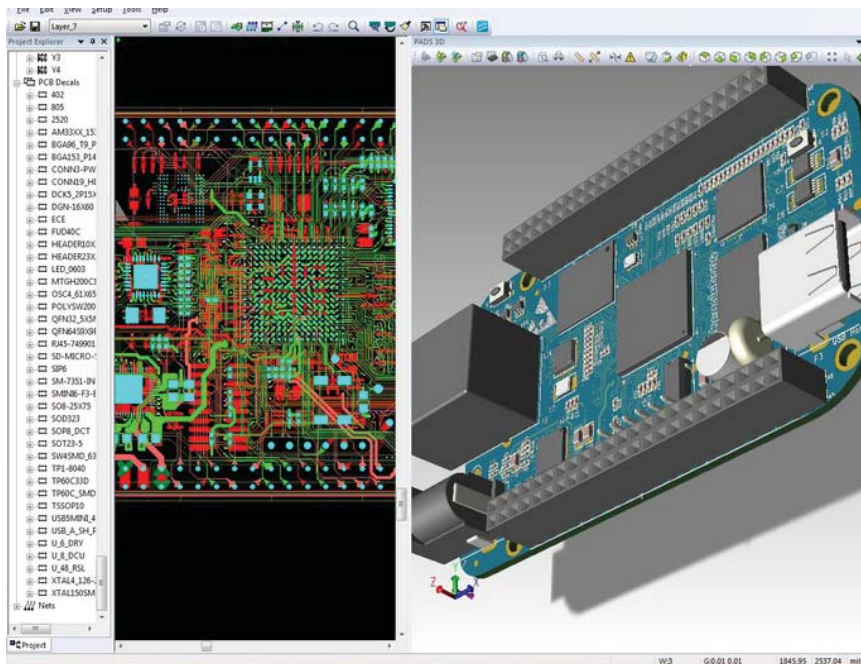


PADS Standard Plus Advanced Engineering and Design



PADS Standard Plus is an easy-to-use, complete desktop design flow for PCB hardware engineers and layout designers requiring higher productivity.

OVERVIEW

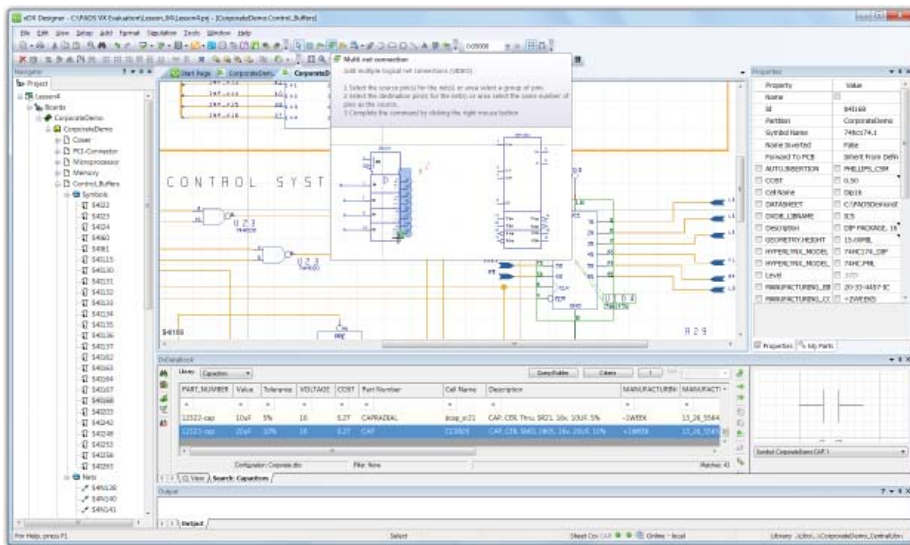
PADS® Personal Automated Design Solutions provide an easy-to-use environment that helps solve the PCB design challenges you meet every day. Using PADS, you will get your job done faster and better, while saving costs.

Targeted toward the independent engineer who requires a more complete design flow that includes advanced toolsets, PADS Standard Plus is equipped with enhanced layout and integrated analysis and verification, supplying all you need to produce quality PCBs, fast

Easy-to-use schematic and layout translators help import libraries and designs from your current toolset, whether it's Allegro®, Altium® Designer, CADSTAR®, OrCAD®, P-CAD®, or Protel®.

