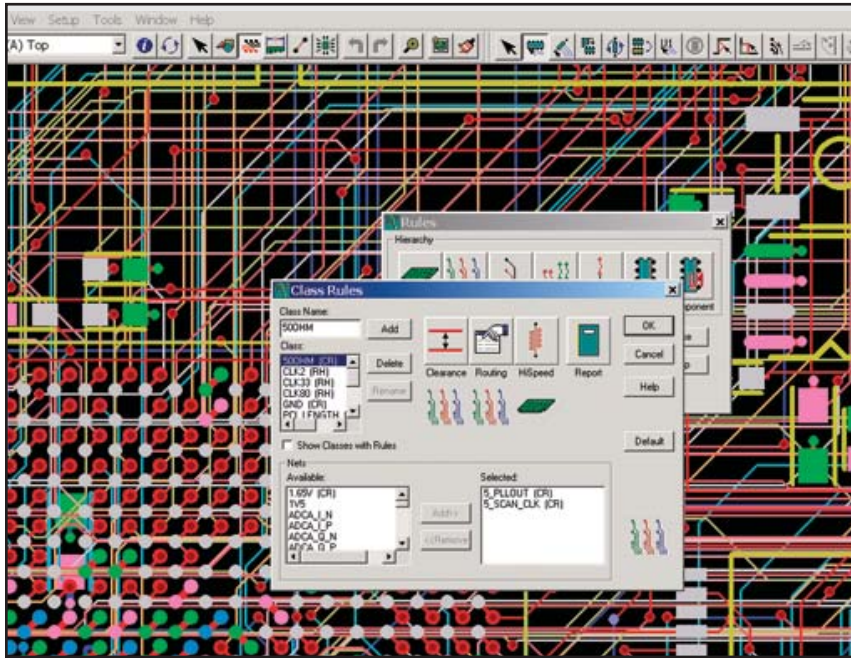


# PADS Layout



*The PADS Layout solution combines ease of use with great value and broad technology, making it ideal for complex PCB designs.*

## Major product features

- The standard for Windows-based PCB layout
- Proven, reliable PCB design technology
- Powerful, yet easy to use
- Scalable to fit any requirements
- Advanced capabilities tackle complex design problems with accuracy and ease

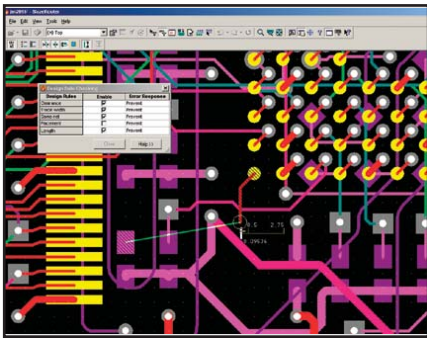
## PADS Layout– Meeting Today’s Design Challenges

Reduced headcounts, increased revenue expectations, and ever-shorter market windows make efficiency and value the two “must-haves” of the modern PCB design market. To keep pace, designers need real power in their layout tools – power that is feature-rich and reliable, yet easy to use and affordably priced.

PADS® Layout is the answer. It provides everything you need to complete your toughest designs simply and quickly in a flexible design environment.

PADS Layout integrates seamlessly with the rest of PADS PCB Design Solutions, making PADS Layout part of a complete, integrated flow for design definition, analysis, planning, and layout. Add-on modules for design variant creation, advanced packaging, design-for-test, and more, enable PADS Layout to expand to meet future needs. In addition, PADS Layout offers seamless integration, with Mentor Graphics’ Hyperlynx® tool suite, the industry’s choice for signal integrity accuracy and ease of use.

PADS Layout can also be used stand alone, to bring exceptional layout quality to schematics captured with other vendors’ software.



*PADS Router, maximizes routing quality with constraint-driven routing and automatic design rule checking*

## Overview

PADS Layout is a rich, robust PCB editing environment that provides all the functionality needed to efficiently design and route complex PCBs.

PADS Layout starts with netlist import, reading in all the component and netlist information, component attributes, design rules, and net constraints defined in the schematic. A wizard-driven, shape-creation tool simplifies library component creation and generates accurate land patterns. Component placement is easy and precise, using a combination of manual and automatic tools that allows group placement and component rotation down to a tenth of a degree.

PADS Layout also provides a robust set of manual and interactive routing tools. Newest among these is PADS® Router, the shaped-based, any-angle route editor that gives you full control and superior interactive routing in real time.

PADS Layout fully supports split/mixed-plane creation, including custom thermal pad and elaborate cutout support. PADS Layout also audits designs for 100% testpoint coverage and performs essential manufacturability checks before designs are sent out to fabrication. Finally, PADS Layout provides a robust set of menu-driven CAM outputs for all popular manufacturing and test equipment.

