

## Press Release

### KIOXIA and Western Digital Announce Newest 3D Flash Memory

*Groundbreaking Architectural Innovations in Scaling and Wafer Bonding Technology Deliver a Major Leap in Performance, Density and Cost Effectiveness*

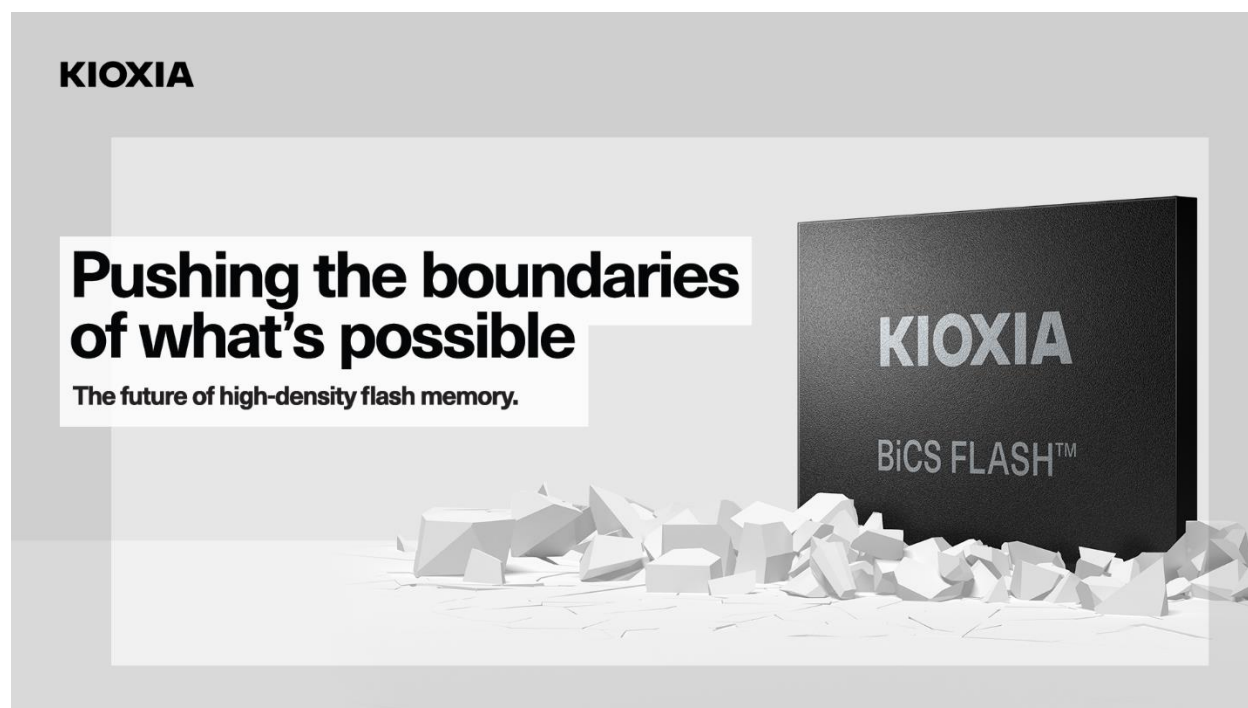


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**Düsseldorf, Germany, 31 March 2023** – [KIOXIA Europe GmbH](#) shares the recent developments in cooperation between, KIOXIA Corporation and Western Digital Corp. (NASDAQ: WDC) The companies, demonstrating continued innovation, announced details of their newest 3D flash memory technology. Applying advanced scaling and wafer bonding technologies, the 3D flash memory delivers exceptional capacity, performance and reliability at a compelling cost, which makes it ideal for meeting the needs of exponential data growth across a broad range of market segments.

“The new 3D flash memory demonstrates the benefits of our strong partnership with KIOXIA and our combined innovation leadership,” said Alper Ilkbahar, Senior Vice President of Technology & Strategy at Western Digital. “By working with one common R&D roadmap and continued investment in R&D, we have been able to productize this fundamental technology ahead of schedule and deliver high-performance, capital-efficient solutions.”



