KIOXIA

KIOXIA BiCS FLASH™ 3D Flash Memory

The Next Generation is Here

The next generation of KIOXIA BiCS FLASH™ 3D flash memory features architectural innovation that meets the needs of data-centric applications like advanced smartphones, PCs, SSDs and data centers. When performance, high density and cost-effectiveness matter, KIOXIA BiCS FLASH™ 3D flash memory delivers.

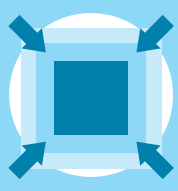
BiCS FLASH™

Leading the Way

Groundbreaking Architectural Innovation

218 Layers with CBA (CMOS directly Bonded to Array) Architecture

4 Plane Device



Lateral Shrink Technology

Key Features[1]

80% Interface Speed Increase (3.6Gbps)

30% Power Efficiency Improvement

20% Write Performance Improvement

>10% Read Latency Improvement

50% Higher Bit Density

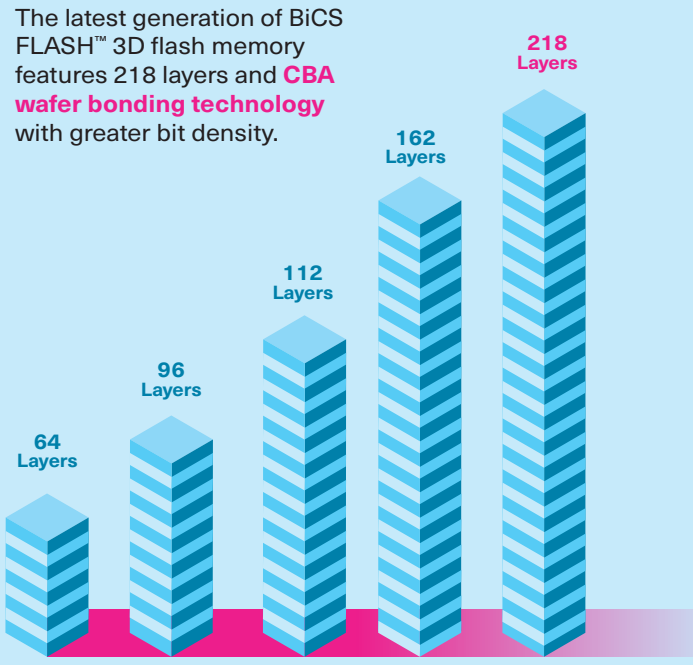
Densities and Packaging

Industry's First 4TB Single Package Device[2]

TLC (Triple-Level Cell)	QLC (Quad-Level Cell)
1Tb	1Tb/2Tb
132BGA 12mm x 18mm	
152BGA 14mm x 18mm	
154BGA 11.5mm x 13.5mm (28% smaller) – Now Available	

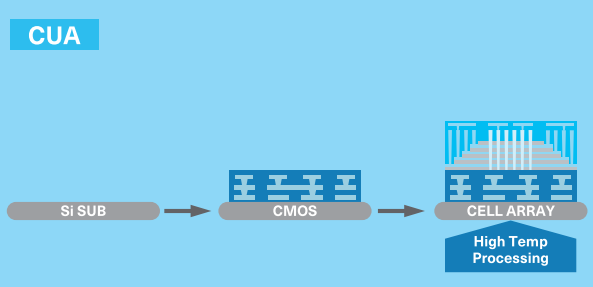
A Look at Layers

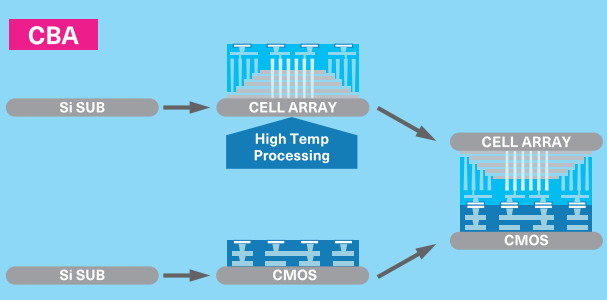
The latest generation of BiCS FLASH™ 3D flash memory features 218 layers and **CBA wafer bonding technology** with greater bit density.



Why CBA Technology?

KIOXIA has implemented **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. Fabrication of the cell and peripheral separately enables optimization of each, eliminating the trade-off between cell reliability and I/O speed.





Target Applications

IoT · Gaming/AR/VR · Automotive · Data Centers

PCs · Enterprise · Tablets · Smartphones

Data Center Efficiency

KIOXIA BiCS FLASH™ 3D flash memory was designed to address the most challenging data center issues:

Density Per Rack Slot · **Power Efficiency** · **IOPS/QoS**

The combination of vertical and lateral scaling produces greater capacity with fewer layers – resulting in higher density, smaller die size and optimized cost. Our groundbreaking architectural innovations in lateral scaling and wafer bonding deliver a major leap in performance, density and cost-effectiveness..

KIOXIA

KIOXIA delivers flash-based products for next-generation storage applications. Having invented NAND flash over 35 years ago, KIOXIA is now one of the world's largest flash memory suppliers – and continues to move the technology forward.

[1] Features and typical use performance improvements as compared to the previous generation of BiCS FLASH™ 3D TLC flash memory.
[2] Based on a 16-die stacked 2Tb QLC architecture. Source: KIOXIA, July 2024.

In every mention of a KIOXIA product: Product density is identified based on the density of memory chip(s) within the Product, not the amount of memory capacity available for data storage by the end user. Consumer-usable capacity will be less due to overhead data areas, formatting, bad blocks, and other constraints, and may also vary based on the host device and application. For details, please refer to applicable product specifications. The definition of 1KB = 2^10 bytes = 1,024 bytes. The definition of 1Gb = 2^30 bits = 1,073,741,824 bits. The definition of 1GB = 2^30 bytes = 1,073,741,824 bytes. 1Tb = 2^40 bits = 1,099,511,627,776 bits.

V2.1