

Memory Solution

Overview

Memory products are among the most universally utilized devices in today's electronic systems. Designers of these devices are routinely faced with a number of challenges:

- ▶ *Completing fast and accurate analog, full-chip and mixed-signal simulation*
- ▶ *Maximizing yield in advanced processes*
- ▶ *Finding and eliminating electrical integrity issues*
- ▶ *Performing complete functional verification of all scenarios*
- ▶ *Reducing power consumption*

Synopsys provides cutting-edge design tools for IC design, verification, and manufacturing that help you shorten time-to-market, increase yield, and maximize your success in today's demanding memory market.

Key Benefits

Synopsys is a world leader in electronic design, offering solutions that encompass tools, methodologies, IP, and services to help you address the key issues of memory design. The key benefits (Figure 1) include:

- ▶ Fast and accurate design via the industry's most comprehensive and trusted design and sign-off flow.
- ▶ Low power design via the tools and methodologies within the Synopsys Eclipse™ Low Power Solution
- ▶ High quality-of-results via our complete selection of memory verification products and methodologies
- ▶ Maximized device yield using a comprehensive suite of DFM, yield prediction, and TCAD applications

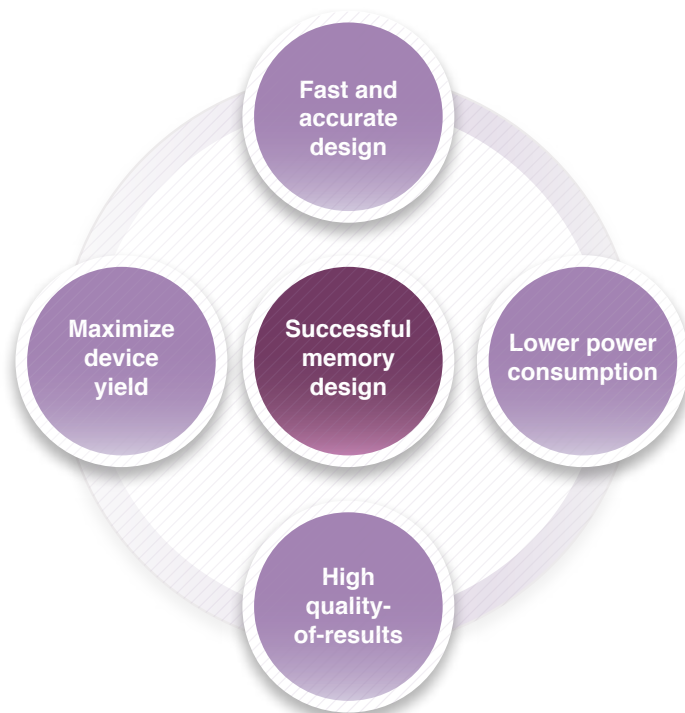


Figure 1: Key benefits of Synopsys memory solution

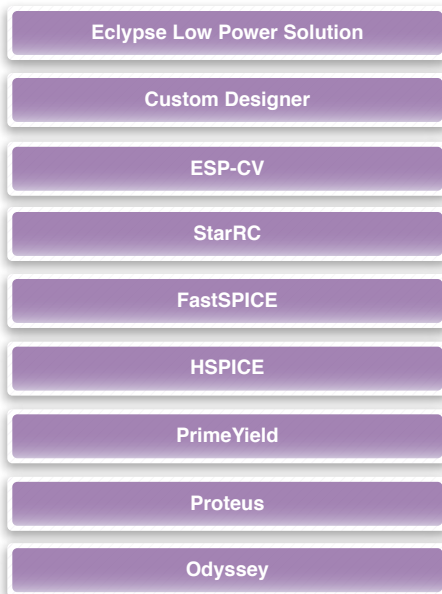


Figure 2: Elements of the Synopsys memory solution

Fast and Accurate Design

Designing memories requires engineers to understand and optimize the tradeoffs of area vs. performance vs. signal integrity. Synopsys can help memory designers meet their targets with a complete offering of design and sign-off tools (Figure 2). The Galaxy Custom Designer™ suite is the first analog/mixed signal design environment to address custom design and verification using open standards and interoperable PDKs. Its ease-of-use helps you reduce time-to-market by increasing your design productivity, especially crucial for large designs, such as custom memories.

StarRC™ is the preeminent RLC extraction tool for advanced node processes and is recognized as the standard for accuracy, capacity and performance. It is designed to address parasitic extraction issues for 45nm (and below), crucial for accurate analysis of especially sensitive or timing critical circuitry (e.g. the path to the furthest bit cell).

Trusted Low Power Design

Synopsys provides a full range of tools and methodologies to meet the design and power constraints and tight market windows faced by today's memory vendors. The Eclipse Low Power Solution is tailor-made to address the growing requirements of low power design.

High Quality-of-Results

Synopsys helps engineers at memory companies manage their unique verification requirements. Synopsys offers the Discovery™ Verification Platform which enables a gamut of simulation technologies, ranging from the precision analog/digital level with HSPICE® (e.g. sense amps and critical paths) to full-chip verification with our suite of FastSPICE simulators, which are used heavily in simulating large designs at the transistor level and designed for memory verification.

For functional-level verification, ESP-CV™, also a part of the Discovery platform, is a powerful, customer-proven equivalence checker designed for comparing transistor vs. RTL functionality in compiled and custom memory designs.

Maximize Device Yield

Meeting the market requirements for increased capacity and production volume requires designing at the complex and expensive 65 nm and 45 nm nodes. Synopsys provides a host of solutions for DFM, yield management, and process development. PrimeYield™, for example, aids the designer in incorporating OPC effects within the physical design phase useful for designing long address lines or minimum size devices in 45nm processes. Proteus predicts the 45nm proximity effects important for sensitive analog structures. Odyssey™, a predictor of process yield issues, will allow you to move your designs to volume production faster and with less risk.

Summary

Synopsys provides leading edge technology that is used and trusted by all leading companies in memory design. Find out how Synopsys can help you design, verify, and build high-capacity memory devices faster, predictably, and with high yield.

For more information about Synopsys products, support services or training, please visit us on the web at: www.synopsys.com, contact your local sales representative or call 650.584.5000.