PRODUCT BRIEF

Memory portfolio overview

Trusted supplier with the broadest portfolio of NOR Flash and specialty RAM memories

With over 40 years of experience, Infineon is the trusted supplier for the industry's broadest range of NOR Flash and specialty RAM memory solutions. We focus on the industrial, compute, communication, and automotive markets, and our longevity program offers 10+ years supply assurance for long-term platforms. Infineon advanced memory technologies deliver unique reliability for embedded application designs.

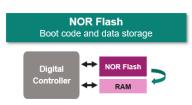| Memory type	Infineon product family	Interface	Volt.	Den.	Speed *1	Target application
	Solutions for boot code and system data storage					
NOR Flash	**SEMPER™ Secure** Secured & safe	QSPI Octal (xSPI) HYPERBUS™	3.0V 1.8V	128Mb to 512Mb	Up to 400MB/s	**Security enabled by hardware root-of-trust** Networking, surveillance, smart factories, data centers; Secured boot and storage, secured end-to-end transitions
	SEMPER™ Safety and high density	QSPI Octal (xSPI) HYPERBUS™	3.0V 1.8V	256Mb to 4Gb	Up to 400MB/s	**Architected and designed for functional safety** Robotics, industrial automation, motor drives, ADAS; Safety-critical operation, high speed, fast boot
	SEMPER™ Nano Tiny footprint & low power	QSPI	1.8V	256Mb	Up to 52MB/s	**Designed for smaller, faster, and smarter devices** Hearables, wearables, smart sensors, portable medical; Compact, reliable, built-in ECC, low power
	HYPERFLASH™ High performance	HYPERBUS™	3.0V 1.8V	128Mb to 512Mb	Up to 333MB/s	**High throughput with HYPERBUS™ interface** Industrial HMI, digital displays, clusters; Instant-on, image and graphics storage
	Standard Serial Wide product range	QSPI Dual QSPI	3.0V 1.8V	64Mb to 1Gb	Up to 204MB/s	**Wide range of industry-proven solutions** Industrial, compute, communications and automotive; Reliable boot code and data storage
	Standard Parallel Legacy NOR Flash	16/8-bit page mode	3.0V	64Mb to 2Gb	Down to 70ns / 15ns	**Long-term support for legacy devices** Mature products as in industrial and medical; Reliable boot code and data storage

	Solutions for data logging and instant data capture					
F-RAM	**EXCELON™ Ultra** High perf & Instant write	SPI QSPI	1.8V 3.0V	2Mb to 16Mb	Up to 108MHz	**"Unlimited" data logging, low-pin count, non-volatile** Industrial automation, Server/RAID, smart meters; Data logging, critical data capture on power loss
	EXCELON™ Auto AEC-Q100 & instant write	SPI QSPI	1.8V 3.3V	1Mb to 16Mb	Up to 108MHz	**AEC-Q100 qualified, instant write, non-volatile** Camera, sensor for ADAS, infotainment; Data logging, critical data capture on power loss
	EXCELON™ LP Low power & small footprint	SPI	1.8V 3.3V	2Mb to 16Mb	Up to 50Mz	**Ultra-low power, in-rush current control, non-volatile** Portable medical devices, wearables, IoT devices; Data logging, instant data capture on power loss
	Standard F-RAM High reliability & instant write	I2C, SPI, Parallel, x8, x16	3.3V 5.0V	4kb to 4Mb	Up to 40MHz / Down to 60ns	**High-reliable, instant write, non-volatile** Industrial, computing, networking; Data logging, instant data capture on power loss
nvSRAM	**nvSRAM** High speed & dependable	Parallel, x8, x16	1.8V 3.0V 5.0V	256kb to 16Mb	Down to 25ns	**High-speed, non-volatility with no battery backup** RAID storage, industrial automation, gaming; Data logging, storage for critical data
		I2C, SPI QSPI	1.8V 3.0V	64kb to 1Mb	Up to 108 MHz	**Low pin count, non-volatility with no battery backup** Industrial control and automation, smart metering; Data logging, storage for critical data

*1: Speeds in "MHz" refers to serial interfaces, the higher the number the faster the communication. Speeds in "ns" refer to parallel interfaces access times, the lower number the faster the communication.

	Expansion RAM for Data buffer and scratchpad					
Async SRAM	**Async MoBL™ SRAM** Ultra-low power & reliable	Parallel, x8, x16, x32	1.8V 3.0V 5.0V	1Mb to 64Mb	Down to 45 ns	**Highly energy efficient, reliable memory** Industrial automation, motor drives, insulin pumps; Data retention with battery backup, scratchpad
	Async FAST SRAM High-speed & reliable	Parallel, x8, x16, x32	1.8V 3.0V 5.0V	256Kb to 32Mb	Down to 10ns	**High-throughput, reliable memory** Networking switches and routers, defense; High speed scratchpad, communication data buffer
pSRAM	**HYPERRAM™ 2.0** High speed & low pin count	HYPERBUS™ Octal (xSPI)	1.8V 3.0V	64Mb to 512Mb	Up to 400MB/s	**High speed, low power, low pin count** Wearables, IoT devices, HMI displays, machine vision; Expansion RAM for scratchpad and data buffer
	HYPERRAM™ 3.0 High speed & low power	HYPERBUS™ x16	1.8V	256Mb	Up to 800MB/s	**High throughput, low power** Industrial, IoT devices, automotive V2X; Expansion RAM for scratchpad and data buffer
Sync SRAM	**Sync RAM** High bandwidth & reliability	Parallel, x18, x36, x72	1.3V 1.8V 2.5V 3.3V	4Mb to 144Mb	Up to 2.1GT/s *2	**Intensive processing support, random access** Servers, image processing, defense, network cards; Expansion RAM for processing intensive applications

2: "GT/s" refers to Giga transactions per second

Use cases for Infineon NOR Flash and specialty RAM memories

NOR Flash
Boot code and data storage

Boot code
1. Code programmed during manufacturing
2. At power on, code copied to DRAM
3. Application runs from DRAM copy

Data storage
1. Application parameters programmed during manufacturing
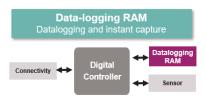2. Controller reads and writes data while executing

Expansion RAM
Data buffer and scratchpad

Data buffer
1. RAM holds data temporarily to balance performance mismatches

Scratchpad
1. Complex algorithms generate many intermediate results
2. Intermediate results loaded in and out of scratch memory to enable fast compute

Data-logging RAM
Datalogging and instant capture

Instant data capture
1. On power failure RAM instantly captures system state
2. On power recovery, operation re-starts safely

Instant data capture
1. Data from sensors continuously saved in RAM for efficiency gains and preventative maintenance
2. System state saved continuously for diagnostics

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