SYNOPSYS®

DATASHEET

Synopsys Silicon.da

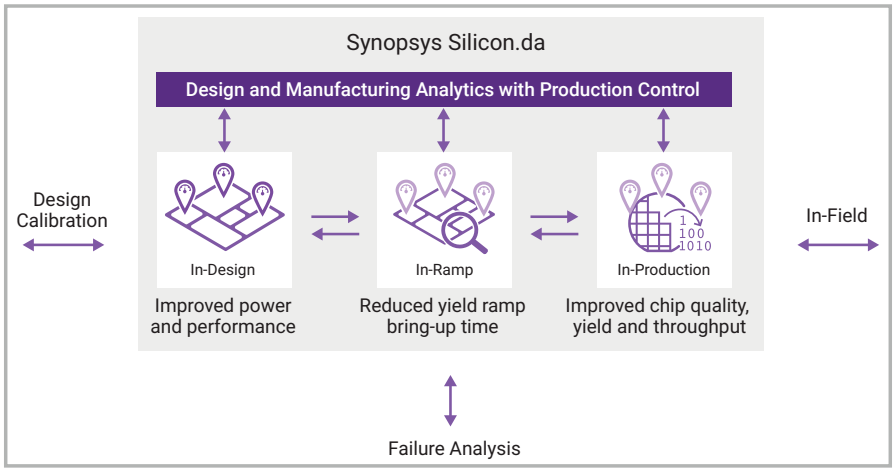
Integrated SLM analytics solution from design through manufacturing

Overview

Synopsys Silicon.da is a unique analytics solution spanning design and product manufacturing lifecycle phases from in-design to in-ramp and then onto in-production as part of the Synopsys Silicon Lifecycle Management (SLM) family of solutions.

This solution offers the ability to process and analyze orders of magnitude more silicon data compared to prior approaches. Synopsys Silicon.da automatically highlights silicon data outliers, enabling engineering teams to quickly identify and correct underlying issues in the semiconductor supply chain. The solution also boosts productivity by consolidating analytics across all manufacturing phases within a single environment and avoiding time-consuming usage of multiple tools.

With Synopsys Silicon.da, engineering teams can leverage silicon design, production and sensor data to quickly determine how to improve key chip production metrics such as yield, quality and throughput, while also improving key silicon operational metrics such as chip power and performance.



The benefits of Synopsys Silicon.da span three key focus areas:

Scalability

The enhanced product architecture accommodates petabytes of data across the full breadth and depth of data types including design, sensor, diagnostic, fab and test which most analytics tools cannot process. A solution which can handle massive amounts of data becomes crucial for performing timely root cause analysis, especially to debug silicon chip issues further downstream in manufacturing or to debug RMAs (return merchandise authorization) or performing historical analysis. Also, the flexibility to provide users an option to process and store their data on the cloud is critical. Synopsys Silicon.da offers several cloud solutions including Microsoft Azure and Amazon Web Services (AWS).

