

(19) (KR)
(12) (A)

(51) 。 Int. Cl.⁷ (11) 10-2004-0076219
A61B 8/00 (43) 2004 08 31

(21) 10-2004-0012147
(22) 2004 02 24

(30) JP-P-2003-00046515 2003 02 24 (JP)

(71) 가 가
1 1 1

가 1385

(72) 1-1-1가 가

3-3361-51

1-3

5-221-646

(74)
:

(54)

(1) (1) (1) FPC(6) , FPC(6)
(1) (1) (9)가 FPC(6) (10)
(1) FPC(6) .

2	1	.
3	1	2 A - A .
4	1	2 B - B .
5a	5c	1 .
6a	6c	1 .
7a	7b	1 .
8	1	가 .
9	2	.
10	가	.
11	가	, A (fillet) ,
B		.
12	3	.
13		.
14		.
15		.

- 1 :
- 2 :
- 2a :
- 2b :
- 2c :
- 3 :
- 4 :
- 5 :
- 12 : FPC

2003 2 24

2003-46515

가

14 15 (201) (201) 14 가

(201) (201c) (203) (207) (205)가 (201) (backing material)(209)가 (201b)

(201) FPC(211) (211)[Flexible Printing Circuit(FPC)]가 (201) (201b) (201c)

FPC(211) 15 (209) (201) () 90

(基端部)가 (205) (201) 가 (205) (201) , FPC(211) (201)

(201) , FPC(211)

(large deflection theory) , FPC(211) (201) 90 100 N/mm² 가 가

, FPC(211) 가 , FPC(211) FPC(211) (201) 가 가

가 가 , FPC

, FPC가 , FPC 가

가 가 (crack) 가 가

가 가

(角部)

가

1 8 1 1 1 1

3 1 2 1 A-A 4 2

B-B

1 2 (1) 3 x, y, z (1)

3 3 11 (1) x (2) (128 256

(2) (2a), (2c)(1), (2b)(2) (2b)

(2c) (2a) z (2c)

(3)

PZNT (2a) (PZT) PZMT (3)

(2b) (2c) 가

가

1 2 (1) (2c) (3) (

4)가 (5) (1) (2b) (14) (5)가

(1) y FPC(6)()가 y 90

FPC(6) (6a) (6b) (6c)

(6d) (6b, 6c) (2)

(7)(4)

(6b, 6c) (7) (8b) (8c) FPC(6)

(6d) (1) (8b) (8b) (8c) (8c)

(1) z (8b) (8c) (1)

z

(1) FPC(6) (10a, 10b) (9)()가 (2c)

1 (10a) 2 (10b) (9) (8c) (2c) (2b)

(2b)

(12) (fillet) (1) FPC(6) (12)

(13)()

(1) FPC(6) (2b) (2c) (11)(

)가 (11)

1) FPC(6) 가

FPC(6) (5) () ()

(4) (6b) (6c) (1) 가 (1)

) (4) (1)

(6b) (1) (6c)

, 5 7

5a (21a) (21a) (21) (21) x, y, z

z (21b, 21c)

, 5b (21) FPC(6) (21) y FPC(6) y (11) 가

, 5c (21) FPC(6) (10) (9) (2)

1c) (8c) 가 (21b) (8b), (8b) (21c) (8c) (22) (8c) (8

, (21b) (8b), (8b) (21c) (8c) (22) (8c) (8

). (9) 가 가 (9) 가 (21a) (Curi 가

e temperature) (21a)가 가 (21a)가

, 6a (9) (8c) (13) (21b)

(8b), (8c) (12)

, 6b (21c) (3) (21b)

(14) (5)

, (3), (21c), (21a), (21b) (5) (

23)가

, 6c (23) (24) (

가). (24) (3) (14)

, (21a) (21b, 21c) (21) , 7a

(2) (1)

, (21b, 21c) FPC(6) (22)

(2) (7)가

, 7b (3) (4)

, (2b) (8b), (1) FPC(6) (1) y FPC(6) y (10) (8c) (9)

(2c)

가 가 (1) FPC(6) FPC(6) 가 (12)

