



# Weller Technology Co., Limited

## Company Profile & Capabilities

# CATALOGUE

- **Company Profile**
- **Business Introduction — PCB Assembly**
- **Business Introduction — PCB Fabrication**
- **Business Introduction — Components Sourcing**
- **Business Introduction — Mold Injection & Box Build Service**



# Company Profile

## Who We Are?

WELLERPCB

Located in Shenzhen, China

20 Year's Experience and Knowledge in PCB Manufacturing

13 Year's Experience in PCB Assembly Field with 8 SMT Lines and 200 People  
(12 SMT Lines Capacity)

Direct Manufacturing Service Not A Broker

Have Been Working with European and American Customers Since 2003

Certified by IATF 16949:2016, ISO 13485:2016 and ISO 9001:2016

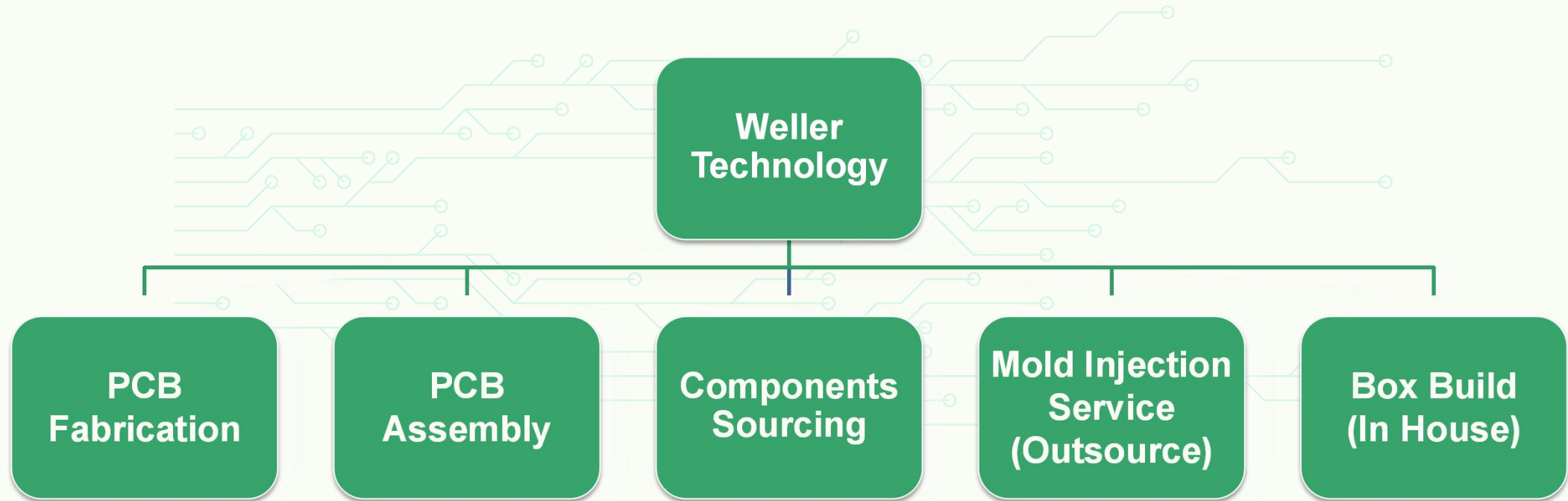
# Who We Are?

# WELLERPCB

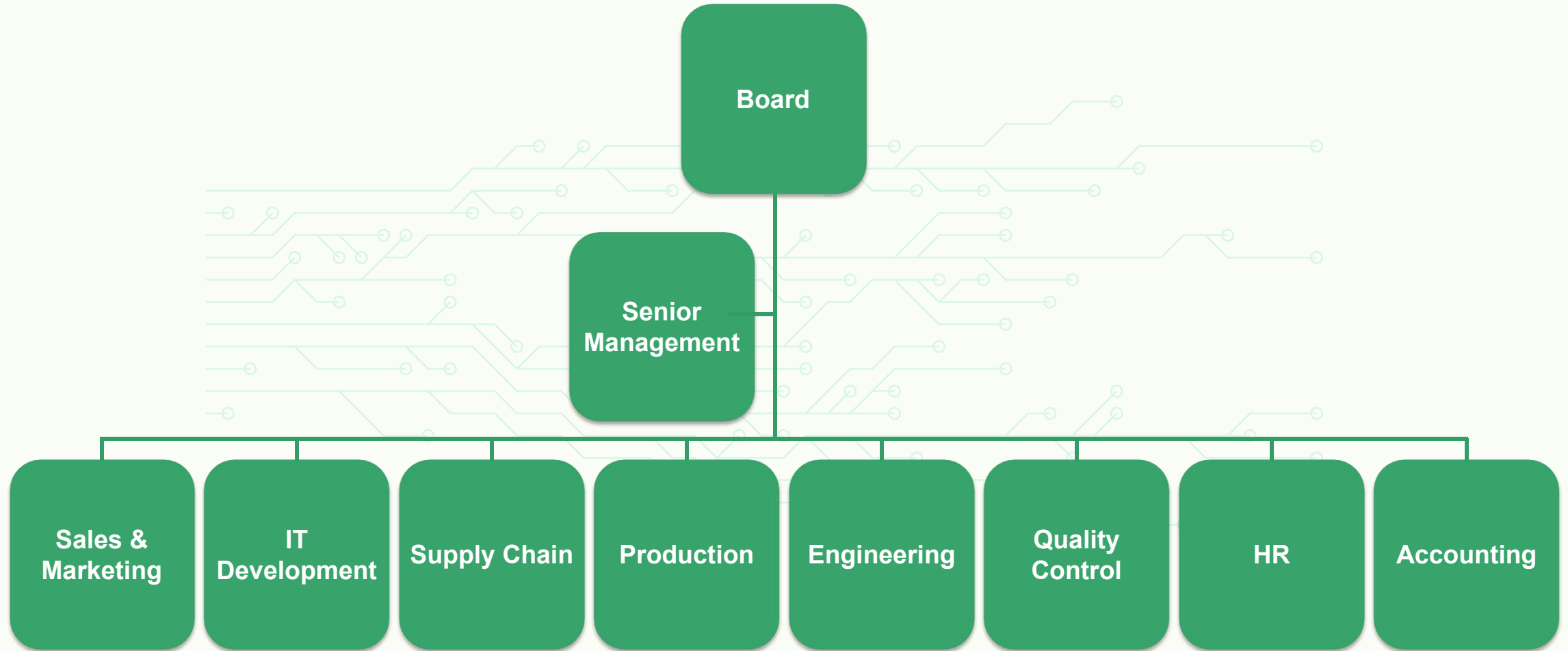


# Who We Are?

**WELLERPCB**



# Who We Are?



## Who We Are?

**WELLERPCB**

PCB Fabrication (2-50 Layers, Prototypes to Mass Volumes)

PCB Assembly (BGA and QFN Assembly, Fine Pitch Components Insertion)

Components Sourcing (Cost Down by BOM Optimizing and 100% Original Brand)

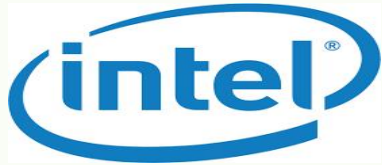
Mold Injection (Plastic Injection Molding, Metal Stamping Service)

Box Build (PCBA + Final Product Assembly)

**Combined Strength, Turnkey Solution**

# Who We Are?

# WELLERPCB

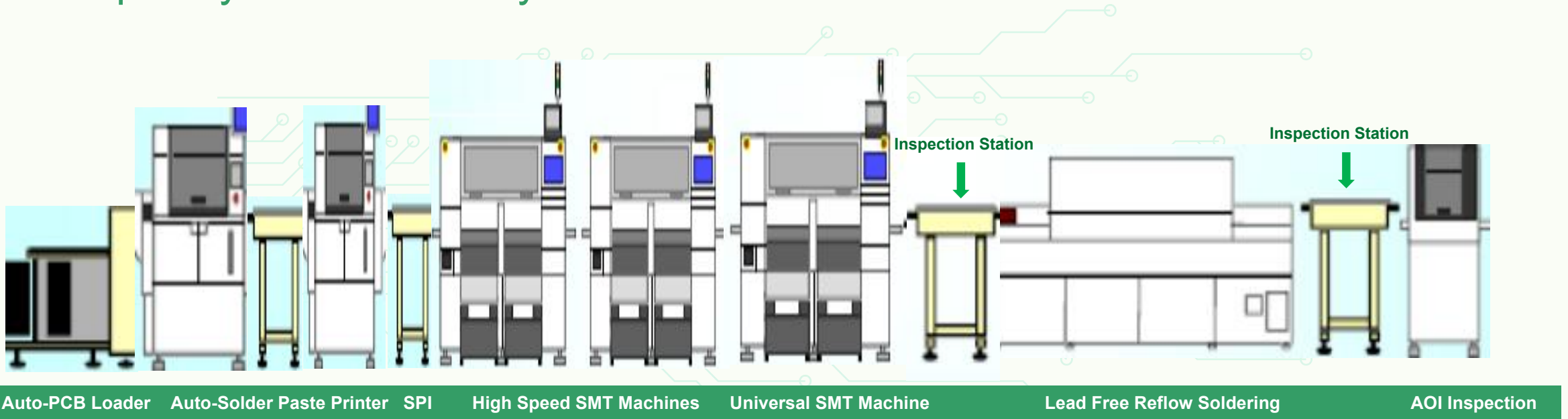




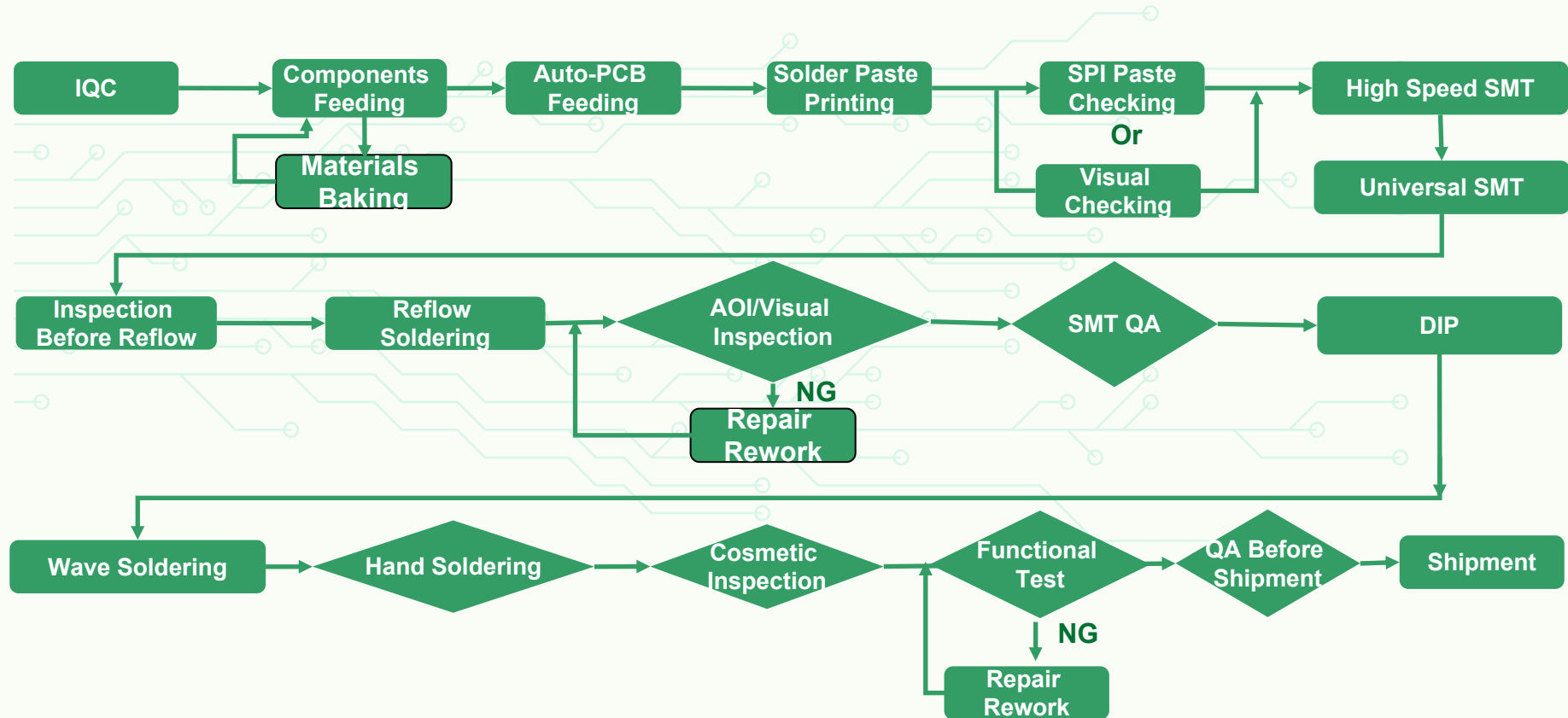
PCB Assembly

- ◆ SMT And Through-Hole Assembly
- ◆ Fine Pitch Component Insertion
- ◆ Lead-Free Assembly
- ◆ BGA And QFN Assembly
- ◆ One-Stop PCB Assembly

