DATASHEET

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# Cadence 3D Components: Enabling IP Sharing of Multiphysics System Design and Analysis

## Supporting Clarity 3D Solver

The present and future of high-performance electronic systems require that design teams integrate all components to ensure specifications are met and timelines maintained. The traditional design methodology of integrating in the lab is not a realistic means of meeting aggressive timetables; therefore, the common practice is to integrate components from multiple suppliers into one complete design to ensure first-pass success. However, vendors are often hesitant to share the level of detail required for complete simulations, even though detail is necessary to realize end products and systems.

Cadence provides a solution for this conundrum called 3D components, which enables designers to create an encrypted model and choose to show the consumer the outer portion of the design without revealing the underlying proprietary IP. In Figure 1, the left side highlights the menu that generates and exports a 3D component. The small box on the top right shows the 3D connector component in full detail, with the small box below it showing the resultant IP-protected equivalent model with only the port location and rough footprint outline.

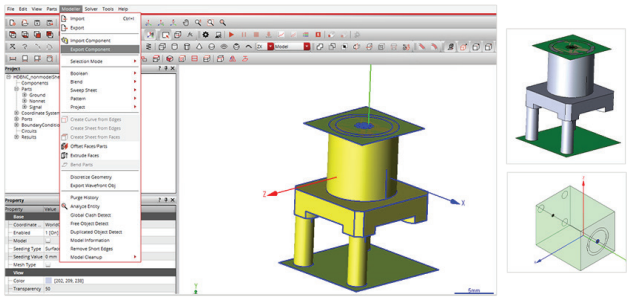

*Figure 1: Encrypted model of a 3D connector component*

## Why Encryption?

Cadence's 3D encryption of components enables designers to edit, share, and work on high-speed and high-frequency electrical components with outside customers and partners. It does so by allowing designers to protect the underlying IP of their designs when collaborating with others by encrypting use thereof through password protection and hiding the main portions of the design, showing only the geometries needed. With Cadence encryption support within its multiphysics systems analysis (MSA) products, including the Cadence® Clarity™ 3D Solver and Celsius™ Thermal Solver product lines, designers can freely share their designs without fear of revealing confidential IP.

## What are 3D Components?

A 3D component is an encapsulated model that includes a set of 3D objects, sheets, boundary conditions, and ports/excitations from the Clarity 3D Solver, Clarity Transient Solver, and/or the Celsius Thermal Solver.

Using the Clarity 3D Solver as an example, designers can easily import and export individual 3D component designs (Figure 2) across Cadence platforms such as Allegro®.

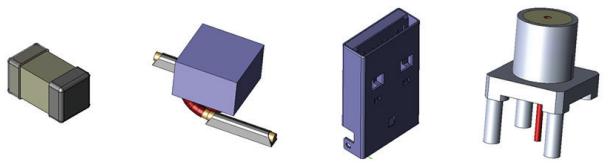

*Figure 2: 3D components of typical lumped models (capacitor, coil, and connector)*

## Enabling IP Sharing

Once a 3D component is encrypted, it can be shared. As Figure 1 shows, the receiver of the protected IP cannot see the inner workings of the components. The designer has successfully hidden the components' IP from view, guaranteeing IP protection while enabling customers and partners to use these components to carry out their respective multiphysics system-level simulations without any loss of accuracy (Figure 3).

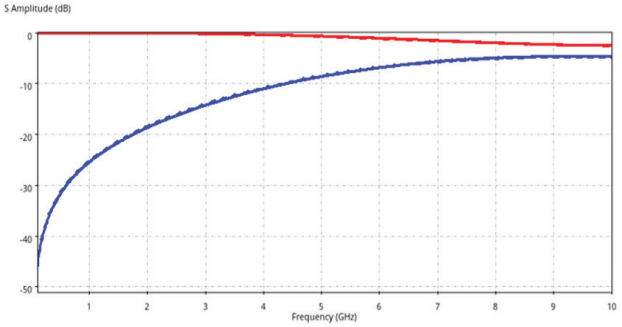


*Figure 3: S-parameter comparisons (return-loss and insertion-loss) of the connector model and its equivalent encrypted model*

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