CYPRESS

512Mb 1.8-V Quad SPI FS-S NOR Flash Memory



PRODUCT OVERVIEW

INTRODUCTION

The Cypress FS512S is a high performance Quad SPI NOR Flash memory device ideal for embedded systems. The low-pin-count Quad SPI interface enables reduced package size and simplified board layout compared to traditional parallel interfaces. Read bandwidth of 80 MB/s ensures host controllers can retrieve and execute program code without delay and also read data quickly. Cypress applies stringent testing and qualification processes to ensure all parts meet our world-class quality requirements, and offers AEC-Q100 qualification.

Reduced PCB Area and Complexity

- Cypress FS512S NOR Flash saves board space by using a low-pin-count Quad SPI Interface which enables package sizes as small as 48-mm^2
- A low-pin-count interface also simplifies board layout

High Read Bandwidth

- Cypress FS512S NOR Flash offers high read bandwidth of 80 MB/s
- High read bandwidth enables the fastest program execution for high-performance systems

Hybrid Sector Size with Fast Program and Sector Erase Times

- Eight 4KB Sectors Provide Flexibility for boot code and parameter storage, remaining sectors are 256KB
- A 475-µs Page Program (512 Bytes) time (Typical) increases manufacturing throughput
- A 930-ms Sector Erase (256KB) time (Typical) enables new data to be written quickly

FEATURES

SECTOR SIZE
- 256KB with optional eight 4KB sectors

QUAD I/O READ FREQUENCY
- 133 MHz (SDR)
- 80 MHz (DDR)

READ BANDWIDTH
- 66 MB/s (SDR)
- 80 MB/s (DDR)

PROGRAM AND ERASE TIMES (TYP)
- 475-µs Page Program (512 Bytes)
- 240-ms Sector Erase (4KB)
- 930-ms Sector Erase (256KB)

POWER
- 1.70-V to 2.00-V Supply Voltage
- 60-mA Quad Read SDR (Typ)
- 70-mA Quad Read DDR (Typ)
- 70-µA Standby (Typ)
- 8-µA Deep-Power Down (Typ)

TEMPERATURE RANGES
- Industrial: -40°C to +85°C
- Industrial-plus: -40°C to +105°C
- Extended: -40°C to +125°C

AUTOMOTIVE SUPPORT
- AEC-Q100 Qualification
- PPAP Support

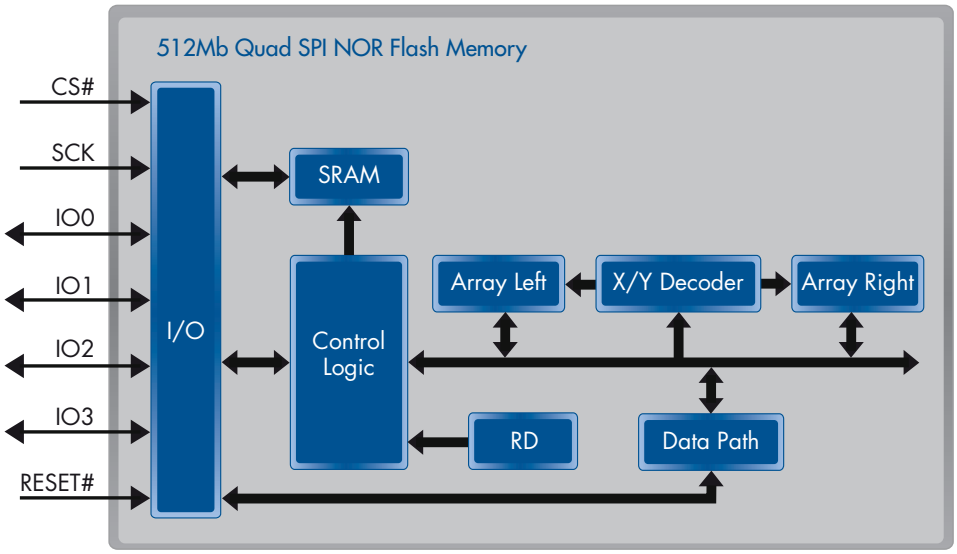
PACKAGES
- 16-lead SOIC (300 mil)
- 8-contact WSON (6x8 mm)
- 24-ball BGA (6x8 mm, 5x5-ball)

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APPLICATIONS

- Automotive telematics/infotainment
- Advanced driver assistance systems (ADAS)
- Networking/communications
- Industrial Internet of Things (IoT)

FUNCTIONAL BLOCK DIAGRAM



512Mb 1.8-V Quad SPI NOR Flash Memory Block Diagram

512Mb 1.8-V QUAD SPI FS-S NOR FLASH MEMORY DEVICE PORTFOLIO

MPN	Density	Speed	Package	Package Materials	x = Temperature Range
S25FS512SAGMFx01	512 Mbit	133 MHz (SDR)	16-lead SOIC	Lead (Pb)-free	I = Industrial (–40°C to +85°C) V = Industrial-plus (–40°C to +105°C) N = Extended (–40°C to +125°C) A = Automotive AEC-Q100 Grade 3 (–40°C to +85°C) B = Automotive AEC-Q100 Grade 2 (–40°C to +105°C) M = Automotive AEC-Q100 Grade 1 (–40°C to +125°C)
S25FS512SAGNFx01			8-contact WSON	Lead (Pb)-free	
S25FS512SAGBHx21			24-ball BGA	Low-Halogen, Lead (Pb)-free	
S25FS512SDSMFx01		80 MHz (DDR)	16-lead SOIC	Lead (Pb)-free	
S25FS512SDSNFx01			8-contact WSON	Lead (Pb)-free	
S25FS512SDSBHx21			24-ball BGA	Low-Halogen, Lead (Pb)-free	

GET STARTED NOW

To learn more about Quad SPI FS-S NOR Flash Memory products, visit www.cypress.com/FS-S

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