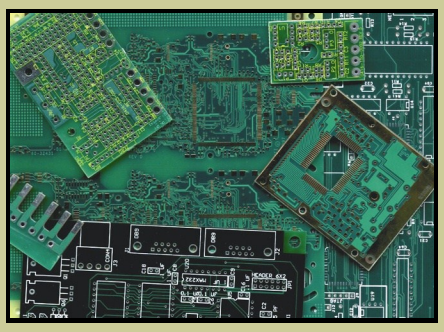
Optima
Technology Associates, Inc.

Since 1995, Global Resources, Local Support



When you need quality Printed Circuit Boards …

To Spec

On Time

On Budget

Count on Optima Technology Associates to meet your requirements

Optima Technology Associates, Inc.

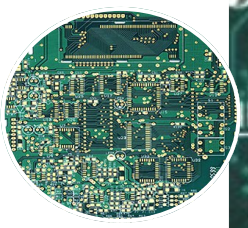
Optima Technology Associates, Inc. was founded in 1995 to provide complete electronic contract manufacturing services from design through assembly and fulfillment. Included in our core operations is one of the industry's best, most reliable, and customer friendly sources of rigid printed circuit boards.

Consider the convenience of having all of your electronic needs handled by a single source with a strong commitment to quality and customer satisfaction. Whether your need is prototype, medium or high volume production, Optima is driven to always deliver high quality goods and services, on time. ***Our goal—better value from your electronic supplier to strengthen your strategic position.***

Located in Lewisberry, PA and New Delhi, India, we specialize in providing local support coupled with cost-effective pricing via off-shore manufacturing through our ISO Approved facilities.

From concept to production, Optima is your one stop for printed circuit boards.

Capabilities

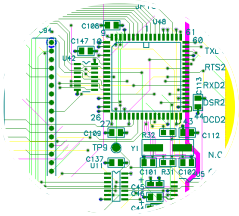


- **Single-sided / double-side (rigid), FR4 & Metal Core**
- **Multi-layer FR4 up to 10 layers (rigid)**
- **Buried vias**
- **Controlled impedance**
- **Materials available: CEM1, FR4, FR5, Teflon, Getek, Microwave/High Frequency (Rogers), Polyimide, etc.**
- **Electroless nickel/immersion gold, immersion silver, immersion tin, HASL, SMOBC Finishes**

To Order Call: 1 717 932 5877, or email: optima@optimatech.net

Processes

- IPC 600 Class 2 (Standard)
- IPC 600 Class 3 (Available, as required)
- IPC 6012 / MIL STDs (Available, as required)
- Material thickess 0.010 to 0.125
- SMOBC, HAL, Tin/Lead Reflow, RoHS Compliance
- LPI, Wet Film, Dry Film soldermasks in a variety of colors
- Various silkscreen colors
- Edge tab gold plating
- Scoring, routing
- 100% bare board testing (including flying probe)



Services

- Design review check
- Photo Plotting / Gerber plot review
- Blanket orders, split deliveries
- Quick turn prototypes to production
- PCB design & layout
- SMT & TH assembly via in-house operations

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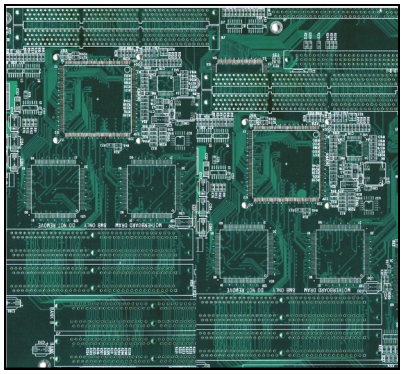
PCB Technology Summary

Build Specification	
IPC Class (I, II, or III)	Class II, III
UL Registration (UL 94V0 or others)	UL796 & Ul 94VO
Layer Count	
# of layers (min/max)	1-10 Layers
Board Sizes	
Maximum dimensions (in.)	16" x 20"
Board Thickness	
Board thickness range (in.)	0.016 -0.125"
Thickness tolerance (%)	7-10%
Core thickness range (in.)	0.006- 0.031"
Warp & Twist	
Maximum board warp (%)	<1.0%
PCB Edge to conductor	
PCB Edge to conductor (in.)	0.008"
Laminate Materials	
External (FR4, FR406, RCC, etc.)	FR4, FR406
Internal (FR4, FR406, RCC, etc.)	FR4, FR406
Material Properties	
Dk (Dielectric Constant #)	4.2 -4.6
Tg (Glass Transition in deg. C)	130-170
Surface Finish Capabilities	
HASL (Y/N)	YES
ENIG (Y/N)	YES
Immersion silver (Y/N)	YES
Other finishes (Types)	Immersion Tin
Finish Thickness	
HASL (in.)	0.003-0.010"
ENIG (in.)	2-3 micro inches
Immersion silver (in.)	6-18 micro inches
Other finishes (Type: in.)	Tin 32-48 micro inches
Lines/Spaces	
External minimum (in./in.)	0.006"
Internal minimum (in./in.)	0.006"
Copper Thickness	
External range (oz)	0.5 - 2 Oz
Internal range (oz)	1 -2 Oz
Internal Power range (oz)	1- 2 Oz
Hole Plating	
Minimum plating (in.)	1 mil
Non-plated hole size tolerance (in.)	+/-0.003"
Plated hole size tolerance (in.)	+/-0.003

