



A Global Leader in Flash Storage Solutions

Mobile and Compute Product Family Brochure

Western Digital.

Western Digital®

Key Advantages

- Decades of innovation in the flash memory industry
- Leading smartphone and tablet manufacturers use Western Digital flash memory
- Full portfolio for all market segments to drive innovations in a connected world
- 15-year expertise with mobile embedded storage solutions
- Partnership with leading chipset vendors
- World-class fabs via joint ventures with Kioxia

There are over 5 billion smartphone subscriptions worldwide¹, making smartphones the largest and most popular Internet of Things (IoT) platform. The smartphone is now the hub of our everyday connected lives, enabling immediate access to home, work, media, surveillance, gaming, photography, video, shopping, communications and many other uses.

To grow market share, device manufacturers, chipset makers and application developers are driving a variety of innovations at an accelerated pace to entice consumers to purchase their latest device. The new possibilities that 5G networks promise are bringing new enthusiasm as the ecosystem imagines novice applications and new usages to take advantage of 5G high speeds and low latency. In the race to the future of all things connected, Western Digital is leading by enabling mobile manufacturers with the latest advancement in storage technology, our deep engagement in the ecosystem with vertical integration and the unique understanding of the most important factor for success — delivering seamless user experiences with better, faster, greater storage solutions.

Providing a Complete Data Solution

Western Digital has a complete portfolio of storage products, from end points to the cloud, which enable the new usages our digital world demands. Mobile devices, industrial solutions, automotive products, surveillance systems and connected home devices are among the many markets that benefit from Western Digital embedded flash devices, removeable cards and SSDs. Western Digital is a leader in 3D NAND technology that enables high-capacity data solutions, and our NAND storage solutions are on leading-edge technology through our joint venture with Kioxia.

Empowering the Mobile Ecosystem

Western Digital optimizes its flash product lineup to enable next-generation devices through intense collaboration with industry partners. We partner with device manufacturers, operating system vendors, mobile network operators, system integrators, chipset providers and application developers to bring the best mobile experience to consumers. Western Digital's active participation in organizations such as JEDEC and the SD Association helps us play a key role in defining industry standards that drive mobile applications.

A Trusted Partner

Our products can be found in leading smartphone and computing platforms around the world. Western Digital is committed to developing and delivering leading storage solutions to enable emerging technologies, new applications and leading-edge devices.



Mobile



IoT & Commercial

Ready for 5G Devices

Networks are rolling out worldwide. These networks will enable ultra-fast speeds, low latency, lower power, and high network capacities, transforming not only smartphones, but billions of interconnected Internet of Things (IoT) devices.

High-performance and high-capacity storage will play a key role for OEMs, hardware vendors, applications developers and consumers. Western Digital offers iNAND® with the latest UFS 3.1 specification to enable the performance demands of 5G devices and applications.

Artificial Intelligence (AI) is becoming a key differentiator for mobile devices as smartphone OEMs combine high-resolution cameras with AI to enable a typical consumer to easily produce prosumer-quality images. Multiple high-resolution world-facing cameras combined with high-resolution 'selfie' cameras, enabled with AI editing, are producing larger image file sizes and driving a need for even higher capacity. Dedicated AI functionality in the smartphone not only enables photography but turns the smartphone into the central hub of the Internet of Things (IoT) revolution.

OEMs and hardware vendors are working closely with application developers to bring compelling augmented reality, virtual reality and high-end gaming experiences to smartphones. High-quality games and expansive virtual environments require high capacity and high performance to build, map and display these interactive applications. High-speed, low-latency 5G networks will connect consumers, workers and game players to these immersive environments. Media will be transformed with 5G speeds, allowing for fast download of movies and rapid upload of photos and videos.

Western Digital iNAND products offer multiple interfaces and form factors, giving OEMs and applications developers the flexibility to deliver a portfolio of products differentiated with performance and storage capacity at competitive price points. Western Digital's leading 3D NAND technology delivers performance and capacities to empower the 5G data revolution.

UFS Embedded Flash Drive

| | | | |
|---|---|---|---|
| Western Digital iNAND EU551 Mobile MC UFS 512GB | Western Digital iNAND EU521 Mobile MC UFS 256GB | Western Digital iNAND EU511 Mobile MC UFS 256GB | Western Digital iNAND EU311 Mobile MC UFS 256GB |
|---|---|---|---|

The iNAND® MC EU551, EU521, EU511 and EU311

are our most advanced flash storage solutions, built on the latest 3D NAND technology. These products are designed to deliver a fast, smooth user experience for the most data-intensive flagship mobile devices and tablets.

Features and Benefits

- UFS 3.1/3.0/2.1
- Capacities of 64GB² to 512GB within a unified small form factor package
- Write Booster based on SmartSLC™ Gen 7 technology**
- Host Performance Booster (HPB) 2.0**



e.MMC Embedded Flash Drive

| | | |
|--|--|---|
| Western Digital iNAND EM131 Mobile MC eMMC 128GB | Western Digital iNAND EM111 Mobile MC eMMC 128GB | Western Digital iNAND EM122 Commercial CL eMMC 64GB |
|--|--|---|

The iNAND® MC EM131, MC EM111 and CL EM122

portfolio provides mobile device manufacturers the freedom and agility to break new ground with high reliability, endurance and scalability for mid- to high-end mobile devices.

