GJ MICROSYSTEMS

ONE STOP SOLUTION FOR YOUR EMBEDDED SYSTEMS NEEDS

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PCB DESIGN CAPABILITIES

1. About Us

GJ MICROSYSTEMS has been working in the field of embedded systems since last many years and has achieved a tremendous growth in very short period with its expertise and never compromising quality of work. At GJ MICROSYSTEMS, we are always committed to customer satisfaction and due to this very reason; we have got a record 100% satisfaction of customers. It has been our policy that customer is always right, that us lead us to this great heights in a very short time.

We have got a very exhaustive experience in the field of PCB designing, be it be single Layered or Multilayered. We have prepared large number of PCB Layouts for many companies/individuals in India and Abroad. Out client base includes companies/individuals from India, USA, UK and France. We have got many projects to our portfolio. We have a very systematic approach for carrying out PCB layout work, which can be found out in the form of a flow chart in the following section/pages. All these projects involved creating components for schematic, creating schematic diagram taking into account the client's requirement, Creating Footprints, Routing (Manual/ Semi – Automatic/ Automatic), checking DRC, Creating Gerber files, NC Drill files etc. We also provide full support to PCB manufacturers, understanding their requirements for specific files formats required for PCB manufacturing. Besides this we are also capable to provide .prn/.cdr files of various layers for the manufacturers who undertake to manufacture PCB using screen printing methods. We also provide free changes up to 10% of ECO for clients, looking to the fact that most projects require some changes after first production run of samples.

2. Highlights Of Our Service

- High Speed, High Density PCB Design
- BGA's and Fine Pitch-High Pin count devices
- Mix Technology Analogue / Digital PCB Designs
- Design for EMC - reduced EMI and noise susceptibility

- Design Constraint Requirements (i.e. Differential Routing, Controlled Lengths/Delay, Crosstalk Control, etc.)
- Handling Special nets
  - Ground Shielding on special nets.
  - Managing Skew problems - issues like pin ordering, branching, fixed length nets, Differential nets ...etc.
- Clock nets - special care is provided to clock nets, which includes clock tree design with proper termination(s).
- Adding Automatic Test points - as part of DFT (as required by ATE's).
- Design for Manufacturing
  - Selecting correct style of copper pouring on Power and Ground nets. To avoid bridging when soldered on wave soldering machines.
- Design for Economy -
  - Designing Split Power Planes to reduce the number of overall layers.
- User Constraints
  - Via and Net delays for high speed traces.
  - Net Frequency and Net Current for critical signals.
- Impedance Control
- Multilayer, Surface Mount and Mixed Technologies
- Complete Signal Integrity (includes)
  - **Measurements - viz.**
    Net lengths, Impedance(s), Rise / Fall time, Overshoot / Undershoot.
  - **Analysis**
    Cross talk, Reflection including Termination Adviser.

Capabilities

- Analog
- BGA /FFBGA
- Controlled Impedance
- D/S / Through Hole / SMD
- Digital Design
- VME Boards
- High Speed
- Mix Technology Analogue / Digital PCB Designs
- Military
- PCI-X
- PCI Add On
- DSP Boards

Complexity Expertise

Board size	**Few square inches to 100+ square inches**
Layers (no.s)	**1 - 16**
Frequency (Electrical)	**Few KHz to 500 MHz**
No. of nets (nos)	**10000+ on a single controlled impedance board**
Density (pins/sq inch)	**120 +**
No. of components on a single board	**1500 + with 8 BGAs**
Voltages on a single board	**1 - 8 (like +12V, 3.3V, 2.5V, 1.5V etc.)**
Different logic families on single board	**1 - 6+ (SSTL, HSTL, LVPECL etc.)**
Trace widths on single board	**4 mil - 40 mil**
Range of designs	**Single chip evaluation boards to FPGA Boards**
Range of target applications	**Consumer electronics board to High Reliability Industrial/Telecom boards**
Range of components	**Simple logic devices to multi-million gate FPGAs and ASICs**

Technical Inputs - Required From Client

- A NEATLY drawn and COMPLETE Schematic diagram.
- Electrical and Mechanical specifications of all components (Component Datasheets preferred).
- PCB FORM Factor - shape and size, including details of mounting...etc.
- Layout Guidelines with specifications of sensitive / high speed nets, components...etc.
- Capability report of the PCB Manufacturer.

