ZUKEN®

CADSTAR™

High-speed Design
CADSTAR Place and Route Editor
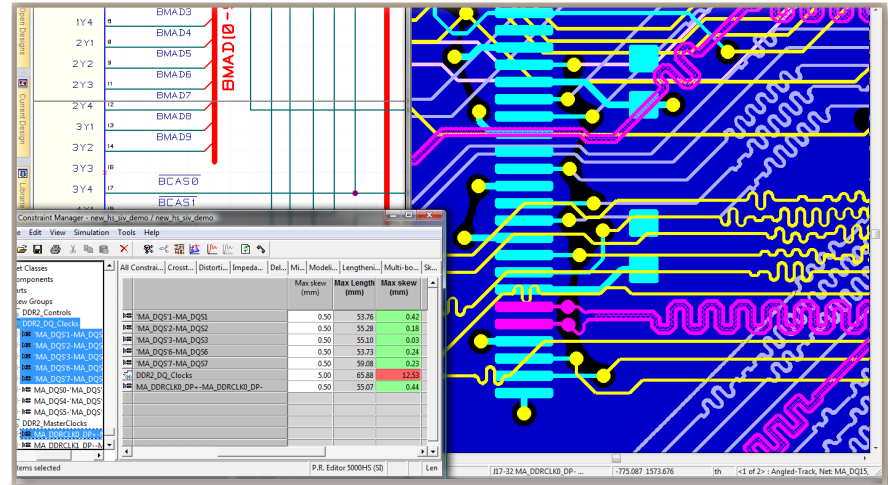
TOP FEATURES AND BENEFITS

- Integrated within CADSTAR to provide a dedicated rules-driven place and route environment.

- Supports cross-probing with schematic and layout to improve data access and design object selection.

- Advanced interactive and automatic placement and routing algorithms ease the design of any design technologies.

- Embedded Constraint Manager enables rules-driven approach for high-speed applications.

- Common constraint entry system for circuit design, layout and analysis.

- Assign standard or user-defined topologies to control route order and timing for high-speed signals.

- Automatic generation of extendednets, busses and differential pairs.

- Support for static or self-healing conductive areas to simplify the design of complex power and ground planes.

- Automatic fan-out and test-point generation to reduce effort in routing and ICT data generation.

Introduction

CADSTAR Place and Route Editor (P.R.Editor) is an integral part of the CADSTAR solution. Using the latest algorithms for interactive and automatic placement and routing, it helps achieve optimal routing results. Supported by a constraint-driven process, P.R.Editor enables designers to meet specifications and performance goals throughout the design process.

CADSTAR P.R.Editor offers an extensive set of electrical and physical design rules that allow you accurately implement the latest design technologies. Designers can interactively and automatically design and verify their constraints and use area-based rules to accommodate the complex matrix of timing rules and signal quality requirements found in today's high performance designs. These include high-speed interfaces such as DDR2/DDR3, SuperSpeed USB and PCI Express. Embedded within the CADSTAR design suite, P.R.Editor can help you manage today's advanced technology design challenges with ease.

Concurrent input and verification of high-speed constraints

Intelligent component placement

CADSTAR P.R.Editor provides visual indicators to guide you toward optimum placement that conforms to predefined constraints. Components can be dynamically pushed aside, aligned with other devices or spread apart to optimize available space. Cross-probing is supported with all other CADSTAR applications, including Schematic Editor and the Constraint Manager to simplify the placement of critical components.

Constraint management

P.R.Editor is a constraint-driven routing environment that follows a wide range of high-speed rules, including min/max length, absolute and relative skew, and crosstalk limits. The constraint manager in P.R.Editor allows entry of constraints or uses the constraints defined during circuit design to provide flexibility managing engineering requirements at any point of the design process. Constraints can be verified as the user is routing or during post-layout. Configurable reports can be generated to share and confirm results of signal impedance, length and delay, and crosstalk results.

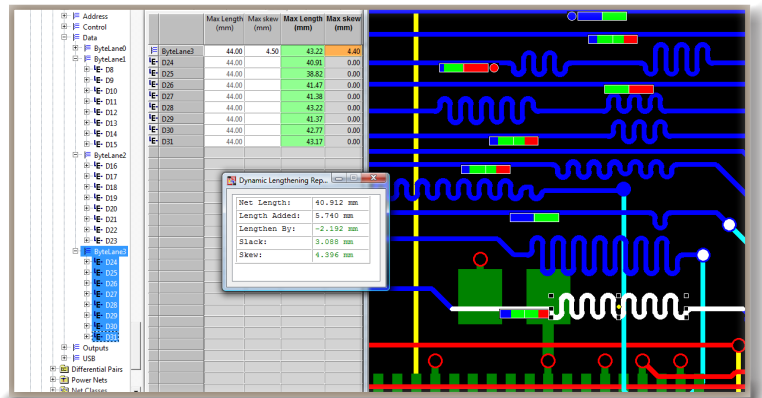## Complete high-speed design environment

Designers seeking a powerful interactive and automatic high-speed routing solution will find P.R.Editor offers full control of the routing process supported by the electrical and physical rules entered in the constraint manager. Users experience an easy-to-use solution and a reduced learning curve with a spreadsheet-based constraint management system, access to a variety of command inputs (with shortcuts), assist menus and mouse strokes.

To reduce the effort in designing high-speed applications, features such as the Activ-45 mode have been developed for ultimate speed and precision during interactive routing. Activ-45 offers single-click routing with auto-completion and dynamic push-and-shove to enable you to complete the most challenging PCBs.

P.R.Editor simplifies the routing of impedance-controlled lines with rules to constrain signals to any layer set, and options to predefine trace width and spacing by layer to ensure signal quality and reduce reflections during high-speed signal propagation.
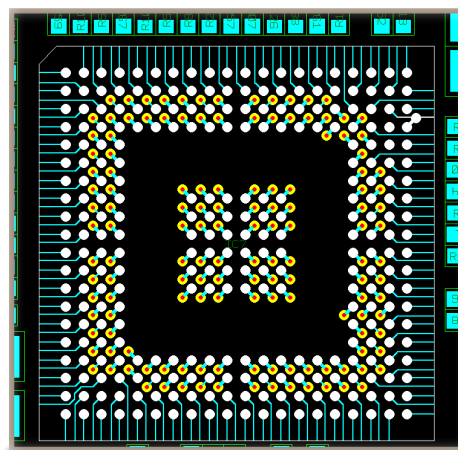
P.R.Editor includes other advanced routing algorithms such as routing of bus patterns, differential signals and curved and free-angle routing to address specific high-speed design challenges.

To improve routability of high-density interconnect, designers can use the fan-out router to create intelligent breakout patterns from high-pin count devices, with support for automatic creation of spiral via patterns to maximize access to subsequent routing on inner layers.

Dynamic tuning of constrained signals

P.R.Editor also includes a rules-driven autorouting system where selected nets or the complete design can be automatically routed. The optional Dragon Router supports features that include multi-pass routing and automatic routing of differential pairs. The Dragon Router also includes a routing consultant to help identify any routing obstacles and helps plan a sequence of routing steps, with the support of a native 45° algorithm, to maximize completion and manufacturability of your design.

Automatic generation and reuse of fan-out patterns

Design for Manufacturing

P.R.Editor supports a complete and flexible design rule editor to optimize layout for manufacturing. Designers can automatically improve routing patterns, reduce via counts, and define area-based rules to meet manufacturing specifications. Other features include post-processing of traces to meet minimum or maximum trace widths, removal of acid traps, teardrop generation, and automatic insertion of test-points.