

# IBM Announces New CMOS Image Sensor Foundry Offering

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IBM today announced the availability of technology and manufacturing services for complementary metal oxide semiconductor (CMOS) image sensors for use in camera-phones, digital still cameras and other consumer products. The offering combines IBM's copper process technology with image sensor intellectual property licensed from Eastman Kodak Company to produce CMOS image sensors that can offer industry-leading image quality for high-volume consumer applications.

IBM announced a CMOS image sensor development and manufacturing collaboration with Kodak in September, 2004, which included the license of Kodak CMOS image sensor fabrication intellectual property to IBM. Kodak this week announced new three- and five-megapixel CMOS image sensors qualified and manufactured for Kodak by IBM's semiconductor facility in Burlington, Vermont, that utilize this process.

IBM's foundry offering is based on IBM's 0.18-micron copper CMOS manufacturing process, available at its Burlington facility, that features an integrated design kit, including a 4-transistor, 3-micron pixel with pinned diode, and access to IBM's image sensor circuit library.

IBM's CMOS technology delivers image sensors with one of the industry's best "dark current" performance, or the ability to capture photos in low-light situations, a key feature for consumer applications such as camera cell phones.

Image quality can also be improved through IBM's ability to produce sensors featuring an ultra-thin, 2.5-micron copper stack incorporating an on-chip color filter and microlens. The copper stack is approximately 30 percent thinner than standard aluminum-based processes, which can result in significant improvements in light collection efficiency (quantum efficiency) for improved picture quality in low light. In addition, IBM's angle response performance -- important when using lenses with wider apertures -- delivers superior photo resolution and sharpness.

Currently, IBM is the only foundry supplier producing image sensors based on 0.18-micron copper process technology. IBM was the first semiconductor manufacturer to introduce copper technology and foundry clients can benefit from the company's successful copper production track record. In addition, IBM offers access to industry-recognized design kits and a comprehensive circuit library.

"IBM is bringing its extensive copper semiconductor process experience to bear on the CMOS image sensor market, offering clients what we believe is the best foundry technology available today," said Tom Reeves, vice president, semiconductor products for IBM Systems & Technology Group. "Our innovative technology produces sensors with excellent color accuracy, low noise and very competitive low-light performance that can help clients differentiate their products in this competitive and growing consumer market."

"We are pleased to see Kodak's image sensor technology at the heart of IBM's new foundry offering," said Chris McNiffe, General Manager of Kodak's Image Sensor solutions business. "Our collaboration with IBM has been extremely successful thus far, leveraging our respective strengths in imaging and semiconductor manufacturing."

Image sensor market growth is shifting from charged coupled devices

(CCDs) to CMOS-based sensors. CCDs have been the predominant technology used in digital imaging products due to improved picture quality, but CMOS technology benefits can include low power, high integration and low production costs compared to CCDs, all important benefits for consumer applications. IBM's foundry technology roadmap will enable CMOS-based image sensors that approach the size and performance of CCD pixels offered today.

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