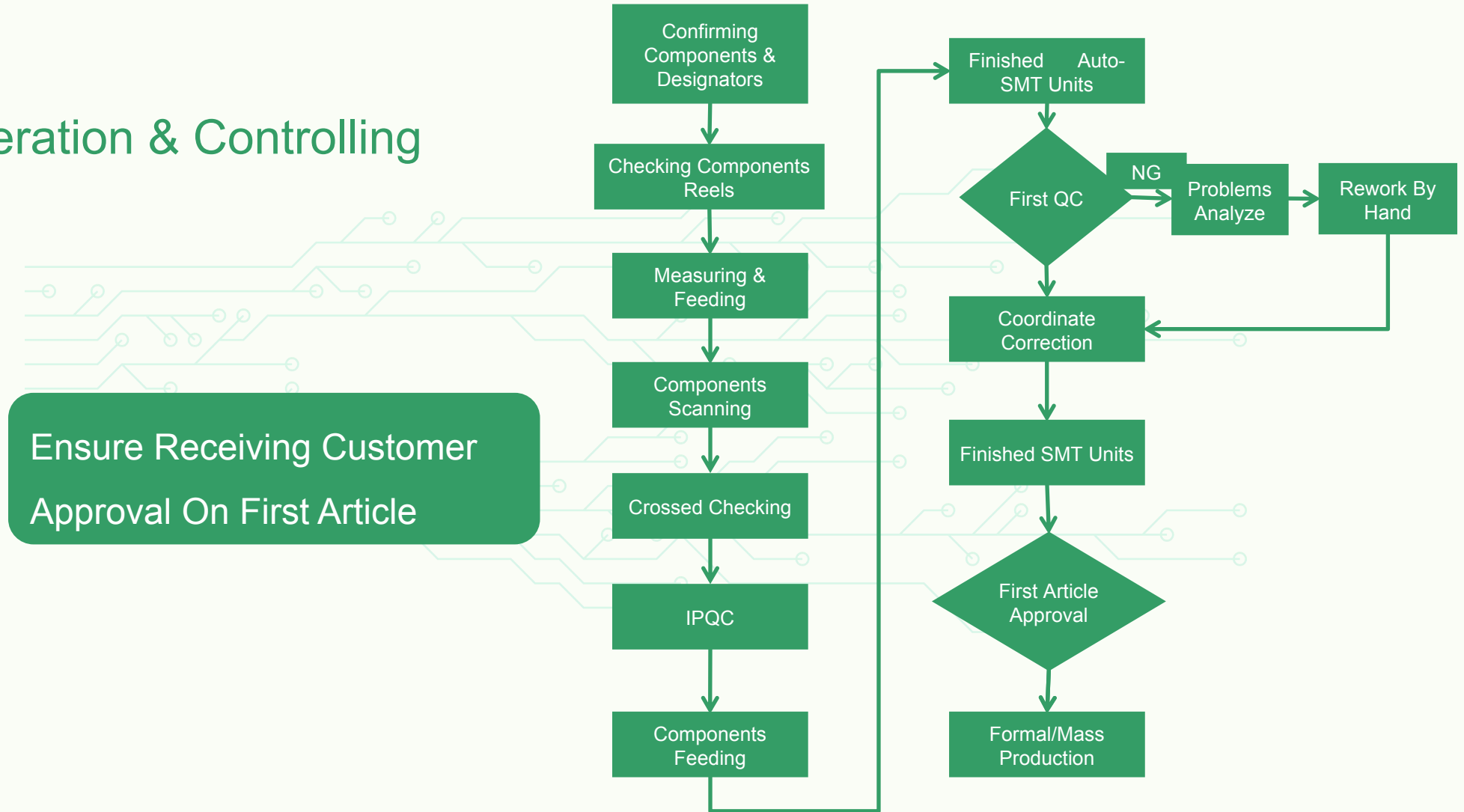
## ◆ Completely Auto-Assembly Process



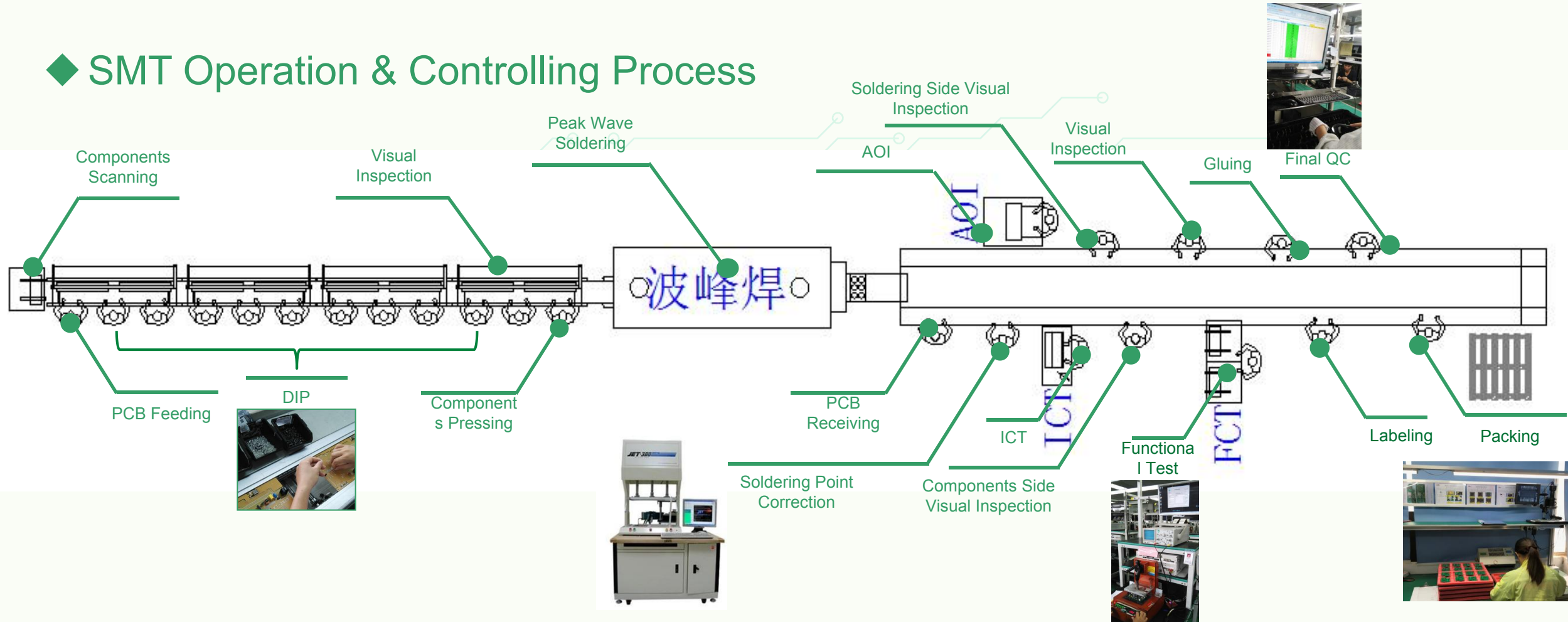
## ◆ Internal SMT Work Flow Chart



## ◆ SMT Operation & Controlling Process



## ◆ SMT Operation & Controlling Process



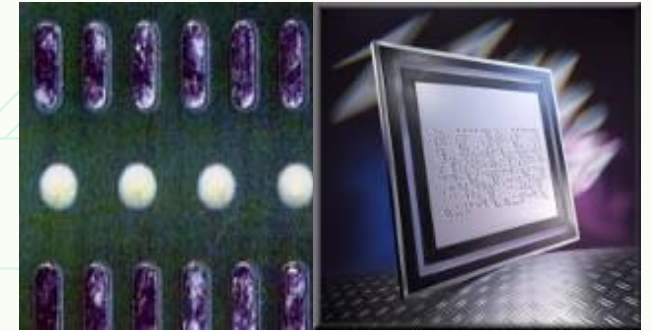
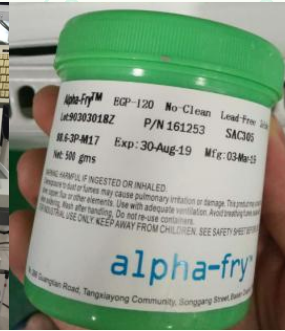
## ◆ SMT Operation & Controlling Process

Process/Aspects		IQC (Components)	Sold Paste & Printing	SMT Process	Re-Flow Soldering	AOI
Weller	Capabilities	1. Checking model, package, value, polarity etc. of each component before SMT process. 2. Confirming any potential issues with customers in advance.	1. Sold Paste: U.S. brand Alpha, high quality, usually don't use local brands. 2. All automatic printing process and SPI paste checking technology are applied before SMT process to ensure good quality.	1. Japanese brand JUKI high precision SMT machines which enables to mount mixed components at a time.	1. Enable to control 12 temperature zones. 2. Keeping re-flow soldering temp. curve graph as long as customer required.	1. AOI inspection for all process.
	Results	Advantages: 1. Higher efficiency and yield rate. Disadvantages: 1. Higher labor cost and longer processing time.	Advantages: 1. Higher quality of solderability. 2. Even thickness of solder paste, good solderability especially for precise components and ICs. Disadvantages: 1. Higher cost.	Advantages: 1. Good alignment and higher precision. Disadvantages: 1. Higher cost.	Advantages: 1. Controlling even temperature to ensure good soldering quality, especially for high precision BGA, QFN and 1. Higher cost.	Advantages: 1. Eliminating missing components. Disadvantages: 1. Higher cost.
Competitors	Capabilities	1. Usually no IQC process SMT directly.	1. Manual solder paste printing or semi-automatic printing. 2. No SPI checking machine, process SMT directly.	1. Ordinary domestic brand SMT machines or cheaper ones, handle different components by different machines or procedures.	1. Mainly only has 6-8 temperature zones.	1. Visual inspection Manually.
	Results	Disadvantages 1. Higher risks of bad yield Advantages: 1. Lower cost, faster speed.	Disadvantages: 1. Unstable solderability, components may fall off. 2. High risks of cold solder joints, solder bridges etc., which will cause functional issues on ICs and BGA components. Advantages: 1. Lower cost.	Disadvantages: 1. Lower precision, higher risks of misplaced components or open short circuits issue. Advantages: 1. Lower cost.	Disadvantages: 1. Insufficient re-flow time under higher or lower temp. which will result in bad solderability and cold solder joints issue. Advantages: 1. Lower cost.	Disadvantages: 1. Higher risks of missing components, lower efficiency. Advantages: 1. Lower cost.

## ◆ Crucial Equipment of PCB Assembly

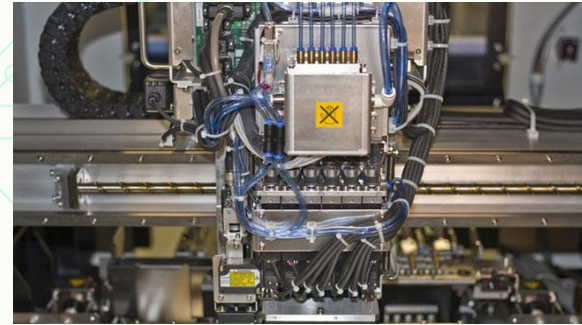
Auto-Solder Paste Printer

U.S. Solder Paste Brand Alpha



## ◆ Crucial Equipment of PCB Assembly

Japanese JUKI  
Brand



## ◆ Lead Free Re-Flow Soldering Process



## ◆ Lead Free Re-Flow Soldering Process

- ① Automatic Optical Inspection
- ② Automated X-Ray Inspection
- ③ First Article Inspection Instrument
- ④ BGA Repair Machine



## ◆ DIP Assembly Line



DIP Assembly Line A



DIP Assembly Line B



DIP Assembly Line C

## ◆ SMT Assembly Capability

No.	Item	Capability
1	Board Size	2"*4"-18"*20"
2	Board Thickness	0.5-4.0mm or Less
3	SMT Component Size	1.0*0.5mm-74*74mm
4	Component Qty.	.
5	IC Pitch	0.3mm (12mil )
6	BGA /CSP	Pitch 0.35mm
7	Board Complexity	SMT/PTH/Boxbuild
		Single/Double Sides Reflow
8	Glue	Yes
9	Nitrogen Reflow/Wave	Yes
10	Process	Clean/No Clean/Lead Free
11	Baking Oven	Yes

## ◆ DIP Assembly Line



Net Sever  
Application

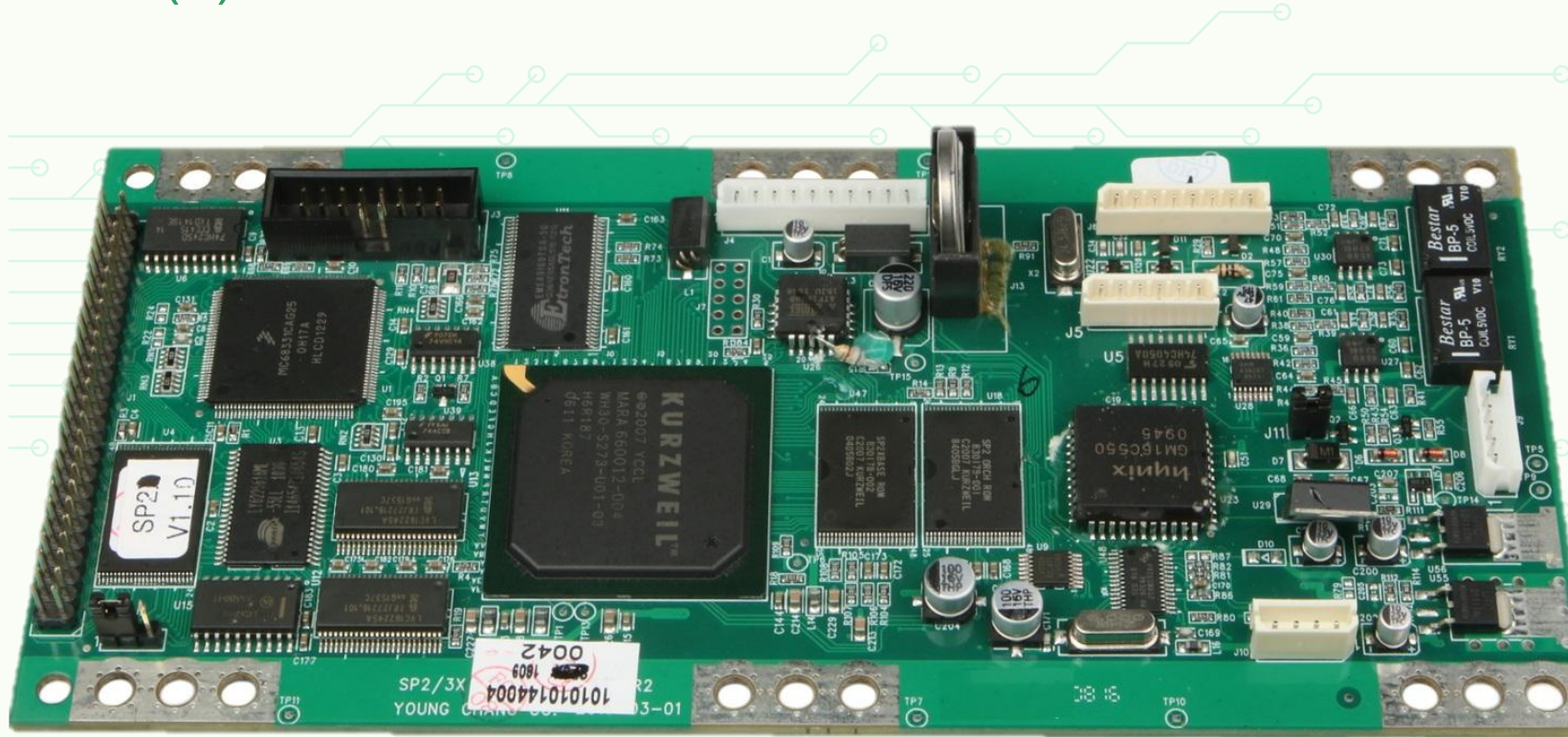


Industrial Control  
Application



RF  
Application

## ◆ Products Index (2)





PCB Fabrication

## ◆ SMT Assembly Capability

No.	Item	Capability for Sample	Capabilities for Small/Medium/Mass Production
1	Material Types	FR4 (General)	Brand: Shengyi, Guoji, KB, ITEQ
2		Halogen Free	S1155 (General TG), S1165 ( High TG)
3		FR4 (High TG)	EM827, S1000-2, FR408, FR408HR, IT180A, N4000-13, PCL-370HR
4		Ceramic Substrate	Rogers 4350, Rogers 4003
5		PTFE	Rogers Series, Taconic Series, Arlon Series, Nelco Series, F4B Series
6		Metal Base	Aluminum Base, Copper Base, Iron Base (1-4L)
7		Multiple Material Lamination	FR4 and Aluminum Base Mixed Lamination, FR4 and Rogers Mixed Lamination, Aluminum Base and Rogers Mixed Lamination
8	Parameter	Number of Layers	1-60 Layers
9		Finished Board Thickness	Board with HASL: 0.4—3.2 mm, Others: 0.2—12 mm Min. Thickness for 4L: 0.5mm, for 6L: 0.7mm, for 8L: 0.9mm, for 10L: 1.2mm
10		Max. Production Sizes	Board with HASL: 350mm*300mm (0.4mm≤Thickness≤0.8mm)
11			420mm*350mm (0.8mm≤Thickness≤1.2mm)
12			RoHS Compliant Board and HASL Board Thickness > 1.2mm
13		Profile	CNC Milling ,V-CUT, Break Tab, Stamp Holes, Punching
14		Distance From V-Cut Center Line To	T≤1.0mm: 0.3mm (20°), 0.33mm (30°), 0.37mm (45°), 0.42mm (60°)
15		Circuits of Inner & Outer Layer	1.0mm < T≤1.6mm: 0.36mm (20°), 0.4mm (30°),0.5mm (45°),0.6mm (60°)
16			1.6mm < T≤2.4mm: 0.42mm (20°), 0.5mm (30°),0.6mm (45°),0.8mm (60°)
		2.4mm < T≤3.0mm: 0.47mm (20°), 0.6mm (30°),0.8mm (45°),1.0mm (60°)	