가 가 (1) FPC(6) FPC(6) 가

(1) FPC(6) (10)가 90 (10) 가
 (9) (1) FPC(6) (1) FPC(6) .
 , (1) FPC(6) .
 , 가 (1) FPC(6) 가 , 가 (12) 가
 (12)가 .
 , (8b) (8c) FPC(6) .
 , FPC(6) (1) 가 , .
 , (1) FPC(6) (11)가 .
 (1) , FPC(6) (1) (10) (9) (11) ,
 , (10) (9) (13) .
 , (9)가 , (1) FPC(6) .
 , 9 2 .
 9 2 , .
 1 가 .
 9 , (1) y FPC(31b, 31
 c)가 . FPC(31b, 31c) (32b) (32c) ,
 (32b) (32c) (2) (7) .
 FPC(31b, 31c) (1) , (1) FPC(31b, 31c)
 (33)가 . , 5 90
 , 10 90 가 .
 (1) FPC(31b, 31c) (33) (9)가 . (9)
 (2c) (32c), (2b) (32b) .
 , (1) FPC(31b, 31c) (1) y
 , (1) (1) .
 , FPC(31b, 31c) 가 , (1) FPC(31b, 31c) (1) FPC(31b, 31c)
 가 . , (1) FPC(31b, 31c) 가 .
 , (33) 5 , (9) .
 , 1 , (1) FPC(31b, 31c) 가 .
 , 가 가 가
 가 (1) FPC(6) .
 10 가 . 10 P , P
 .
 가 FPC
 (1) FPC (12)
 10 .

.
 : 2 mm,
 : 10 ,
 : 5 .
 10 , 0.44 N . ,
 1.74 N . .
 4 .
 , FPC 가 , FPC ,
 FPC 가 ,
 , 10 가 ,
 .
 11a 11b 가 .
 가 , 6 0.01 mm , FPC
 FPC가 .
 .
 (blade) : 30000 rpm,
 : 0.05 mm,
 : 0.15 mm ~ 0.10 mm,
 : 0.1 mm ~ 0.05 mm.
 11a 11b , 0.05 mm 가 0.07 mm 가 .
 ,
 , 가 가 FPC , FPC 가 .
 , 10 가 ,
 .
 , FPC /
 Cu/ FPC .
 () .
 FPC (R) : 5 mm,
 : 90 ,
 Cu (t) : 0.025 mm,
 Cu (Young's modulus)(E) : 130000 N/mm².

1

$$\sigma = (\Delta L / L) \times E$$

$$= \frac{1/4 \times 2\pi \times (R + t/2) - (1/4 \times 2\pi \times R)}{1/4 \times 2\pi \times R} \times E$$

$$= \frac{tE}{2R}$$

$$= 325 [N/mm^2]$$

325 N/mm² 1 FPC ,

, 1 FPC , 0

, 2 , FPC 가 90

가

12 3 12 12

8 ~ 256 (101) (102) (101) (101) , 12

(102b) (102) (102a), (102c)(1), (102b)(2) , (10

2c) (102c) (102a) (103) , (10

(102a), (102b) (102c), (103) (2a),

(2b) (2c), (3) 가

12 (101) (102c) (103) (

104)가 (101) (102b) (114)

(105)가 (105)

(101) FPC(106)(1)가 , 가 9

0 FPC(107)(2)가 ,

가 90

FPC(106) (101) (106a) (106a) (102)

(4) FPC(107) (101) (107a)

(107a) (102) (4)

(101) FPC(107) (110a) (109a)

(102c) 1 (110a) (109) (107a) (102c)

(101) FPC(106) (110b) (109b) (106a) (109b) (102b) (10

2b) 2 (110b) (109b)

(109a, 109b) (101) FPC(106, 107)

, (109a, 109b) ()

(101) FPC(106) (102b) (102c) (111)()가 (111) (1

01) FPC(106, 107) 가

FPC(106, 107) (105) () ()

(101) FPC(107, 106) (101) FPC(106, 107) (109a, 109b),

(102b) (106a), (110a, 110b) (102c) (107a)

(101) FPC(106, 107) (101) FPC(106, 107)

FPC(106, 107) 가 가 가 (101)

13 12 , 12 가

가 13 0.22 N/mm , 12 1.62 N/mm

0 N/mm² 가 , FPC 13 300 N/mm² , 12

가

가

(57)

1.

2.

3.

4. 1 , , , 1 , 1 , 2 , 2 .

5. 1 가 .

6. 1 , .

7. 1 , .

8. 1 (fillet) .

9. , 1 , 2 , 2 , 1 2 (主面) 1 , 2 2 2 2 .

