QLC Accelerates into the Mainstream

With accelerating data creation comes an increased need for high density storage solutions, and KIOXIA has applied its flash engineering expertise to push boundaries. The inventor of flash memory, KIOXIA successfully created the world’s first 3D QLC flash memory back in 2017.

What is QLC?

KIOXIA’s BiCS FLASH™ 3D flash memory product lineup includes 4-bit-per-cell, quadruple-level-cell (QLC) technology, which significantly expands capacity by pushing the bit count for data per memory cell from three to four.

KIOXIA’s QLC technology is an ideal solution for read-intensive environments, enabling data center and enterprise customers to balance performance, endurance, density, and cost.

The Memory Hierarchy

- Higher
- Lower
- DRAM
- SRAM
- TLC
- QLC
- QLC/PLC
- HDD
- SCM

Key Features

- Robust (10x improved write/erase cycles over planar floating gate QLC)
- Lower cost per bit than TLC
- High density
- Nearline HDD replacement – early adoption of QLC
- Security/surveillance systems
- All-flash arrays
- Artificial intelligence
- Machine learning
- Content delivery network
- Client/Consumer SSDs

Eyes on the Future – QLC Applications

Data Centers get Greener* with QLC

When compared to nearline HDDs, QLC-based SSDs:
- Increase scaling density per watt
- Reduce power consumption
- Bring new levels of scalability to the data center

Make Way for QLC SSDs

The cost/performance of QLC SSDs is better than HDDs – making them an ideal alternative to the lower performance spinning disks commonly deployed in data centers. Nearline HDD replacement is one area in which QLC SSDs are increasingly impacting the data center.

Posied for Mainstream Adoption

QLC will make up 7% of total NAND Flash shipments in 2021 – a number that is projected to grow to 30% by 2025.

KIOXIA delivers flash-based products for next-generation storage applications. Having invented NAND flash over 30 years ago, KIOXIA is now one of the world’s largest flash memory suppliers – and continues to move the technology forward.

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