

ONPRESS - Flex PCB - ONPRESS - Flex PCB - ONPRESS - Flex PCB

ONPRESS PRINTED CIRCUITS LIMITED



"Flexible Printed Circuit Board"

- Reliable Quality**
- Total solution to electronic industry**

PREFACE

The heritage of Onpress Printed Circuits Ltd. is growing at the same pace with the electronic industry. We aim at providing a total solution to our valuable customers. In 2001 we established flexible PCB department. By 2002, We invested over HKD10,000,000 to build a 9000SF flexible PCB manufacturing plant.

We focus our effort to provide high end single sided and double sided flexible PCB in 2003 and further enlarge our product range to multi-layer flexible PCB and Rigid-flex in the future.

Product Features

- Single sided flexible PCB
- Double sided flexible PCB
- Circuit Density
 - Circuit density up to 4 mils line and spacing
- Variety: All kinds of surface metal finishing products
 - Electrolytic plate Nickel / Gold
 - Thick Gold and thin Gold
 - Electroless immersion Nickel / Gold
 - Hot air leveling / T/L plating
 - Entek / OSP's

Material Type

1.) Laminate and coverlay (PI)

- Arisawa
- Jiu Jiang China
- Grace

2.) Photo imageable coverlay

Coates UK

Sanwa Japan

3.) Adhesive for stiffener

3M 467

3M 468

4.) Stiffener material

FR 4

P I

Pressure sensitive adhesive (3M467, 3M468)

Lead Time

a.) Sample lead time: 2 weeks

b.) Production:

--New project 3~4 weeks

--Repeat order 2~3 weeks

Outline profile

-- Steel Rule tool die

-- Class A die punch

Out put capacity

50,000 SF per month

Technology Road Map for flexible PCB.

- 2000 ◦ R&D of flexible circuit manufacturing Technology.

- 2001 ◦ Establishment of flexible PCB department
 ◦ Manufacturing process Evaluation
 ◦ Sourcing machinery
 ◦ Build a pilot line for sample Run and small quantity production.

- 2002 ◦ PCB plant construction and installation of machinery (cap: 50,000 SF/month).
 ◦ Engineers and workers training.

- 2003 ◦ Mass production of S/S and D/S FPC
 ◦ Mass production of Rigid-flex Double sided FPC

- 2004 ◦ Evaluate the multi-flex process
 ◦ Mass production of multi-flex 4~6 layers by June 2004

- 2005 ◦ Mass production of Rigid-flex Multi-FPC
 ◦ Plant layout of new FPC plant (cap: 200,000 SF/month)

- 2006 ◦ Installation of machineries for the new plant



鶴山安栢電路版廠有限公司

HESHAN ONPRESS PRINTED CIRCUITS LTD.

TEL: (0750) 8211133 FAX: (0750) 8211138

Flexible PCB Manufacturing equipment

1. Drilling



2. Chemical Treatment



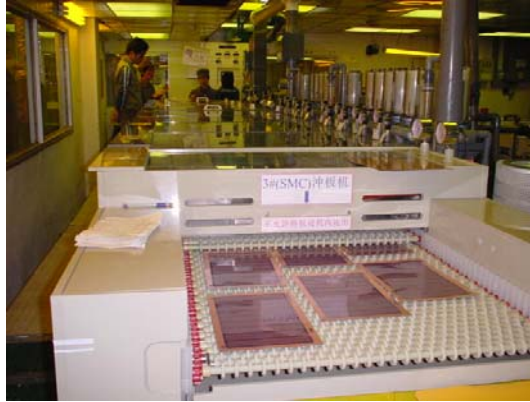
3. Image Transfer





鶴山安栢電路版廠有限公司
HESHAN ONPRESS PRINTED CIRCUITS LTD.
TEL: (0750) 8211133 FAX: (0750) 8211138

4. Development



5. Etching



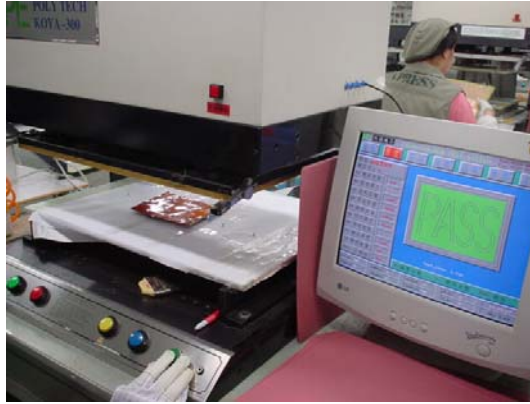
6. Lamination (Coverlayer)