Key Features

- Petabytes of data
- Multi domain support
- Cloud enabled

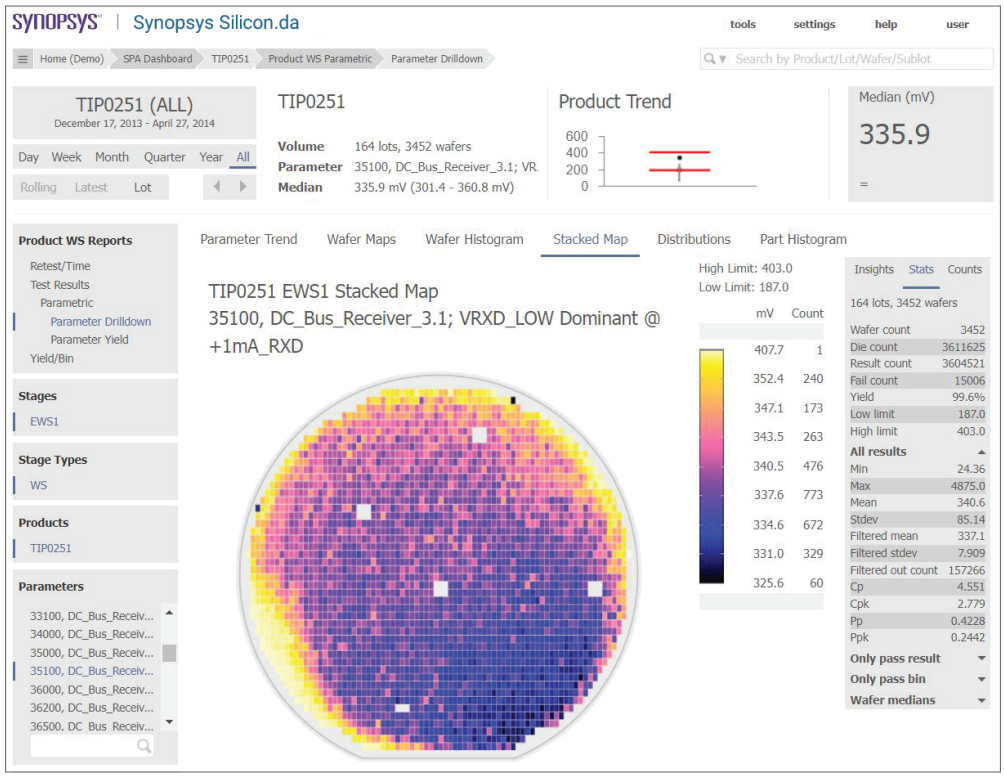


Figure 1: Stacked wafer map example. Solution can handle over 1 billion dies being analyzed at once (not shown).

Productivity

Most data today is either unused by engineers due to the massive amount of data or due to lack of an automated process on where to look for issues within this data. With Synopsys Silicon.da, engineers are now able to gain instant value from all data integrated into one solution. Automated analysis and identification of issues or key points of interest is shown in the form of insights. Part-level traceability and debug enables quick root cause analysis along with corrective action recommendations back into the supply chain. Sub-die analysis is also available in early New Product Introduction (NPI) product stages to identify systematic issues causing failure analysis that are preventing high yield and high-volume production.

Key Features

- Actionable insights out-of-the box
- Automated root cause analysis
- Accurate failure analysis candidate selection

