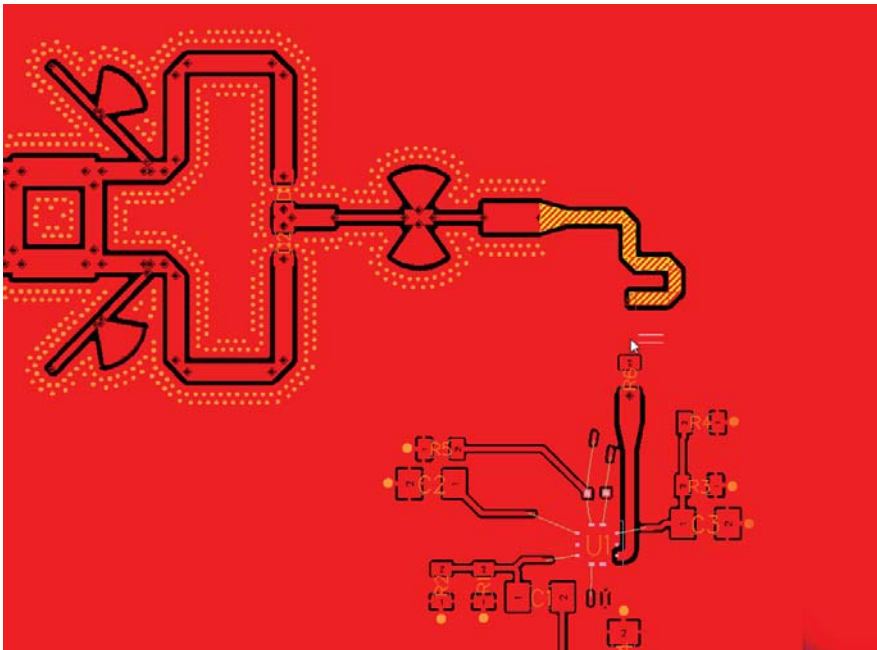


Advanced RF Design Option for PADS Professional



Use PADS Professional to design RF, analog, and digital circuits on the same PCB.

MAJOR BENEFITS:

- Direct inter-tool communication interface eliminates manual file transfer
- RF and PCB parallel design reduces time-to-market
- Efficient cross-team collaboration between RF and PCB
- Dynamic design-database updates reduce errors
- Improved manufacturing yields and time-to-volume reduce product cost
- Accurate simulation reduces over-design margins
- Known design margins eliminate late in the cycle surprises

Overview

Many of today's product designs include multiple RF modules, with high-speed digital and analog circuitry in tight proximity on the same board. For complex system-level designs, as much as 75% of the total cycle time can be spent on RF circuits, making it imperative to find ways to drive efficiency through this process.

Also problematic are the circuit translations required by dedicated RF design tools. Because schematic, layout, and libraries are often translated separately, the RF design process is not only time-consuming but can be prone to errors.

PADS Professional offers an optional solution for integrated, multi-technology RF design. Developed in collaboration with expert RF designers and RF simulation vendors, the Advanced RF Design option adds integration of packaged parts, RF component design, parametric circuit design, design optimization, and integration with interaction analysis, design validation, and design trouble-shooting to take you faster and safer from start to finish.

RF and System Design Integration

With the Advanced RF option, RF circuits can be designed directly in PADS Professional or be transferred to PADS from Keysight ADS. No more schematic “black boxes”; these are true RF schematics in system-level design. To fully support RF designs, PADS Professional was designed to understand RF, not just translate the design. A good example is when you add parametric circuit elements equivalent to RF elements. The parametric shapes library is identical to the ADS library, to ensure that what you simulate is also what ends up on the PCB.

Parts Design and Optimization

Design RF components in PADS, or modify existing PADS parts to become true RF components, rather than imported polygons. Schematic symbols are auto-generated, for quick and easy use on your PCB. You can also optimize RF shapes with a HyperLynx® full-wave EM (electro-magnetic) solution. Efficient tuning and optimization integrations with Keysight ADS (ADS Tuning expressions) are included, with a bi-directional tuning flow for RF interconnects to significantly reduce time-to-market.

RF Layout Features

To further reduce design time, a large number of layout features have been added to the RF Design Tool. New RF layout features have been added to the RF Design environment, which is a modeless and RF-centric environment of PADS Professional. By keeping RF-specific functions separated, the layout tool learning curve is minimized.

Stitching Vias

Adding ground vias to shield RF circuits can be time consuming. With PADS Professional, a large number of vias can be added in seconds. Also, vias can be grouped to allow easy movement or deletion, and vias can be added based on user-provided rules.