鶴山安栢電路版廠有限公司
HESHAN ONPRESS PRINTED CIRCUITS LTD.
TEL: (0750) 8211133 FAX: (0750) 8211138

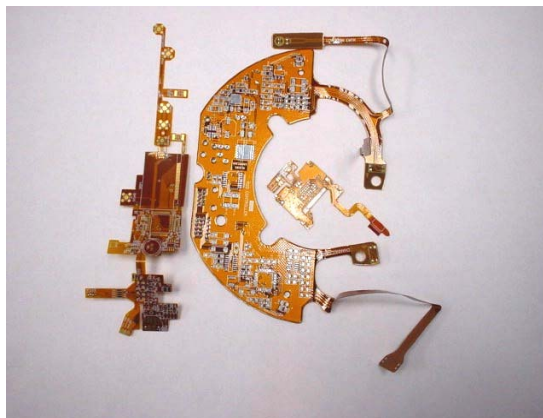
7. Electrical Test



8. Profiling (Steel rule tool die)



9. Products

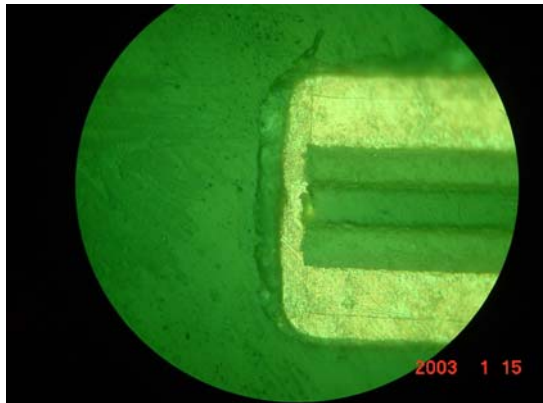


10. Quality Assurance

- a.) X-Ray thickness measurement



- b.) Micro-section plated-through hole inspection



- c.) Peeling strength measurement



- d.) Solderability test





鶴山安栢電路版廠有限公司
HESHAN ONPRESS PRINTED CIRCUITS LTD.
TEL: (0750) 8211133 FAX: (0750) 8211138

Capability - Flexilbe Circuit

1.) Hole size tolerance

- a. $\pm 0.08\text{mm}$ (PTH hole)
- b. $\pm 0.05\text{mm}$ (NPTH hole)
- c. $+0.1\text{mm} / -0.05\text{mm}$ (Punch hole)

2.) Hole location tolerance

- a. $\pm 0.08\text{mm}$ (Drill hole)
- b. $\pm 0.1\text{mm}$ (Punch hole)

3.) Minimum hole size

0.3mm

4.) Line width tolerance

$\pm 15\%$

5.) Line space tolerance

$\pm 15\%$

6.) Minimum line width

0.12mm

7.) Minimum line space

0.12mm

8.) Minimum pad size

$B1 \geq A + 0.4\text{mm}$ (isolated pad)

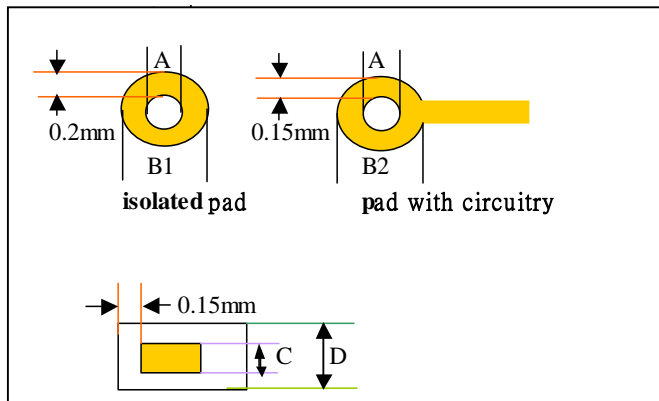
$B2 \geq A + 0.3\text{mm}$ (pad)