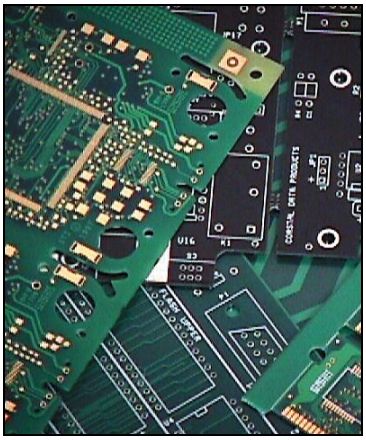
Plating Aspect Ratio	
Standard (Ratio #)	1:04
Extended (Ratio #)	1:06
Soldermask	
Soldermask Type (LPI, Dry film, etc.)	LPI
Minimum dam (in.)	5 mil
Soldermask Registration	
Standard Tolerance (in.)	+/-0.004"
Extended Tolerance (in.)	'+/-0.003"
Soldemask Image	
Image Process (Photo, Laser, etc.)	Photo
Silkscreen	
Text Height (in.)	0.035"
Stroke Width (in.)	0.006"
Colors	White, Black
Location accuracy (in.)	+/-0.010"
VIAs (Smallest finished dia.)	
Drilled (in.)	0.010"
Buried (in.)	0.012"
Via plugging	
Percent plugged (%)	A/R
VIA Pad Size	
External (in.)	0.020"
Internal (in.)	0.024"
Routing	
Tolerance (in.)	+/-0.005"
V-score	
Tolerance (in.)	+/- 0.004"
PCB Test	
Net List Test (% coverage)	100%
IPC-9252, Class III (Y/N)	YES
Other Tests (Type/% coverage)	
Impedance test (ohms/tolerance%)	10
Test Point Spacing	
Spacing (in.)	40 mil
Delivery Lead-time	
Pre-production (days)	5 - 10days
Production (days)	10-15 days
On-time Delivery	
OTD (% on-time)	99%

Certifications & Memberships



- UL 94 V0 listed
- ISO 9001:2000
- RoHS per Eu Directive 2002/95/EC
- Indian Printed Circuit Board Association (INBA)
- Indo American Chamber of Commerce (IACC)
- SAP Enabled (Customized ERP)

Data Type & Formats



- Gerber (.gbr, 274X preferred, 274D supported
- AutoCAD (.dwg, .dxf)
- Excellon (.drl)

Getting Started

- Gerber data for all artwork layers
- Aperature list of all layers
- Drill file in gerber or Excellon format
- Fabrication drawing (dimensions & tolerances, datums, hole coding, finished thickness, hole size reference, finished size, tolerance, & plating)
- Notes (material, mask type / color, silk screen type / color, plating thickness & special requirements)
- Fabrication standards & specifications

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Optima Technology Associates, Inc. specializes in integrated, electronic contract manufacturing from design, PCB fabrication, PCB assembly, test, unit assembly and shipment.

Products Supplied

- *Printed Circuit Board Assemblies (PCBAs)*
- *Printed Circuit Boards (PCBs)*
- *Mechanical Assemblies*
- *Cable & Wire Harnesses*
- *Metal & Plastic Enclosures*

Services Offered

- *Contract / Turnkey Manufacturing*
- *Engineering Design Services*
- *Product Design & Prototyping*

Customer Benefits

- *Local support, close to you & your markets*
- *Cost-effective, world-class manufacturing in New Delhi, India*
- *Responsive & flexible*

Quick Facts

- *50,000 ft^2 manufacturing facilities*
- *150+ employees*
- *Located in Lewisberry, PA and New Delhi, India*
- *PCBA capacity greater than 1 million assemblies per year*
- *PCB fabrication capacity greater than 100,000,000 ft^2*

From Concept to Production, Optima is Your One Stop for Printed Circuit Boards & Assembly Services

Optima
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