17	Drilling Hole	Mechanical Hole (Finished)	0.1mm≤Hole Dia.≤6.2mm (Driller Size: 0.15mm—6.3mm)	0.15mm≤Hole Dia.≤6.2mm (Driller Size: 0.2mm—6.3mm)
18			Min. Finished Hole for PTFE and Multiple Material Lamination: 0.35mm (Driller Size: 0.45mm)	Min. Finished Hole for PTFE and Multiple Material Lamination:0.35MM (Driller Size: 0.45mm)
19			Mechanical Blind/Buried Hole Dia.≤0.4mm (Driller Size≤0.5mm)	Mechanical Blind/Buried Hole Dia.≤0.4mm (Driller Size≤0.5mm)
20			Min. Width for Slot: 0.5mm (Min. Router Size: 0.6mm)	Min. Width for Slot: 0.5mm (Min. Router Size: 0.6mm)
21			Min. Jointed Hole Dia.: 0.35mm (Driller Size: 0.45mm)	Min. Jointed Hole Dia.: 0.35mm (Driller Size: 0.45mm)
22			Dia. for Hole Plugged with Solder Mask≤0.55mm (Driller Size≤0.65mm)	Dia. for Hole Plugged with Solder Mask≤0.55mm (Driller Size≤0.65mm )
23		0.1mm≤Finished Dia. for Hole Plugged with Resin≤0.4mm	0.1mm≤Finished Dia. for Hole Plugged with Resin≤0.4mm	
24		Laser Drilling Hole (Finished)	Min. Finished Laser Drilling Hole Diameter: 0.1mm (Depth≤65μm), 0.13mm (Depth≤100μm)	Min. Finished Laser Drilling Hole Diameter: 0.1mm (Depth≤65μm), 0.13mm (Depth≤100μm)
25			0.075mm≤Finished Dia. For Blind Hole Plugged with Resin≤0.15mm	0.075mm≤Finished Dia. For Blind Hole Plugged with Resin≤0.15mm
26			0.075mm≤Finished Dia. For Blind Hole Plugged with Plated Copper≤0.127mm	0.075mm≤Finished Dia. For Blind Hole Plugged with Plated Copper≤0.127mm
27		Back Drilling Hole	0.35mm≤Back Drilling Hole Dia.≤6.5mm	0.35mm≤Back Drilling Hole Dia.≤6.5mm
28	Countersink Hole, Step Hole	Standard Drilling:130° (Driller Dia.≤3.175mm),165° (3.175mm≤Driller Dia.≤6.3mm)	Standard Drilling:130° ( Driller Dia.≤3.175mm ) ,165° (3.175mm≤Driller Dia.≤6.3mm)	
29		Special Drilling: 82°,90°,120° (0.3mm≤Countersink Hole Drilling Dia.≤10mm)	Special Drilling: 82°,90°,120° (0.3mm≤Countersink Hole Drilling Dia.≤10mm)	
30	Min Hole & Aspect Ratio	0.1mm (T≤0.6mm), 0.15mm (T≤1.2mm)	0.1mm (T≤0.6mm), 0.15mm (T≤1.2mm)	
31		Max. Aspect Ratio: 20:1 (Min. Drilling > 0.2mm)	Max. Aspect Ratio: 20:1 (Min. Drilling > 0.2mm)	
32	Circuit Graphic	Copper Weight	Inner Layer: 1/2 OZ – 12OZ, Out Layer: 1/2 OZ – 12OZ , ( 2L: Max.12OZ)	Inner Layer: 1/2 OZ – 12OZ, Out Layer: 1/2 OZ – 12OZ , ( 2L: Max.12OZ)
33		Capacity for Inner Layer Etching	1/3 OZ & 1/2 OZ: 3 / 3 mil	1/3 OZ & 1/2 OZ: 3 / 3 mil
34			1 OZ: 3 / 4 mil	1 OZ: 3 / 4 mil
35			2 OZ: 4 / 5 mil	2 OZ: 4 / 5 mil
36			3 OZ: 6 / 7 mil	3 OZ: 7 / 9 mil
37		4 OZ: 8 / 11 mil	4 OZ: 9 / 12 mil	
38		Capacity for Outer Layer Etching (Base Copper Thickness)	1/3 OZ: 3 / 3 mil	1/3 OZ: 3.5 / 4 mil
39			1/2 OZ: 3 / 4 mil	1/2 OZ: 4 / 4.5 mil
40			1 OZ: 4.5 / 5 mil	1 OZ: 5 / 5.5 mil
41			2 OZ: 6 / 8 mil	2 OZ: 6.5 / 8 mil
42			3 OZ: 8 / 12 mil	3 OZ: 8 / 13 mil
43			4 OZ: 9 / 15 mil	4 OZ: 10 / 16 mil
44			5 OZ: 11 / 16 mil	5 OZ: 12 / 18 mil
45			6 OZ: 13 / 18 mil	6 OZ: 14 / 20 mil

46	Circuit Graphic	Min. Distance from Drilling Hole to Copper (For Blind Hole)	7 mil (First Stack Up), 8 mil (Second Stack Up ), 8.5 mil (Third Stack Up)	7 mil (First Stack Up), 8 mil (Second Stack Up), 8.5 mil (Third Stack Up)
47		Min. Distance from Drilling Hole to Copper (Without Blind Hole)	6 mil ( < 8L), 7 mil (8L≤Layer≤12L), 8 mil (L > 12L)	6 mil ( < 8L), 7mil (8L≤L≤12L), 8mil (L > 12L)
48		Min. Distance from Laser Drilling Hole to Copper (HDI Board)	6 mil	6 mil
49		Min. Distance from Outline to Inner/Outer Circuit Graphic	8 mil	8 mil
50		Min. Space for Inner Layer Isolated Area	8 mil	8 mil
51		Min. Space for Inner Layer Copper from Board Edge to Avoid Exposure	8 mil	8 mil
52		Min. Distance from Gold Finger Chamfer to Circuit Graphic	8 mil	10 mil
53		Min. Space Between Wall of Hole on Different Network	10 mil	10 mil
54		Min. Distance Between Pads with Immersion Gold	4 mil	5 mil
55		Min. Distance Between Pads with HASL ( No Solder Mask)	6 mil (Isolation 10mil for Pads on Copper)	7 mil (Isolation 10mil for Pads on Copper)
56		Min. Annular Ring for Vias	14 mil (8 mil Hole Dia., H/1 OZ Base Copper), 20 mil (8 mil Hole Dia., 2 OZ Base Copper)	18 mil (8 mil Hole Dia., H/1 OZ Base Copper), 24 mil (8 mil Hole Dia., 2 OZ Base Copper)
57		Min. Annular Ring for DIP Holes	20 mil (8 mil Hole Dia., H/1 OZ Base Copper), 24 mil (8 mil Hole Dia., 2 OZ Base Copper)	22 mil (8 mil Hole Dia., H/1 OZ Base Copper), 26 mil (8 mil Hole Dia., 2 OZ Base Copper)
58			Immersion Gold, Immersion Silver, Immersion Tin, OSP≥7 mil	Immersion Gold, Immersion Silver, Immersion Tin, OSP≥8 mil
59		Min. Pads for BGA (Finished)	HASL: Isolated Circuit ≥8 mil, Solder Mask Opening on Copper≥14 mil	HASL: Isolated Circuit ≥10 mil, Solder Mask Opening on Copper≥16 mil
60		Min. Width/ Space for Grid	7/7 mil	7/7 mil
61		Min. Space Between Gold Fingers	6 mil	7 mil
62		Min. Space from Peelable Solder Mask to Pad	14 mil	16 mil
63		Min. Space from Silkscreen to Pad	6 mil	8 mil
64		Min. Space from Carbon to Pad	10 mil	12 mil
65	Min. Space from Carbon to Carbon	13 mil	16 mil	

# PCB Assembly



66	Solder Mask	Colors for Solder Mask Inks	Green, Yellow, Red, White, Blue, Black, Matt Black, Matt Green	Green, Yellow, Red, White, Blue, Black, Matt Black, Matt Green
67	Silkscreen	Colors for Silkscreen Inks	White, Yellow, Black, Grey, Orange	White, Yellow, Black, Grey, Orange
68		Min. Width for Solder Mask Bridge	Base Copper $\leq$ 1 OZ, 4 mil (Green), 5mil (Other Colors)	Base Copper $\leq$ 1 OZ, 4 mil (Green), 5mil (Other Colors)
69			Base Copper: 2-4 OZ, 6 mil	Base Copper: 2-4 OZ, 6 mil
70		Min. Single Width for Solder Mask Opening	2 mil (Partial 1.5 mil)	2.5 mil (Partial 2 mil)
71		Min. Width & Height for Silkscreen	Min. Width: 5 mil, Min. Height: 28 mil	Min. Width: 5 mil, Min. Height: 28 mil
72		Type for Silkscreen (Only for White Color)	Serial Number, Bar Code, Two-Dimension Code	Serial Number, Bar Code, Two-Dimension Code
73	Surface Finishing		HASL(Lead Free), Immersion Gold, Immersion Tin, Immersion Silver, OSP	HASL(Lead Free), Immersion Gold, Immersion Tin, Immersion Silver, OSP
74		RoHS Compliant	Hard Gold, Immersion Gold + OSP, Immersion Gold + Plated Gold Fingers, Gold Plated + Plated Gold Fingers, Immersion Silver + Plated Gold Fingers, Immersion Tin + Plated Gold Fingers, ENEPIG, Pattern Plated (Base Copper $\leq$ 2 OZ)	Immersion Gold + Plated Gold Fingers, Gold plated + Plated Gold Fingers, Immersion Silver + Plated Gold Fingers, Immersion Tin + Plated Gold Fingers, ENEPIG , Pattern Plated (Base Copper $\leq$ 2 OZ)
75		Non RoHS Compliant	HASL	HASL
76	Surface Plating and Coating Thickness	HASL	2-40 $\mu$ m (0.4 $\mu$ m Large Tin Area)	2-40 $\mu$ m (0.4 $\mu$ m Large Tin area)
77		Pattern Plated	Nickel: 3 $\mu$ m-5 $\mu$ m, Gold: 0.025 $\mu$ m-0.1 $\mu$ m	Nickel: 3 $\mu$ m-5 $\mu$ m, Gold: 0.025 $\mu$ m-0.1 $\mu$ m
78		Immersion Gold	Nickel: 3 $\mu$ m-5 $\mu$ m, Gold: 0.05 $\mu$ m-0.1 $\mu$ m	Nickel: 3 $\mu$ m-5 $\mu$ m, Gold: 0.05 $\mu$ m-0.1 $\mu$ m
79		Immersion Tin	$\geq$ 0.8 $\mu$ m	$\geq$ 0.8 $\mu$ m
80		Immersion Silver	0.1 $\mu$ m-0.3 $\mu$ m	0.1 $\mu$ m-0.3 $\mu$ m
81		OSP	0.2 $\mu$ m-0.3 $\mu$ m	0.2 $\mu$ m-0.3 $\mu$ m
82		Plated Hard Gold	$\leq$ 3 $\mu$ m (2.0 $\mu$ m or More Need to Review)	$\leq$ 3 $\mu$ m (2.0 $\mu$ m or More Need to Review)
83		Chemical Nickel & Pd Gold	Soldering: Nickel: 3 $\mu$ m-5 $\mu$ m, Pd: 0.05 $\mu$ m-0.1 $\mu$ m, Gold: 0.03 $\mu$ m-0.05 $\mu$ m	Soldering: Nickel:3 $\mu$ m-5 $\mu$ m, Pd: 0.05 $\mu$ m-0.1 $\mu$ m, Gold:0.03 $\mu$ m-0.05 $\mu$ m
84			Bonding: Nickel: 3 $\mu$ m-5 $\mu$ m, Pd: 0.1 $\mu$ m-0.15 $\mu$ m, Gold: 0.07 $\mu$ m-0.15 $\mu$ m	Bonding: Nickel:3 $\mu$ m-5 $\mu$ m, Pd: 0.1 $\mu$ m-0.15 $\mu$ m, Gold: 0.07 $\mu$ m-0.15 $\mu$ m
85		Solder Mask	15 $\mu$ m-25 $\mu$ m ( Solder Mask on Copper), 8 $\mu$ m-12 $\mu$ m (Solder Mask on Via and the Edge of Circuit) (Once)	15 $\mu$ m-25 $\mu$ m ( Solder Mask on Copper), 8 $\mu$ m-12 $\mu$ m (Solder Mask on Via and the Edge of Circuit) (Once)
86	Key Carbonized	0.1 $\mu$ m-0.35 $\mu$ m	0.1 $\mu$ m-0.35 $\mu$ m	
87	Peelable Mask	0.2 $\mu$ m-0.5 $\mu$ m	0.2 $\mu$ m-0.5 $\mu$ m	