Remarks : B1、B2 are pad diameter ,
A is drill size

9.) Opening in coverlayer

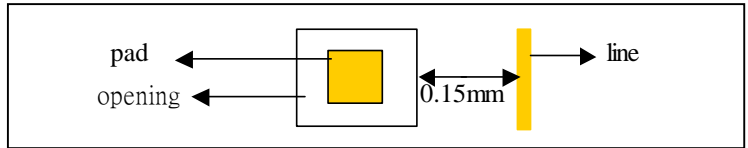
$D \geq C + 0.3\text{mm}$

Remarks : C=pad , D=opening



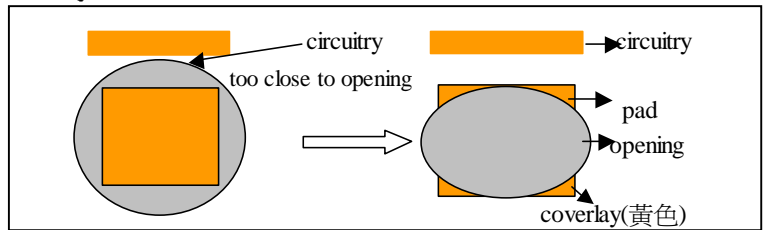


10.) Space of circuitry to coverlayer opening
 0.15mm



11.) Coverlayer opening close to circuitry

If space between coverlayer opening to circuitry is less than 0.15mm

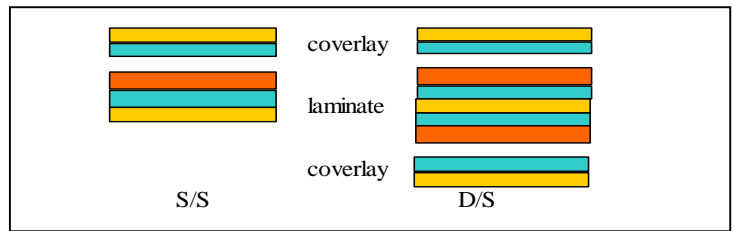


12.) Outline tolerance

- a. Steel rule tool die $\pm 0.3\text{mm}$
- b. Class A die punch $\pm 0.1\text{mm}$

13.) Board finished thickness

- a. Single sided with coverlayer flexible PCB $0.13 \pm 0.03\text{mm}$
- b. Double sided with coverlayer flexible PCB $0.24 \pm 0.03\text{mm}$



Remarks : PI = 1 mil (0.025mm)
 Adhesive = 1 mil (0.025mm)
 Copper = 1 OZ (0.035mm)

14.) Metal finishing thickness

- a. Copper $> 5 \mu\text{m}$
- b. Nickel $> 2 \mu\text{m}$
- c. Gold $0.01 \sim 0.05 \mu\text{m}$ (flesh gold) $> 0.05 \mu\text{m}$ (thick Gold)
- d. Solder: $1 \sim 8 \mu\text{m}$ (electrolytic plating) $1 \sim 15 \mu\text{m}$ (HAL)

15.) Wet film solder mask

- a. Clearance 0.1mm
- b. Line coverage 0.1mm

16.) Space of circuitry to edge

- a. Steel rule tool die 0.3mm
- b. Class A die punch 0.2mm



鶴山安栢電路版廠有限公司
HESHAN ONPRESS PRINTED CIRCUITS LTD.
TEL: (0750) 8211133 FAX: (0750) 8211138

17.) Stiffener

- a. Stiffener materials FR4(0.1~2.5mm) , PI (0.05~0.2mm)
- b. Bonding of stiffeners Pressure sensitive adhesives 3M467, 3M468
- c. Tolerance of stiffener $\pm 0.5\text{mm}$

18.) Laminate / Coverlay material

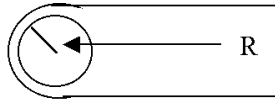
Major laminate construction

Polyimide (PI) 1 mil
Adhesive 1 mil
Copper 1 OZ



19.) Minimum Bend radius

R=3mm



20.) Working panel size

- a. Minimum Panel Size 6.8"X12"
- b. Maximum Panel Size 12"X16"
- c. Standard Panel Size 8"X12", 10"X12"

21.) Inspection Documents

IPC-6013

