

International Test Conference: Ridgetop's Innovative Solution for Characterization of Intrinsic Reliability of CMOS Processes Draws Major Interest

In partnership with Q-Star Test, Ridgetop Group demonstrated components of its user-configurable fabrication process reliability checking solution at the International Test Conference, held from October 31 to November 5, 2010 in Austin, Texas, drawing interest from more than 50 companies that included major industry players such as Intel, Taiwan Semiconductor Manufacturing, Texas Instruments, Freescale, Qualcomm, as well as many other fabless design houses.

Ridgetop is currently developing and testing an innovative low-cost technique that can very rapidly characterize the intrinsic reliability of deep submicron nanotechnology CMOS processes for microelectronics applications. Due to the relatively recent introductions of 32 nm and 28 nm channel length semiconductor processes, the operating lifetimes have uncertain durations. Ridgetop is addressing this uncertainty question through the development of a standardized test platform and method of establishing the reliability lifetimes. Accelerated stress tests targeting reliability concerns, such as Negative Bias Temperature Instability (NBTI), Positive Bias Temperature Instability (PBTI), Time-Dependent Dielectric Breakdown (TDDB), Hot Carrier (HC) damage, Electromigration (EM), and Stress Migration (SM) can be performed using this solution.

At ITC, the type of reliability and mismatch characterization data that can be rapidly generated for very low cost was demonstrated. This drew strong interest, especially after data was exhibited that proves that modern CMOS technologies have serious reliability concerns and process mismatch issues, both of which need to be characterized in order to ensure a device will stay functional for its required lifetime.

Ridgetop's solution is focused on making chip design fully synthesizable, allowing easy porting to different technologies. It can also be used very effectively for process variation characterization (transistor mismatch, capacitor mismatch, etc.).

Once fully developed and tested, the solution will target microelectronics engineering sectors that can benefit from accurate reliability evaluation such as automotive, medical devices, military, and game consoles (console vendors have had growing callbacks due to reliability problems).

The strong industry interest resulting from the successful demonstration of the semiconductor reliability solution's potential at ITC will help Ridgetop draw together a group of companies willing to engage in an extensive beta program to test, evaluate and validate existing key portions of the product (the individual test structures for NBTI, TDDB, etc.), in addition to the companion instrumentation, software and certain validating silicon runs that are in development.

If your organization is interested in participating in Ridgetop's upcoming beta program, please contact Phil Davies at Ridgetop Group, at phil.davies@ridgetopgroup.com or 520-742-3300.