

# Qualified Manufacturing Partner

NETWORK PCB, INC. / SAN JOSE, CALIFORNIA / PCB ASSEMBLY &amp; FABRICATION

## FACILITY

1371 Oakland Rd  
San Jose, CA 95112

## IN BUSINESS

**25+ yrs**

## QUOTE TURN

**1 hour**

## ASSEMBLY TURN

**Same day**

ProvenMetal delivers turnkey printed circuit board assembly through a qualified partner network. Assembly for this program is performed at Network PCB's San Jose facility. Fabrication is routed through Network PCB's supplier network, which includes both domestic and overseas sources. All quoting, program management, and orders run through ProvenMetal.

## 01 / ASSEMBLY: IN-HOUSE, SAN JOSE

QUICK TURN PCB ASSEMBLY

FULL TURNKEY SERVICES

BGA REWORK

### 1.1 / PROCESS ENVELOPE

|                           |                                        |
|---------------------------|----------------------------------------|
| Assembly types            | SMT and through-hole                   |
| Smallest component placed | 0201 / 01005                           |
| Package support           | BGA, µBGA, flip chip                   |
| Minimum pitch             | 0.3 mm, 0.4 mm                         |
| Substrate types           | Rigid, flex, and rigid-flex assemblies |
| Volume range              | Prototype and production quantities    |
| Turnaround                | Same day delivery available            |
| Cleaning process          | Water soluble                          |
| Inspection                | AOI and X-ray                          |

1.2 / EQUIPMENT

|                         |                                                                                     |
|-------------------------|-------------------------------------------------------------------------------------|
| Solder paste printing   | EKRA, DEK                                                                           |
| Solder paste inspection | Mycronic SPI                                                                        |
| Placement               | Mycronic surface mount pick and place; iineo Europlacer dual turret, max 30,000 cph |
| Reflow                  | BTU Pyramax, 12 zone; Heller 1809W, 9 zone; Vitronics Soltec XPM2                   |
| Wave soldering          | NU/ERA, leaded and lead-free                                                        |
| Selective soldering     | Ersa Smartflow, leaded and lead-free                                                |
| AOI                     | Mirtec MV-6 and MV-7, 5 high-resolution cameras                                     |
| X-ray                   | Dage XD7600NT                                                                       |
| BGA rework              | Air-Vac DRS 24C; Chip-off WDS-650                                                   |
| Cleaning                | Typhoon T-12 wash system                                                            |

Leaded process capability is maintained alongside lead-free, supporting high-reliability builds where tin whisker risk rules out a RoHS process.

02 / FABRICATION: PARTNER NETWORK

|                                                                                                                            |                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <p><b>MADE IN THE USA</b></p> <p>Under 24 hour turnaround available. Load board, probe card, and test board expertise.</p> | <p><b>OVERSEAS PARTNERS</b></p> <p>Prototype to high volume. ISO, UL, and IPC standards certified. India, Vietnam.</p> |
|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|

The fabrication route for each order is determined and documented at order time.

2.1 / FABRICATION ENVELOPE

| SPECIFICATION               | STANDARD          | ADVANCED          |
|-----------------------------|-------------------|-------------------|
| Maximum layer count         | 16                | 32                |
| Board thickness             | 0.015 to 0.200 in | 0.010 to 0.250 in |
| Trace / space, outer 1 oz   | 6/6 mil           | 4/4 mil           |
| Trace / space, inner 0.5 oz | 5/5 mil           | 3/3 mil           |
| Minimum mechanical drill    | 0.006 in          | 0.004 in          |
| Minimum laser drill         | 0.004 in          | 0.003 in          |

## 2.2 / BOARD CONSTRUCTION

| SPECIFICATION               | STANDARD       | ADVANCED                            |
|-----------------------------|----------------|-------------------------------------|
| Minimum layer count         | 1              | 1                                   |
| Outer layer finished copper | 1 oz to 2 oz   | 1 oz to 4 oz                        |
| Inner layer finished copper | 0.5 oz to 2 oz | 0.3 oz to 3 oz                      |
| Annular ring                | 0.005 in       | 0.003 in mechanical, 0.001 in laser |
| Aspect ratio, through-hole  | 10:1           | 15:1                                |
| Plated hole to copper       | 0.008 in       | 0.005 in                            |
| Copper to board edge, outer | 0.010 in       | 0.005 in                            |
| Copper to board edge, inner | 0.015 in       | 0.005 in                            |
| Plated and non-plated slots | Routed         | Routed or nibbled                   |
| Minimum panel size          | 9 in × 12 in   | 8 in × 8 in                         |
| Maximum panel size          | 18 in × 24 in  | 24 in × 36 in                       |