88	Tolerance	PTH	+ / - 0.076 $\mu$ m	+ / - 0.076 $\mu$ m
89		NPTH	+ / - 0.05 $\mu$ m	+ / - 0.05 $\mu$ m
90		Press-Fit	+ / - 0.05 $\mu$ m	+ / - 0.05 $\mu$ m
91		Precision of Hole Location	+ / - 0.076 $\mu$ m	+ / - 0.076 $\mu$ m
92		Angle of Counter-Boring	+ / - 10°	+ / - 10°
93		Orifice of Counter-Boring	+ / - 0.1 mm	+ / - 0.1 mm
94		Depth of Counter-Boring	+ / - 0.1 mm	+ / - 0.1 mm
95		Precision of Rear Drill Depth	+ / - 0.1mm	+ / - 0.1mm
96		Irregular Hole (Milling)	+ / - 0.1 mm	+ / - 0.1 mm
97		Blind Slot Precision (NPTH)	+ / - 0.1 mm	+/-0.1mm
98		Trace Width	Trace Width $\leq$ 10 mil: + / - 1 mil, Trace Width > 10 mil: + / - 1.5 mil	Trace Width $\leq$ 10 mil: + / - 1.5 mil, Trace Width > 10 mil: + / - 2 mil
99		Pad	+ / - 1.5 mil (Pad $\leq$ 10 mil), + / - 10% (Pad > 10 mil)	+ / - 1.5 mil (Pad $\leq$ 10 mil), + / - 10% (Pad > 10 mil)
100		Alignment Accuracy Between Inner Layers	$\leq$ 5 mil	$\leq$ 5 mil
101		Board Thickness Tolerance	Thickness $\leq$ 1.0 mm: + / -0.1mm, 1.0mm < Thickness < 1.6mm:+ / - 8%	Thickness $\leq$ 1.0 mm: + / -0.1mm, 1.0mm < Thickness < 1.6mm: + / - 8%
102			Thickness $\geq$ 1.6mm: + / - 10%	Thickness $\geq$ 1.6mm: + / - 10%
103		Outline Tolerance	+ / - 0.1mm	+ / - 0.1mm
104		Outline Location Tolerance	+ / - 0.1mm	+ / - 0.1mm
105		V-CUT Angle Tolerance	+ / - 5°	+ / - 5°
106		V-CUT Symmetry Tolerance	+ / - 0.1mm	+ / - 0.1mm
107		V-CUT Balance Tolerance	+ / - 0.1mm	+ / - 0.1mm
108	Chamfer Angle Tolerance for Gold Finger	+ / - 5°	+ / - 5°	
109	Chamfer Angle Balance Tolerance for Gold Finger	+ / - 0.13mm	+ / - 0.13mm	
110	Impedance	Impedance Tolerance	+ / - 5 Ohm (< 50 Ohm), + / - 10% ( $\geq$ 50 Ohm)	+ / - 5 Ohm (< 50 Ohm), + / - 10% ( $\geq$ 50 Ohm)

111	Others	Special Technique	Via on Pad, Plug with Resin, Gold Finger without Leading Wire, Plated Hard Gold without Leading Wire Partial, Metalized Edge, Impedance, Half Hole, Back Board, HDI, Multilayer Blind & Buried Via, Buried Resistance Capacitance Board, Power Supply Heavy Copper Board, Drill from Rear, Rigid-Flex, FPC	Via on Pad, Plug with Resin, Gold Finger without Leading Wire, Plated Hard Gold without Leading Wire Partial, Metalized Edge, Impedance, Half Hole, Back Board, HDI, Multilayer Blind & Buried Via, Buried Resistance Capacitance Board, Power Supply Heavy Copper Board, Drill from Rear, Rigid-Flex, FPC
112		Mechanical Blind & Buried Via	Pressing on Same Side≤3 Times	Pressing on Same Side≤3 Times
113		HDI Board (LDPP)	1+N+1, 1+1+N+1+1, 2+N+2, 3+N+3, 4+N+4, 5+N+5 (N for Buried Via≤0.3mm) Laser Buried Via Can Be Plugged by Resin and Copper.	1+N+1, 1+1+N+1+1, 2+N+2, 3+N+3, 4+N+4, 5+N+5 (N for Buried Via≤0.3mm) Laser Buried Via Can Be Plugged by Resin and Copper.
114		Coefficient of Thermal / Conductivity for Metal Material	1-4 W/mK	1-4 W/mK
115		Minimum Thickness for Inner Layer	0.05mm (Non Blind & Buried Via) ,0.13mm (Blind & Buried Via)	0.075mm (Non Blind & Buried Via), 0.13mm (Blind & Buried Via)
116		Minimum Thickness for Insulating Layer	2 mil (H OZ)	3 mil (H OZ)
116		Warp	Standard: + / - 0.5%, Blind & Buried Via or Asymmetric Pressing: + / -1.0%	Standard: + / - 0.5%, Blind & Buried Via or Asymmetric Pressing: + / -1.0%
117		Minimum Radius for Inner Angle	0.3mm	0.3mm
118		Maximum Voltage	500V	500V
118		Maximum Current	200mA	200mA
119		Solder Mask Hardness	> 6 H	> 6 H
120		Thermal Stress	260 °C, 0 S	260 °C, 0 S
120	Peelable Strength	1.4 N/mm	1.4 N/mm	

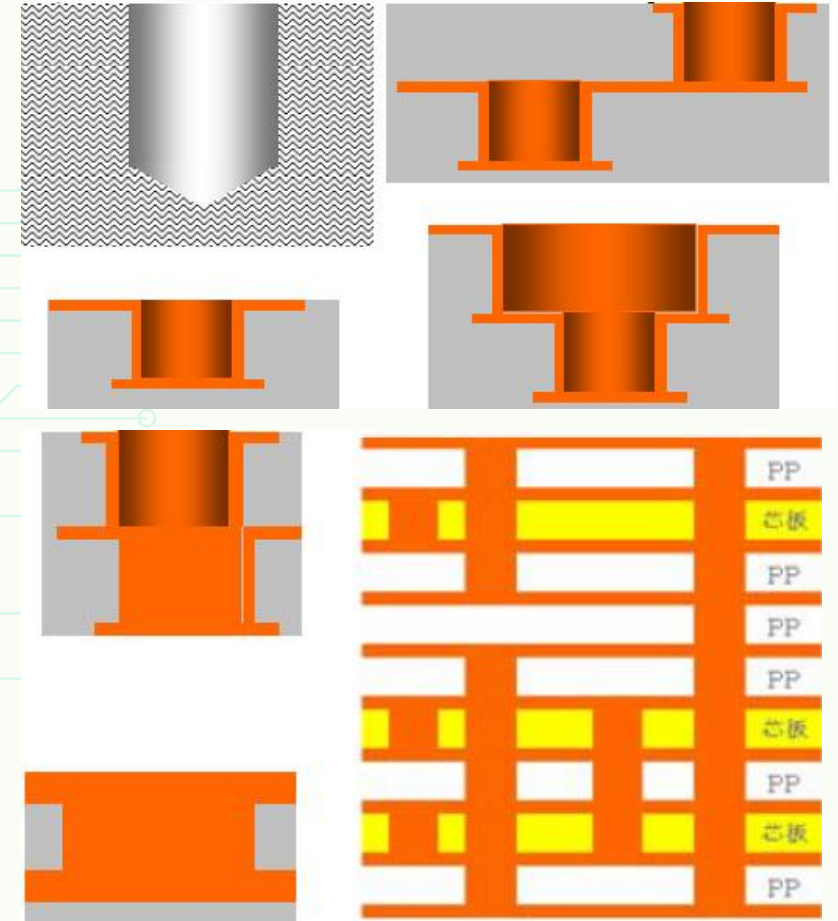
111	Others	Special Technique	Via on Pad, Plug with Resin, Gold Finger without Leading Wire, Plated Hard Gold without Leading Wire Partial, Metalized Edge, Impedance, Half Hole, Back Board, HDI, Multilayer Blind & Buried Via, Buried Resistance Capacitance Board, Power Supply Heavy Copper Board, Drill from Rear, Rigid-Flex, FPC	Via on Pad, Plug with Resin, Gold Finger without Leading Wire, Plated Hard Gold without Leading Wire Partial, Metalized Edge, Impedance, Half Hole, Back Board, HDI, Multilayer Blind & Buried Via, Buried Resistance Capacitance Board, Power Supply Heavy Copper Board, Drill from Rear, Rigid-Flex, FPC
112		Mechanical Blind & Buried Via	Pressing on Same Side≤3 Times	Pressing on Same Side≤3 Times
113		HDI Board (LDPP)	1+N+1, 1+1+N+1+1, 2+N+2, 3+N+3, 4+N+4, 5+N+5 (N for Buried Via≤0.3mm) Laser Buried Via Can Be Plugged by Resin and Copper.	1+N+1, 1+1+N+1+1, 2+N+2, 3+N+3, 4+N+4, 5+N+5 (N for Buried Via≤0.3mm) Laser Buried Via Can Be Plugged by Resin and Copper.
114		Coefficient of Thermal / Conductivity for Metal Material	1-4 W/mK	1-4 W/mK
115		Minimum Thickness for Inner Layer	0.05mm (Non Blind & Buried Via) ,0.13mm (Blind & Buried Via)	0.075mm (Non Blind & Buried Via), 0.13mm (Blind & Buried Via)
116		Minimum Thickness for Insulating Layer	2 mil (H OZ)	3 mil (H OZ)
116		Warp	Standard: + / - 0.5%, Blind & Buried Via or Asymmetric Pressing: + / -1.0%	Standard: + / - 0.5%, Blind & Buried Via or Asymmetric Pressing: + / -1.0%
117		Minimum Radius for Inner Angle	0.3mm	0.3mm
118		Maximum Voltage	500V	500V
118		Maximum Current	200mA	200mA
119		Solder Mask Hardness	> 6 H	> 6 H
120		Thermal Stress	260 °C, 0 S	260 °C, 0 S
		Peelable Strength	1.4 N/mm	1.4 N/mm

## ◆ Volume Capability

- Heavy Copper: 3, 4, 5, 6 OZ (All Layers)
- HDI: Laser/Mechanical Drill
- Backplane
- High Layer Count: 1-50L
- SBU PCB Board
- Hybrid Material (Rogers+FR4)
- Special Technology PCBs [Special Technology PCBs [Silver Filling, Heat Sink (Copper and Aluminum Base), Resin

## ◆ HDI Capability

- Track Width/Space: 3/3mil
- Aspect Ratio: 1:1
- HDI Steps:  $3 + N + 3$
- (Incl. Stack Via Hole And Cross Via Hole)
- Mechanical Drill
- Mechanical Back Drilling



## ◆ Normal Capability Features

- Peelable Mask
- Solder Mask Color: Green, Red, Yellow, Blue, Black, White, Matte Finishing; Raw Material Brand: Taiyo PSR4000
- Silkscreen Color: Black, Yellow, White; Raw Material Brand: Taiyo PSR4000
- Outline and Profile: Routing, Punching, V-Cut, Edge-Plated
- Single Ended Impedance ( $\pm 5\%$ ) and Differential Impedance Control ( $\pm 8\%$ )
- HDI with Laser Drilling, Stack-Via Holes

## ◆ Normal Capability Features

- Layers: 1-50
- PCB Thickness: 15.7mil to 394mil
- Copper Thickness: 1/3OZ to 6OZ, The Copper Foil
- Material: FR4, Rogers 4350B, 4350C, 6003, Alron, Getek, Plyclad 370HR, MEGTRON 6, ISOLA,
- Nelco (N4103-13), Hitachi, Matsushita, Aluminum Base, Copper Base
- Surface Finishing: HAL Lead-Free, ENIG (2u" Based IPC-4552), Immersion Ag, Flash Gold, Gold Finger, OSP, Entek, Carbon Ink,

## ◆ 14 Highlights About Weller PCB Fabrication

14 Highlights About Weller PCB Fabrication				
	Weller		Competitors	
Process/Aspects	Capabilities	Results	Capabilities	Results
Engineering Team	<ul style="list-style-type: none"> <li>1. Over 10 years' industry experience.</li> <li>2. Most worked for top Chinese PCB manufacturers such as TechWise, TTM China, Elec &amp; Eltek China, Suntak etc.</li> </ul>	<p>Advantages:</p> <ul style="list-style-type: none"> <li>1. Professional on reading and processing technological documentations from customers.</li> <li>2. Capable of understanding the cutting-edge articles.</li> </ul> <p>Disadvantages:</p> <ul style="list-style-type: none"> <li>1. Higher personnel cost.</li> </ul>	<ul style="list-style-type: none"> <li>1. Less industry experience from medium or small factories.</li> <li>2. With very basic PCB engineering knowledge and limited English abilities.</li> </ul>	<p>Disadvantages:</p> <ul style="list-style-type: none"> <li>1. Mainly be able to process simple PCB projects.</li> <li>2. Incapable of understanding the cutting-edge articles.</li> </ul> <p>Advantages:</p> <ul style="list-style-type: none"> <li>1. Lower personnel cost.</li> </ul>
Automatic CAM Software	<ul style="list-style-type: none"> <li>1. Application of the authorized and latest edition of CAM Station and automatic CAM software from Frontline Company, such as GENESIS and INPLAN.</li> </ul>	<p>Advantages:</p> <ul style="list-style-type: none"> <li>1. Dealing with the complicated, difficult and HDI multilayer PCBs more efficiently and safely.</li> <li>2. Capable of screening design errors automatically before manufacturing, such as open/short circuits.</li> </ul> <p>Disadvantages:</p> <ul style="list-style-type: none"> <li>1. Higher cost.</li> </ul>	<ul style="list-style-type: none"> <li>1. Usually use piratical GENESIS software, CAM350 software plus subject judgments.</li> </ul>	<p>Disadvantages:</p> <ul style="list-style-type: none"> <li>1. Not good at processing complicated, difficult and HDI multilayer PCBs.</li> <li>2. Hard to examine errors of design before manufacturing.</li> </ul> <p>Advantages:</p> <ul style="list-style-type: none"> <li>1. Lower cost.</li> </ul>