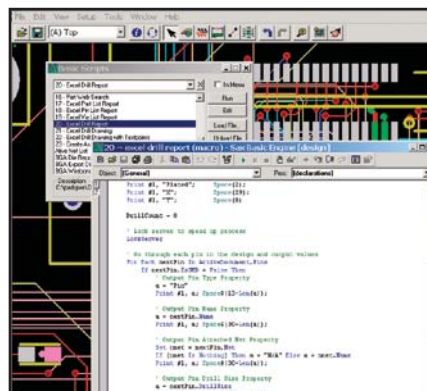
## PADS AutoRouter

PADS® AutoRouter ships with every seat of PADS Layout. This powerful, shape-based autorouter combines high completion rates with minimal post-route rework for the highest yields possible. Native any-angle and diagonal routing algorithms accurately and efficiently route high-density designs.

Tight integration with PADS Layout ensures that PADS AutoRouter follows design rules and net constraints entered at the schematic or PCB level, minimizing post-route checking.

With PADS AutoRouter you get:

- “Push and shove” and “rip-up and retry” technology for batch-routing results that rival interactive routing in design quality and aesthetics
- A combination of pad-entry controls, same-net clearance rules, and copper sharing that can meet fabrication requirements automatically
- Integrated testpoint routing and post-route auditing to adapt to your existing design-for-test (DFT) process
- True diagonal routing that minimizes trace lengths and design layers
- A context-sensitive, HTML-based Help system



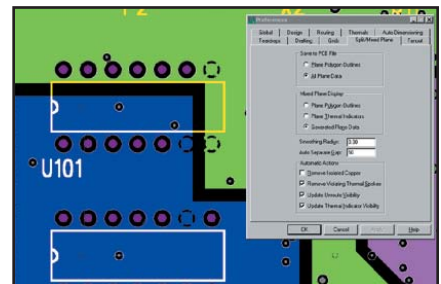
*Automation methods allow you to query and modify PADS Layout data structures for better communication with other applications*

## Automation

PADS Layout combines Object Linking and Embedding (OLE), automation methods, and a Visual Basic engine to provide advanced integration and customization. Extended API commands provide direct access to PADS Layout data structures for faster, better communication between all your design tools.

With PADS Layout, you can:

- Cross-probe between data elements with applications, such as Microsoft® Excel®
- Leverage other EDA and OLE-compliant tools to enhance your design process
- Use a Script Wizard to take advantage of automation techniques, even if you don't have any programming background



*Split/Mixed-Plane operations ensure connectivity to multiple plane areas*

## Split-Plane Definition

Split/Mixed-Plane operations provide an interactive and automated method for creating complex embedded planes and routes.

- Automatically check connectivity to multiple split-plane areas, ensuring an electrically correct design
- Maintain all design rules, including net-specific and conditional net rules
- Simplify the separation of embedded planes into multiple plane polygons

- Support embedded traces on internal plane layers
- Support positive and negative plane areas

### Autodimensioning

PAD Layout includes robust dimensioning tools that document the PCB form factor automatically. These tools include datum and standard dimensioning, radius, angle, and leader support, as well as user-defined tolerancing.

### Online DRC

Design Rule Checks (DRC) enable base and extended rules hierarchy, including layer, class, group, pin pair, and conditional rules. Four modes of operation (prevent, warn, explain, allow) let you choose the degree of system assistance you want as you route.

### Expanded Capabilities

An array of options is available to increase the efficiency of your system. Many of these modules are included in standard configurations of PADS Layout.

*Physical Design Reuse* – The Physical Design Reuse (PDR) option supports the creation, saving, and placement of physical reuse elements independent of the schematic source. By allowing you to reuse existing, proven circuits, PDR significantly reduces design time.



To minimize errors, PDR allows you to replicate ‘golden circuits’ in new and existing designs

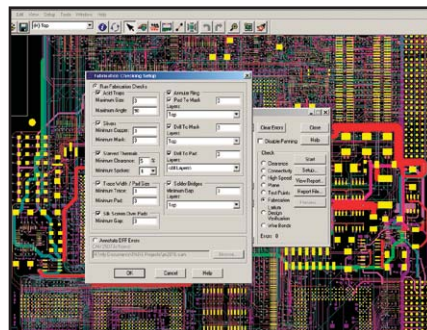
- Save completely routed circuits as reuse elements in a PDR library

- Easily replicate reuse elements to support multi-channel designs, whether the design is newly created or taken from the PDR library
- Use intelligent, element-building technology to create a clone of the initial reuse element and position it on your cursor for placement

*High-speed Routing* – Two options enable you to route length-constrained nets. PADS Router routes high-speed nets interactively, while PADS AutoRouter offers a superset of capabilities that enables both interactive and automatic high-speed routing.

- Interactively and/or automatically route complex, length-constrained traces easily and quickly
- Make intelligent routing choices on the fly. The handy “Trace Length Monitor” puts real-time graphical information at your fingertips.
- Handles min/max, matched length, and differential pair traces in real time

*Design For Fabrication* – Verify your designs with DFF Audit. With this module you can perform a variety of fabrication design rule checks. Fabrication errors detected by are corrected in PADS Layout so you don’t have to worry about errors being corrected at the fab house and never updating your design.