10. 9 , , .

11. 9 , .

12. 9 , .

13. 9 (fillet) .

14. , ,

가 ,

가

15.

14 ,

,

가

가

16.

14 ,

,

가

가

17.

14 ,

18.

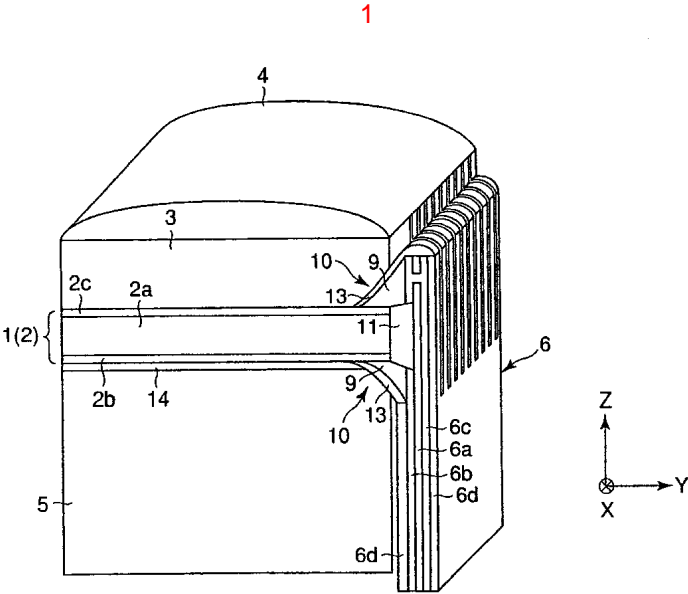
14 ,

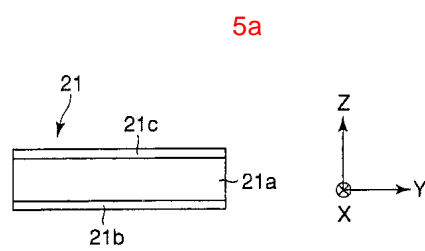
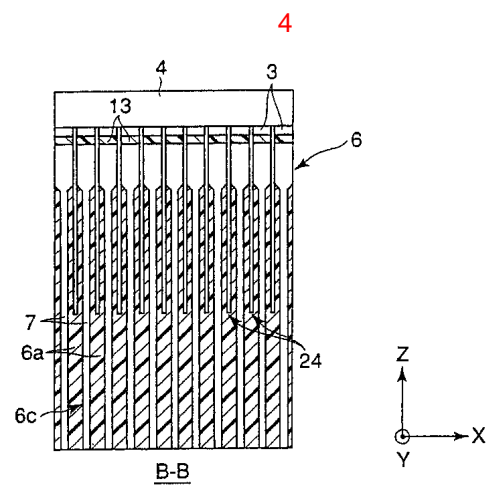
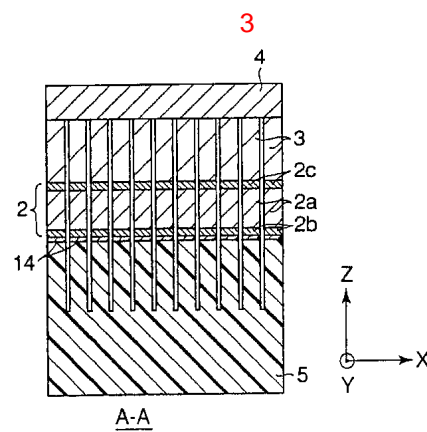
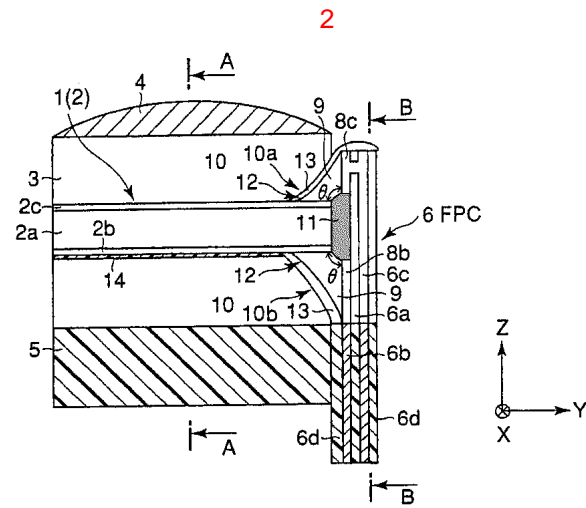
19.