FEATURES AND BENEFITS:

- Easy to learn and use
- Proven technology for PCB design, analysis, and verification
- Accurately handles your tough design problems
- Reduces design time
- Full 3D visualization, placement, and clearance check



Included in all PADS configurations are intuitive project and design navigation, complete hierarchical support, and advanced tools for design rules and attribute management. Video tooltips ease the learning curve.

Schematic Design

PADS includes broad capabilities for system design capture and definition. Intuitive project and design navigation, complete hierarchical support, a starter library, and advanced design attribute and design rules management make it easy to capture and define your schematic. Achieve efficiency and productivity with full forward and backward annotation to layout and routing and a direct link to signal integrity analysis.

PADS central database includes all design rules and constraints with online DRC. The multi-level hierarchy guides you through the process of capturing rules in an easy-to-view spreadsheet user interface, automatically updating the layout as you go. Default, class, net, group, pin pair, layer, conditional, and component rules are included. High-speed rules include differential pairs, matched lengths, maximum and minimum length, and support of DDR topology (virtual pins and associated nets).

Component Management

With PADS component management, you have access to all component information from a single spreadsheet, without concern for data redundancy, multiple libraries, or time-consuming tool overhead. PADS easily integrates with corporate component and MRP

databases through Access® and Excel®, enabling geographically dispersed design teams to access central component information.

With PADS component management, databases are kept in sync and up-to-date, thus avoiding costly redesigns and quality problems that otherwise might be undetected until late in the design cycle.

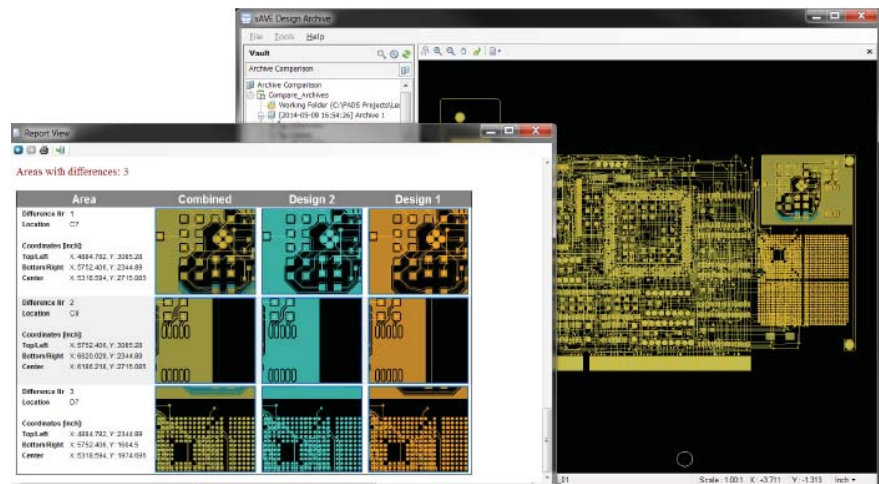
PartQuest™

PADS connects to partquest.com, a website tightly integrated with the component supplier Digi-Key® and their full component catalog. Research, identify, and purchase the right parts for your new design, then download the schematic

symbol, footprint, and parametric information directly into the PADS libraries. PartQuest provides access to more than 365,000 parts, each with complete library data. Additional parts are added on a regular basis.

Archive Management

With PADS, you can create multiple backups of your project data and easily retrieve that data later for review and modifications. You don't have to worry about losing design data while performing different scenarios (e.g.,



View reports graphically to compare differences, easily generate reports, and add red-lining and markups for future reference.

constraint management, simulation and analyses, different placement options), as PADS automatically creates archives of each scenario, saving you time and costs.

View and search the vaults to see contents quickly and easily with graphical preview. Use the vault to restore backups, create a new project from existing archives, and compare versions. Improve team collaboration with archive searching, report generation, and comparison.

Add comments and information easily with intelligent red-lining that associates specific design objects and organizes comments logically by issue or topic.

