

# VIIS<sup>ta</sup> HCP



## VIIS<sup>ta</sup> HCP I Single-Wafer High Current Ion Implanter 200eV - 60keV

### Key Benefits

- Production Proven
- Highest Productivity
- Lowest Particle Level
- Precise Beam Steering

VIIS<sup>ta</sup> HCP delivers the highest productivity on a production-proven single wafer architecture. It is the only high current system that ensures both high yield and high productivity.

### Features

- Patented dual-magnet ribbon beam architecture for superior particle performance
- In-situ interlocked beam steering for precise dopant placement
- Simple, one-dimensional wafer scanning endstation for highest productivity

VIIS<sup>ta</sup> HCP is the production-proven choice of advanced device manufacturers worldwide.

### The 45nm Challenge

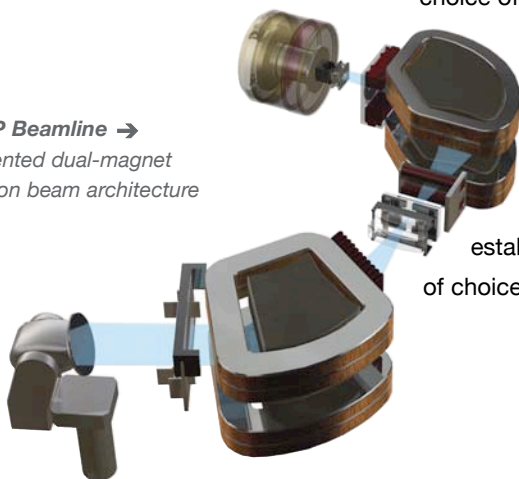
Single-wafer high current systems have been established as the architecture of choice for advanced device

manufacturing. Sub-65nm devices have a greater sensitivity to particles that can mask implants, cause device failures and result in lower device yields. Shorter gate lengths demand tighter implant angle control to achieve abrupt source drain extension junctions and high yield. IC manufacturing fabs need to meet these implant requirements with a reliable, production-proven, single-wafer high current platform.

### First in Single-Wafer High Current

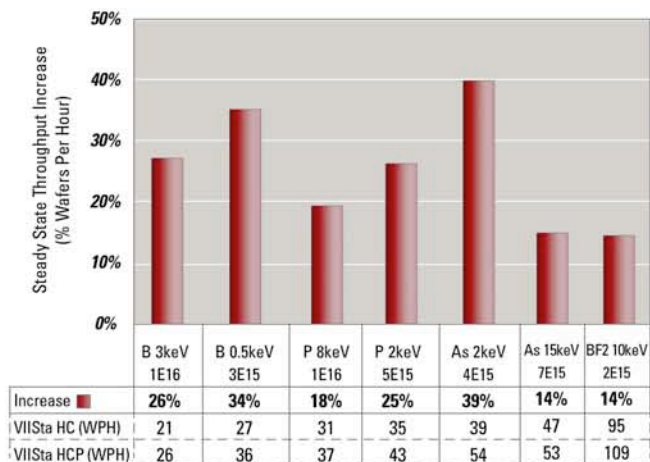
Varian Semiconductor was the first to introduce single-wafer high current systems. The Company has successfully moved customers from batch to a single wafer implanter with device level dose and angle matching. The VIIS<sup>ta</sup> high current series is the market leader, and is in production at leading-edge memory, logic, and foundry manufacturers worldwide. VIIS<sup>ta</sup> HCP, the 5th generation tool, extends this leadership.

HCP Beamline →  
Patented dual-magnet  
ribbon beam architecture



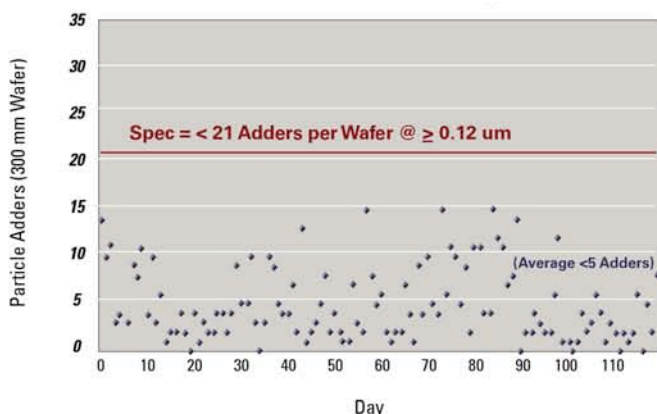
## Productivity Enhancement

VIISta HCP vs. VIISta HC



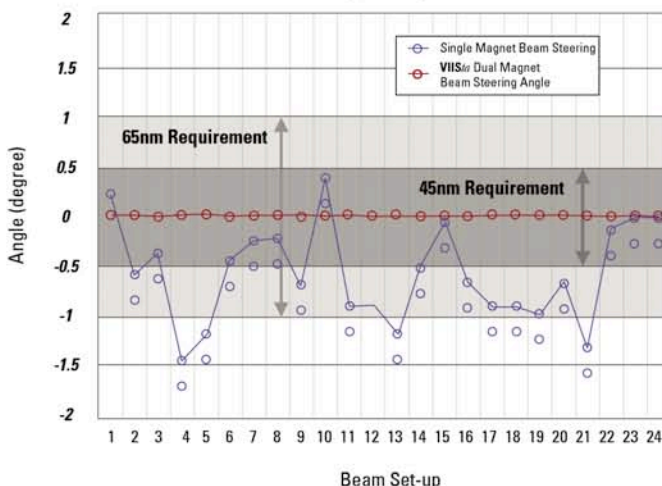
## Best-in-Class Particle Performance

Customer Production Data @  $\geq 0.12\mu\text{m}$



## Beam Steering Angle Performance

VIISta HCP Meets Angle Requirements for 45nm



## Highest Productivity

The VIISta HCP brings new innovations to further increase its productivity. Innovations on the patented dual-magnet ribbon beam architecture result in:

- Improved beamline transmission
- Higher on-wafer beam utilization
- Higher beam current output

Together with a high throughput, one-dimensional wafer scan endstation, VIISta HCP provides the highest productivity in the industry.

## Lowest Particle Level

Implant source chambers and beamline elements create particles due to depositions and beam strike. VIISta HCP's patented dual-magnet ribbon beam architecture isolates the wafer from sources of particles - the second magnet filters out particles generated from the source. The result is industry-leading particle contamination performance - two to five times cleaner than single magnet systems, and up to 10 times cleaner than batch systems.

## Precise Beam Steering

The VIISta HCP is the only high current system that measures and adjusts beam steering. The unique closed-loop Varian Positioning System (VPS™) delivers accurate, repeatable and interlocked incident angle control for the true zero degree and precise tilt angle implants needed for high current applications. The result is the most precise and consistent lot-to-lot and day-to-day device performance.

## VIISta Platform

The VIISta HCP is a member of the VIISta single-wafer ion implant platform, which features:

- Dual-magnet architecture
- Varian Control System (VCST™)
- Varian Positioning System (VPS™)
- Varian IHC source
- VIISta single wafer endstation

This high degree of commonality across the VIISta platform provides flexibility in managing capacity, product mix changes, spare parts and training.