14 ,

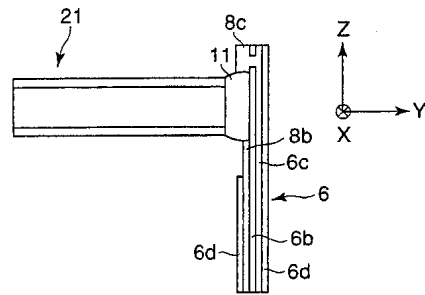
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14 ,

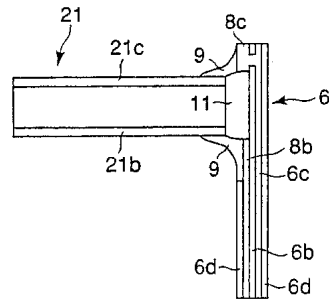




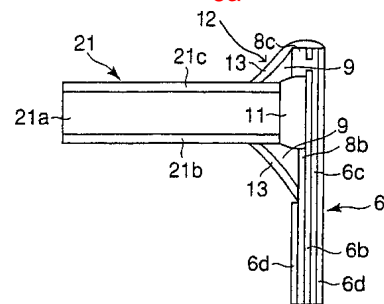
5b



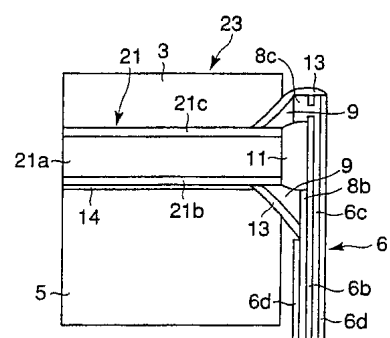
5c



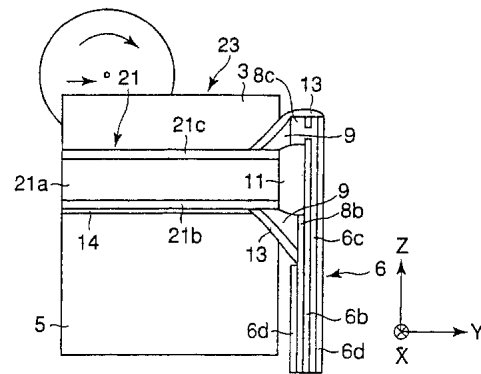
6a



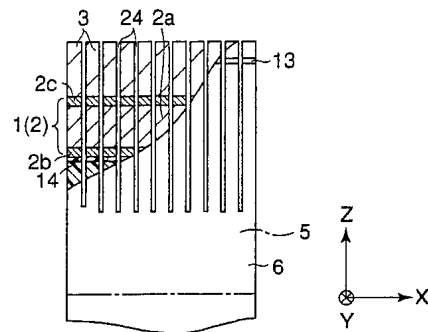
6b



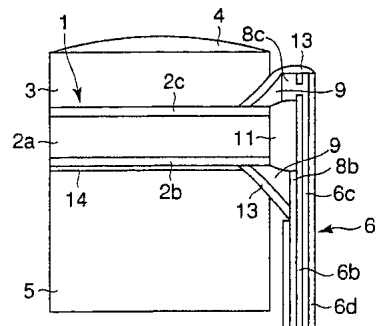
6c