Simulation and Analysis

Analog Analysis

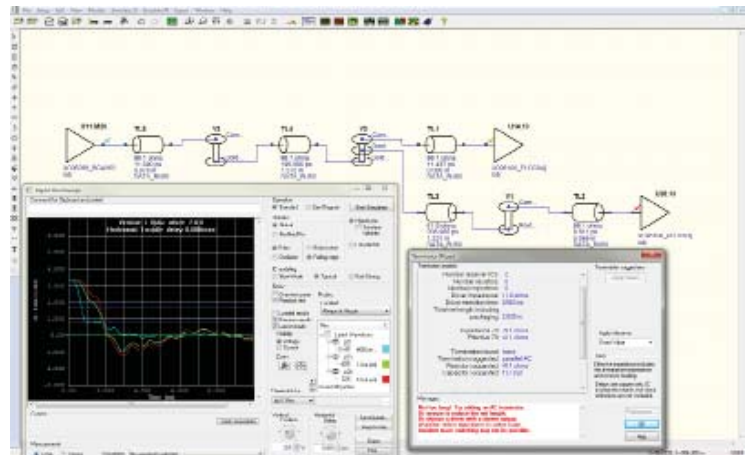
With PADS you can eliminate costly and error-prone schematic re-entry through board-level analog simulation analysis and verification, integrated directly into the schematic environment. A single schematic drives both the simulation and PCB design, shortening the overall development cycle significantly.

Simulation capabilities include DC, frequency, and time-domain analysis, as well as statistical approaches, such as Monte Carlo Analysis and multiple sweep analyses.

Waveform analysis in PADS is simple, with drag-and-drop features for fast waveform viewing and multiple cursor support. A waveform calculator and measurement tools

are available for more immediate validation and evaluation of your design. Quickly compare results by overlaying waveforms from multiple simulation runs. A range of plotting formats is available, including time domain, digital, smiths charts, and Bode plots.

PADS contains thousands of popular proven models, access to extensive external vendor libraries, the ability to import and convert existing PSpice libraries, and drag-and-drop



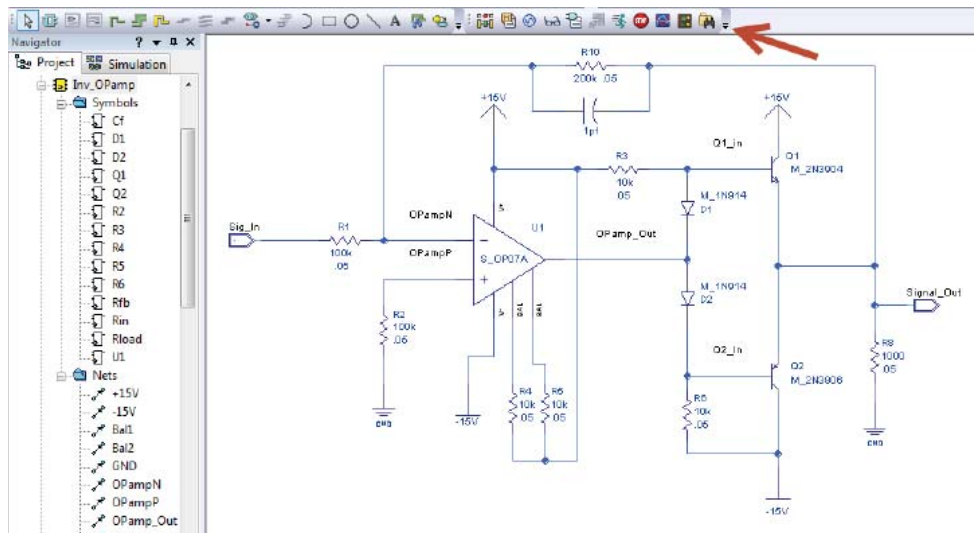
Determine routing constraints and verify your routed PCB using PADS Standard Plus signal integrity analysis, powered by HyperLynx® technology.

symbol generation for automatic symbol creation using commonly found SPICE models.

