Verigy V6000 WS SmartRA

Product Overview

SmartRA is a scalable, flexible and cost-effective solution that allows manufacturers to meet the expanding performance requirements of redundancy analysis (RA) for DRAM at wafer sort.
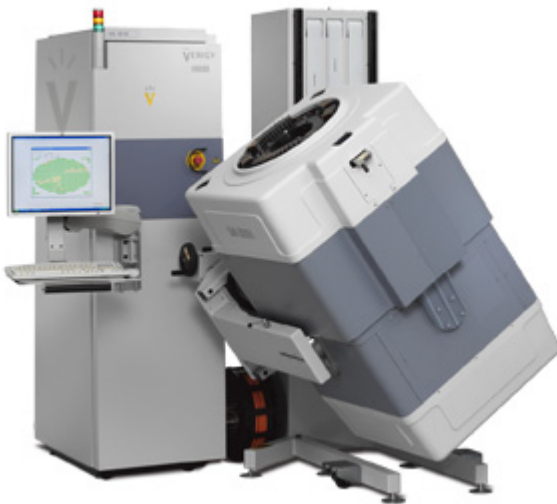
Industry Challenges

As DRAM device densities continue to increase, manufacturers are challenged to maintain high throughput and yields during wafer sort testing. Given the unprecedented complexity of these devices, redundancy analysis (RA) presents unique challenges because huge volumes of fail data are generated, potentially terabits of memory per test, which must be analyzed. In order to prevent that analysis from disrupting throughput and yields, high-performance RA is necessary.

Additionally, this testing environment is a moving target. Device densities will continue to increase, as will wafer sort test parallelism, test frequencies and levels of device complexity. Manufacturers, therefore, need an RA solution that is flexible, allowing them to scale upward while controlling cost.

The V6000 WS, the industry's first scalable, high-volume wafer sort test solution, offers breakthrough parallelism, scalable performance and low cost-of-test

for both Flash and DRAM applications. For Flash, the V6000 WS provides the storage and performance to optimize throughput and yields. But with DRAM, with its greater device complexity and consequential requirements for analyzing higher volumes of fail data, more is needed.

Product Summary

RA processing power for today's DRAM devices, plus adaptability for the future

SmartRA, an option to the V6000 WS, provides the performance needed to conduct redundancy analysis on DRAM devices, thereby allowing manufacturers to achieve their throughput and yield goals for wafer sort.

SmartRA provides flexible performance for a wide variety of cases that a manufacturer might encounter, including low or high test frequencies, and low or high levels of complexity with redundancy design. SmartRA eliminates the possibility of timeouts (during which RA time exceeds the shorter pattern time made possible by the V6000's parallelism), thereby maintaining high throughput and yields. SmartRA's open architecture makes it possible to use either Verigy RA algorithms or algorithms that customers have defined themselves; customers need not be tied to proprietary software architectures. The open architecture also uses off-the-shelf high-performance blade servers, enabling customers to add only the performance required for their immediate needs, without impacting the test cell footprint, and do so at minimal cost. The testing solution will remain viable and cost-effective into the future.

Ample and scalable performance for wide range of test cases

A solution for all cases that a manufacturer might encounter, SmartRA handles low or high test frequencies, and low or high levels of complexity with redundancy design.

Here's why greater performance is so important, specifically with RA of DRAM. The V6000 WS makes it possible to double test frequency, which reduces functional test time. Consequently, RA times can be longer

than the pattern time- i.e. no longer hidden, but rather exposed-creating the possibility of timeouts, which drag down yields. As test requirements evolve, SmartRA ensures that RA can remain hidden. SmartRA, with its higher performance, reduces the RA time to once again hide within the pattern time, eliminating timeouts between patterns. High throughput and yields are maintained.

Flexibility of an open architecture

SmartRA's design is based on an open architecture. In contrast to proprietary software architectures from other companies, manufacturers can use RA algorithms they define themselves, or use Verigy turnkey RA algorithms. Additionally, by being based upon the long-tester-life V6000 platform, as well as off-the-shelf blade servers, the testing solution will not become obsolete when today's devices do. Manufacturers only pay for what's needed now, while remaining ready to adapt to future needs, all on the same platform.

Cost-effective immediately and as needs change

SmartRA takes advantage of off-the-shelf high-performance blade servers, which are separate from, yet highly integrated with, the core test solution, the V6000 WS. As a result, when more performance is needed, processing power can easily be added, virtually without limits, and without impacting the test cell footprint. With support of up to eight V6000 WS test cells with a single server rack, manufacturers always have the right performance at the lowest cost.

Testers from other companies include the RA processing within the tester architecture. In order to maintain throughput and yields on such systems, customers need to spend considerably more on processing power.

Features and Benefits

FEATURE	BENEFIT
High RA performance	Delivers enough processing power to keep RA time hidden behind the shorter pattern times of the V6000's scalable parallelism
Scalable servers	Matches V6000 hardware platform scalability, including RA support for 1 TD test capability for DRAM wafer sort for each functional test. Scale number of servers without increasing test footprint.
Open software architecture	Enables use of customized RA software algorithms or those provided by Verigy
Turnkey solution	Speeds time-to-market
Scan Controller per test site	Accelerates scan, compression, preprocessing, and transfer of fail data for RA and bitmapping
Enhanced LANComm	Accelerates data transfer to the RA server farm for analysis and bitmapping

Related information

For more information about SmartRA, please visit the following website:
www.verigy.com/go/memory

Contact information

For more information about SmartRA, please contact your local Verigy sales representative.
www.verigy.com/go/contactus

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