

# Boost Speed, Save Space and Lower Energy Consumption With **Xccela** Flash Memory



**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 5X performance while reducing pin count by 4X, energy consumption by 3X and package size by 2X compared to the page mode parallel NOR solution. In addition to enabling one of the fastest possible 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

- **Densities:** 256Mb to 2Gb
- **Performance:** Up to 200 MHz in double data rate (DDR) with data strobe, 400 MB/s read throughput or 166 MHz in single transfer rate, 166 MB/s read throughput, 83ns initial access time and 2.5ns subsequent access time, 2 MB/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 (2.3–3.6V) support
- **Energy Consumption:** Low 28 pJ/bit energy consumption
- **Package Options:** Industry-standard, Pb-free TBGA24 and SOIC 16W (selected density)
- **Temperature Range:** Full industrial (–40°C to 85°C) and automotive AEC-Q 100 Grade 2/Grade 1 (–40°C to 105°C/125°C) temperature support to address a variety of applications
- **Security\*:** Hardware and software block protection; one-time programmable region

## Why Buy Micron **Xccela** Flash Memory?

### 1. Expertise and Quality

Products 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.

### 2. Competitive Solutions

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

### 3. Product Lifecycle Solutions

Design with confidence knowing that Micron's Product Lifecycle Solutions bring the stability of our long-term memory support in alignment with the lifecycle of your design. Depending on your specific requirements, choose between our standard lifecycle support and the extended support for eligible products in our Product Longevity Program (PLP), which goes one step further for long-life applications that need support for extended longevity periods.

## 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 compared to traditional SPI and quad SPI NOR flash, with random access times as fast as 83ns and sequential byte reads as fast as 2.5ns. Sustained read throughputs of 400 MB/s enable an entire 1Gb **Xccela** flash device to be read in a mere 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.

## Xccela Flash Applications

With lower-density memory subsystem interfaces trending toward x4/x8 SPI interfaces and 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 has 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, DSLRs and home automation.

## Serial NOR Flash Product Family

Product Family	Voltage Range	Sector Erase Size	Bus Width	Density Range <sup>1</sup>	Max Clock/ Max Data Transfer Rate	Package <sup>1</sup>
<b>Xccela</b> flash/MT35X	1.7–2.0V, 2.7–3.6V	Uniform 4KB, 32KB, 128KB	x1, x8	256Mb–2Gb	200 MHz DDR (400 MB/s)	SOIC, BGA
MT25T	1.7–2.0V, 2.7–3.6V	Uniform 4KB, 32KB, 64KB	x1, x2, x4, x8	256Mb–1Gb	166 MHz (166 MB/s)	SOIC, BGA
MT25Q	1.7–2.0V, 2.7–3.6V	Uniform 4KB, 32KB, 64KB	x1, x2, x4	128Mb–2Gb	166 MHz (83 MB/s)	SOIC, DFN, BGA, KGD, CSP
N25Q	1.7–2.0V, 2.7–3.6V	Uniform 4KB, 64KB	x1, x2, x4	16Mb–1Gb	108 MHz (54 MB/s)	SOIC, DFN, BGA, KGD, CSP
M25P	2.3–3.6V	Uniform 32KB, 64KB <sup>2</sup>	x1	512Kb–16Mb	75 MHz (9 MB/s)	SOIC, DFN, KGD
M25PX	2.3–3.6V	Uniform 4KB, 64KB	x1, x2	8Mb–16Mb	75 MHz (19 MB/s)	SOIC, DFN, BGA, KGD
M25PE	2.7–3.6V	Uniform 256B, 4KB, 64KB	x1	1Mb–16Mb	75 MHz (9 MB/s)	SOIC, DFN, KGD
M45PE	2.7–3.6V	Uniform 256B, 64KB	x1	1Mb–16Mb	75 MHz (9 MB/s)	SOIC, DFN, KGD

<sup>1</sup>Not all densities available in all package and voltage combinations. <sup>2</sup>M25P05 and M25P10 erase sector = 32KB, M25P20 – M25P16 erase sector = 64KB.

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