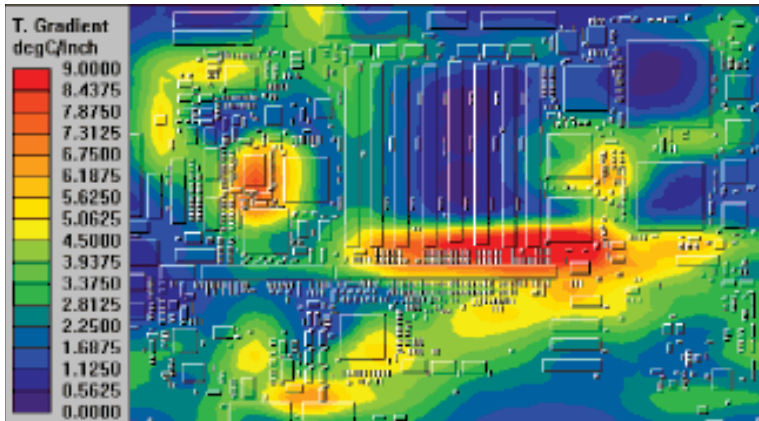
Signal Integrity Analysis

Signal integrity (SI) analysis is essential for today's designs.

Fast edge rates in today's integrated circuits cause detrimental high-speed effects. Issues such as signal degradation ranging from over/undershoot, ringing, crosstalk, and timing problems, occur even in PCB designs running at low frequencies. PADS SI analysis is fully integrated with the schematic, letting you run pre-layout analysis early in the design to identify critical problems. After layout you can analyze signal integrity and timing at three important stages: following part placement, after critical net routing, and after detailed routing of the entire board.



PADS Standard Plus schematic includes an integrated analog simulation environment that makes it easy to drive simulation and PCB layout and shorten overall design time.

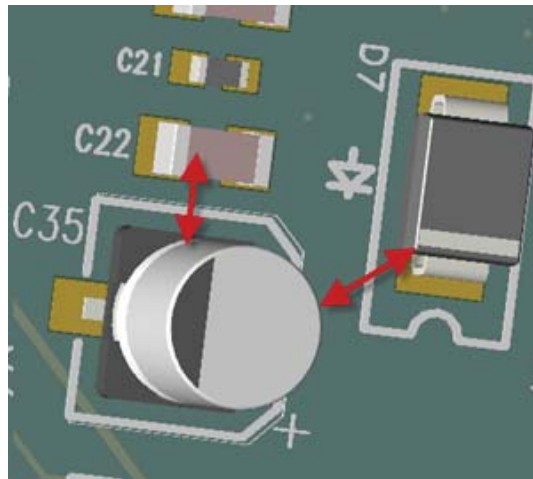


Thermal analysis is available directly from within PADS Standard Plus.

PADS signal integrity analysis is powerful and easy enough for anyone to use. You don't need to be an SI engineer to define routing constraints, verify your routed board, and ensure your design goals are met.

Thermal Analysis

PADS is unique in enabling early thermal analysis of your board. As soon as placement is complete, you can analyze board-level thermal problems on placed, partially routed, or fully routed PCB designs. Temperature profiles, gradients, and isothermal maps enable you to resolve the board and component overheating early in the design process. PADS thermal analysis takes conduction, convection, and radiation cooling effects into account, helping you identify and take appropriate action on any potential "hot spots."



Use PADS 3D to easily measure distance and object-to-object minimum distance. Measurements can be taken from axis, edge, face, and point.

PCB Layout

Save countless hours of design time with the advanced layout and routing capabilities in PADS. Advanced design rules with real-time design rule checking and bi-directional cross-

Constraints	Minimum XY (th)	Minimum Z (th)	Optimal XY (th)	Optimal Z (th)
Any to Any	5	2.5	10	5
Active Board to Assembly	0	0	0	0
Component to Mechanical	5	0	10	5
Component to PCB Assembly	25	25	25	25
Add Constraint...				
Component to Assembly				
Component to Board Edge				
Component to Component				
Mechanical to Assembly				
Mechanical to Mechanical				
Mechanical to PCB Assembly				
PCB Assembly to Assembly				
PCB Assembly to PCB Assembly				

From	To	Minimum XY	Minimum Z	Optimal XY	Optimal Z
Any	Any	5	2.5	10	5
Board	Assembly	0	0	0	0
Component	Mechanical	5	0	10	5
Component	PCB	25	25	25	25

PADS Standard provides 3D design rule checks, based on your PCB design constraints and clearance definitions.

probing ensure that boards adhere to your design specifications. With PADS, you can eliminate costly fixes after prototype and manufacturing. Split and mixed planes are also easy to create and modify, making customized thermal connections a snap.