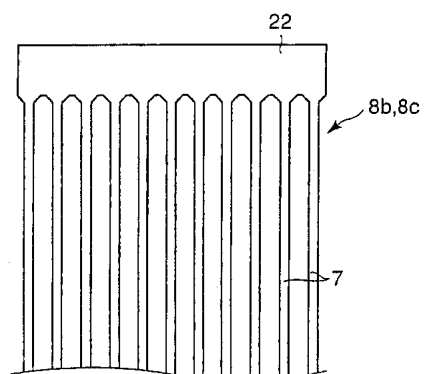
7a



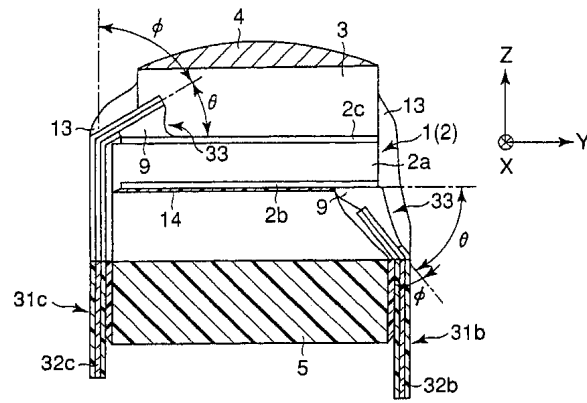
7b



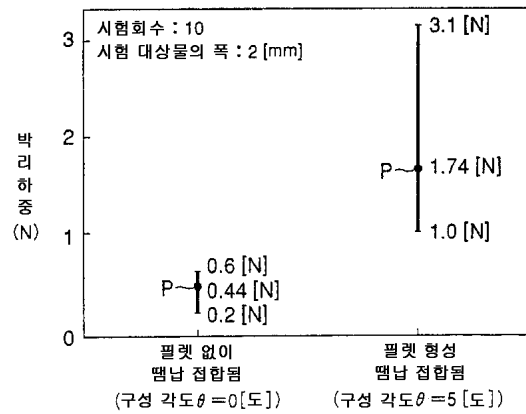
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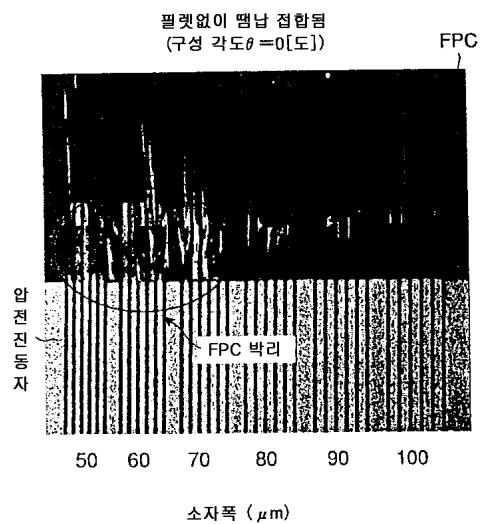
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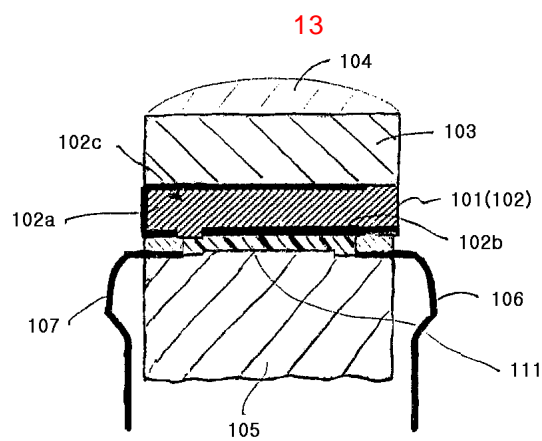
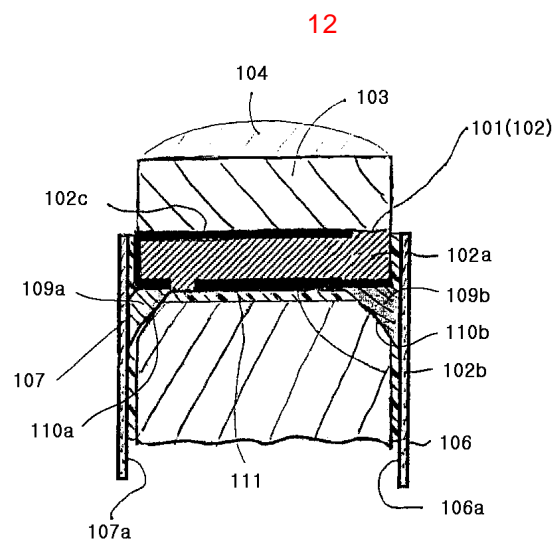
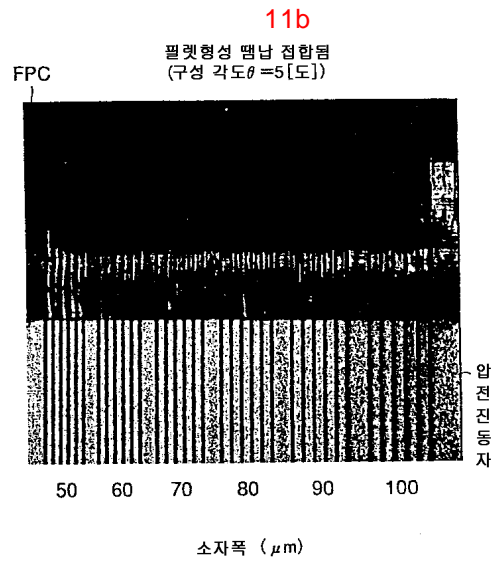


