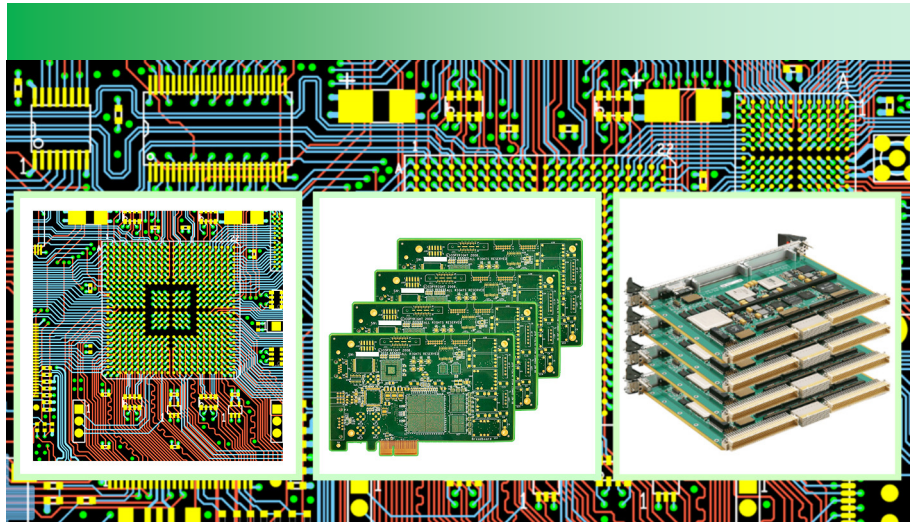




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PCB Layout Design

PCB Fabrication

PCB Assembly & Test

## PCB Layout Design and Turnkey Services

Located in Southern California for 25 years, Largo Circuit Design (Largo) is an ISO 9001 certified premier provider of Printed Circuit Board (PCB) layout design services. We also offer complete turnkey PCB solutions that include board fabrication, parts procurement, assembly and test. Our technical capabilities, experience, proven processes and attention to details ensure that we provide our customers with the highest quality PCB solutions and meet their demanding technical requirements and schedules. Our boards are designed, built and assembled in the USA.

### Our services

- PCB layout design
- PCB manufacturing
- PCB assembly and parts procurement
- Chassis assembly and wiring harness
- Test

### Design Capabilities

- **CAD Tools**
  - Cadence Allegro
  - Altium
  - Mentor Graphics
- **Technologies**
  - Digital, high-speed, FPGA, analog, low-voltage, RF, mixed signals, high voltage/high current, power & servo
  - High density, impedance control, blind/buried/micro vias and advanced materials
  - Signal integrity control and thermal management
- **Compliance Standards:**
  - Design: IPC-2221 and MIL-STD-275F
  - Bare boards manufacturing: IPC-6012C and MIL-PRF-55110
  - Assembly: IPC-A-610E and J-STD-001
- **Types of Boards**
  - Rigid, flexible, multi-layer, backplanes and ceramic Multichip modules

### Why Choose Largo Circuit Design

- **Skilled and Experienced Designers**  
Our skilled team of electrical engineers and PCB designers has expertise with the most advanced technologies.
- **Advanced CAD Systems**  
We use the most powerful and popular PCB CAD systems and the latest techniques to provide you with a top quality layout.
- **Design for Manufacturability (DFM)**  
We use rules-driven design methodology, coupled with extensive industry networking, to ensure that our designs are compatible with the most current manufacturing and assembly processes.
- **Complimentary Services**  
Largo offers its customers complimentary board analysis services. Using these services at an early stage saves time, reduces cost, and decreases the number of iterations between the electrical design engineer and the PCB layout designer.
- **Proven Track Record**  
We have successfully delivered thousands of PCB designs and turnkey systems, including boards with advanced technologies.
- **Customer Support**  
Our commitment to our customers' success does not stop with delivery of our services. Our dedicated customer support team and our designers will assist you with your post-delivery phase.

## Complimentary PCB Evaluation Services

Largo assists design engineers to refine their design before committing it to a final PCB layout. The following is a list of complimentary services that we provide.

### ■ "Real-estate" Study

Based on your BOM and board size we will analyze your design and find out if there is enough room on your board for the parts that you have selected.

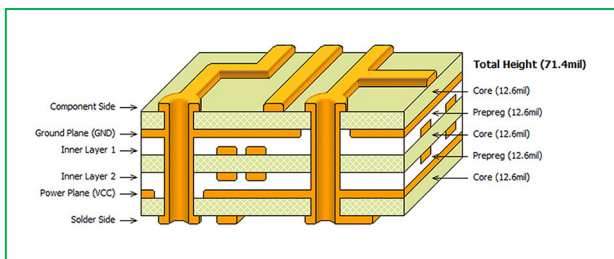
### ■ Data Package Review

We will help you put together a board data package that is complete and ready for layout.

### ■ Layers Stack-up Study

Designing an optimized multilayer PCB stack-up configuration is critical to the performance and cost of the product. Moreover, a properly constructed stack-up and material selection can reduce electromagnetic emissions, crosstalk, and improve the signal integrity of the product.

We combine our expertise and our powerful design tools to provide you with a recommended stack-up based on your design requirements.



Layers Stack-up Example

## Industry Sectors

- RF and Microwave
- Avionics
- Defense and Aerospace
- Telecommunication
- Cube satellites
- Semiconductor
- Video and Audio
- Automotive
- Unmanned Aerial Vehicle (UAV)
- Medical devices
- Consumer electronics

## Customer Testimonial

*Largo has proven itself to be a highly capable and knowledgeable design house. My project brought a number of difficult electrical designs to Largo consisting of a mixture of digital, analog and power components. Largo designed the boards, procured the parts and fabricated the boards. Largo completed the job ahead of time and all the boards were a first pass success, meeting all performance and quality requirements.*

*I consider Largo to be a first class organization and will continue to use them. I have recommend Largo to many peers and will continue to use and recommend them.*

**M.W. Boeing**

## Customer Testimonial

*" This letter is written in appreciation of Largo successful delivery and performance on the RDP project. We were very impressed with the support, commitment and professionalism of the Largo's team. The boards were delivered on time and met all our requirements. Please extend our appreciation to both Ray and Jeff for a job well done. We are looking forward to working with Largo in the future. "*

**D.W. Raytheon**

## Customers (Partial List)

- AMCC
- BAE Systems
- Baxter Healthcare
- Boeing
- Broadcom
- Crane Aerospace
- Cypress Semi.
- DuPont
- General Ceramics
- Hamilton STD
- Hewlett-Packard
- Hitachi
- IBM
- ITT
- Ixia
- JPL
- Kyocera
- L3 Com.
- Litton Systems
- Lockheed Martin
- Maxim
- Matsushita
- Minolta
- Northrop
- Perkin Elmer
- Panasonic
- Philips
- Physical Optics
- Raytheon
- Ricoh
- Sharp
- Samsung
- Sanyo
- Teledyne
- Toshiba
- UTC Aerospace

