

## Industry-Leading TLC 3D NAND Solutions for Flagship Smartphones



### Advanced Smartphone Experiences — Driving Need for Faster Access to Data

Today's mobile devices are smarter than ever. Recent innovations are enabling entirely new ways of interacting with smartphones, including advanced user authentication, augmented reality, natural language recognition and personalized imaging capabilities. These advanced user experiences are being made possible by artificial intelligence (AI), which is driven by dedicated on-chip AI processing engines.

The emergence of AI in flagship smartphones is driving the need for more advanced storage solutions that enable faster and more efficient access to data. Analyst firm Gartner predicts that by 2022, 80% of all smartphones will have on-device AI capabilities,<sup>1</sup> increasing the requirement to process and store more data locally.

### Fast, High-Capacity NAND Storage Solution

If you're designing a next-generation mobile user experience, Micron's innovative 64-layer triple-level cell (TLC) 3D NAND technology solves the storage performance challenge. It delivers the speed and features you require — with higher capacity than previous-generation NAND technologies. By utilizing our CMOS under Array (CuA) technology, our new mobile NAND products pack more storage cells into a smaller die area to deliver the industry's smallest physical footprint for a 32GB die. Our unique approach places all of the flash memory layers on top of the logic array, maximizing the use of space in the smartphone design.

## Key Benefits

### 1. High Performance

Get dramatically faster performance versus planar NAND with 3D NAND's enhanced performance features and the ultra-fast interface of our UFS products.

### 2. Enhanced Reliability

Deliver better quality and reliability thanks to our 3D NAND's use of proven floating gate cell architecture.

### 3. High Capacity

Get double the storage density with the same package size of previous-generation TLC 3D NAND.

### 4. Power Efficiency

Significantly reduce peak power consumption with Micron's peak power management feature.

### 5. Small Form Factor

Build in one of the world's smallest 3D NAND die — ideal for ultra-small form factor devices.

# Micron® TLC 3D NAND and UFS Products for Mobile

## The UFS Advantage

Additionally, you can enable an ultra-fast mobile experience with our select 3D NAND products that use the Universal Flash Storage (UFS) 2.1 standard. With UFS, you can:

- Significantly boost read/write speeds and boot-up times.
- Experience seamless HD streaming, higher bandwidth gameplay and faster multimedia file loading.
- Enhance mobile camera performance when capturing bursts of photos, like panoramas or action shots.

## Why Micron TLC 3D NAND for Mobile Enhanced Performance Features

- **Industry-Leading Write Performance** – Offers random writes of 40,000 IOPS, with the 64-layer TLC 3D NAND products performing 50% faster than previous-generation TLC 3D NAND.
- **UFS 2.1 High-Speed Gear 3 Interface** – Delivers 200% higher bandwidth versus e.MMC 5.1; uses Command Queue technology to read and write commands simultaneously.
- **4K Read Mode** – Improves random read performance.

## Power Efficiency

Our TLC 3D NAND uses a peak power management system to significantly reduce the memory peak power consumption in smartphones.

## High-Capacity Storage

64-layer TLC 3D NAND technology with CMOS under Array technology doubles the storage density of previous-generation TLC 3D NAND while maintaining the same package size.

## Improved Reliability

Micron's unique floating gate technology provides superior data retention<sup>2</sup> compared to charge trap gates used by competitors.

## Trusted Memory Partner

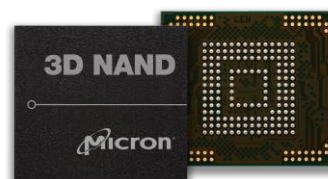
Over the last three decades, Micron has developed a worldwide reputation as an expert in research, design, process development and manufacturing of memory and storage solutions. Our technical experts collaborate closely with our customers, equipment suppliers, industry partners, universities and other strategic partners to enable successful integration of innovative memory-based systems and solutions ideal for our mobile customers.

## TLC 3D NAND for Mobile

Product	Interface	3D NAND Capacity
UFS	UFS 2.1	64GB 128GB 256GB

## Contact Us

When you're ready to take your mobile innovation to the next level, Micron's TLC 3D NAND can help. Contact your Micron sales representative or visit [micron.com](http://micron.com) to learn more about our TLC 3D NAND and UFS solutions for mobile.



*Our TLC 3D NAND devices provide high-quality performance, high capacity and enhanced reliability for smartphones and other small form factor devices.*

[micron.com](http://micron.com)

1. Source: Gartner Market Insight:10 Use Cases for AI-Powered Smartphones to Generate New Business Opportunities.  
2. Floating gate technology uses isolated charge storage nodes for superior cell-to-cell charge isolation, delivering higher data retention and reliability.

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