RF capabilities include via-stitching for easy creation of co-planar wave guides and the ability to flood a region with vias according to your rules. Importing complex RF shapes and chamfered corners is also supported.

You can also achieve significant time savings with physical design reuse, in which you repeat placed and routed complex circuits in channel designs or duplicate the circuit for creating new designs.

Auto-dimensioning, direct DXF import into the board and part library editor, advanced fabrication verification tools, assembly variant functions, and 3D viewing and editing are also included.

Optional capabilities include advanced packaging utilities for bare die design, test-coverage auditing, an IDF link to third-party CAD/CAM tools, and ECAD-MCAD collaboration.

3D Visualization and Editing

PADS Standard Plus adds quality 3D visualization and editing capabilities to your layout environment. With PADS you have photorealistic visualization of your PCB assembly, including components, pads, traces, silkscreen, solder mask, and more. It also provides dynamic object synchronization. Eliminate costly and time consuming errors by

visualizing the PCB in 3D, and identifying conflicts with other devices or mechanical objects.

Easily place components in 3D, take measurements and run clearance checks based on your PCB design constraints. You can use online DRC during placement, and batch DRC for the entire, making your layout process quick and efficient.

You can add 3D models to your library by simply importing STEP files, making 3D components, enclosures, and board assemblies accessible and ready for use easily. You can also export your assembly at any time to STEP, 3D PDF, JPG, and more, making collaboration and documentation easy and effective.

Routing

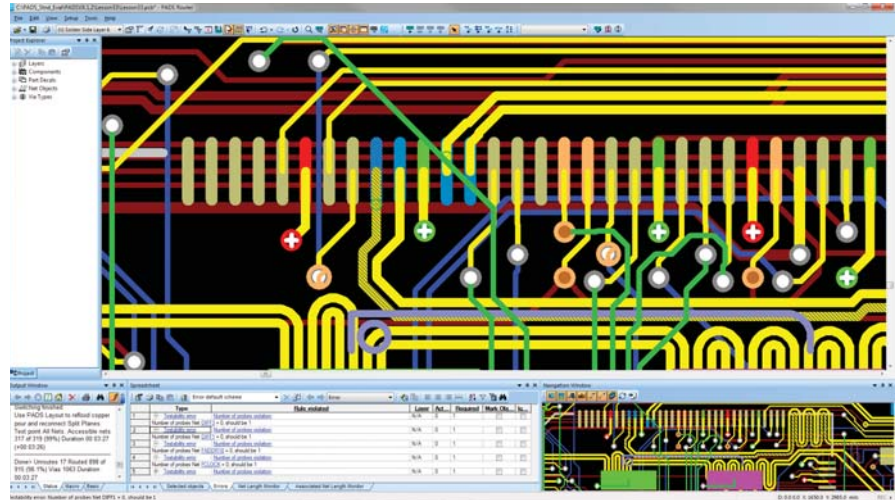
Easily and interactively route all your design elements, including analog, digital, and mixed-mode, with PADS. You have control over all routing aspects and can choose between orthogonal, diagonal, and any-angle styles.

Sophisticated design rules guide trace-length requirements and make it easy to interactively route differential pairs. Intuitive graphical monitoring tools provide real-time feedback for immediate visual validation.

Proven routing algorithms let you apply robust design rules and advanced design constraints between objects

or groups of objects, such as components, layers, nets, and vias.

Operations best suited to an autorouter include fanout and routing by individual components or groups of components.



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

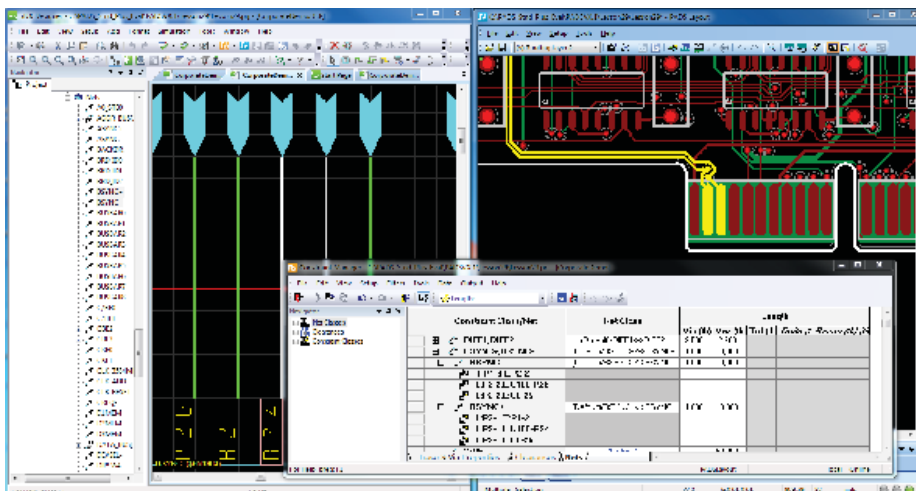
After routing your critical nets, use post-layout verification to analyze signal integrity and timing, and to ensure your design criteria are met before sending your board to manufacturing.