# PCB Fabrication



## 14 Highlights About Weller PCB Fabrication

Process/Aspects	Weller		Competitors	
	Capabilities	Results	Capabilities	Results
PCB (Raw Materials)	<p>1.All raw materials (core, PP) come from UL certified manufacturers, such as ShengYi, ITEQ, NanYa, China Circuits, KingBoard etc. and also have HF base materials like Rogers and M5 etc.</p> <p>2.No uncertified materials will be used in our production.</p>	<p>Advantages:</p> <p>1.High reliability to meet the electrical features and functions of customer's design and also support customer's demands on special materials.</p> <p>Disadvantages:</p> <p>1.Higher cost.</p>	<p>1.Using cheap materials to reduce costs, most are not UL certified.</p> <p>2.Having very limited access to special materials.</p>	<p>Disadvantages:</p> <p>1.High risks of quality issues, such as electric leakage and bad signal etc.</p> <p>Advantages:</p> <p>1.Lower cost and faster availability.</p>
PCB (Inner/Outer Layer Process)	<p>1.100K class clean workshop to ensure no open/short circuits caused by dusts.</p> <p>2.Application of AOI through the whole process.</p>	<p>Advantages:</p> <p>1.High quality and high yield rate.</p> <p>Disadvantages:</p> <p>1.Higher cost.</p>	<p>1.Mainly with 300K class clean workshop or without clean room.</p> <p>2.Inspection open/short circuits manually.</p>	<p>Disadvantages:</p> <p>1.Lower efficiency and yield rate, higher risks, unstable quality.</p> <p>Advantages:</p> <p>1.Low cost.</p>
PCB (Laminate Process)	<p>1.Equipped with 9 multiple temperature zones vacuum laminating machines.</p>	<p>Advantages:</p> <p>1.High quality and high yield rate.</p> <p>Disadvantages:</p> <p>1.Higher cost.</p>	<p>1.Ordinary laminating machine or subcontract the process.</p>	<p>Disadvantages:</p> <p>1.Lower quality control of multilayer PCBs, higher risks of delaminating during SMT process.</p> <p>Advantages:</p> <p>1.Lower cost.</p>
PCB (Drilling)	<p>1.All Japanese Hitachi drilling machines.</p> <p>2.Using new drilling bits.</p>	<p>Advantages:</p> <p>1.High precision of holes alignment.</p> <p>2.Lower roughness of hole surface.</p> <p>Disadvantages:</p> <p>1.Higher cost.</p>	<p>1.Mainly use domestic brand drilling machines.</p> <p>2.Using old drilling bits repeatedly.</p>	<p>Disadvantages:</p> <p>1.May cause no plating or insufficient plating on hole wall, high risks of open circuits.</p> <p>Advantages:</p> <p>1.Lower cost.</p>
Copper Plating Hole	<p>1Automatic VCP (Vertical Copper Plating) production line.</p>	<p>Advantages:</p> <p>1.More even plating of the holes, no exposed areas.</p> <p>2.Ensure min. 25µm plating thickness.</p> <p>Disadvantages:</p> <p>1.High cost.</p>	<p>1.Outdated manual or semi-automatic plating production line.</p>	<p>Disadvantages:</p> <p>1.Uneven plating or insufficient copper thickness (usually 15-18µm), high risks of open circuits during SMT reflow soldering process.</p> <p>Advantages:</p> <p>1.Lower cost.</p>

## ◆ 14 Highlights About Weller PCB Fabrication

14 Highlights About Weller PCB Fabrication					
		Weller		Competitors	
Process/Aspects	Capabilities	Results	Capabilities	Results	
VIA Hole (PLUGGING )	1.Ensure 70% depth of the vias being covered or plugged by solder mask or resin.	Advantages: 1.No risks of cracked holes during SMT process. Disadvantages: 1.Higher cost.	1.Mainly can only cover the vias with solder mask.	Disadvantages: 1.High risks of cracking vias during SMT process. Advantages: 1.Lower cost and faster handling.	
PCB (Solder Mask )	1.Imported materials, such as Japanese TaiYo.	Advantages: 1.Better photonasty and higher quality. Disadvantages: 1.Higher cost.	1.Purchase from local factories.	Disadvantages: 1.Bad photonasty and rough surface. Advantages: 1.Lower cost.	
	2.Capable of applying special thickness: Knee of the track $\geq 5\mu\text{m}$ Surface 10-30 $\mu\text{m}$	Advantages: 1.Better electrical insulation. 2.Better resilience to chemistry or mechanical forces and lower risks of cracking or peeling off.	1.Hard to meet customized thickness, can only meet: Knee of the track $< 5\mu\text{m}$ Surface $< 10\mu\text{m}$	Disadvantages: 1.Bad electrical insulation, high risks of electric leakage. Advantages: 1.Lower cost.	

# PCB Fabrication



## 14 Highlights About Weller PCB Fabrication

Process/Aspects	Weller		Competitors	
	Capabilities	Results	Capabilities	Results
PCB (Surface Finish)	1.The whole craftsmanship process finished in house, the thickness of the immersion gold follows the IPC4552 standard of 2μ" (Min.).	Advantages: 1.Higher quality and strict in house QC to ensure high quality SMT. Disadvantages: 1.Higher cost.	1.Subcontract or immersion gold < 1μ".	Disadvantages: 1.Bad quality, may cause SMT quality issues. Advantages: 1.Lower cost.
PCB (Silkscreen)	1.Imported materials, such as Japanese TaiYo.	Advantages: 1.Better photonasty and fadeless. Disadvantages: 1.Higher cost.	1.Ordinary domestic brand printing ink.	Disadvantages: 1.Bad stability and durability, may fade off. Advantages: 1.Lower cost.
	2.High precision and high definition of printing.	Advantages: 1.Higher definition of printing.	1.Ordinary manual or semi-automatic printing.	Disadvantages: 1.Low definition or even blurry legends. Advantages: 1.Lower cost.
PCB (Profile)	1.Imported high precision profile routing machine. 2.X-RAY quadratic element measurement.	Advantages: 1.Capable of processing profiles with high precision and complexity. Disadvantages: 1.High cost.	1.Ordinary domestic brand profile routing machine. 2.No quadratic element measurement equipment.	Disadvantages: 1.Hard to ensure the precision of the profile. 2.Unable to measure PCB with special profile. Advantages: 1.Lower cost.
PCB (E-Test)	1.100% E-Test. 2.Circuits repairing is not allowed.	Advantages: 1.High reliability, ensure 100% yield rate. Disadvantages: 1.Higher cost.	1.In order to save cost, repair open/short circuits after production.	Disadvantages: 1.Potential risks of bad function.
PCB (Final Inspection)	1.Doing final inspections by strictly following the specs from customer original files.	Advantages: 1.Ensure no any visual or functional issues and also ensure every spec. follows the original design of customer. Disadvantages: 1.Higher cost.	1.Mainly only apply simple visual inspection.	Disadvantages: 1.May ignore or miss important specs of the original design.

## ◆ Crucial Production Equipment 1

Station



Impedance Tester



Pre-cleaning Dry Film



X-Ray Drilling Machine



Universal Electrical Test



S.E.S. Line Schmid



PCB Router Machines



PCB Roller Coating



## ◆ Crucial Production Equipment 2

Auto PTH Line



PCB Roller Coating



Precleaning Solder Mask



Post Etch Punch



PCB Copper Plating



PCB Routing Machine



Exposure Workroom



Immersion Gold Process



## ◆ Crucial Production Equipment 3

Flying Probe Test



Laminate Pressing



PCB Drilling Process



Oxide Replacement



Laminator Dry Film



Exposure ILS Bacher



Dry Film Exposure



PCB Mylar Remover



## ◆ Crucial Production Equipment 4

Developer Solder



Deburring Machine



Developer Dry Film



D.E.S.Line Schmid



CO2 Laser Drilling



Auto V-cut Machine



Automatic Filling



A.O.I. Machines



## ◆ Production Key Equipment For HDI PCB Board 1



**Class 1000 Clean Room with Auto Alignment Exposure Units and LD1**

## ◆ Production Key Equipment For HDI PCB Board 2



Automatic Lay Up and High Capacity Lamination Press with Auto-Loading

## ◆ Production Key Equipment For HDI PCB Board 3



New Generation Of CO<sup>2</sup> Laser Drilling Machines

## ◆ Production Key Equipment For HDI PCB Board 4



Developer Solder



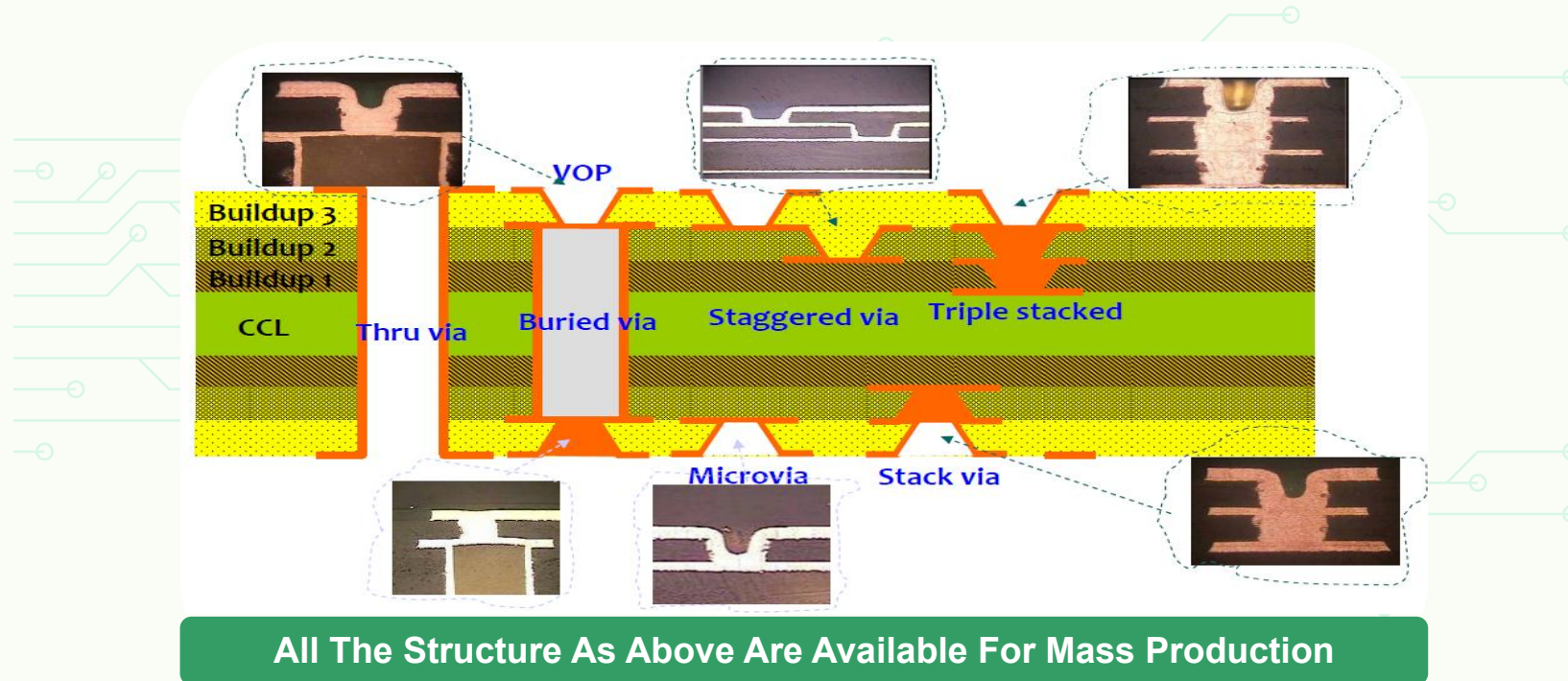
Deburring Machine



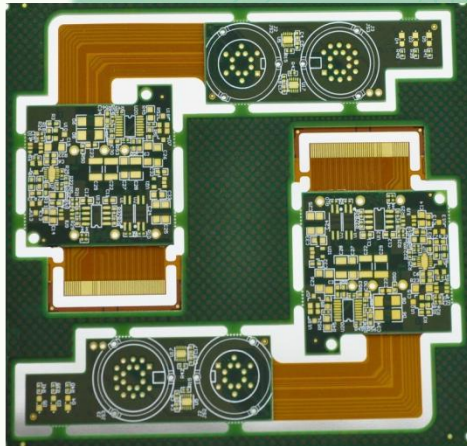
Developer Dry Film

**Good HDI Cu Plating Solution With Horizontal Copper Plating Line Plus Vertical Continuous Plating Line**

## ◆ Build-Ups For HDI PCB Board



## ◆ Products Index (2)

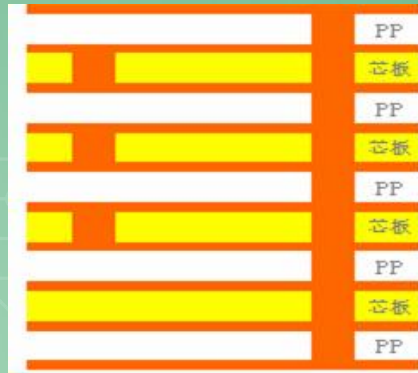
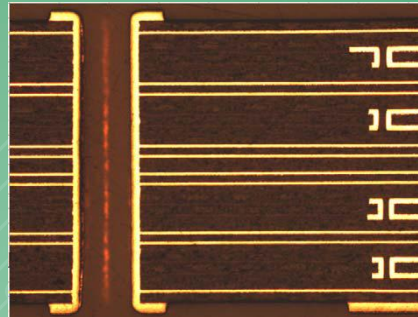
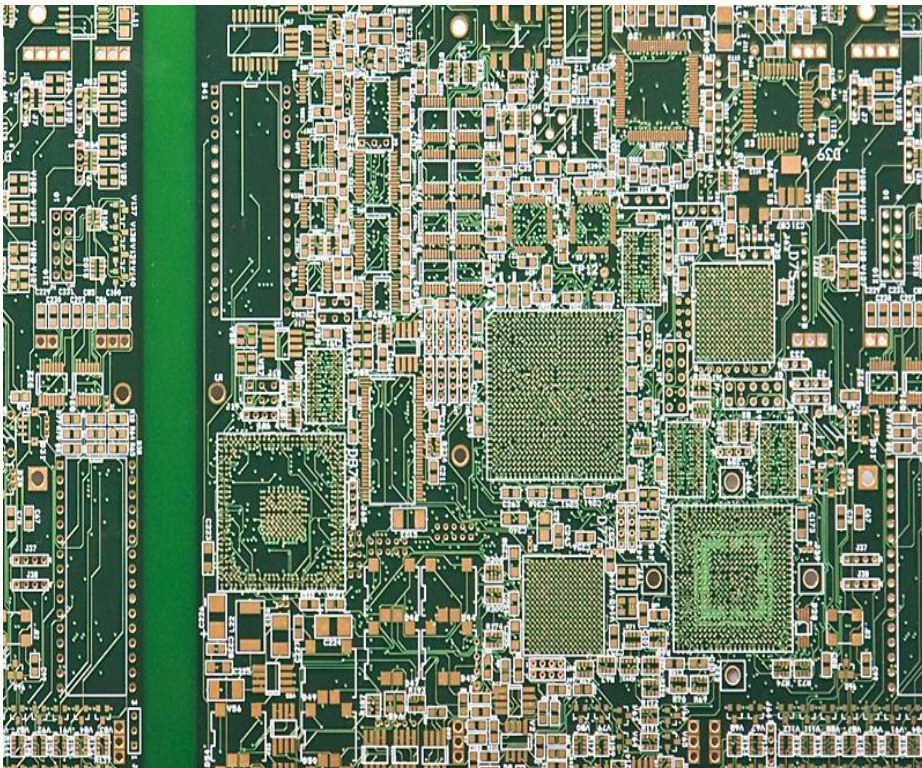


