ZUKEN

CR-8000™

Multi-board System Design
Design Force

TOP FEATURES AND BENEFITS

- Hierarchical multi-board design and system-level signal and design traceability

- Combine conventional 2D design with 3D design in real-time

- 64-bit, multi-core, multi-threading platform with support of OpenGL and DirectX graphics for optimal performance

- Concurrent design of multiple PCBs in one environment

- True 3D architecture supports accurate design of embedded components, die in cavities, and embedding ICs directly in the dielectric material

- Single environment for high-speed design with constraint management and SI and PI analysis

- Integrated electromechanical environment enables users to design with accurate 3D enclosure model in real-time

- Design to any manufacturing specification during layout with built-in design for manufacturing (DFM) checks

- Integrated IP Management allows filtering of critical design details when exchanging data with suppliers

- Chip-package-board co-design to optimize I/O for improved routability

- Embedded work-in-progress (WIP) data management with DS-2, Zuken's electronic library and data management solution

- Full compatibility with CR-5000 Board Designer

Introduction

Break down the boundaries of your electrical design process with Design Force, a true innovation in system-level IC package and PCB design and analysis. As the process for designing a complete product continues to increase in complexity, it often includes technologies that have become difficult and sometimes impossible for most ECAD tools to manage and address. Design Force provides the ability for design teams to take system-level design information from as early as the conceptual and planning phase and layout each board in the product, simultaneously considering the entire system view.

Design Force fully leverages the latest industry hardware and software capabilities, allowing users to design in a native 3D environment, obtaining optimal performance by utilizing native 64-bit, multi-threading, multi-core processors. Design Force supports multiple client-server implementations and includes the ability to work from your corporate cloud. Many consumer devices have introduced the use of finger gestures to communicate with touch screen devices. Design Force allows users to make simultaneous use of both hands, interacting with the mouse and a touch pad to promote maximum productivity during the design process by significantly reducing the number of menus, mouse clicks and mouse travel distance.
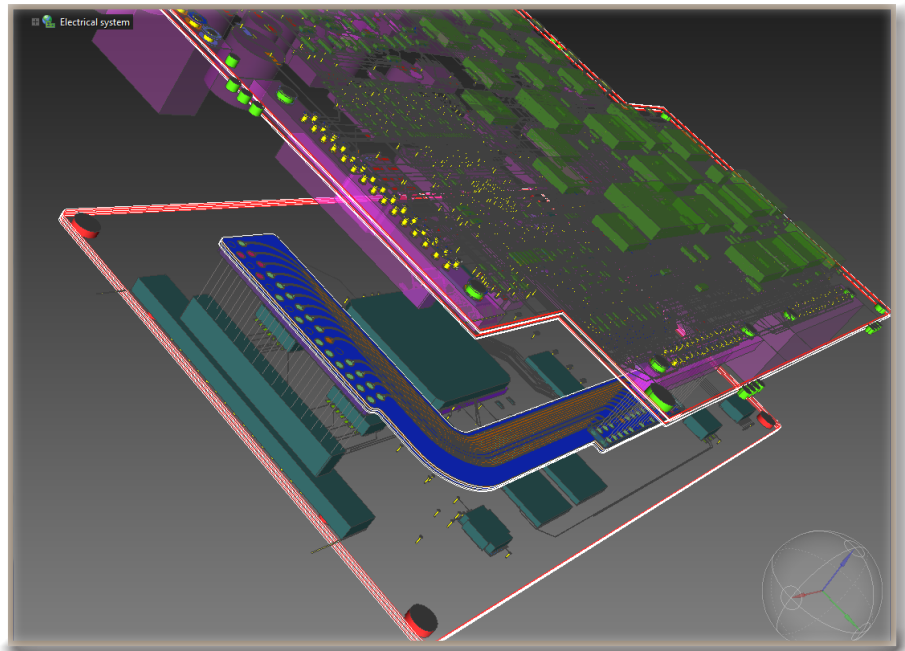
Multi-board design of two rigid PCBs connected by a flex PCB

Multi-board design

CR-8000 was developed to facilitate the development of a product from concept to manufacturing. Design Force exchanges information with System Planner and Design Gateway to drive the design process and share changes between the product planning and circuit design disciplines. This allows design teams to create multi-board designs without unnecessary iterations during the design process.