## 2.3 / TRACE AND SPACE BY COPPER WEIGHT (MIL, TRACE/SPACE)

| LAYER AND COPPER WEIGHT | STANDARD | ADVANCED |
|-------------------------|----------|----------|
| Outer, 1 oz             | 6/6      | 4/4      |
| Outer, 2 oz             | 10/10    | 8/8      |
| Outer, 3 oz             | 15/15    | 12/12    |
| Outer, 4 oz             | 20/20    | 20/20    |
| Inner, 0.5 oz           | 5/5      | 3/3      |
| Inner, 1 oz             | 6/6      | 5/5      |
| Inner, 2 oz             | 10/10    | 8/8      |

3 mil geometry is available on inner layers at 0.5 oz under the advanced process. Best outer layer geometry is 4 mil at 1 oz.

## 2.4 / BOARD THICKNESS BY LAYER COUNT

| LAYER COUNT | STANDARD          | ADVANCED          |
|-------------|-------------------|-------------------|
| 1 layer     | 0.015 to 0.200 in | 0.010 to 0.250 in |
| 2 layer     | 0.015 to 0.200 in | 0.010 to 0.250 in |
| 4 layer     | 0.020 to 0.200 in | 0.016 to 0.250 in |
| 6 layer     | 0.031 to 0.200 in | 0.025 to 0.250 in |
| 8 layer     | 0.047 to 0.200 in | 0.031 to 0.250 in |
| 10 layer    | 0.062 to 0.200 in | 0.040 to 0.250 in |
| 12 layer    | 0.062 to 0.200 in | 0.050 to 0.250 in |
| 14 layer    | 0.075 to 0.200 in | 0.062 to 0.250 in |

## 2.5 / DRILLING

| SPECIFICATION                             | STANDARD                             | ADVANCED        |
|-------------------------------------------|--------------------------------------|-----------------|
| Min drill, final thickness up to 0.031 in | 0.006 in                             | 0.004 in        |
| Min drill, 0.031 to 0.062 in              | 0.008 in                             | 0.005 in        |
| Min drill, 0.062 to 0.093 in              | 0.010 in                             | 0.006 in        |
| Min drill, 0.093 to 0.125 in              | 0.015 in                             | 0.008 in        |
| Min laser, dielectric up to 0.004 in      | 0.004 in                             | 0.003 in        |
| Largest hole                              | 0.247 in plated, 0.250 in non-plated | Design specific |
| Nibbling                                  | No                                   | Yes             |
| Plating in holes                          | 0.0008 in                            | 0.0015 in       |
| Back drill for stub removal               | Available                            | Available       |

## 2.6 / VIA TECHNOLOGY

| CAPABILITY                  | STANDARD       | ADVANCED                               |
|-----------------------------|----------------|----------------------------------------|
| Blind vias                  | No             | Yes                                    |
| Buried vias                 | No             | Yes                                    |
| Stacked vias                | No             | Yes                                    |
| Controlled depth blind vias | No             | Yes, max 0.75:1 aspect ratio           |
| Pre-drilled core blind vias | No             | Yes                                    |
| Sublamination blind vias    | No             | Yes                                    |
| Build-up technology         | No             | Up to 4-N-4, any layer                 |
| Filled vias                 | Non-conductive | Non-conductive, conductive, or partial |
| Tented vias                 | Yes            | Yes                                    |
| Soldermask plugged vias     | Yes            | Yes                                    |

## 2.7 / CONTROLLED IMPEDANCE

|                             |                    |
|-----------------------------|--------------------|
| Layers supported            | Up to 32           |
| Single-ended tolerance      | ±10% std / ±5% adv |
| Differential pair tolerance | ±10% std / ±5% adv |
| TDR testing                 | Yes                |

## 2.8 / SILKSCREEN

|                           |                             |
|---------------------------|-----------------------------|
| Colors                    | 7 standard / custom adv     |
| Minimum legend width      | 0.004 in                    |
| Silkscreen to pad spacing | 0.005 in std / 0.004 in adv |

## 2.9 / SOLDERMASK

| SPECIFICATION                      | STANDARD                                      | ADVANCED                         |
|------------------------------------|-----------------------------------------------|----------------------------------|
| Colors                             | Green, black, blue, red, white, clear, yellow | Custom                           |
| Finish                             | Semi-gloss, matte                             | Semi-gloss, matte                |
| Thickness over copper              | 0.0007 in                                     | 0.0010 to 0.0012 in, double coat |
| Web / dam                          | 0.005 in                                      | 0.003 in                         |
| Gap to pad                         | 0.004 in                                      | 0.002 in                         |
| Copper ring under mask-defined pad | 0.003 in                                      | 0.001 in                         |
| LPI                                | Yes                                           | Yes                              |
| Dry film                           | No                                            | Yes                              |