Clearance Rules

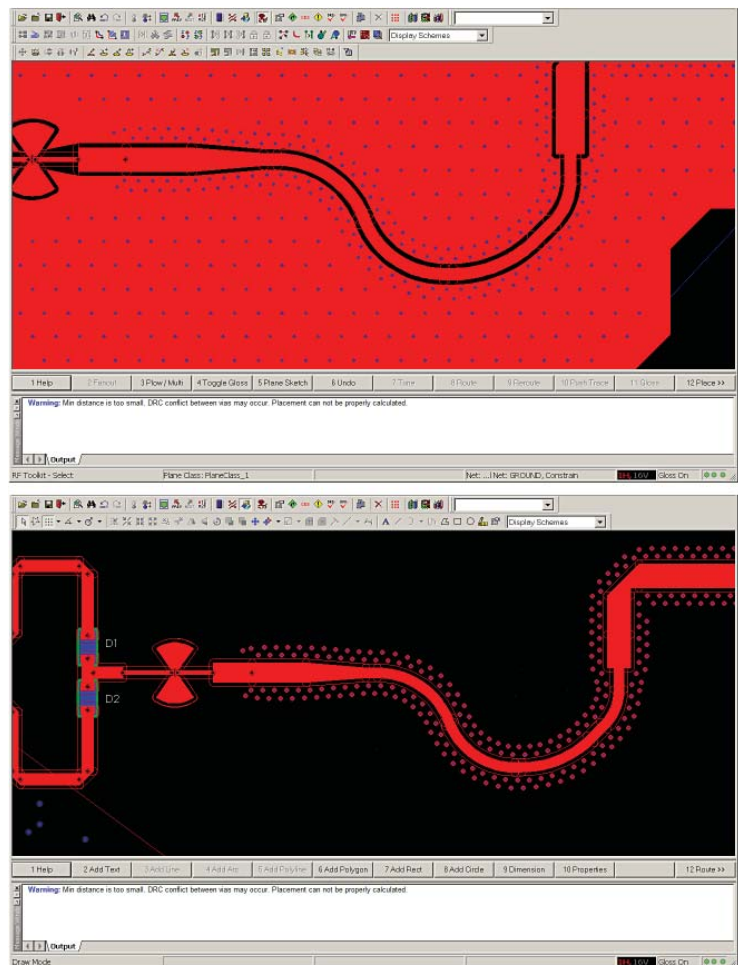
RF designs usually have very restrictive clearance requirements. A sophisticated graphical interface allows you to control full clearance around RF elements. The clearance can be controlled not only on the layer where the circuit is placed, but also on adjacent layers. Clearance can be defined globally for a whole circuit or for individual elements of the circuit.

Auto Arrangement

The auto-arranger automatically places RF circuits, and can handle partial selections from a RF circuit or arrange the full circuit. RF shapes connect to each other at a natural angle but can be micromanaged using a user-friendly GUI.

RF Groups

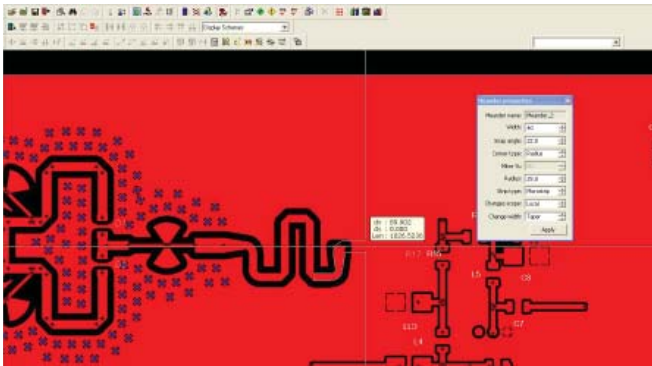
RF circuits can be grouped to ensure that the circuit stays intact on the main system board. A circuit can also be divided into subgroups for partial simulations or to protect parts of the circuit. Non-RF objects, such as high-speed traces, plane shapes, or cutouts can be added to RF groups for inclusion in real PCB simulations. Additionally, Design elements can be grouped under a user defined name such as Amplifier, Filter or Lbn. The group can be managed as if it is one single design object, and multiple groups can be created in a hierarchical fashion. The content of a group can be sent to ADS with a single mouse click.



Quickly add any number of stitching vias.

Meanders

Meanders can be added at any time in layout to allow connection between elements in a controlled manner. As an RF shape, meanders can support sophisticated clearance rules and be broken down into elements that can be simulated. The meander can also be sent as layout data for EM simulation. Additionally, meanders can be sent to ADS for tuning and optimization and the tuned meander can be read back into PADS.



Meanders can be added at any time.

RF Design Validation and Troubleshooting

You can transfer your layout to ADS for 2D EM validation, or transfer the design to HyperLynx full-wave EM to validate 3D structures. Validate exact layout metal against performance requirements and use the 3D simulation results to troubleshoot issues before building any hardware. Eliminating problems in simulation saves time and money compared to finding them late in the design.

Simulation

Schematic entry and RF circuit layout can be started in the PADS or ADS environment for maximum flexibility. Simulation, tuning, and optimization capabilities are supplied by the RF simulator. An intelligent link transfers only what the RF simulator needs for a successful simulation, rather than the whole design, which makes this an accurate and reliable process, rather than an error-prone translations.

Simulating the RF section of a real PCB can be difficult, typically including cumbersome translations of non-intelligent layout data, such as GDSII or Gerber. The PADS Professional methodology transfers layout data and includes metal shapes, cutouts, and external connections such as ports. This intelligent link also supports simultaneous connections to ADS. On large or complex RF circuits, the simulation can be distributed to multiple computing platforms to reduce simulation time.

3rd-Party Design and Analysis Tool Integration

For maximum flexibility, simply add 3rd-party data such as intelligent RF components by importing DXF, and converting it into an RF component. PADS Professional will auto-generate a schematic symbol, making it ready to use quickly and easily.

You can also export your design data into ODB++ for handoff to manufacturing. This ensures that a complete and accurate set of data, including RF shapes, is transferred to the PCB fabricator.

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

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