

Micron Xccela™ flash memory

Boost speed, save space and
lower energy consumption



Xccela™ flash memory sets a new record for NOR flash speeds to meet the demand for instant-on performance and fast system responsiveness in automotive, industrial, consumer and networking applications.

With Xccela flash, system designers no longer have to choose between the performance of parallel NOR and the small footprint of serial NOR. Our Xccela flash uses a new interface with as few as 11 active signals. It delivers five times the performance while reducing pin count by four times, energy consumption by three times and package size by two times compared to the page mode parallel NOR solution. In addition to enabling one of the fastest examples of direct code execution and shadowing, Xccela flash paves the way for simpler system designs, lower system costs and lower energy consumption.

Key features and benefits

- **JEDEC xSPI standard-compliant**
- **Densities:** 256Mb to 2Gb
- **Performance:** Up to 200MHz in double data rate (DDR) with data strobe, 400MB/s read throughput or 166MHz in single transfer rate, 166MB/s read throughput, 75.8ns initial access time and 2.5ns subsequent access time, and 2MB/s (256 bytes page buffer) program throughput
- **Interface:** Standard single SPI interface and octal I/O interface, along with DDR mode, to enable a high degree of flexibility, performance and backward compatibility; only 11 active signals for DDR operation
- **Single supply voltage:** Low-voltage range (1.7–2.0V) or full-voltage range (2.7–3.6V) support
- **Energy consumption:** Maximum 45pJ/bit energy consumption
- **Package options:** Industry-standard, green TBGA24
- **Temperature range:** Full industrial (–40 C to 85 C) and automotive AEC-Q100 Grade 2/Grade 1 (–40 C to 105 C/125 C) temperature support to address a variety of applications
- **Security¹:** Hardware and software block protection; one-time programmable region

Why buy Micron Xccela flash memory?

Expertise and quality

Products are defined and developed by a team of engineers, system architects and ecosystem partners to give you access to leading, proven, high-reliability solutions that can handle the most stringent application requirements.

Competitive solutions

Get instant power-on with best-in-class 400MB/s read throughput, improve firmware updates with extremely fast 2MB/s program throughput, and increase application security¹ with features like advanced block protection.

Unwavering commitment to the industrial and automotive markets

Micron leverages its Manassas, Virginia (U.S.), fabrication site to support the rapidly growing need for high-quality, high-reliability memory solutions. This site manufactures our long-lifecycle products to ensure supply continuity for the industrial and automotive markets. Delivering a leading-edge, state-of-the-art auto- and industrial-qualified memory portfolio with the associated lifecycle support places Micron in a class by itself and further underscores our continued commitment to these markets.

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Xccela flash applications

With lower-density memory subsystem interfaces trending toward x4/x8 SPI interfaces and with performance growing exponentially, OEMs are looking for simple, low-energy memory solutions to meet their needs.

- **Automotive:** Based on advanced NOR process technology and robust design methodologies, Xccela flash memory is highly reliable, supports the automotive temperature range, and is AEC-Q100 qualified. With automotive systems integrating electronic technology at lightning-quick speeds, consumer expectations for instant-on have carried over to automotive applications such as advanced driver-assistance systems, infotainment platforms and instrument clusters. Xccela flash is ideal for instant-on applications.
- **Industrial multi-market:** As low-end microcontrollers (MCUs) continue to shrink in die size, there is a need to augment the small amount of internal memory with a low-pin-count, high-performance memory subsystem. With only 11 active signal pins, Xccela flash significantly reduces the bond pads of an MCU design. Other industrial human-machine interface applications that require instant-on and fast execution like industrial PCs, factory automation and medical diagnostic equipment can also benefit from Xccela flash.

- **Core networking:** Enterprise communication demands fast, robust and secure networking equipment. Xccela flash breaks the NOR flash speed limit and addresses the requirements of next-generation networking infrastructures.
- **Consumer:** The combination of extreme performance and low pin count makes Xccela flash ideal for consumer applications that are space-constrained and require instant-on, such as digital still cameras, DSLR cameras, augmented and virtual reality (AR/VR) and home automation.

Performance that matters

Serial peripheral interface (SPI) NOR flash is used in a wide array of applications for boot code, program code and data storage. Xccela flash memory maintains backward compatibility with SPI NOR flash, making migration between these products relatively easy. Xccela flash also offers dramatically better performance while consuming less energy per bit than traditional SPI and quad SPI NOR flash, with random access times as fast as 73.3ns and sequential byte reads as fast as 2.5ns. Sustained read throughputs of 400MB/s enable an entire 1Gb Xccela flash device to be read in just 0.3 seconds. With Xccela flash memory's direct execute-in-place operation and low-pin-count interface, valuable board space can be saved and the need for code shadowing can be eliminated.

NOR flash product family

| Product family | Voltage | Sector erase size | Bus width | Density range ² | Max clock/max data transfer rate | Package options |
|--------------------|--------------------|--------------------------|----------------|----------------------------|----------------------------------|--------------------------|
| Xccela flash/MT35X | 1.7-2.0V, 2.7-3.6V | Uniform 4KB, 32KB, 128KB | x1, x8 | 256Mb-2Gb | 200MHz DDR (400MB/s) | BGA |
| MT25T | 2.7V-3.6V | Uniform 4KB, 32KB, 64KB | x1, x2, x4, x8 | 256Mb-1Gb | 133MHz (180MB/s) | BGA, SOIC |
| MT25Q | 1.7-2.0V, 2.7-3.6V | Uniform 4KB, 32KB, 64KB | x1, x2, x4 | 128Mb-2Gb | 166MHz (90MB/s) | DFN, BGA, KGD, CSP, SOIC |
| MT28EW | 1.65-3.6V | Uniform 128KB | x8, x16 | 128Mb-2Gb | 95ns, 20ns page | TSOP, BGA |
| MT28FW | 1.65-3.6V | Uniform 128KB | x16 | 1Gb, 2Gb | 105ns, 20ns page | BGA |

1. No hardware, software or system can provide absolute security under all conditions. Micron assumes no liability for lost, stolen or corrupted data arising from the use of any Micron products, including those products that incorporate any of the mentioned security features.
2. Not all densities are available in all package and voltage combinations. Some densities are offered as stacked solutions.

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