KIOXIA and Western Digital reduced the cost by introducing several unique processes and architectures, enabling continued lateral scaling advancements. This balance between vertical and lateral scaling produces greater capacity in a smaller die with fewer layers at an optimized cost. The companies also developed groundbreaking CBA (CMOS directly Bonded to Array) technology, wherein each CMOS wafer and cell array wafer are manufactured separately in its optimized condition and then bonded together to deliver enhanced bit density and fast NAND I/O speed.

“Through our unique engineering partnership, we have successfully launched the eighth-generation BiCS FLASH™ with the industry's highest<sup>1</sup> bit density,” said Masaki Momodomi, Chief Technology Officer at KIOXIA Corporation. “I am pleased that KIOXIA’s sample shipments for limited customers have started. By applying CBA technology and scaling innovations, we’ve advanced our portfolio of 3D flash memory technologies for use in a range of data-centric applications including smartphones, IoT devices and data centers.”

The 218-layer 3D flash leverages 1Tb triple-level-cell (TLC) and quad-level-cell (QLC) with four planes and features innovative lateral shrink technology to increase bit density by over 50 percent. Its high-speed NAND I/O at over 3.2Gb/s, a 60 percent improvement over the previous generation, combined with a 20 percent write performance and read latency improvement, will accelerate overall performance and usability for users.

**Ends**

**Forward-Looking Statements (Note to the editors)**

This press release contains forward-looking statements within the meaning of federal securities laws, including statements regarding expectations for the availability, production, capabilities, performance, reliability, efficiency and impact of our next generation 3D flash memory technology and products using our next generation 3D flash memory technology. These forward-looking statements are based on management’s current expectations and are subject to risks and uncertainties that could cause actual results to differ materially from those expressed or implied in the forward-looking statements. Important risks and uncertainties that could cause actual results to differ materially from those expressed or implied in the forward-looking statements include: volatility in global economic conditions; future responses to and effects of the COVID-19 pandemic or other similar global health crises; impact of business and market conditions; the outcome and impact of our ongoing strategic review, including with respect to customer and supplier relationships, regulatory and contractual restrictions, stock price volatility and the diversion of management’s attention from ongoing business operations and opportunities; impact of competitive products and pricing; our development and introduction of products based on new technologies and expansion into new data storage markets; risks associated with cost saving initiatives, restructurings, acquisitions, divestitures, mergers, joint ventures and our strategic relationships; difficulties or delays in manufacturing or other supply chain disruptions; hiring and retention of key employees; our level of debt and other financial obligations; changes to our relationships with key customers; disruptions in operations from cybersecurity incidents or other system security risks; actions by competitors; risks associated with compliance with changing legal and regulatory requirements and the outcome of legal proceedings; and other risks and uncertainties listed in the company’s filings with the Securities and Exchange Commission (the “SEC”), including the company’s Form 10-K filed with the SEC on August 25, 2022, to which your attention is directed. You should not place undue reliance on these forward-looking statements, which speak only as of the date hereof, and the company undertakes no obligation to update or revise these forward-looking statements to reflect new information or events, except as required by law.

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<sup>1</sup> Source: As of March 30, 2023. KIOXIA survey.



**About KIOXIA Europe GmbH**

KIOXIA Europe GmbH (formerly Toshiba Memory Europe GmbH) is the European-based subsidiary of KIOXIA Corporation, a leading worldwide supplier of flash memory and solid-state drives (SSDs). From the invention of flash memory to today's breakthrough BiCS FLASH, KIOXIA continues to pioneer cutting-edge memory solutions and services that enrich people's lives and expand society's horizons. The company's innovative 3D flash memory technology, BiCS FLASH, is shaping the future of storage in high-density applications, including advanced smartphones, PCs, SSDs, automotive and data centers.

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