Advanced PCB Option

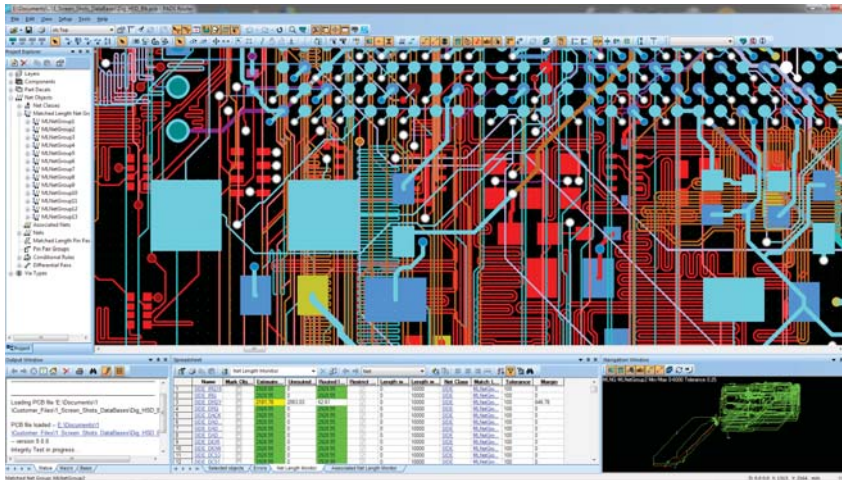
To speed your time to completion and increase manufacturability, add the PADS Advanced PCB Option.

Design for Test

PADS can automatically insert test points as part of the normal routing phase, to optimize test points placement. You can set rules for component pad entry and via placement under SMD pads and then check them using post-route audits and design verification.



Set design constraints from either the schematic or layout in a spreadsheet-based editor.



The Advanced PCB Option allows automatic routing of high-speed constraints.

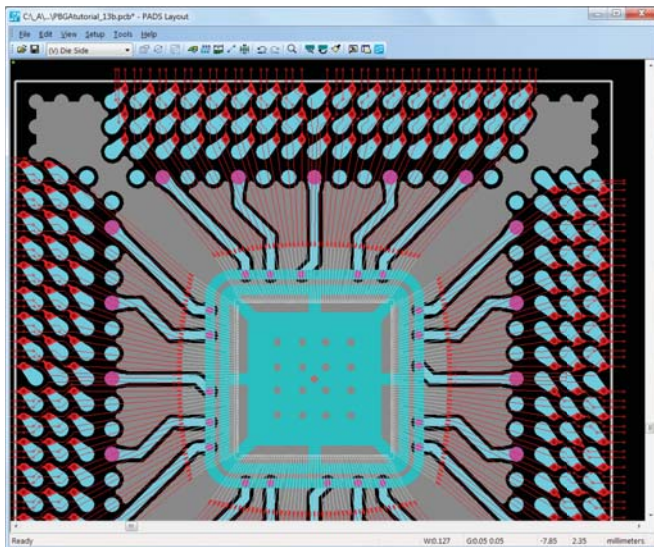
High-Speed Autorouting

Automatically route constrained nets with the high-speed autorouter.

Differential pairs, maximum and minimum length nets, and matched-length nets can be completed quickly and verified to the defined constraint.

Advanced Packaging

Significantly reduce package design time and improve your PCB design quality with PADS advanced packaging tools. PADS automates key aspects of the package design process, such as die capture, rules-based wire bond design,



Advanced packaging tools reduce design time when designing with bare-die components.

