DIRECT PLATING SYSTEM
"Vertical direct plating technique"

DP system is simple system in limited steps and wide operation window, designed for the metallization of through holes in a double sided or multilayer printed circuit boards.

DP system produces a conductive metallic layer over the non-conductive surfaces thus allowing the direct plating of the electrolytic copper omitting the electroless copper plating step.

DP system provides the following functional characteristics:

- Lower operating costs.
- Excellent plating quality.
- Less water consumption.
- Less process steps.
- Wider operation window.
- Environmentally friendly as it contains no formaldehyde.
- Shorter processing times.
- Adaptability to existing production lines.
- Simple process control.

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PROCESS SEQUENCE

1- DP Cleaner Conditioner

- Formulated to clean the board surface and condition the non-conductive surfaces to attract Palladium particles with attraction forces resulting from the electronic charges provided by the conditioner.

2- DP Micro etch

- To clean and roughen the copper surface so as to gain the maximum adhesion between the board copper surface and the electrodeposited copper.
- Can be omitted in case of mechanical scrubbing prior to direct plating process.

3- DP Predip

- To protect the activator bath from any foreign substances that could be transferred to it by normal drag out, dripping or poor rinsing, thus prolonging the service time of the activator bath.

4- DP Activator

- A novel Palladium-Tin micro fine colloidal solution which deposit highly condensed palladium particles to form a conductive layer over nonconductive surfaces with conjunction with the above-mentioned cleaner conditioner.

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5- DP Accelerator

- To remove excess Tin salts and ensure high conductivity of the previously deposited layer.

OPERATING CONDITIONS

Step	Temperature	Time
DP Cleaner Conditioner	**60˚C**	**10 minutes**
Static water rinse	Room temp.	1 minute
Flow water rinse	Room temp.	1 minute
DP Micro-etch	**Room temp.**	**1 minute**
Static water rinse	Room temp.	1 minute
Flow water rinse	Room temp.	1 minute
DP Predip	**Room temp.**	**1 minute**
DP Activator	**40 ˚C**	**10 minutes**
Static water rinse	Room temp.	1 minute
Flow water rinse	Room temp.	1 minute
DP Accelerator	**40 ˚C**	**10 minutes**
Static water rinse	Room temp.	1 minute
Flow water rinse	Room temp.	1 minute

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