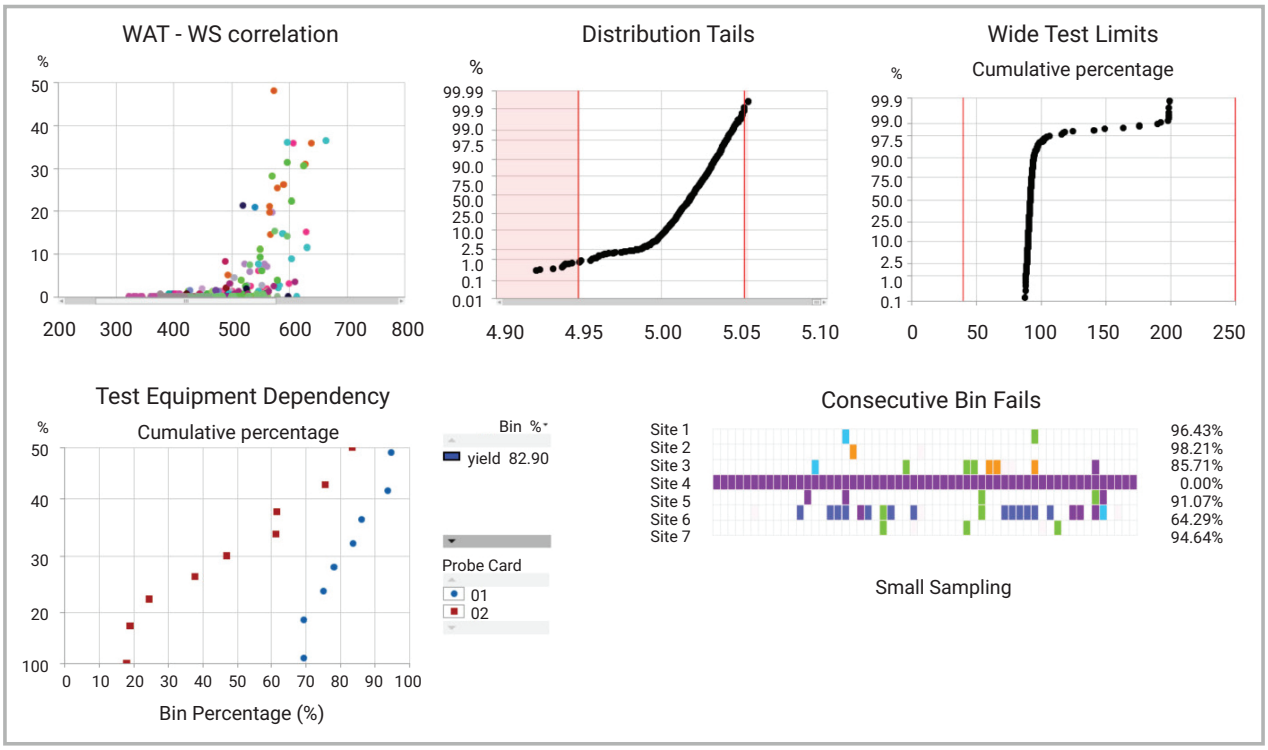


Figure 2: All insights are instantly and automatically refreshed within seconds as your data continuously streams in independent of data volume