Design Force lets you manage all of the boards in a system, and bring them together in one view using the Multi-Board Constraint Browser. This is where you define the connection between each entity of the system and display them in Design Force. You can select between a combination of PCBs, packages, and SoCs into one design and complete the layout of the design as a complete system. The Multi-Board Constraint Browser can then highlight the signal across each entity in the system and analyze the entire interconnect length.

The need for 3D

Since the introduction of CAD systems for electronic design, layout of a PCB in 2D has been sufficient for most mainstream technologies. With design pressures such as reducing cost, miniaturization, and adding more features, the use of the latest available technology has become imperative.

Today's requirements include embedding passive and active components on inner layers, inside a cavity, and within the dielectric of a board stack-up. The introduction of through-silicon-via (TSV) technology has further increased the complexity of designing a product using advanced packaging technologies. 2D CAD systems cannot manage these requirements intelligently and take into consideration the necessary manufacturing rules. Design Force is a true 3D system that allows users to design in 2D or 3D as needed to accurately design with the latest technology and respond to market demands in high-pressure business cycles.

Unified high-speed design environment

High-speed routing and simulation come together in one environment with Design Force. Layout for any application is simplified with access to easy-to-use interactive placement and routing features and powerful autoplacement and autorouting capabilities. Engineers and layout designers can manage constraints and conduct signal integrity analysis concurrently during the physical layout.

Addressing key issues early in the design process, Design Force allows access to embedded EMI and power integrity analysis, and supports integrations to best-in-class analysis solutions for disciplines such RF, Full-wave 3D signal integrity, power integrity, and thermal.

Full compatibility with CR-5000 Board Designer

Design Force can be added to your existing CR-5000 production environment. Layout designs from Board Designer can be readily exchanged with Design Force, allowing you to take advantage of its innovative capabilities and still work within your current process.

Additional features of Design Force

- Co-design system-in-package (SiP), package-on-package (PoP), package-in-package (PiP), and through-silicon-via (TSV) with bidirectional support of exchanging SoC information using LEF/DEF format

- Mechanical Collaboration – import 3D enclosure and design accurately with true mechanical constraints

- Dragon EX – multi-area interactive and automatic routing

- ADM Rule Checker – concurrent verification of design for manufacturing requirements

- DFM Center – panelize and create documentation and outputs for manufacturing

- EMC Adviser EX – design rule checks focused on resolving EMI issues

- Design Reuse – allows the user to manage reuse layout blocks

- IP Management – allows filtering of vital information to secure your IP when exchanging data with suppliers
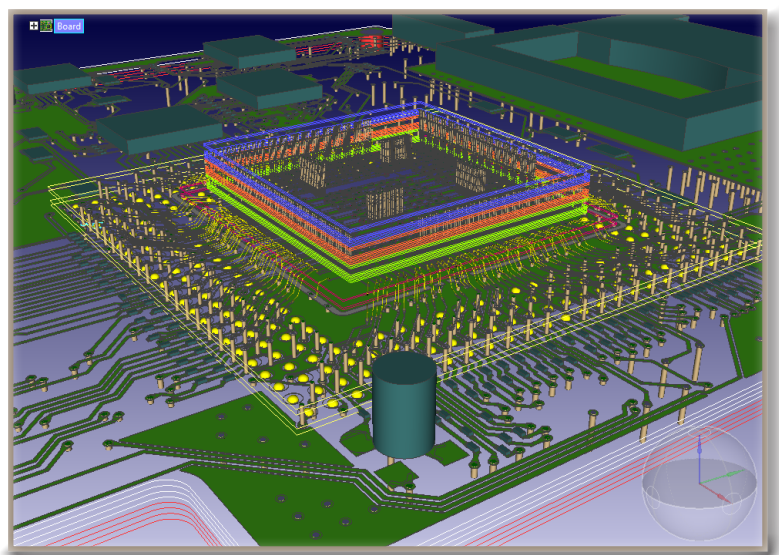
3D co-design of SiP with TSV on a PCB