30221710750	100100800000
			40	100

(, .)

.

, (軟) X

= (%) .

< 5

5 100g 10g , 280g . ,

(OPP ;) , 가
5 , .

,

.

, 5 160 가 ,
, No.1 5 300 , 12.5 gf/mm², 5 , No.6 10 2
30 , 0.6 gf/mm², 1 ,
, CEL - 9000) , (QFP 14mm x 20mm x 1.4mm,
8mm x 10mm, 42).

85 , 85% RH 168 , IR 240 10
가 .

, , 가 .
(%) ,

(/) × 100 = (%)

가 5 .

[5]

no.	Ag (wt%)				(kgf/5 × 5mm)						(%)
12345678910	B 80	C 80	A 80	D 80	0.20.30.40.50.70.81.	1001008000000000					
	F 80	F 0	F 30	F 20	01.5 2.0 2.0						
	F 40	F 52									

5mm × 5mm ()
240 20 2
0.5 mm/ 2 21 22
23 24 25 240 20
가

< 6
E 100g 10g 280g
,

(OPP ;) 가
6 160 가
300 12.5 gf/mm² 5
(CEL - 9000) (QFP
14mm × 20mm × 1.4mm, 8mm × 10mm, 42).

85 , 85% RH 168 , IR 240 10
가
(%) 가

(/) × 100 = (%)
가 6

[6]

no.	mm × mm	mm ²	mm × mm	mm ²		(%)
1234567	11 × 1310 × 129 × 119 × 10	1431209990	8 × 108 × 108 × 108 × 108 × 10	808080808		100100100
8910111	8 × 118 × 108 × 97 × 108 × 9	8880727072	8 × 108 × 108 × 108 × 108 × 10	080808080		706000000
21314	6 × 85 × 74 × 63 × 52 × 4	483524158	8 × 108 × 108 × 108 × 10	808080808		0000
				0		

< 7

F 100g 10g , 280g . , ,
(OPP ;) , 가
, 7 250 160 가 , 7

[7]

no.			(MPa)			(kgf/5mm × 5mm)
		AG (wt%)		()	(gf/mm ²)	
123	F F	60400	1021	230230230	2.02.02.0	2.0 2.00.8
	F					

(MPa)
S , 5 /min, 10Hz ,
250 E '
5 .

(57)

1.

2.

, , ,

250 10 MPa , , 1.0 %

3.

, , , ,

250 10 MPa , , 3.0 %

4.

2 3 ,

, 가

5.

2 3 ,

6.

2 3 ,

(自己 支持性) .

7.

, , , ,

250 10 MPa , , 1.5 %

8.

9.

, 250 10 MPa , ,
1.0 % .

10.

, ,
 , 250 10 MPa , ,
 , 3.0 % .

11.

9 10 ,
 , 가
 .

12.

9 10 ,
 , 100 250 , 0.1 20 , 0.1 30gf/mm² ,
 .

13.

9 10 ,
 .

14.

9 10 ,
 .

15.

9 10 ,
 , 1.5 % .

16.

, ,
 , ,
 100 250 , 0.1 20 , 0.1 30 gf/mm² ,
 .

17.

18.

250 10 MPa , 1.5 %

19.

250 10 MPa , 1.0 %

20.

250 10 MPa , 3.0 %

21.

18 20 ,

가

22.

가 100 250 , 0.1 20 , 0.1 30 gf/mm² ,

23.

22 ,

250 10 MPa

24.

22 ,

1.5 %

25.

22 ,

1.0 %

26.

22 ,

3.0 %

27.

18 20 22 ,

28.

18 20 22 ,

29.

, ,

3.0 % , , 1.0 %

30.

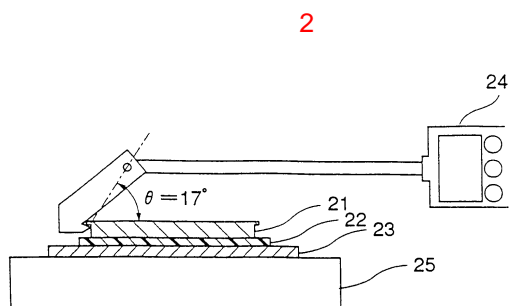
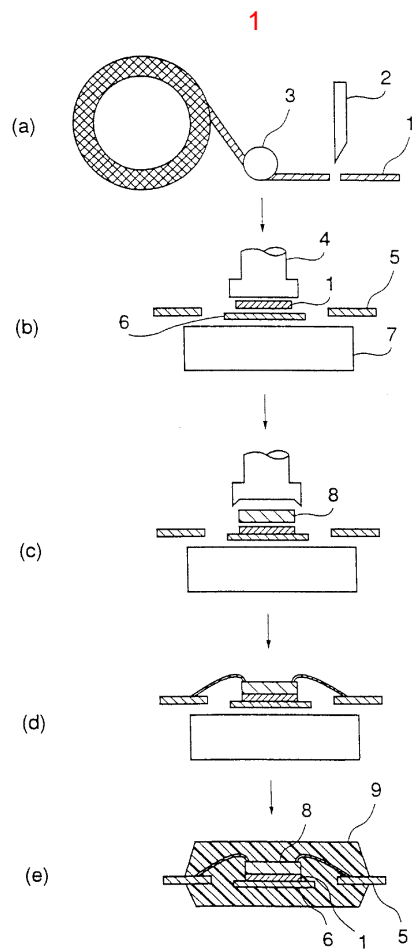
, ,

3.0 % , , 1.5 %

31.

29 30 ,

, 가



3