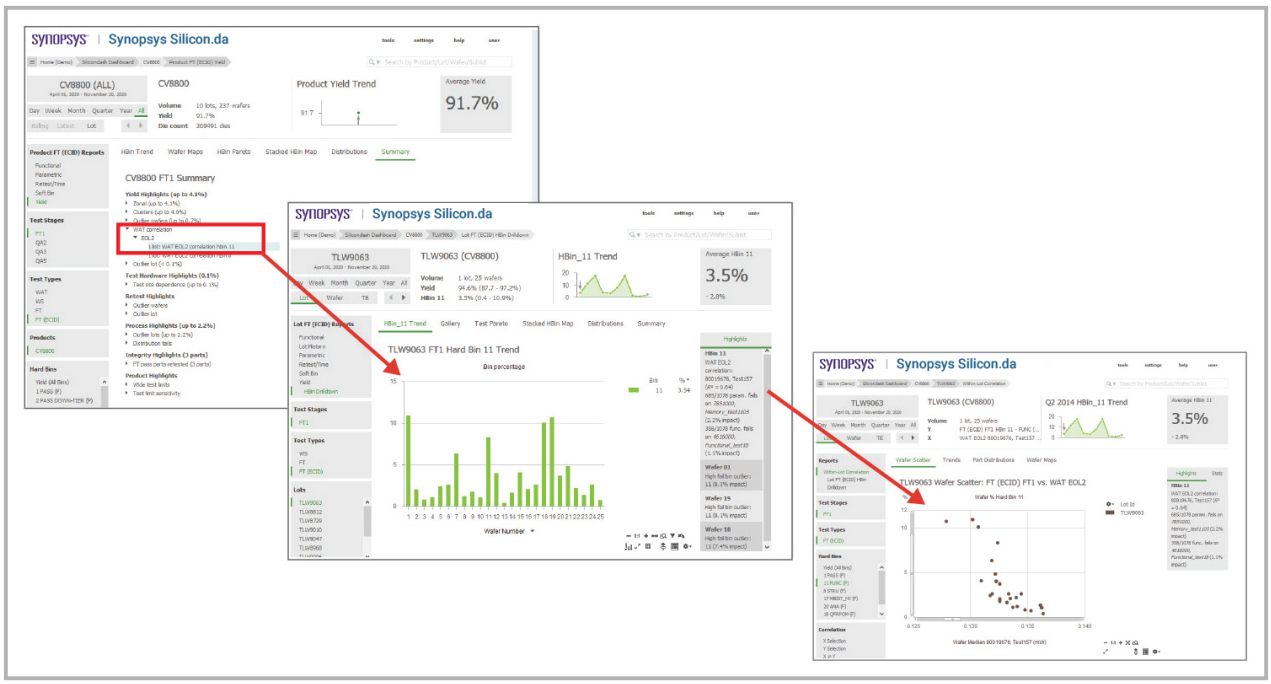


Figure 3: From hierarchical analysis to root cause in only a few clicks

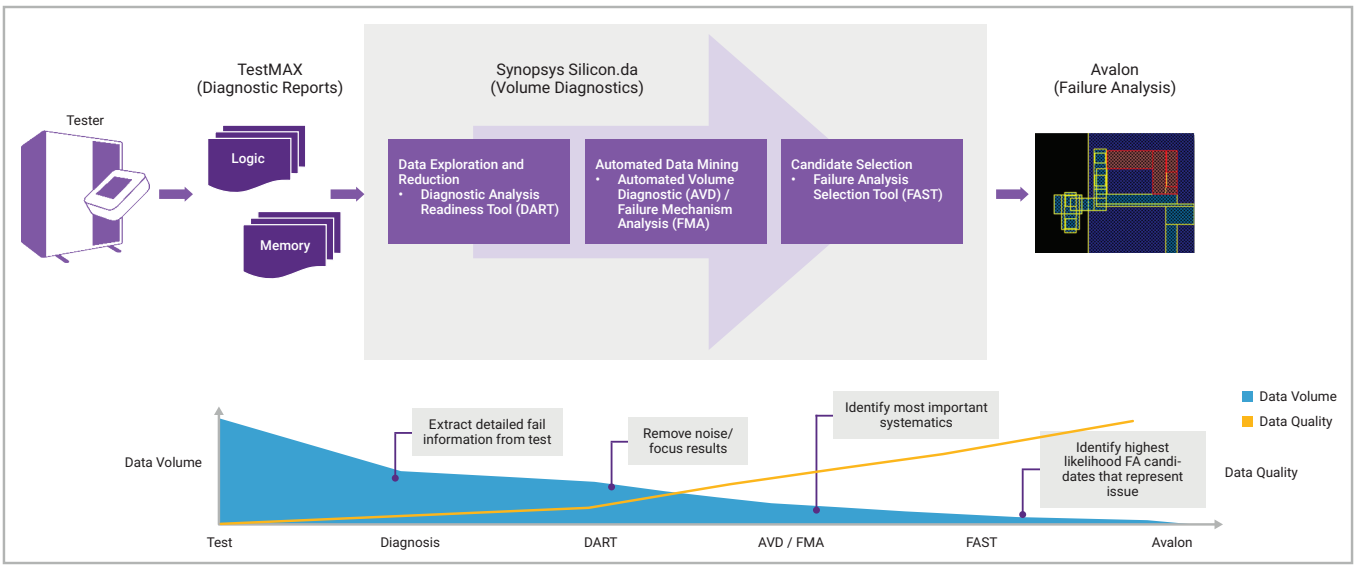


Figure 4: Complete yield learning and yield optimization flow with high accuracy identifying failure mechanisms for Failure Analysis

Efficiency

Chip power and performance optimization is made possible by the inclusion of sensors into the design enabling feedback of the sensor data for performing design calibration. Comprehensive yield optimization is enabled by combining yield trend analysis, diagnostics and failure analysis with improvements made back into the design and/or process. An automated recipe flow for quality optimization containing outlier detection techniques is provided during production control back into the manufacturing supply chain. OEE analysis of the tester fleet enables throughput optimization of the chip production. Real-time data collection & production control is provided for minimal latency to correct issues resulting in cost savings and preventing quality escapes.

Key Features

- Power and performance optimization
- Quality, yield and throughput optimization
- Real-time data collection and production control