Features and Benefits

- MMC 5.1 HS400
- Capacities from 8GB to 256GB



Commercial microSD™ Card



The Commercial microSD™ cards for OEMs and Commercial

are available across a spectrum of performance points to meet the needs of any mobile segment.

Features and Benefits

- UHS-I 104/50/DDR200*
- Capacities from 8GB to 512GB
- Popular choice to increase internal storage capacity and achieve faster read/write speeds for smartphones



* for selected cards

** only applicable to EU551

| iNAND® UFS (Universal Flash Storage) | | | | iNAND e.MMC Embedded Flash Drives | | | |
|--------------------------------------|---------------------------------|-----------------------|--------------------------------|-----------------------------------|-----------------------|-----------------------|-----------------|
| | | | | | | | |
| MC EU551 | MC EU521 | MC EU511 | MC EU311 ^d | MC EM131 ^c | CL EM122 ^b | MC EM111 ^a | |
| Product Specification | | | | | | | |
| Capacity ¹ | 128GB to 512GB | 128GB to 256GB | 64GB to 256GB | 32GB to 256GB | 32GB to 256GB | 8GB to 64GB | 16GB to 128GB |
| Interface | UFS 3.1 Gear 4/2 Lane | UFS 3.1 Gear 4/2 Lane | UFS 3.0 Gear 4/2 Lane | UFS 2.1 Gear 3/2 Lane | e.MMC 5.1 HS400 | e.MMC 5.1 HS400 | e.MMC 5.1 HS400 |
| Package (mm) | | | | | | | |
| 8GB | — | — | — | — | — | 11.5×13×1.0mm | — |
| 16GB | — | — | — | — | — | 11.5×13×1.0mm | — |
| 32GB | — | — | 11.5×13×1.0mm | 11.5×13×1.0mm | 11.5×13×1.0mm | 11.5×13×1.0mm | 11.5×13×1.0mm |
| 64GB | — | — | 11.5×13×1.0mm | 11.5×13×1.0mm | 11.5×13×1.0mm | 11.5×13×1.0mm | 11.5×13×1.0mm |
| 128GB | 11.5×13×1.0mm | 11.5×13×1.0mm | 11.5×13×1.0mm | 11.5×13×1.0mm | 11.5×13×1.0mm | — | 11.5×13×1.0mm |
| 256GB | 11.5×13×1.0mm | 11.5×13×1.0mm | 11.5×13×1.0mm | 11.5×13×1.0mm | 11.5×13×1.0mm | — | 11.5×13×1.2mm |
| 512GB | 11.5×13×1.0mm | — | — | — | — | — | — |
| Ordering Information | | | | | | | |
| 8GB | — | — | — | — | — | SDINBDG4-8G | — |
| 16GB | — | — | — | — | — | SDINBDG4-16G | SDINADF4-16G-H |
| 32GB | — | — | — | SDINDDH4-32G | SDINBDA4-32G | SDINBDG4-32G | SDINADF4-32G-H |
| 64GB | — | — | SDINEDK4-64G | SDINDDH4-64G | SDINBDA4-64G | SDINBDG4-64G | SDINADF4-64G-H |
| 128GB | SDINFDO4-128G | SDINFDK4-128G | SDINEDK4-128G | SDINDDH4-128G | SDINBDA4-128G | — | SDINBDA6-128G-H |
| 256GB | SDINFDO4-256G SDINFDO2-256G* | SDINFDK4-256G | SDINEDK4-128G SDINEDK4-128P | — | — | — | — |
| 512GB | SDINFDO4-512G | — | — | — | — | — | — |

*256GB 4 dies configuration

Commercial microSD Cards

A New Dimension of Mobile Application Performance

Western Digital Commercial microSD cards for OEMs and commercial are available across a spectrum of performance points to meet the needs of any mobile segment.

The Commercial microSD cards are available up to Speed Class V30/U3, U1/C10 and C4.

| Commercial microSD™ Cards | | | |
|------------------------------------|------------------------------|--------------------------------------|---------------------|
| | Speed Class V30, U3, C10, A2 | Speed Class C10, U1, A1 ^a | Speed Class C4 |
| Product Name | Commercial CL QD501 | Commercial CL QD301 | Commercial CL QD101 |
| Formerly known as | SDSDQAE-xxxG | SDSDQAD-xxxG | SDSDQAB-xxxG |
| Capacity ² | 32GB–512GB | 16GB–256GB | 8GB–64GB |
| Interface | UHS-I 104 | UHS-I 104 | UHS-I 50 |
| Performance R/W ³ | Up to 95/90 MB/s | Up to 95/10 MB/s | Up to 20/5 MB/s |
| Operating voltage | 2.7V–3.6V | 2.7V–3.6V | 2.7V–3.6V |
| Operating temperature ³ | -25°C–85°C | -25°C–85°C | -25°C–85°C |

¹ Ericsson Mobility Report, November 2018

² 1 MB = 1 million bytes and 1 GB = 1 billion bytes. Actual user capacity may be less due to operating environment.

³ Based on Western Digital internal testing. Performance based on eMMC high speed interface, using an 8-bit bus.

Read and write speeds may vary depending upon host device, usage conditions, drive capacity, and other factors. 1 MB/s = 1 million bytes per second.

⁴ A1 = Application Performance Class. A1 is indicated by A1 logo marking. A1 is not available on 200GB configuration.

^a iNAND® 7232

^b iNAND® 7250

^c iNAND® 7550

^d iNAND® 8521

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