Calibre CMPAnalyzer

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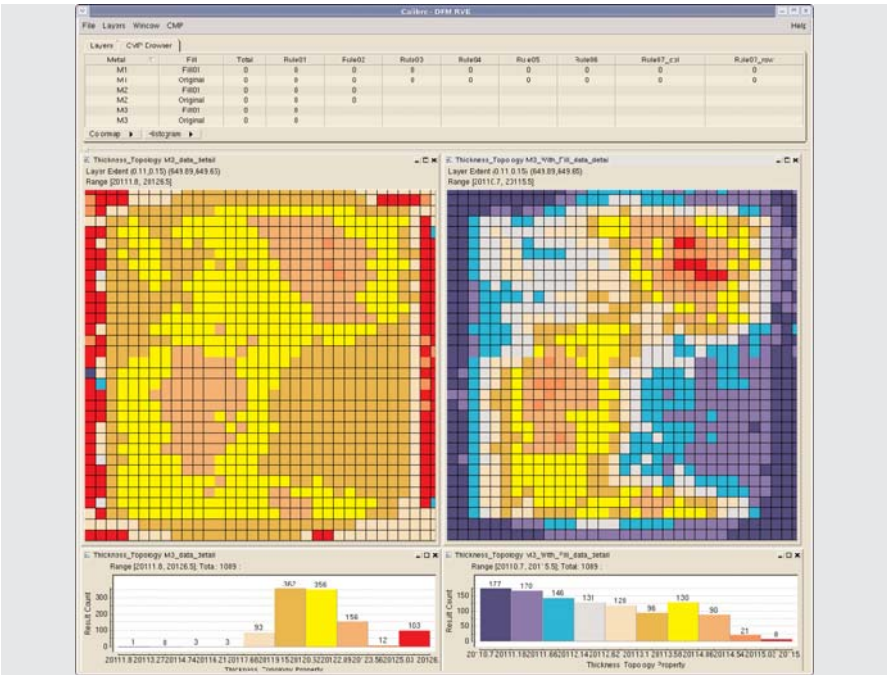


The Calibre® CMPAnalyzer software provides a highly accurate CMP analysis environment with 3D hotspot detection capability.

Chemical-mechanical polishing (CMP) is one of the most significant and direct effects on chip success. The capability to predict and minimize CMP variation in a design is crucial to achieving your yield goals. Model-based planarity analysis enhances systematic and parametric yield at smaller process nodes by accounting for the changes in thickness and resistance variability caused by decreasing linewidths.

Calibre CMPAnalyzer software enables designers to model a CMP process and predict planarity. This analysis can then be combined with Calibre YieldEnhancer's SmartFill automated fill capabilities to optimize planarity and reduce bridging due to dishing and thickness variations. The SmartFill algorithm is designed to achieve your planarity goals while minimizing the amount of fill shapes added. This combination reduces resistance variability while minimizing capacitance added by the filling process.

Improving Planarity

The complete Mentor Graphics planarity improvement solution consists of an integration of Calibre CMPAnalyzer and Calibre YieldEnhancer software with a CMP simulator. Calibre CMPAnalyzer offers direct connection to multiple CMP simulators, including Mentor Graphics' CMP simulator and the TSMC VCMP simulator.

Product Features

- **Report Card** guides you to specific check results for quick hotspot and violation analysis
- **Color Maps and Histograms** provide global view of CMP impact on design
- **Automatic Fill Optimization** combines planarity analysis with precise fill optimization to achieve desired results while minimizing fill shapes
- **Tight Integration with Calibre xRC™** drives extremely accurate circuit simulations
- **Customized CMP models** can be developed in-house using Calibre® WorkBench™

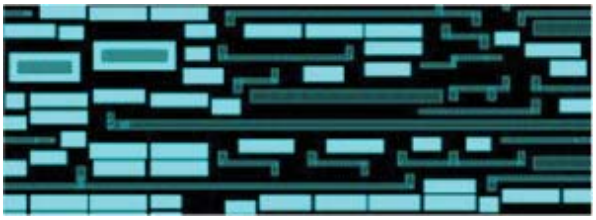
Product Benefits

- **Ease of Use**
  Use one menu to set up and execute simulations, analyze results, and perform fill and extract operations
- **Cost Effective**
  Use customized simulation models in-house and modify when and as needed
- **Control Variability**
  Minimize fill shapes while still meeting planarity goals
- **Reduce Time to Market**
  Combine CMP analysis and automated fill in a single operation to reduce design iterations
- **Production Proven**
  Fully qualified at TSMC for specific TSMC technology data

Mentor Graphics®

Data provided by these CMP simulators to Calibre CMPAnalyzer enable designers to visually highlight and examine a variety of CMP effects. Designers can examine these results layer by layer, and for selected areas in the layout. They can also review specified CMP hotspot checks, such as depth of focus checks.

Based on thickness simulation data from the simulator, Calibre CMPAnalyzer determines the optimum filling strategy and passes the appropriate information to SmartFill. The combination of accurate simulation data and the innovative Calibre fill algorithm improves parametric yield by reducing thickness variation that affects resistance, while at the same time minimizing the capacitance added to the design. Mentor Graphics enables designers to add as few shapes as possible while still achieving specific planarity goals.



The Calibre planarity solution enables designers to model a CMP process and automatically determine the most effective fill strategy.

Improving Parametric Yield

Accurate prediction of the parametric implications of CMP requires knowledge of CMP process variation, design-specific considerations, and the impact of metal fill added to designs. Calibre xRC software integrates with Calibre CMPAnalyzer to create a comprehensive 3D model of the interconnect parameters that more closely matches silicon results. Calibre xRC's accurate accounting for the thickness variation across the design lets designers use this information to validate timing.

Production Proven

Calibre CMPAnalyzer is fully qualified for use with TSMC's Virtual CMP (VCMP) thickness simulator. By integrating with TSMC's VCMP simulator, CMPAnalyzer provides a highly accurate CMP analysis environment with 3D hotspot detection capability that is based on specific TSMC technology data.

The Calibre nm Platform

Calibre CMPAnalyzer is built on the Calibre nm platform, the industry's leading physical verification platform, known for delivering best-in-class performance, accuracy, and reliability. A powerful hierarchical engine is at the heart of the Calibre tool suite, which offers a complete IC design-to-manufacturing solution. In addition, Calibre MT, Calibre MTflex and Hyperscaling enhance performance and reduce turnaround times across the platform.

Industry Support

Mentor Graphics Calibre technology is widespread through the industry. This relationship with your manufacturers makes the decision to use Calibre technology the lowest risk choice.

Superior Product Support

Mentor Graphics is the only EDA vendor to receive the Software Technical Assistance Recognition (STAR) Award in EDA for technical support excellence FIVE times. For this achievement, Mentor Graphics was inducted into the STAR Hall of Fame. No other provider of complex software can match the support offered by Mentor Graphics.

Expert Consulting Services

As a Calibre user, you also have access to Mentor Graphics consulting services. Our consultants can quickly get you up to speed in your environment and on the path to better performance and improved productivity.

Visit our website at www.mentor.com/

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