MRAM DEVELOPER DAY

High-Speed Byte-Addressable NVM

August 6, 2018 in Santa Clara, CA

Please visit the Integral Solutions International (ISI) Booth #6 at the MRAM Developer Day 2018 convention to learn the latest capability of STT-MRAM and Magnetic Sensor testing.

Founded in 1995, with installed base of over 1000 testers worldwide, ISI continues to be the leader in developing magnetic test solutions for R&D, FA, and Production applications. At this conference ISI will be presenting our latest hardware capabilities including:

- Switching Current vs Bias Pulse test with 5.8 mS per cycle
- Switching Current vs Bias Pulse Width test with 53 ms per point
- Error rate vs Pulse Width/Amplitude test of 10^5 trace in under 8 seconds

ISI will also be presenting our latest developments and future roadmaps including:

- Ultra-fast stand-alone perpendicular field MTJ initializer at Wafer level capable of reaching 3 Tesla
- New modular design for even higher throughput capability in production environment

Since analyzing magnetic film performance in the design and production of Magnetic RAM devices is critical, ISI's WLA-3000 Automated Wafer Level Analyzer shown above has been integrated with a variety of industry standard Automated Wafer Probers to provide this service.

With the ISI High Field In-Plane Quad-Pole Magnet option the WLA-3000 can apply a user-defined field vector while performing a variety of STT-MRAM specific DC Measurements and applying High Frequency Pulses.

With the ISI High Field Perpendicular Magnet, the WLA-3000 can apply a user-defined perpendicular field to characterize the latest STT-MRAM perpendicular devices.

Benefitting from the large uniform field zone produced by each of these Magnets, the user had the capability of performing parallel device measurements for increased functionality and throughput.

In parallel to the traditional STT-MRAM pulser channel, the WLA-3000 is also equipped with a bank of DC biasing and measurement channels, extending the measurement capability beyond traditional device testing. These extended measurements include bridge-circuit testing on Magnet Sensor circuits, and programmable biasing of Transistor-based STT-MRAM devices.

The WLA-3000 system has also been successfully adapted to perform chip-level device testing.

A huge complaint in this industry is the delicate nature of the probing interface. Borrowing from the semiconductor industry, at its fundamental core ISI's WLA-3000 resolves this concern by utilizing conventional cantilever-style probepins, which benefit from decades of experience in providing robust, inexpensive, and easily supported configuration in both engineering and production environments.

The WLA-3000's software interface is a mature and proven design, utilizing a convenient menu-driven user interface with simple setup control, test selection, grading, and data logging capabilities. A programmer's interface is also available allowing users to develop their own proprietary tests.

With features like user-interchangeable Magnet configurations, conventional and easy to replace Probecards, parallel Pulser configuration, and Hot Chuck allow customers to custom-configure any system to their specific needs, wither for flexible R&D applications, strenuous high-throughput production testing, and feedback to Wafer Process control.

For STT-MRAM analysis, the WLA-3000 offers these specific tests:

- I-V and R-V Curves
- Breakdown Voltage
- Transfer Curve with variable sweep rate
- Switching Currents vs. Pulse Widths
- Endurance Testing
- Switching Probability vs. Applied Voltage
- Low/High State R-V Distribution
- Read Disturb
- Error Rate Testing
- Field Write Probability
- Voltage Back Hopping
- Sweeping Field Angle

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