Definition: Providing the physical printed circuit board layout of your completed schematic design.

Schematic Input Format/Supported Software

• PDF	• Concept HDL	• Eagle	• OrCAD Capture
• Altium	• KiCAD	• PADS	• Image File

Board Details Needed

1. Full Detailed Schematic Drawing
2. Board Outline Dimensions, Drawing in DXF Format
3. Technology (SMD/Thru-Hole, Mixed, Double Sided Component Placement)
4. Any test points or programming points needed?
5. Key Component Locations
6. Netlist or Block Diagram if available.

Listing of Unusual Requirements:

• Gold Fingers	• Min Tolerances	• High Currents/Voltages
• Thickness Constraints	• Keep Out Locations	• Star Grounds
• Controlled Impedance	• Differential Pairs	• Min/Max Spacing
• High Frequency	• Cutouts/Mounting Holes	• Target Layer Count
• IPC / Mil Spec / ITAR	• Via Fill	• RoHS

Bill Of Materials (BOM) Requirements

- Complete component list with manufacturers part numbers.
- Data sheets for custom / non standard components.

Special Customer Requirements

- Will customer be seeking UL, CE, FCC or IEC certification or approval?
- If processors are used, who will be providing the programming?
- What is the desired timeline for completion of the project?

Epec Deliverables

Description	Format	Description	Format
Gerber Files	• RS 274X	Pick and Place	• Excel
Fabrication Drawing	• RS274X, PDF	Assembly Drawings	• RS274X, PDF
Native CAD Database	• Various	Design Database Files	• Allegro
Netlist	• IPC-D-356A	ODB++ Files (If required)	• ZIP / TAR
NC Drill File	• Excellon	3D Models (If required)	• STP Files

Timelines

Quotes: 2 - 5 Days From The Day The Quote Request Is Submitted.

Usually includes a conference call to discuss requirements on complex designs.

Standard Layout Delivery - 2-3 Weeks (1 week with a premium)

Complexity (layer count, high speed, analog, number of nets) will determine actual lead time.

Lead time will be outlined on the quote provided.

ELECTRICAL ENGINEERING

We have the experience required to consistently meet the highest standards in the industry. Our capabilities span multiple market segments, including Telecom, Datacom, Computer & Storage, Medical, Mil/Aero, Industrial, and consumer products.

Our expertise lies in High-Speed Circuitry Design up to 40GHz and Mesh Networking (Optical: OC-48, OC-192, T1, E1, and Infiniband).

Other capabilities include Thermal Engineering, Signal Integrity Analysis, Software and Firmware Design, including software integration and API design.

Digital/High-Speed and Analog Design Capabilities Include:

- Circuit Design and Analysis
- FPGA to ASIC Conversion
- Component Analysis and Evaluation
- Compliance and Value Engineering
- Pulsed Circuits
- Analog Circuit Simulation and much more!
- Embedded Microprocessors and Chipsets for Power PC, Intel x86, TI DSP, Mellanox, Broadcom and various other chipsets used in Server, Telecom, Industrial, and Commercial market segments
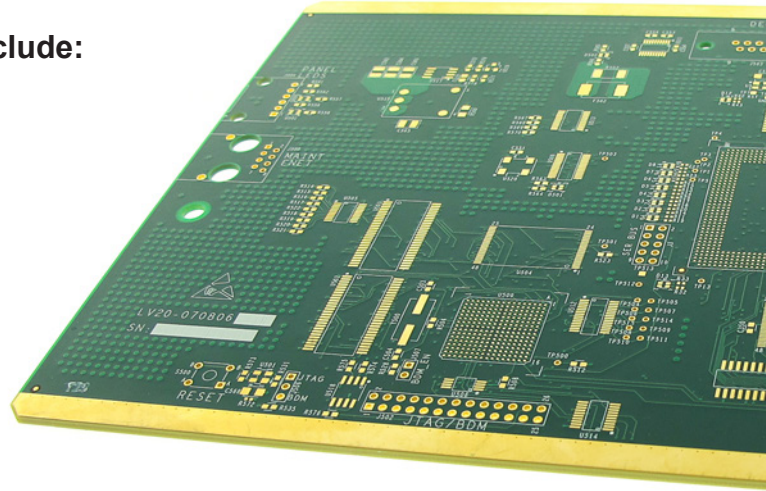
MECHANICAL ENGINEERING

Our Engineers have 30 years' experience in Mechanical Engineering. We are capable of supporting any part of the product life cycle across multiple market segments. We utilize leading CAD platforms such as AutoCAD Inventor, SolidWorks, and Pro/ENGINEER Wildfire.

Our Mechanical Engineering Capabilities Include:

- Packaging, Enclosure, and Industrial Design
- Product/System Architecture
- Detailed Mechanical Design
- Stress Analysis (FEA) Shock/Vibration Simulation
- Thermal Simulation
- Material and Component Selection
- Solid Modeling
- PCB Linkage DFM / DFA and Cost reduction

Epec Can Provide:

- Concept Sketches/Rendering
- Product Specifications
- Mockups
- 3D Rendering
- Full Documentation