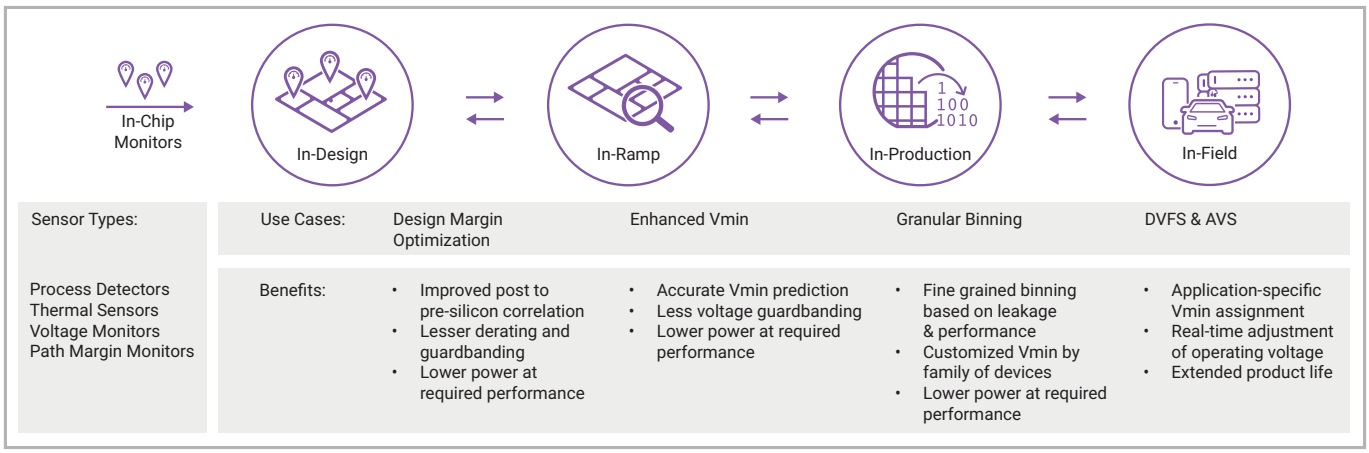


Figure 5: Complete end-to-end power and performance optimization

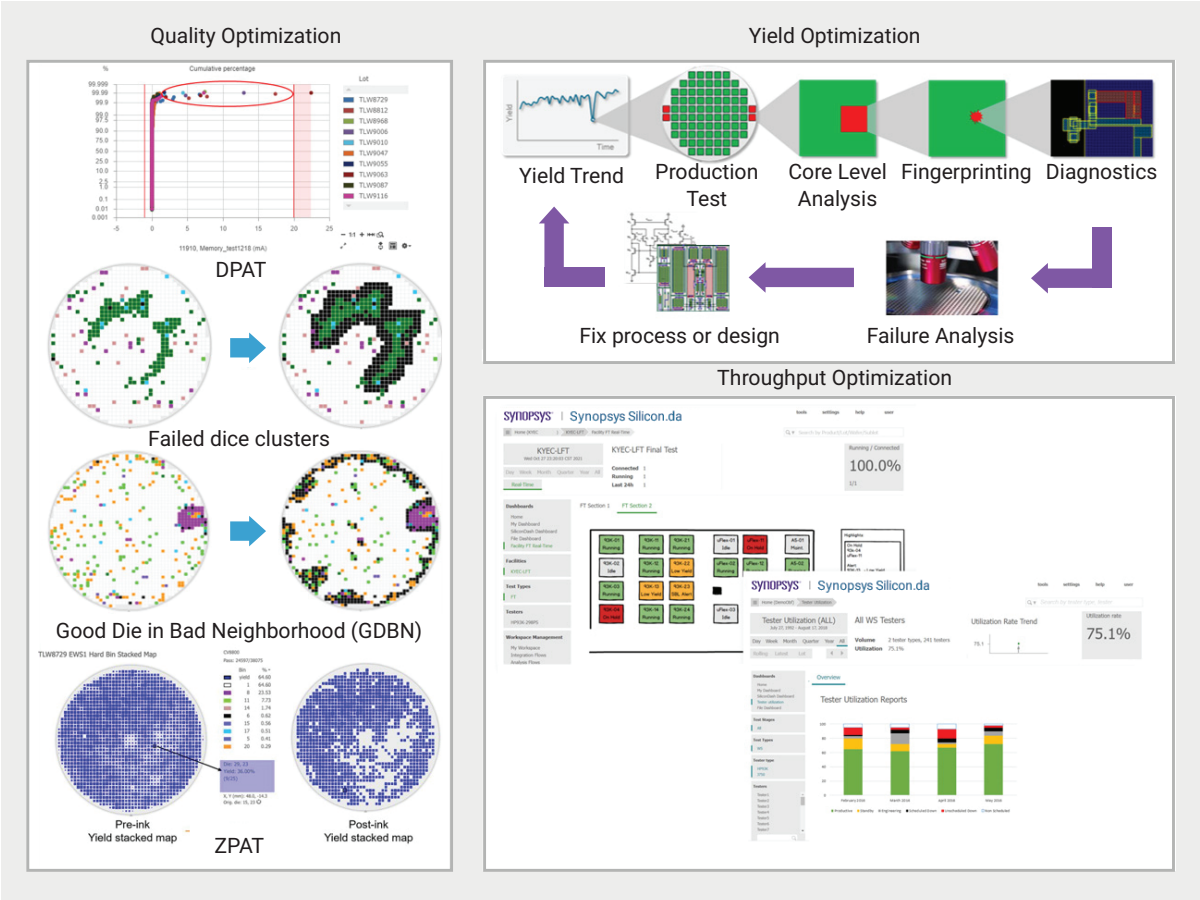


Figure 6: Comprehensive quality, yield and throughput optimization flows

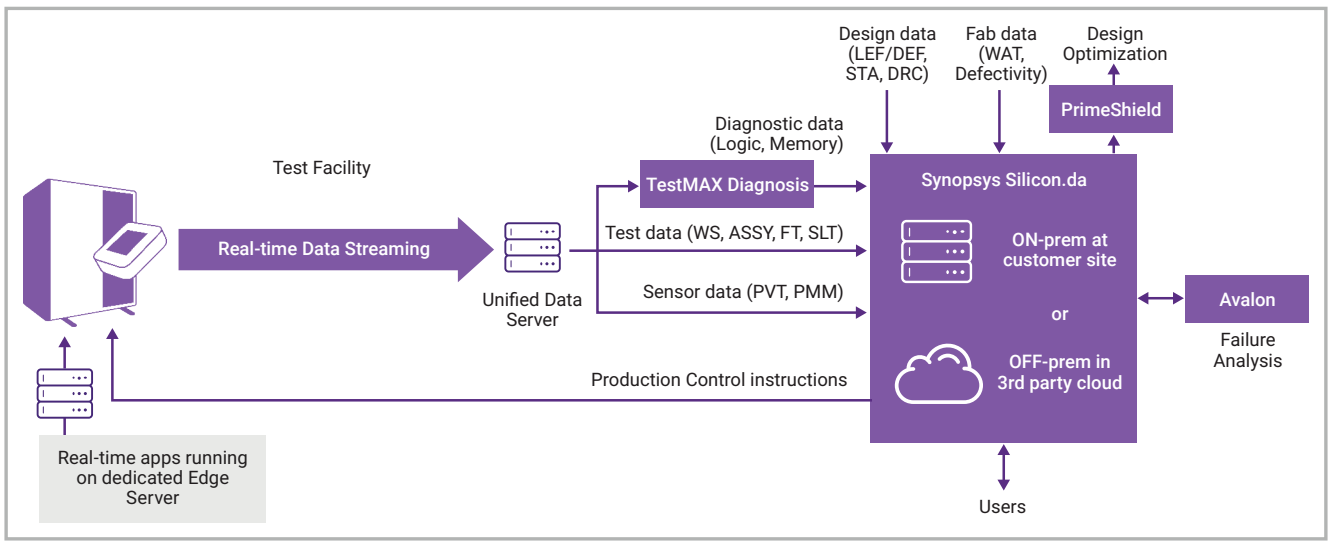


Figure 7: Real-time data collection and production control for minimal latency and improved cost savings and quality

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

SYNOPSYS®

©2023 Synopsys, Inc. All rights reserved. Synopsys is a trademark of Synopsys, Inc. in the United States and other countries. A list of Synopsys trademarks is available at http://www.synopsys.com/copyright.html. All other names mentioned herein are trademarks or registered trademarks of their respective owners.
08/22/23.CS1178063970-SLM-Production-Analytics-Silicon-da-DS.