Deliverables

- Schematic
- Final Net-list
- PCB layout files
- Gerber Files for all layers.
- N.C. Drill file.
- Drill Drawing (Fab Drawing)
- Layer stack report
- Bill of Material (BOM)

Verification

- Air gap
- Hanging traces
- Mechanical fit
- Cross Probing of Schematic and PCB's
- DRC (Design Rule Checking)
- Silk-screen overlap

- Gerbers using ExcelCAM

Our Strength

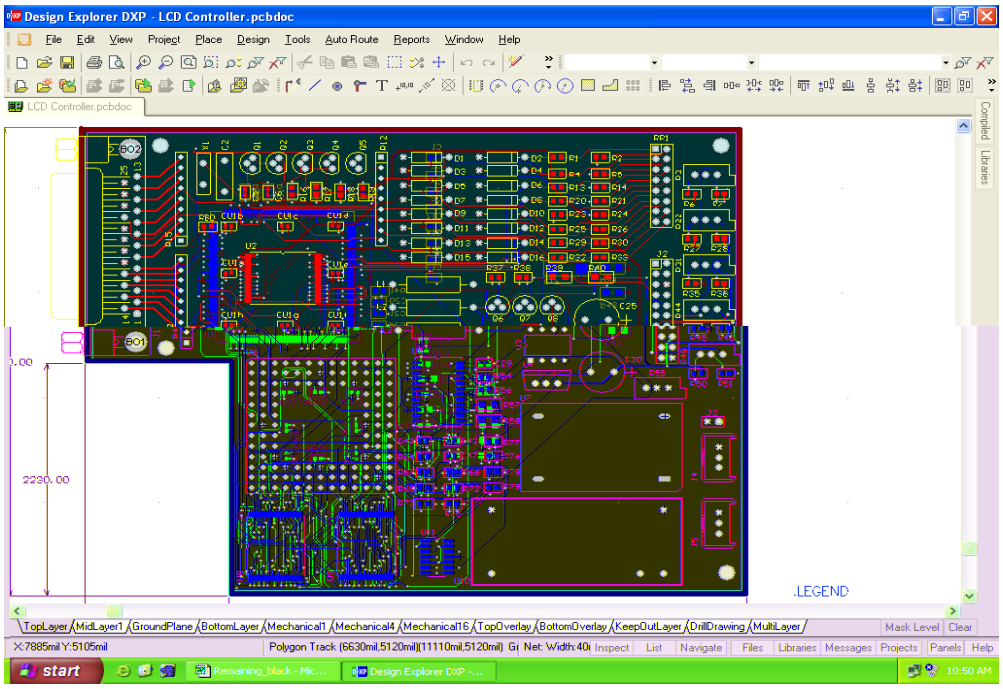
- Awareness and Appreciation of high speed issues like Signal Integrity, Control Impedance, Skew ..etc.
- We extend our experience of high speed Digital Design [including multimillion gate FPGA's, PCI and DSP based solutions] to PCB design.

Our Belief

- We are a part of the clients design team, and his active involvement is the preferred way of completing the design successfully and in time.
- Any tool is ONLY as good as the person handling it.
- Technology is there to change, Skills are there to stay.

To sum up, GJ MICROSYSTEMS offers a comprehensive PCB design service specializing in Medical, Aerospace and Telecom markets, We have successfully designed hundreds of boards that meets some of the world's most stringent compliance requirements.

We offer top-quality PCB Design services and has developed an outstanding reputation for first pass design success. All our PCB designers are experts in understanding Electrical, Mechanical, DFx and Compliance requirements. We can function as your company's virtual PCB design department, or as an addition to your existing staff during peak periods. Our designers are available for on-site work to enhance your engineering team.



3. Guidelines followed by GJ MICROSYSTEMS for layout preparation of PCBs