THE PUMA 9000 SERIES OF PRODUCTS combine high-resolution imaging with traditional laser scattering technology for critical defect detection at sub-90-nm nodes. An innovation in patterned wafer inspection technology, leveraging a common platform with KLA-Tencor’s highly successful 23xx systems, the Puma 9000 series delivers higher performance at throughput, enabling cost-optimized inspection strategies. Its new Streak™ technology allows the Puma 9000 to achieve extremely high data rates and small pixel sizes, enabling inspection strategies that do not compromise sensitivity for throughput. The increased resolution extends the tools’ capabilities beyond traditional laser scattering applications to some critical etch layers. Commonality with the 23xx platform, along with many ease-of-use features, facilitate rapid integration into the production environment. Flexible configurations are available, offering application-specific solutions at the lowest possible cost of ownership (CoO).

PRODUCT DESCRIPTION

Streak Technology High-resolution imaging is combined with advanced ultraviolet (UV) illumination optics to deliver increased resolution with smaller pixel sizes than traditional darkfield systems without compromising on throughput. KLA-Tencor’s proprietary Streak architecture, along with independent collectors featuring selectable polarizations and programmable filters for superior noise suppression, enables fast and efficient defect detection of both array and logic structures.

Proven Detection Algorithm The Puma 9000 series incorporates sophisticated detection algorithms that apply more localized separation, resulting in better signal-to-noise characteristics. This capability is production-proven in KLA-Tencor’s AIT platform, increasing the capture rate of existing defects and enhancing detection of new defect types.

Advanced Array Noise Filtering Taking advantage of the linear architecture, the system can more effectively filter pattern scatter and page-break patterns in the array structures. The Puma 9000 series provides a programmable Fourier filtering mechanism to efficiently block diffraction noise.

Automated Defect Classification and Rule-Based Binning Inline automatic defect classification (IADC) classifies defects in real time during inspection, providing immediate feedback on defect types. Rule-based binning (RBB) is an additional capability that allows users to define specific classifications based on defect detection characteristics. RBB can be used independently or in conjunction with IADC to provide improved binning performance.

Common Platform and 23xx Recipe Import Because the Puma 9000 series is based on KLA-Tencor’s successful 23xx hardware and software platform, the training burden is eased substantially for users. A common graphical user interface (UI) and software code base provide the flexibility to easily import recipes or recipe components from the KLA-Tencor brightfield tools, accelerating integration of the tool into production.

Flexible Configurations Developed with a modular design, the Puma 9000 series provides configuration flexibility based on a single platform. Tools in the Puma 9000 series are designed to target application segments that provide the lowest possible CoO solution based on unique inspection needs. Targeted applications include critical etch layers (where brightfield-like sensitivity is required), films, chemical mechanical planarization (CMP) layer, as well as tool monitoring and photo cell monitoring (PCM) applications.

COMPREHENSIVE, COST-OPTIMIZED DEFECT INSPECTION SOLUTION

As IC manufacturing costs increase exponentially with shrinking design rules, fabs strive to drive down their costs by module by extracting the most value from their equipment. The Puma 9000 series is designed to address this challenge, providing a single platform that meets sensitivity, high-volume sampling, and CoO requirements for sub-90-nm production. Commonality with KLA-Tencor’s 23xx optical wafer inspectors and eS3x electron-beam inspection systems enables the Puma 9000 series inspection systems to be implemented with minimal setup and training. This common platform strategy also enables streamlined service and lower overall development risks and costs—providing fabs with a comprehensive inspection system that makes optimal use of their valuable capital resources. Building on KLA-Tencor’s AIT UV family of darkfield inspection systems and complementing KLA-Tencor’s 23xx brightfield tools, the Puma 9000 series represents the next generation, high-throughput imaging technology.

Multiple inspection technologies are required for a successful yield management program. The 23xx series and the eS3x series incorporate revolutionary ultraviolet (UV) brightfield and e-beam technologies, respectively. These platforms, combined with the Puma 9000 series and its revolutionary Streak technology, form the industry’s only comprehensive defect inspection solution that addresses all stages of the semiconductor manufacturing process, from development through production.
KLA-TENCOR: ACCELERATING YIELD

KLA-Tencor's portfolio of solutions includes the industry's broadest fleet of advanced inspection and metrology systems, which enables customers to capture yield-critical defect and metrology data. It also includes the sophisticated software to turn that data into quick corrective action. Finally, it includes the expertise to help customers rapidly understand and resolve complex manufacturing problems so they can reap the financial and market rewards associated with faster time to market and increased product yields.

KLA-TENCOR SERVICE/SUPPORT

Customer service and support are an integral part of KLA-Tencor's yield optimization solution. Our vast customer support organization services our worldwide installed base and is responsible for customer support following shipment of equipment and software. Services include system installation, secure online monitoring, on-site repair, telephone support, relocation services, and selected post-sales applications.

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