6L (Rigid) + 2L (Flex)  
ENIG: IPC-4552  
Thickness: 1.6mm  
Material: ISOLA IS410  
Hole Copper: 25um



**Embedded Capacitance PCB**

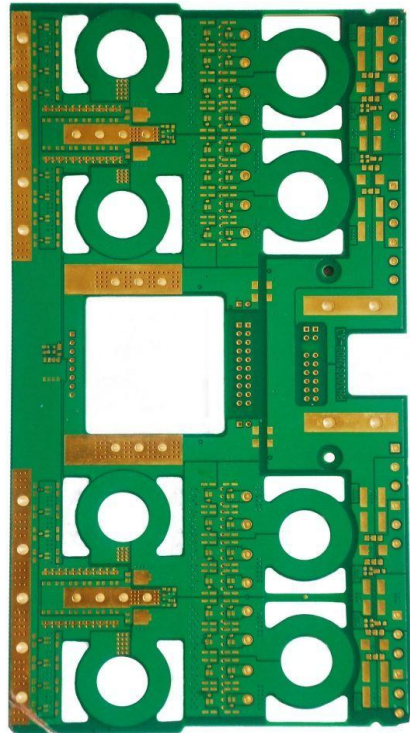
## ◆ Products Index (3)



24L  
ENIG  
Thickness: 3.4mm  
Core Thickness: 2mil  
Hole Size: 12mil  
Hole Copper: 25um Buried Via  
Copper: 25um  
Buried Vias by Machine: L3-L4;  
L7-L8;L13-L14;L17-L18 Line

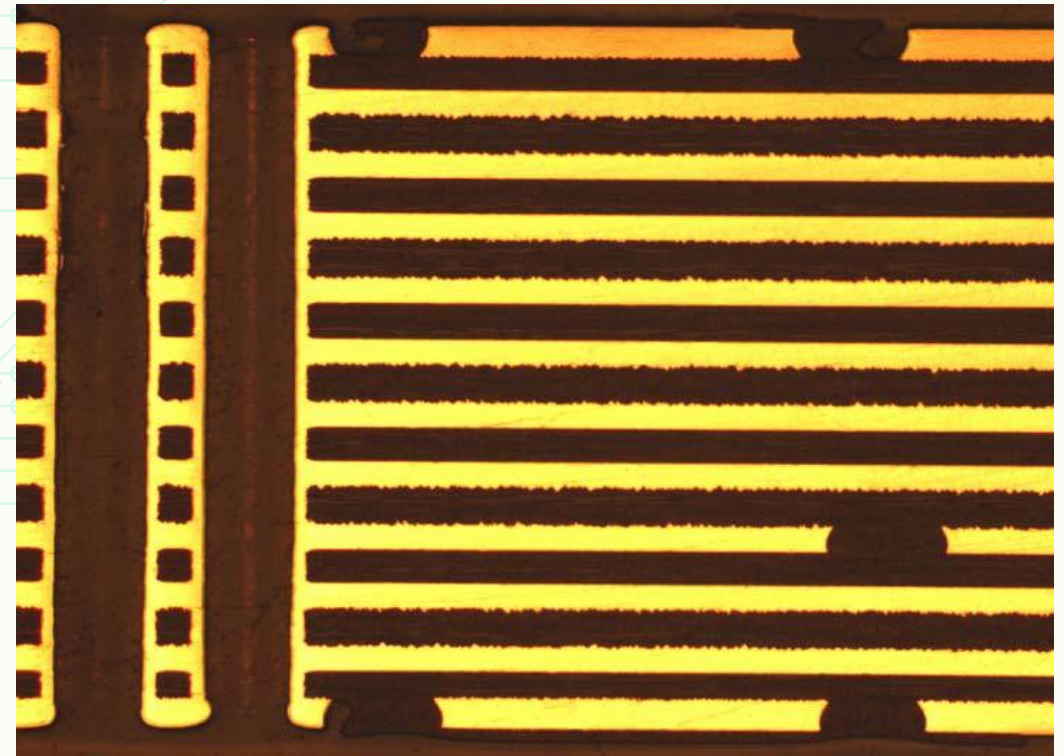
**L18 Line Card With Buried Holes**

## ◆ Products Index (4)



12L  
ENIG: IPC-4552  
Thickness: 3.2mm  
Material: IT180  
Hole Copper: 30-80um  
Circuit Copper:  
3OZ (All Layers)  
4OZ (All Layers)  
5OZ (All Layers)  
6OZ (All Layers)

**Heavy Copper PCB Board**

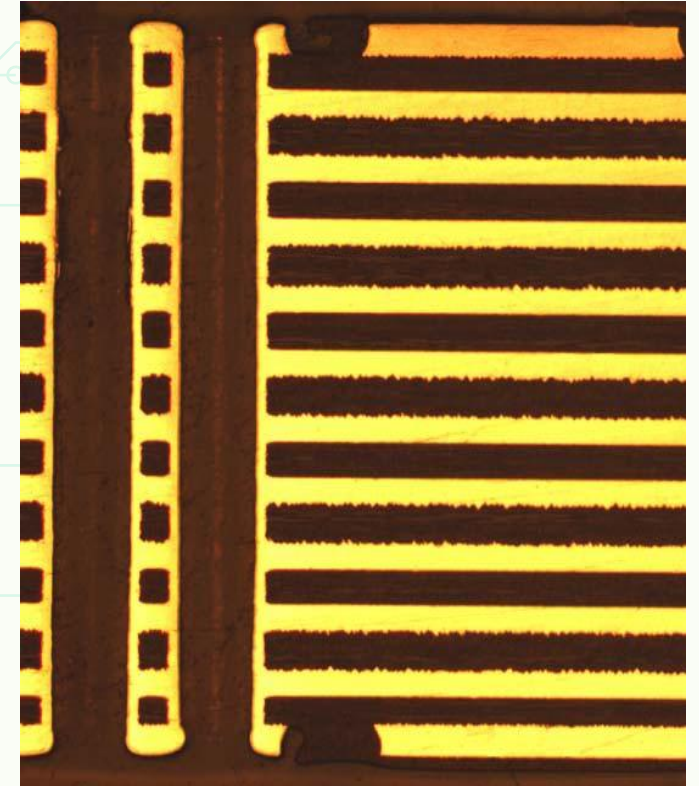


## ◆ Products Index (5)

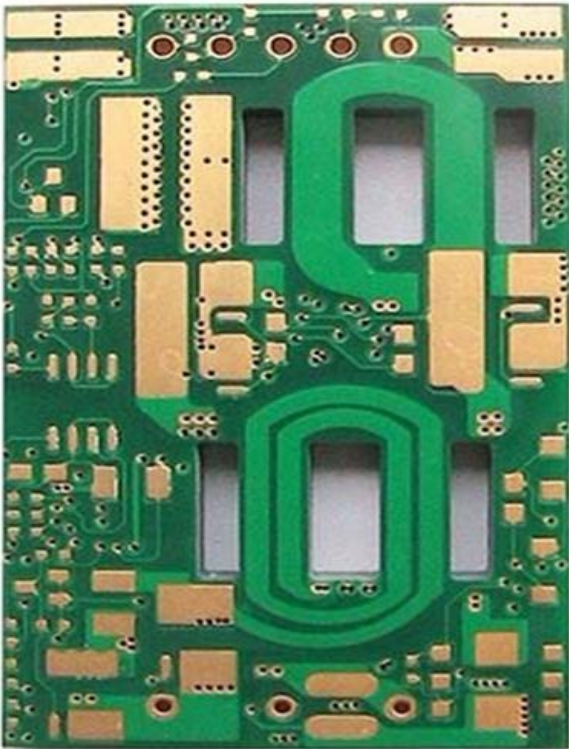


12L  
ENIG: IPC-4552  
Thickness: 1.80mm  
Material: IT180A  
Hole Copper: 1.18-3.15um  
Circuit Copper:  
3OZ (All Layers)  
4OZ (All Layers)  
5OZ (All Layers)  
6OZ (All Layers)

**Heavy Copper PCB Board**

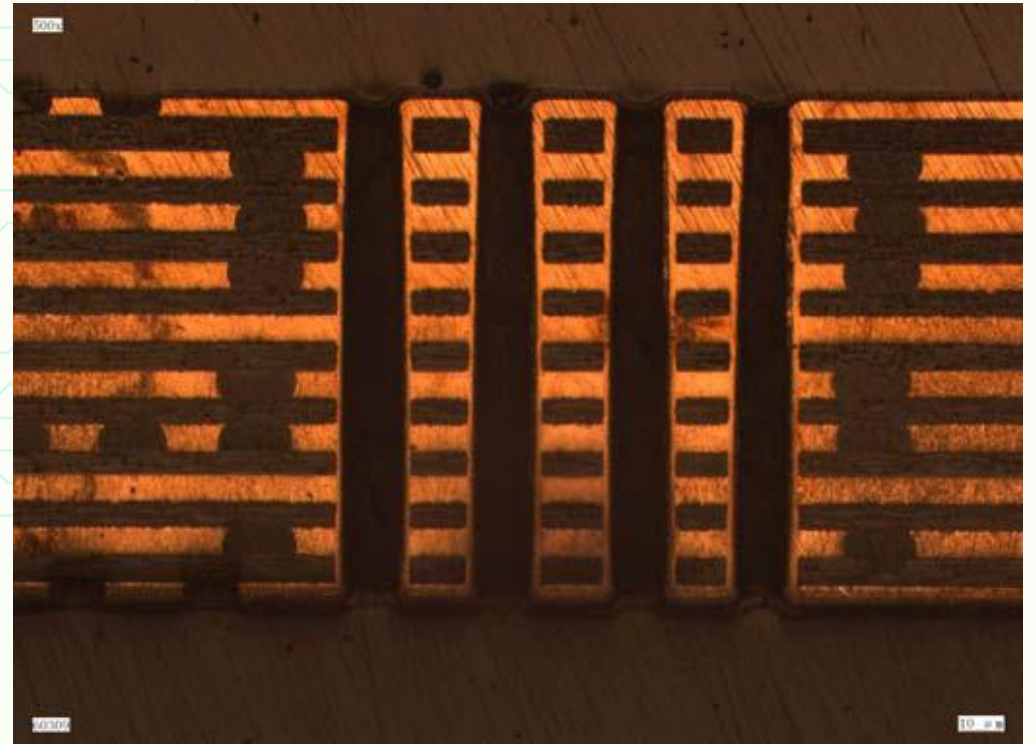


## ◆ Products Index (6)

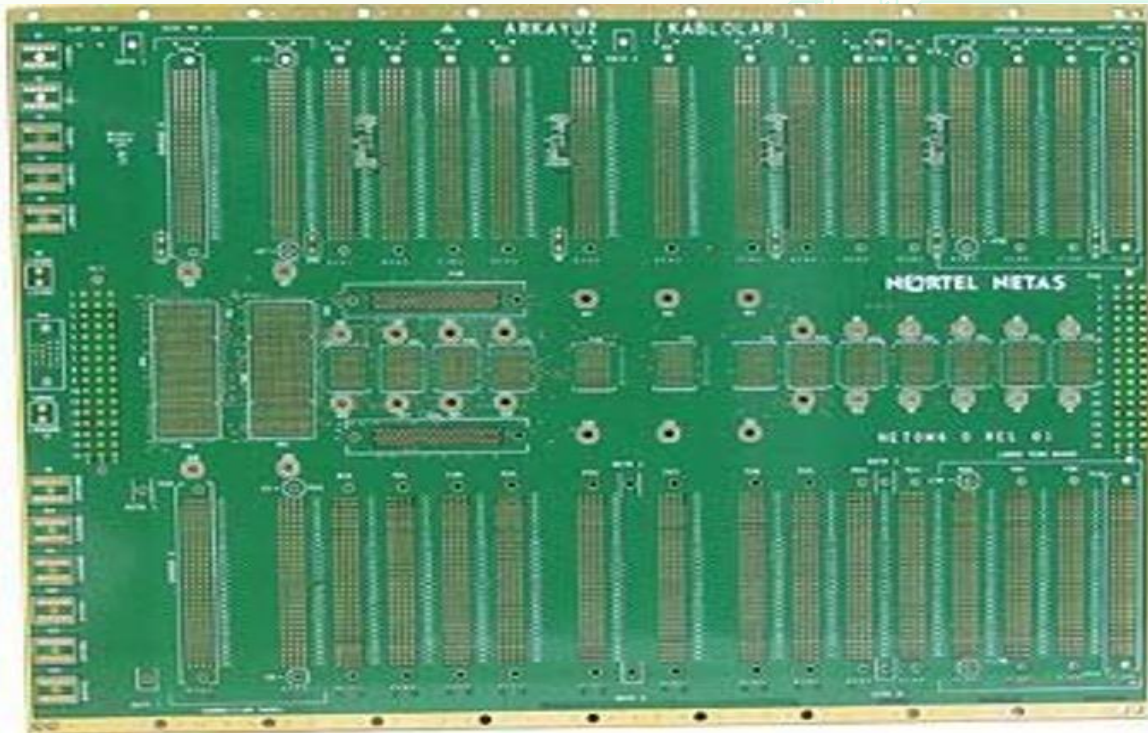


10L  
ENIG-IPC4552  
Thickness: 98.8mil  
Material: IT180  
Copper :  
4OZ (Inner)  
2.6OZ (Outer)