## 2.10 / SURFACE FINISHES

|                                     |                                                |
|-------------------------------------|------------------------------------------------|
| HASL, leaded and lead-free          | Electrolytic hard and soft gold                |
| ENIG                                | Hard gold body and flash gold                  |
| ENEPIG / EPIG (advanced)            | Selective plating, hard and soft bondable gold |
| Immersion silver                    | Tin nickel (advanced)                          |
| Hard gold fingers with ENIG or HASL | White tin                                      |
| OSP                                 | Bare copper / carbon ink (advanced)            |

## 2.11 / LAMINATE AND MATERIAL SYSTEMS

| MATERIAL CLASS             | SUPPLIERS      | DESIGNATIONS                                                   |
|----------------------------|----------------|----------------------------------------------------------------|
| FR-4 and high-Tg FR-4      | Isola, Ventec  | IT180, 185HR, 370HR, VT42, VT47                                |
| Specialty FR-4             | Isola          | IS410, FR408HR                                                 |
| RF and high frequency      | Rogers         | R04003, R04350, R04360, R04835                                 |
| PTFE and ceramic-filled    | Rogers         | R03003, R03006, R03010, R03210, R05880, R06002, R06006, R06035 |
| Polyimide                  | Isola, Arlon   | G200, 85N                                                      |
| Low-loss digital           | Nelco          | N4000, N4350, N5000, 4000-13                                   |
| Very low loss              | Panasonic      | Megtron 6                                                      |
| Black FR-4                 | Ventec         | VT42-B                                                         |
| Flex core                  | DuPont, Apexyl | AP series                                                      |
| Flex adhesive and coverlay | DuPont, Apexyl | LF/FR series                                                   |

Polyimide, Rogers RF and PTFE, and Megtron 6 support airborne and RF defense hardware. Hybrid and mixed-material stackups are supported.

## 2.12 / PRODUCT TYPES

|                  |                |                          |                    |
|------------------|----------------|--------------------------|--------------------|
| RIGID MULTILAYER | HDI            | FLEX, RIGID & RIGID-FLEX | RF & MICROWAVE     |
| BACKPLANE        | BURN-IN BOARDS | PROBE CARDS              | LOAD & TEST BOARDS |

## 2.13 / RF AND MICROWAVE

|                     |                                                                  |
|---------------------|------------------------------------------------------------------|
| Frequency range     | 100 MHz to 30 GHz and beyond                                     |
| Test equipment      | 6 network analyzers, combined sweep 50 MHz to 40 GHz             |
| Antenna measurement | Custom anechoic boxes                                            |
| Etch control        | Close tolerances on critical RF features                         |
| Stub removal        | Back drill                                                       |
| Stackups            | Multilayer, hybrid, mixed-material                               |
| RF finishes         | ENIG, ENEPIG, hard and soft wire bondable gold, immersion silver |

## 03 / DESIGN AND SECONDARY OPERATIONS

### 3.1 / DESIGN CAPABILITY

Single and multilayer boards  
Digital, analog, and RF circuits  
High density and fine line SMT, BGA, and through-hole  
Ultra high speed  
EMI suppression  
Design for manufacturing (DFM)  
Design for test (DFT)  
Input: netlist, PADS PowerLogic, AutoCAD, hand-drawn schematics

### 3.2 / DELIVERABLES

Layout PCB database  
Gerber files and aperture list  
Drill data  
Fabrication drawings  
Photoplots on request

### 3.3 / SECONDARY OPERATIONS

Conformal coating  
Staking  
Encapsulation  
Flying probe test

## 04 / CERTIFICATIONS AND STANDARDS

|                |           |                 |              |                |
|----------------|-----------|-----------------|--------------|----------------|
| ISO 9001:2015  | AS9100    | ITAR REGISTERED | NIST 800-171 | ISO 13485:2016 |
| ISO 27001:2022 | IPC-A-600 | IPC J-STD-001   | UL CERTIFIED | ROHS COMPLIANT |

Certificates, registration numbers, and scopes available on request through ProvenMetal.



PROVENMETAL  
FAST CIRCUIT BOARDS. BUILT IN AMERICA.

QUOTES & PROGRAM INQUIRIES  
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