Elephantech

Elephantech's proprietary printed electronics technology simplifies the flexible PCB manufacturing process significantly.

P-Flex®

SILVER NANO INKJET × HIGH-SPEED ELECTROLESS COPPER PLATING

Original manufacturing method enabling ultrafast delivery

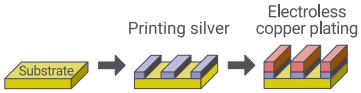
Patented

About Elephantech's manufacturing method (Pure Additive™ processing)

This manufacturing method consists of inkjet-printing silver nano-ink onto the substrate before electroless copper plating is applied to form the circuit. By reducing the amount of metal, liquid waste and man-hours, we can lessen manufacturing costs and shorten the lead time.

(* Patent No. 6300213)

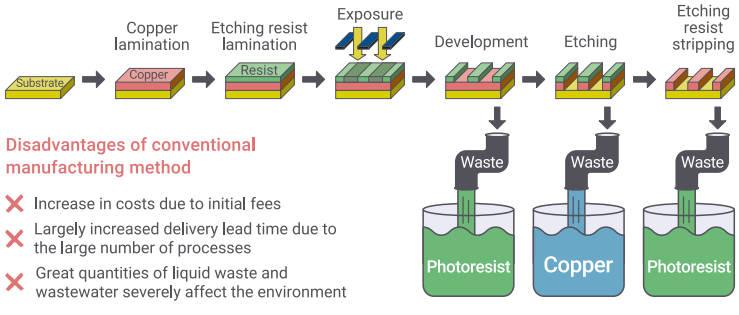
Elephantech's manufacturing method (Pure Additive™ processing)



Advantages of Elephantech's manufacturing method

- ✓ Forming the circuit only where needed allows for a reduction in manufacturing cost and environmental footprint.
- ✓ A simple manufacturing process allowing for a shorter lead time.

Conventional manufacturing method (subtractive method)



Disadvantages of conventional manufacturing method

- ✗ Increase in costs due to initial fees
- ✗ Largely increased delivery lead time due to the large number of processes
- ✗ Great quantities of liquid waste and wastewater severely affect the environment

P-Flex®

v5.3.1_200501

Features

P-Flex® is a type of flexible PCB that is manufactured by applying Pure Additive™ processing. Conventionally, electronic circuits have been manufactured by applying a method known as lithography, in which a thin metallic sheet is first applied to the board surface, and then unrequired sections are melted away.
The novel approach to electronic circuit production that Elephantech has developed – called Pure Additive™ processing – is based on a totally opposite concept to the conventional method. In this innovative manufacturing method, metallic nano particles are printed only onto the required areas of the board surface, and then electroless plating technology is applied to grow the metal, providing the benefits shown on the right.

✔ Lead Time Shortened

- Widely backed up with standard specifications shipped/developed 3 days after data issue.
- Because the manufacturing schedule is short, early delivery of mass produced parts is supported.

✔ Total cost reduced

- Cost from development time to mass production time greatly reduced.
- Our factory has a monthly production capacity of 1000 m² and we can handle and support mass production.

✔ Contribute to SDGs (Sustainable Development Goals)

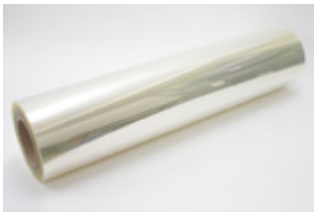
- Since copper is only placed where it is needed, less than 30%* of material is used.
- The shortening of the process allows for a drainage volume of less than 10%*

* An internal investigation

Manufacturing process based on the Pure Additive™ processing

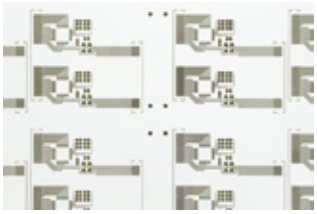
Film

The substrate is 50 µm PET film. 125 µm PET film is also available.



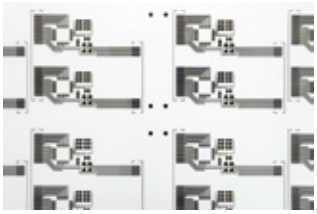
Printing

This is the process in which the seed layer is formed by applying silver nano ink using an inkjet printer.



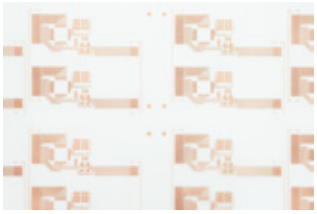
Sintering

This is the process in which the seed layer made up of nano particles is exposed to heat.



Plating

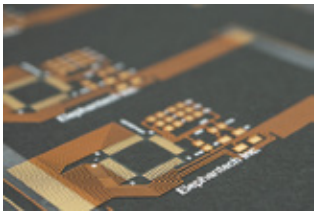
This is the process in which the copper layer is formed on top of the seed layer.



Soldermask coating/Legend

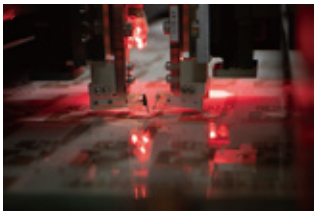
Flex PCB compatible soldermasks* and character information symbols are formed.

* Coverlays shall be used in case of PI.



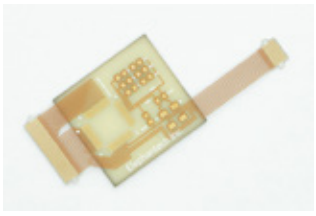
Open/short test

A Flying Probe Tester is used to check for defects such as open and shot circuits.



Cutting

This is the process in which circuits are cut out into specified shapes.



Inspection

Checks are performed to identify any shorts or opens, scratches, dimension tolerances, etc.

P-Flex® manufacturing specifications

Substrate	Transparent heat-resistant PET film: 50 µm thick, 125 µm thick PI (Polyimide) film: 25 µm thick
Line width / spacing	200/200 µm min. 200/150 µm min. (only PET substrate option)
Outline-pattern spacing	0.3 mm min.
Operating temperature	Between -20 °C and +105 °C
Copper foil thickness	3 µm (contact us for thicker options)
Panel size	180 × 270 mm max.
Wiring layer	Single-sided
Soldermask coating (PET)	UV inkjet printing (transparent)
Coverlay pasting (PI)	PI film 12.5 µm, adhesion layer 15 µm
Legend printing	UV inkjet printing (white)
Surface finish	Oxidation prevention treatment, Electroless nickel gold plating (option)
Outline cutting / Hole drilling	Laser cutting
Stiffeners	Wide range of material and thickness
PCBA Service	Available. Subject to negotiation.

Company Overview

Elephantech

Elephantech Inc.
(Formerly AgIC Inc.*)

*Changed corporate name on September 4, 2017

Website Contact

Establishment	January 6, 2014
Address	4-3-8 Hatchobori, Chuo-ku, Tokyo 104-0032, Japan
Capital	JPY 310 million
Representative	Shinya Shimizu, CEO
Website	https://www.elephantech.co.jp/en/
Contact	https://www.elephantech.co.jp/en/about/#contact