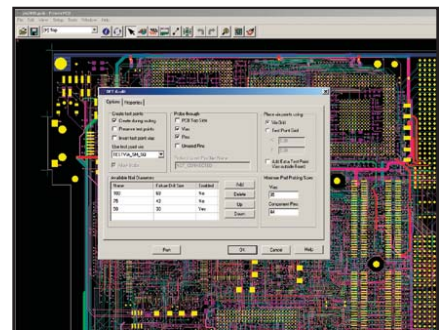
With DFF Audit, you can find and fix all rule violations prior to fabrication

- Identify and correct issues that could cause fabrication problems, without ever leaving the PADS Layout environment
- Check for acid traps, copper slivers, soldermask slivers, traces in a soldermask opening, detection of silkscreen over pads, and more

*Design For Test* – DFT Audit provides two key functions: testpoint assignment and reporting.

- Testpoint Assignment: By enabling the testpoint function in PADS AutoRouter DFT Audit inserts testpoints during normal route passes, converting existing vias and pads to testpoints, or adding necessary testpoints based on your rules. PADS AutoRouter can even be instructed to perform iterative passes with decreasing pad sizes, thus maximizing testpoint coverage.
- Testpoint Report: At any time, a comprehensive testpoint coverage report can be generated for design review.

*Analog Design* – The Analog Tool Kit enables automatic and interactive jumper capabilities and advanced teardrop and pad-filleting controls for



DFT Audit reduces costly design iterations and ensures the testability of your designs before fabrication

high-density, single- and double-sided boards. By automating a tedious, manual process, the Analog Tool Kit saves time and helps ensure that placements will meet your design rules and require-

ments. The Analog Tool Kit is required for any-angle routing in PADS AutoRouter and PADS Router.

*Assembly Variants* – Creates design variants from a single PADS Layout database.

*Clusterplacement* – Allows interactive and automatic topographical placement of component groups by function.

*Critical Place & Route (CPR)* – Defines, verifies, and enforces essential pre-placement and pre-layout design rules.

*Database Viewer* – Streamlines communication by sharing PCB design data with the entire design team.

*Advanced Rule Set (ARS)* – Extends the hierarchy of base design rules to include layer, class, group, pin pair, conditional, and differential-pair rule settings. Measures and verifies signal requirements for high-speed layout based on signal routing and board stack-up. ARS is required for PADS Router and PADS AutoRouter.

*IDF Link* – Allows 2D physical information to pass via an IDF file to and from PADS Layout and mechanical engineering tools such as Pro/ENGINEER® and SolidWorks.

*DxDesigner Link* – Provides push-button integration between PADS Layout and DxDesigner™, allowing you to:

- Pass netlists and attributes bidirectionally for seamless schematic-to-layout design synchronization
- Cross-probe between schematic and layout, for intuitive component placement according to schematic flow and for easy identification of critical nets for design reviews

*Chip-On-Board (COB)/Advanced Packaging Toolkits* - Automates die on substrate design operations using tools such as the die wizard, route wizard, die-flag wizard, wire bond wizard, and advanced post-design report generation.

**Visit our website at [www.mentor.com/pads](http://www.mentor.com/pads)**

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## CAM Outputs

The PCB Editor provides CAM utilities to output DirectCAM, drill data, Gerber, and other standard data-exchange formats.

## Platforms and Operating Systems

Operating Systems – Windows 2000 / Windows XP on Intel-based systems

Memory Requirements – 128MB minimum, 256MB and higher recommended. More memory increases performance.

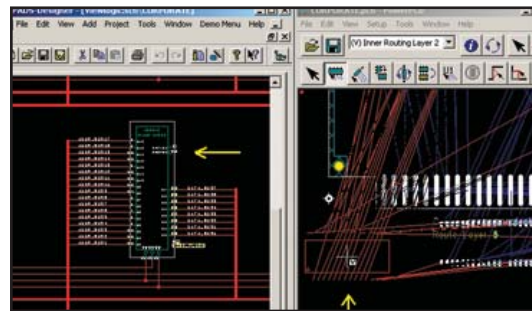
PC Hardware – Pentium-based (or equivalent) CPU, minimum. High-speed CPU is recommended. Two-button mouse minimum, three-button mouse or mouse with scrollwheel recommended. Minimum display 1024 x 768, 256 colors.

## Summary

Dynamic electronic design environments demand PCB design systems that offer strong technology, reliability, and minimal ramp-up time at an affordable price. PADS Solutions deliver just that, with easy-to-use, integrated PCB design systems that include design definition, front-end simulation, PCB layout, and signal integrity analysis.

PADS Layout is one of the flagship products in Mentor Graphics' line of PADS PCB Design Solutions. Download our software today for a free demonstration, <http://www.mentor.com/pads/layout.html>.

See for yourself why PADS Layout has become the market standard for Windows-based complex PCB design, combining ease of use with great value and broad technology.



*Integration between DxDesigner and PADS Layout includes crossprobing for intuitive component placement and easy identification of critical nets*

**Mentor  
Graphics**