BROADENING THE *sensitivity* ZONE

2800 Tackles Pattern-Limited Yield, CMOS Power Crisis

Developed with KLA-Tencor's longstanding technical expertise in broadband brightfield technologies, the 2800 platform is extendible to support capacity expansion and design rule shrinks.

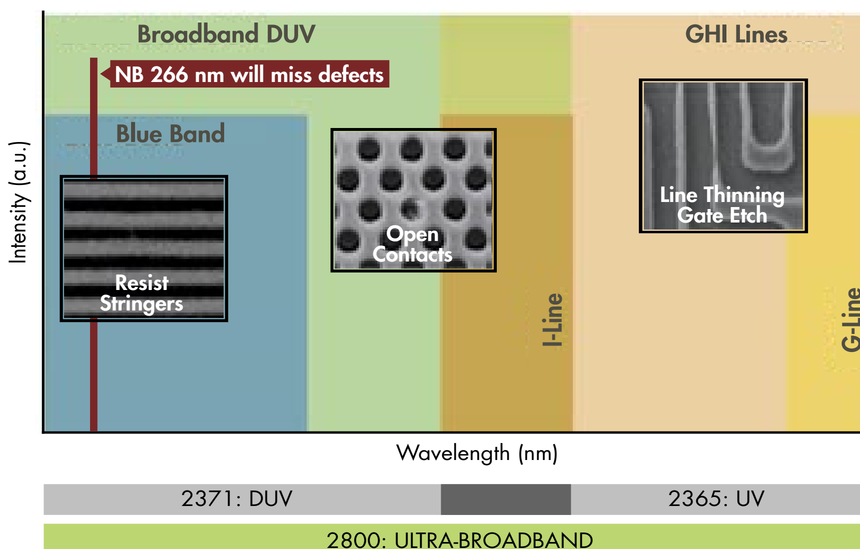
At 65 nm and below, chipmakers face unique challenges that, left unresolved, could prove detrimental to yield. On the one hand, shrinking process tolerances and the widening sub-wavelength gap are creating a pattern-limited yield crisis. This has given rise to systematic defects, primarily in the photolithography module, that are extremely difficult to detect and resolve. At the same time, the CMOS power crisis has generated a wide variety of new defect types and new noise sources, as manufacturers innovate with new materials, device structures, and litho techniques.

These new challenges require highly flexible inspection tools with the broadest spectrum of sensitivity to find all defects in all layers. To this end, KLA-Tencor offers the 2800, a single, flexible brightfield inspection platform with UV and DUV wavelengths, designed to enable the widest capture of yield-relevant defects.

Production-worthy for shrinking design rules

Designed for inspection of critical patterning layers, the 2800 represents KLA-Tencor's next-generation DUV/UV/visible patterned wafer inspection system. The system meets the resolution and throughput needs for production and development nodes for logic and memory devices. Its production-worthy advantages include a high numerical aperture (NA) for all illumination modes, configurability for unique applications, defect binning capabilities, and 2X better throughput than the previous-generation DUV inspection tool.

The 2800 enables fabs to achieve fast time to results in detecting the smallest of yield-impacting defects, particularly on litho and etch layers. Its broadband capability suppresses color noise and allows tuning of signals to isolate defects of interest. In addition, the 2800 brings further advantages when implemented with unique brightfield applications such as Process Window Qualification (PWQ) and Photo Cell Monitoring (PCM). PWQ enables fabs to efficiently evaluate and, if necessary, adjust reticle designs. PCM facilitates faster, more cost-effective identification of root cause of litho defects.



Compared with single wavelength technology, broadband illumination enables detection of the full range of critical defects.

Part of a comprehensive inspection strategy

Sharing a common user interface and recipe components with the Puma 9000 next-generation darkfield inspection tool and the eS3X electron-beam inspection tool, the 2800 is part of a comprehensive patterned wafer inspection portfolio. These commonalities enhance ease of use, lowering the training burden and associated costs; provide fabs with a brightfield baseline of traditional darkfield layers; and facilitate migration of the inspection process from development to ramp to production. With the 2800, KLA-Tencor continues its leadership in brightfield technology, enabling fabs to meet the increasingly complex challenges of design rule shrinks.