10

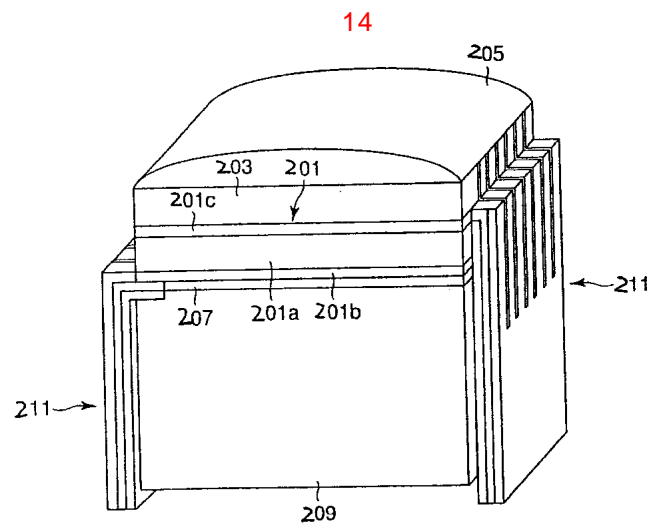


11a

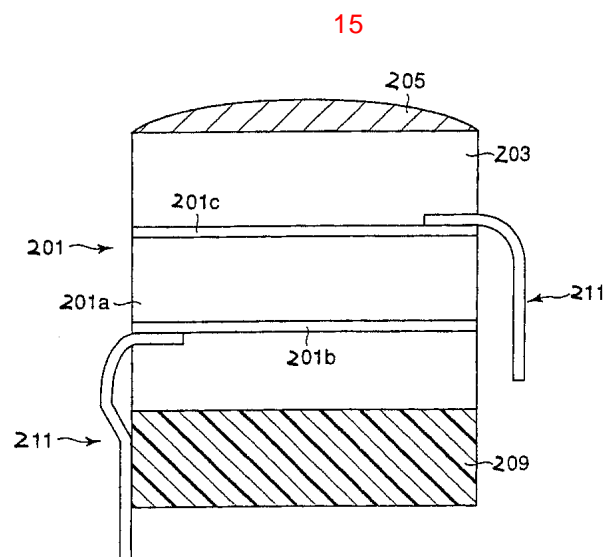




- 종래 기술 -



- 종래 기술 -



- 종래 기술 -

专利名称(译)	超声波探头及其制造方法		
公开(公告)号	KR1020040076219A	公开(公告)日	2004-08-31
申请号	KR1020040012147	申请日	2004-02-24
[标]申请(专利权)人(译)	株式会社东芝 东芝医疗系统株式会社		
申请(专利权)人(译)	Sikki东芝股份有限公司 东芝制药企业把鼻子炮操作系统		
当前申请(专利权)人(译)	Sikki东芝股份有限公司 东芝制药企业把鼻子炮操作系统		
[标]发明人	SUDO MASAACKI 수도마사아키 HIKI SUSUMU 히키수수무 SATO SHINICHI 사토신이치 SATO TAIHEI 사토다이헤이		
发明人	수도마사아키 히키수수무 사토신이치 사토다이헤이		
IPC分类号	B06B1/06 H04R17/00 G01N29/24 A61B8/00		
CPC分类号	A61B8/00 B06B1/0622		
代理人(译)	金泰HONG 金斗KYU		
优先权	2003046515 2003-02-24 JP		
其他公开文献	KR100666976B1		
外部链接	Espacenet		

摘要(译)

在包括压电振动器 (1) 发送和接收超声波的每个部分 (10) 中提供电连接这些压电振动器 (1) 和FPC (6) 的焊接材料 (9) 和电气获得启发的FPC (6) 在该压电振动器 (1) 中, FPC (6) 面对压电振动器 (1) 侧, 由压电振动器 (1) 和FPC (6) 构成。