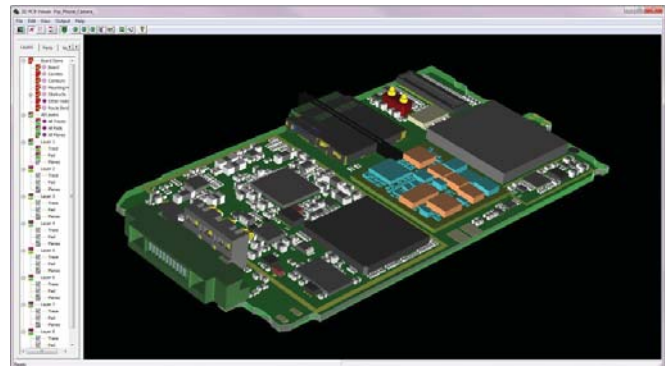
flip-chip definition, and report generation, to improve the quality of your final design.

With PADS you can easily design and place bare-die components on chip-on-board (COB) and multi-chip modules (MCM), ball grid arrays (BGAs), and chip-scale packages (CSPs). A variety of die, die flag, and route wizards make it easy to route single-chip packages and define die flags.

Additional Options

Collaboration with MCAD

Collaborate with your mechanical CAD system using IDX data exchange files to communicate design intent between electrical and mechanical CAD systems. You can preview and consider design



Connect electrical and mechanical domains by adding collaborative tools to PADS Standard Plus.

proposals, then accept, reject, and counter-propose design proposals between disciplines at any time throughout the design process. PADS keeps you and the MCAD designer in your respective system's comfort zone, making collaboration effective and convenient.

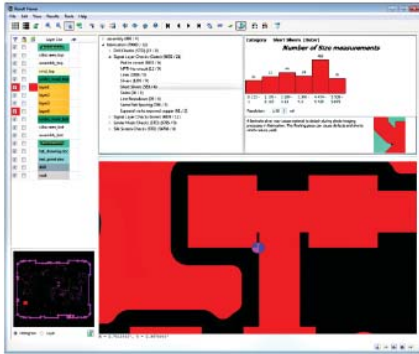
With PADS you can easily collaborate within your own environment, consistently and iteratively, with an intuitive 3D visualization of both the PCB and enclosure. With fast and effective communication between you and the mechanical engineer, you can get products to market faster, while keeping development costs low.

Design for Manufacturing Analysis (DFMA)

With DFM analysis in the PADS flow, you can minimize production issues, achieve fewer revision spins per design, and save time in your release schedule.

Ensuring that your design is prepared correctly for manufacturing is critical because PCB manufacturers value fast throughput more than quality, meaning design changes made to expedite production may not be communicated back to you.

To retain control over your design, it's essential to find and resolve problems such as resist slivers, unintended copper exposed by soldermasks, and improper testpoint-to-testpoint spacing during layout. By validating your PCB layout for fabrication and assembly before manufacturing,



Adding DFM analysis lets you identify assembly and test issues before they cause production problems.

critical net routing, use post-layout signal integrity analysis to analyze signal integrity and timing and ensure that all design criteria are met before sending your board out for manufacturing.

you'll save money and get your product to market more quickly.

PADS DFMA includes more than 100 of the most commonly used fabrication and assembly analyses, making it easy to identify issues that cause production delays. After performing

Customizable User Interface

If you like to modify your tools to the way you work, PADS permits on-the-fly customization of menu items, toolbars, and hotkeys. Simply drag and drop new icons onto new or existing toolbars. The customizable user interface also supports savable workspaces, allowing easy storage and recall of screen layout preferences when multiple designers share the same computer. There is even an editing environment for creating custom macro applications using Visual Basic (VB) or C++.

Why Mentor Graphics?

When selecting a PCB design solution, you're looking for more than new design tools; you're looking for a partner that can help you achieve your business goals. Mentor Graphics is a \$1.24 billion company based in Wilsonville, Oregon that has been helping companies like yours be successful in electronic product design since 1983.

Our focused development of powerful, easy-to-use capabilities within the PADS flow help you solve today's toughest PCB design challenges. This razor-sharp approach has made us the worldwide standard in desktop PCB design and the only 5-time STAR award winner for EDA customer support.

For the latest product information, call us or visit: www.pads.com

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