Heavy Copper PCB Board



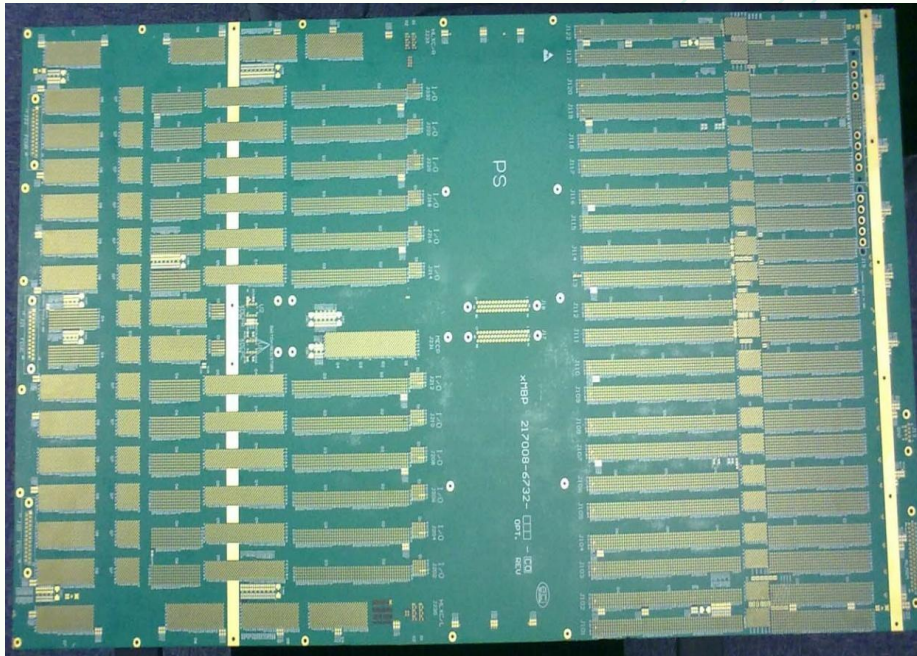
## ◆ Products Index (7)



26L  
ENIG-IPC4552  
Thickness: 4.8mm  
Material: High Tg 170  
Hole Copper: 25um  
Characteristic/Difference Impedance  
Control: +/-10%  
Customer: Nortel Networks

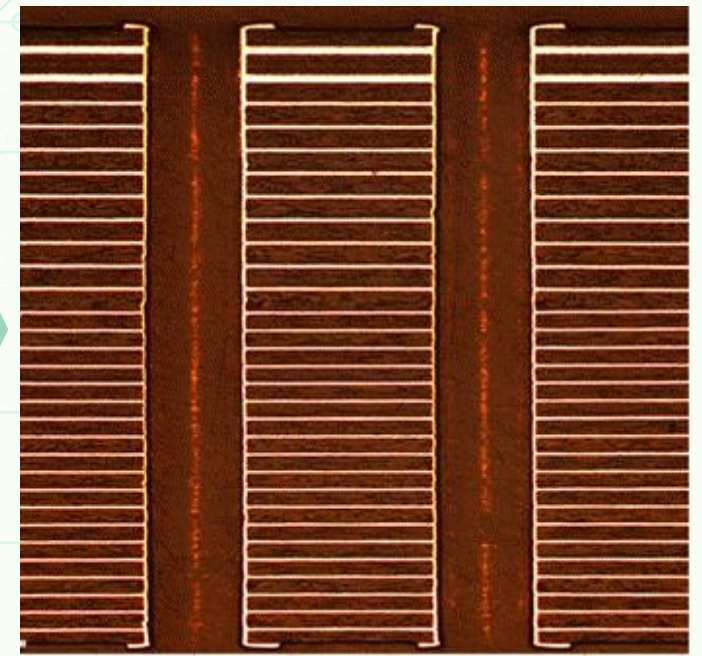
**Backplane PCB Board**

## ◆ Products Index (8)

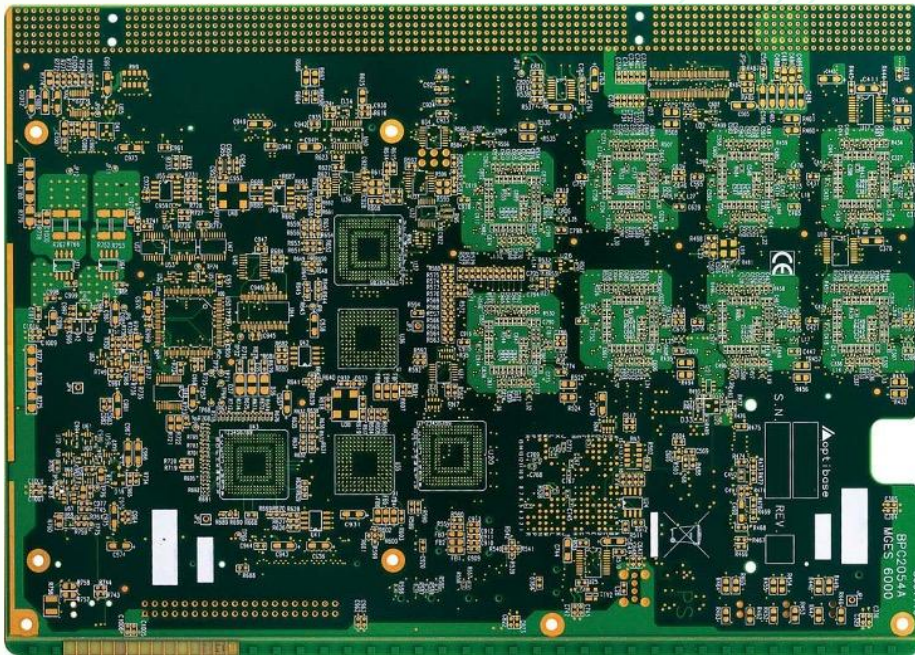


32L  
ENIG  
Thickness: 5.8mm  
Material: Tg170  
Size: 470\*875(mm\*mm)  
Hole Copper: 25um

**Backplane PCB Board**

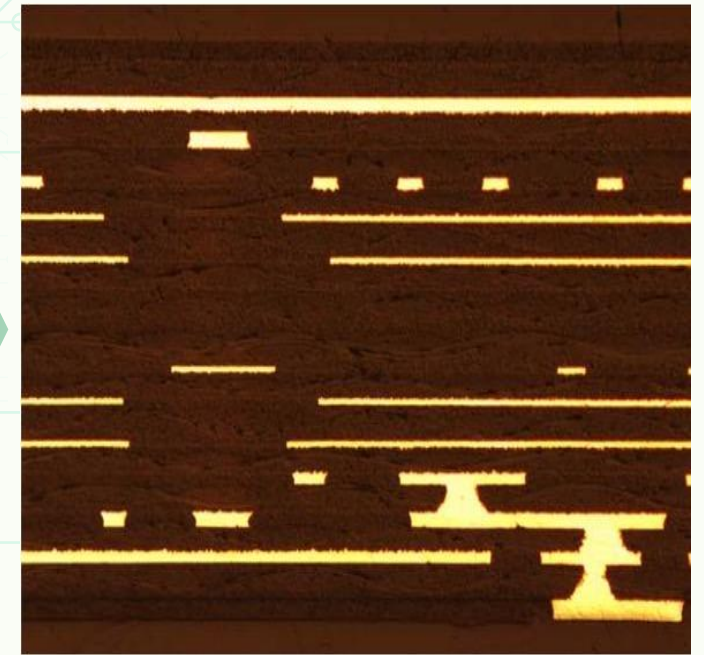


## ◆ Products Index (9)

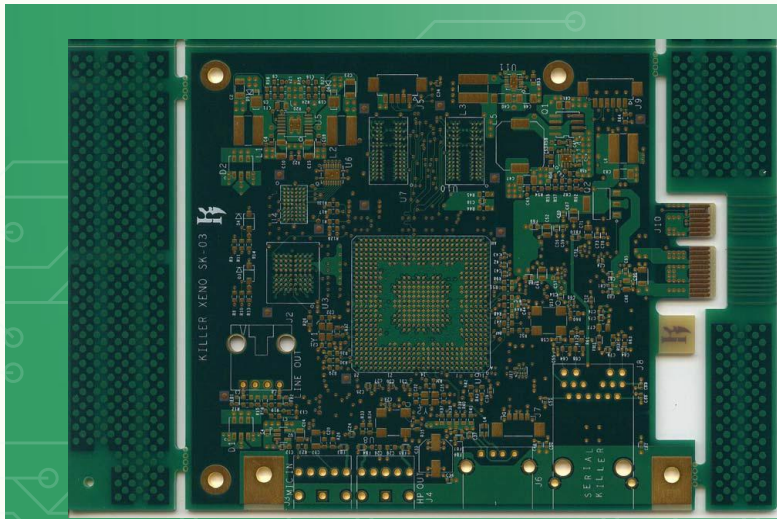


14L  
ENIG  
Thickness: 126.0mil  
Material: IT180A  
Hole Copper: 25um

HDI PCB Board

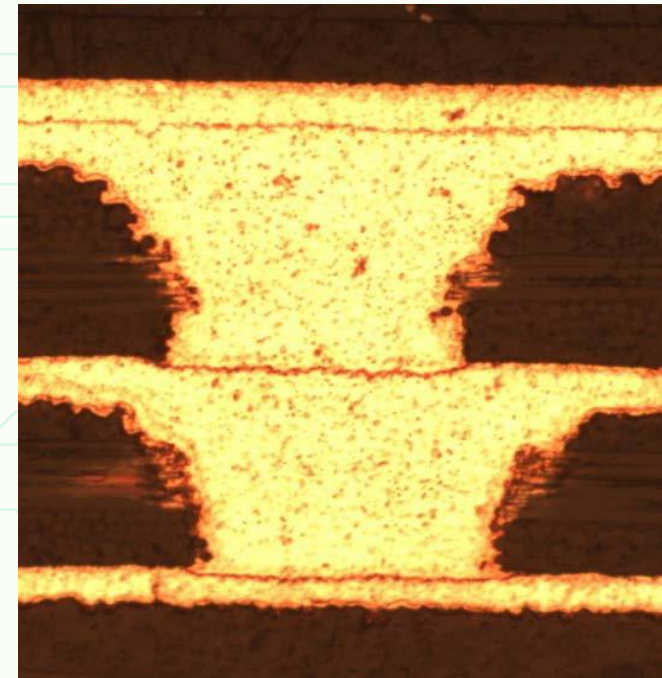


## ◆ Products Index (10)

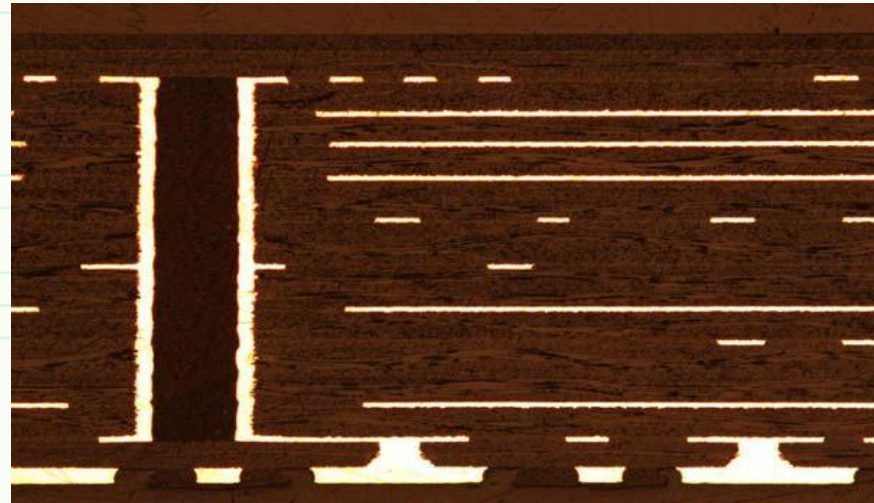
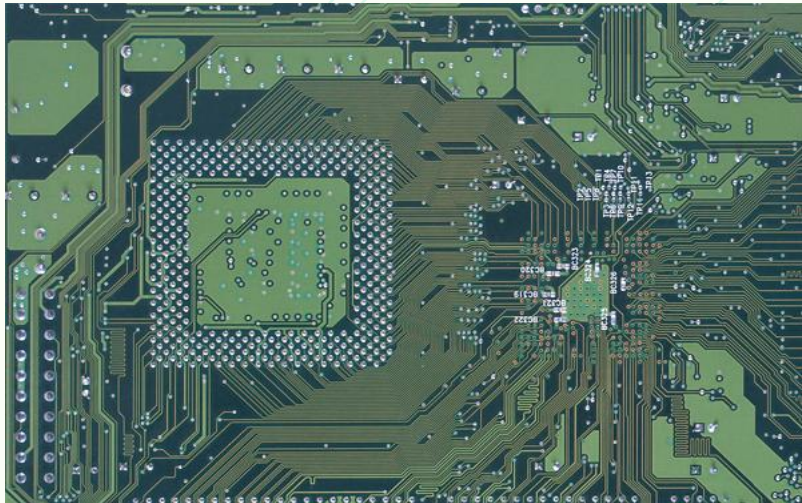


Laser Drill  
Copper Plating

HDI PCB Board 2+8+2



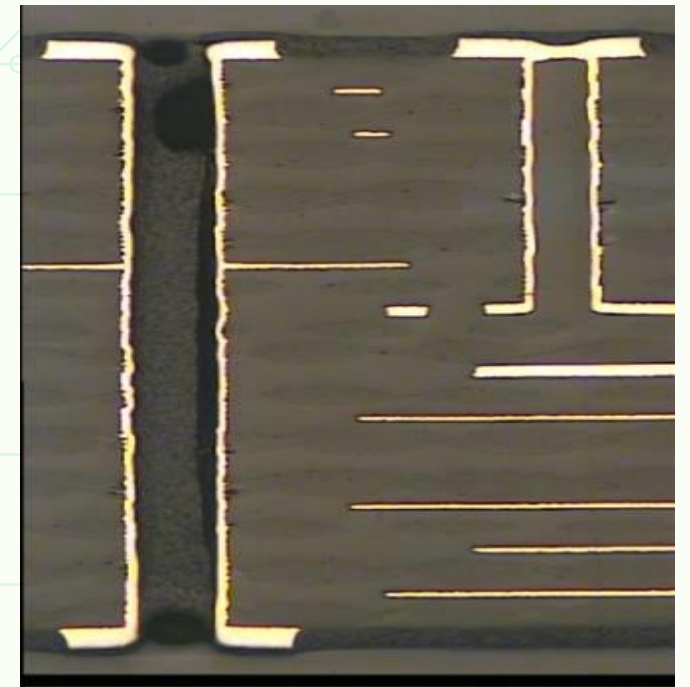
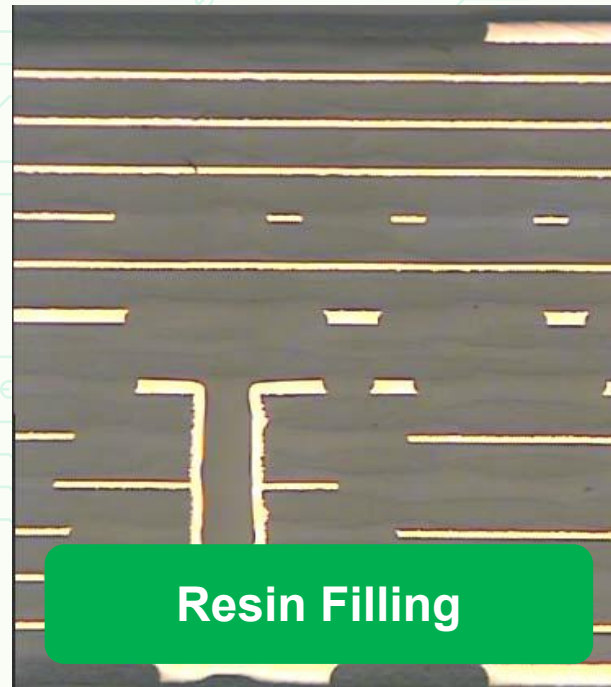
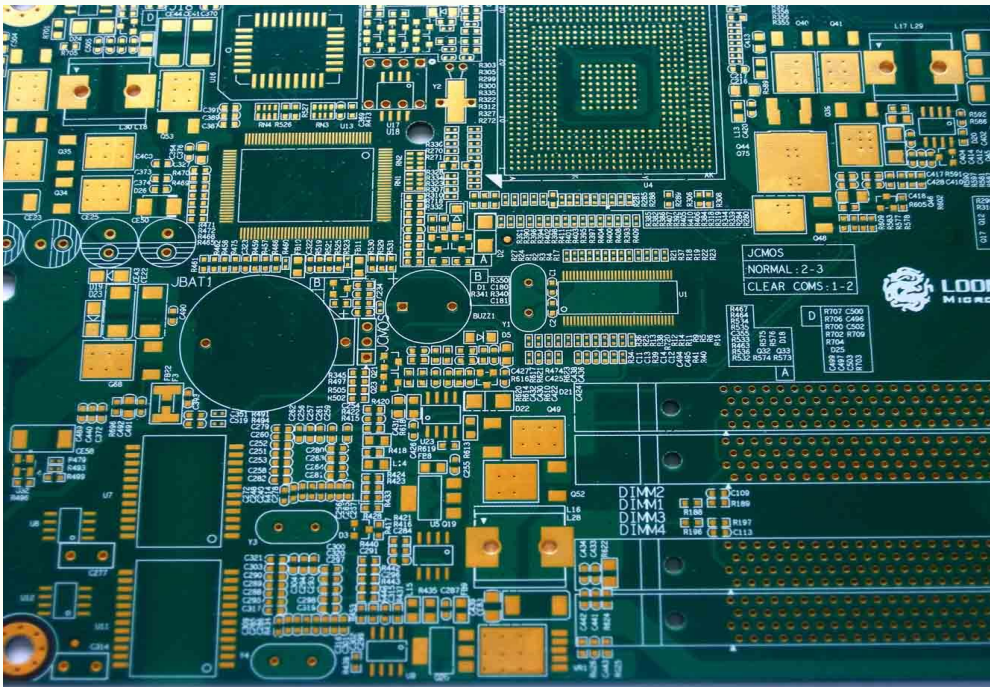
## ◆ Products Index (11)



12L  
ENIG: IPC-4552  
Thickness: 63.0mil  
Material: S1000  
Hole Copper: 25um

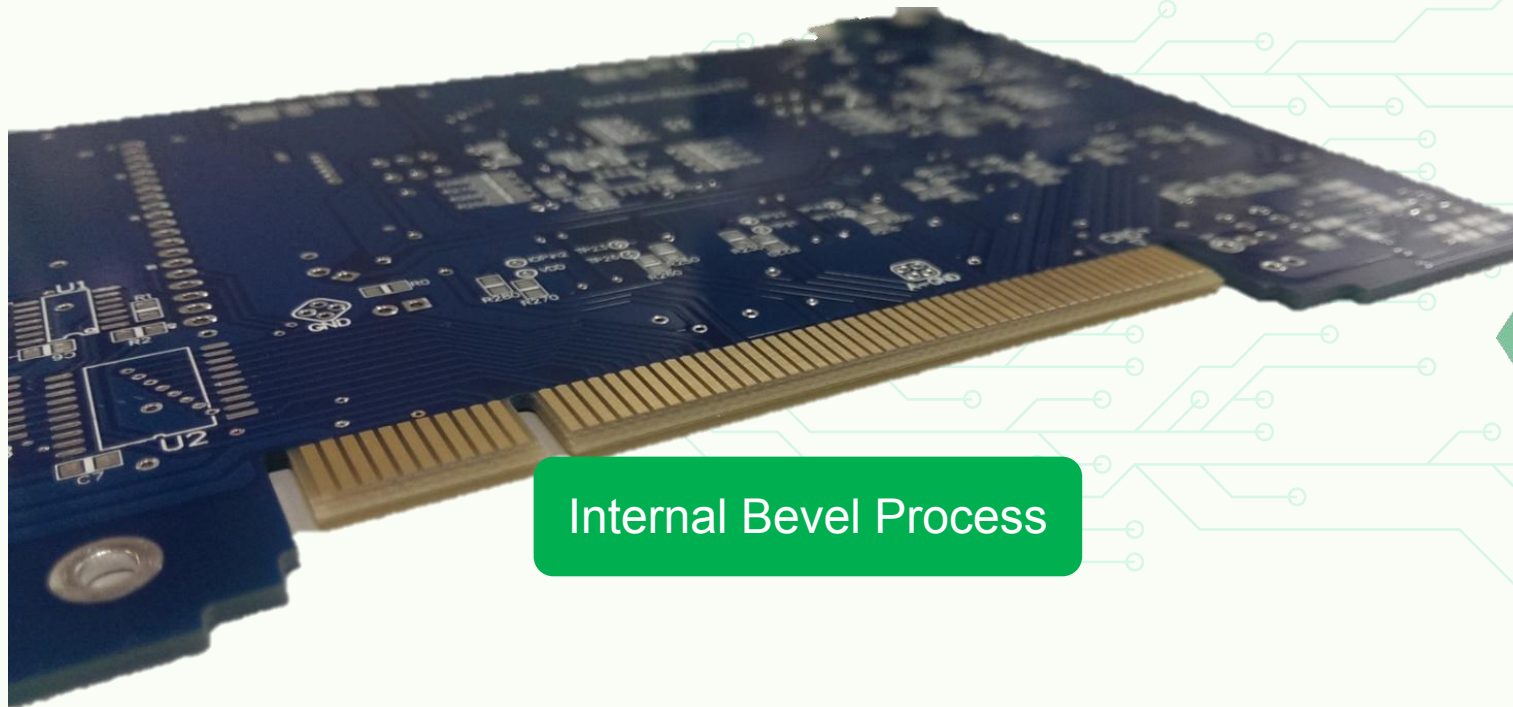
**HDI PCB Board**

## ◆ Products Index (12)



Mechanical Blind Holes

## ◆ Products Index (13)

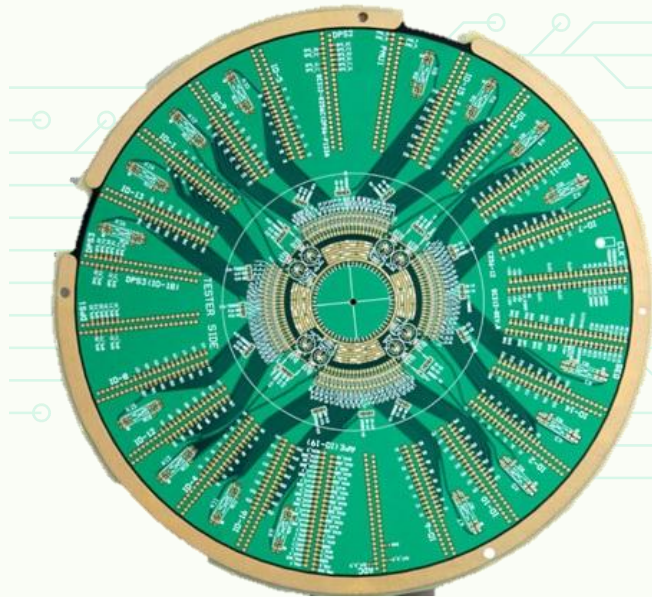


Internal Bevel Process

6L  
Thickness: 1.6mm  
ENIG: 2u" + Hard Gold on  
Gold Finger 30u"  
Special Process:  
Gold Finger Beveling the  
Board in Panel

Gold Finger PCB

## ◆ Products Index (14)



IC Test PCB Board

Layers: 12  
thickness: 5mm  
Surface: Immersion Gold  
Min. Hole: 0.5mm  
Max. Aspect Ratio: 10:1

## ◆ Products Index (15)

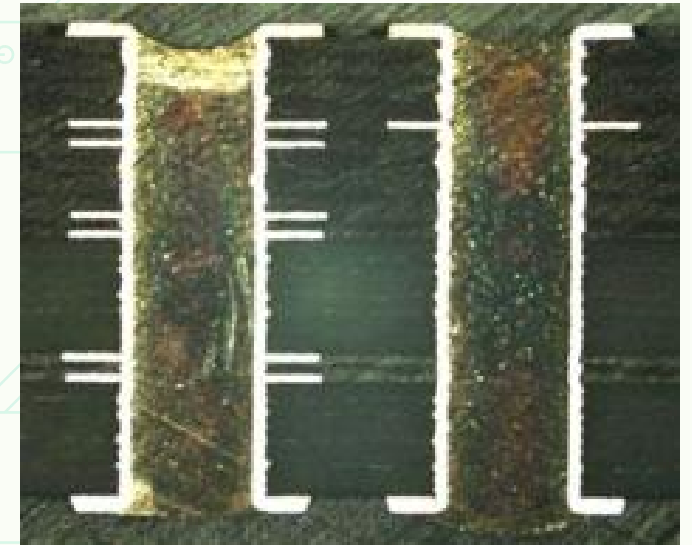


Rogers/FR4 Hybrid PCB Board

FR4	20mil 1/10Z
————— 2116 X 1	
FR4	16mil 1/10Z
————— 2116 X 1	
RO4350	30mil 1/10Z
————— 2313(FR408 X 1	
RO4350	30mil 1/10Z

Total Thickness : 118.1 mil

Layer Stackup



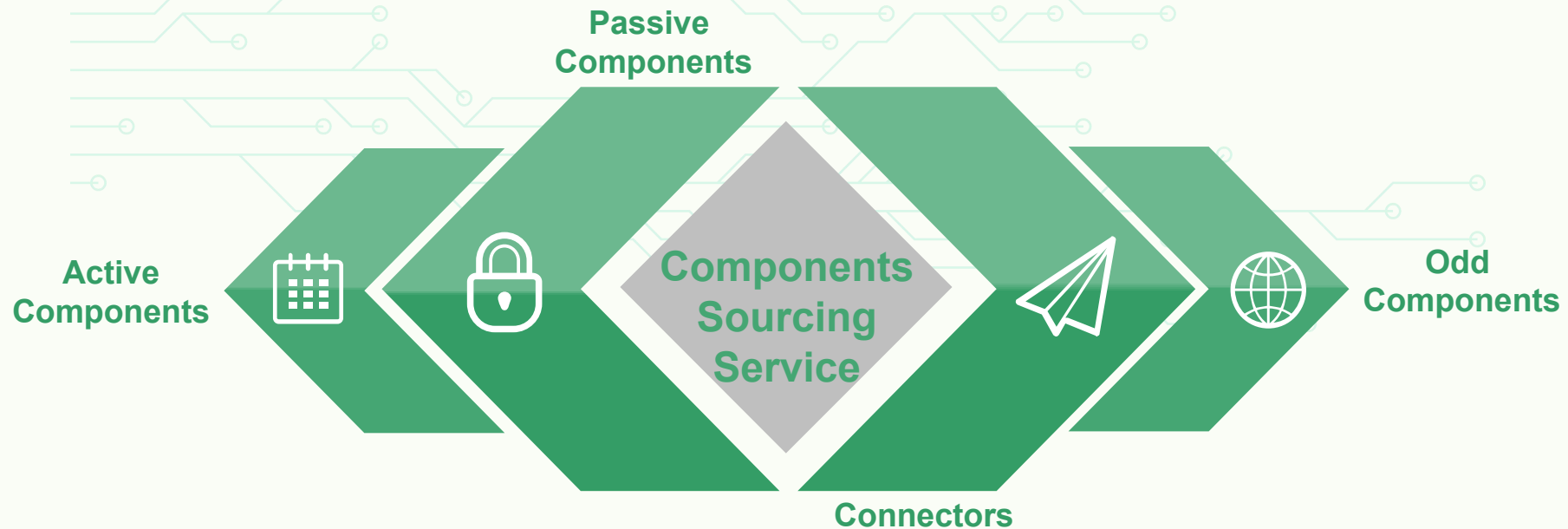
Micro-Section



# Components Sourcing

## ◆ Components Sourcing Service:

Customized supply chain programs that can streamline your manufacturing, and can provide 30% - 50% cost savings.≈



## ◆ Strategic Components Suppliers

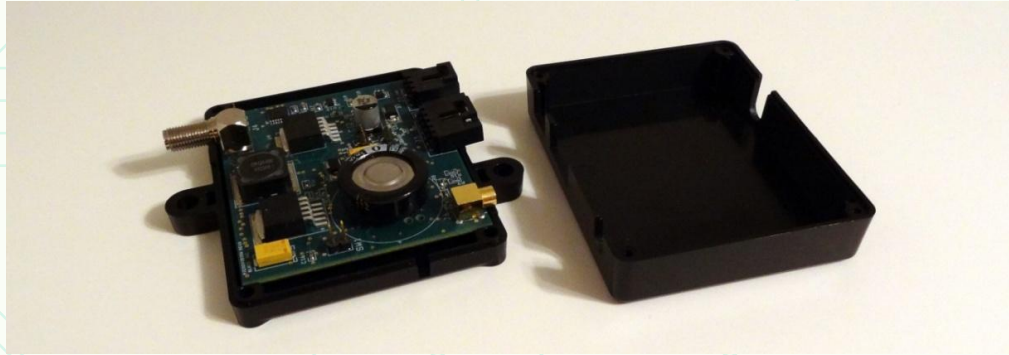


Exactly More Than Above

Mold Injection & Box Build

Service

## ◆ Mold Injection & Box Build Service



# Mold Injection & Box Build

WELLERPCB



## ◆ Mold Injection Production Tour



MOLD  
WORKSHOP



Adam Dark  
STRATEGIES



Adam Dark  
STRATEGIES



Adam Dark  
STRATEGIES



Adam Dark  
STRATEGIES

## ◆ How To Contact US

Weller Technology Co., Limited

Tel: 86 755 2828 2776

Fax: 86 755 2828 2076

E-mail: [service@wellerpcb.com](mailto:service@wellerpcb.com)

Web: [www.wellerpcb.com](http://www.wellerpcb.com)

Add: Building E, Jian Shi Industrial Park, Huang Pu Road 52, Xin Qiao Street, Bao'an District,  
Shenzhen, China 518125

# WELLERPCB

# THANK YOU