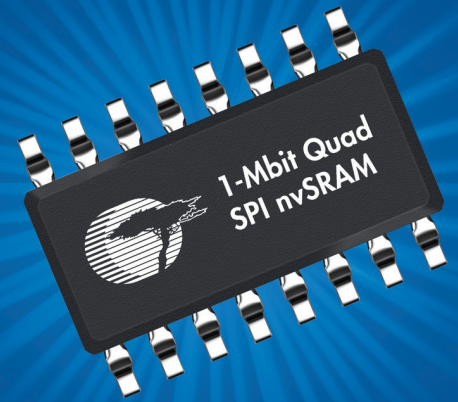


CYPRESS

# 1-MBIT QUAD SPI NVSRAM

ELIMINATE BATTERIES AND REDUCE PIN COUNT  
WHILE MAINTAINING HIGH-SPEED NVRAM PERFORMANCE



## PRODUCT OVERVIEW

### INTRODUCTION

Cypress, the worldwide leader in NVRAM, introduces its newest nonvolatile SRAM (nvSRAM) solution with a Quad Serial Peripheral Interface (SPI). This solution enables system designers to instantly capture and store critical data on power loss without a battery. It also meets the data throughput performance of high-speed parallel nonvolatile RAM (NVRAM), yet offers the reduced pin count of the Quad SPI interface.

### HIGH-PERFORMANCE NVSRAM SOLUTION

- Provides 54 megabytes per second (MBps) burst read/write access time with unlimited write endurance, exceeding the throughput of a x16, 45-ns parallel interface
- Offers an integrated, high-accuracy, real-time clock option

### BATTERY-FREE SOLUTION

- Performs the STORE operations during power-down with AutoSTORE. AutoSTORE uses zero system time with a small external capacitor to complete the STORE during power loss. When power returns to operating minimum, data is automatically RECALL'ed from the nonvolatile elements into the SRAM
- Stores data reliably on power loss without batteries, even in magnetic fields, and is RoHS compliant
- Eliminates the need for an external power-management controller

### LOW PIN COUNT

- Offers a Quad SPI interface with a 108-MHz clock rate
- Requires only 6 controller pins connected to the MCU, compared to 29 pins required by a typical parallel SRAM solution
- Allows for a simpler design with reduced pin count

### CYPRESS' RELIABLE NVSRAM TECHNOLOGY

- Allows full array STOREs from SRAM to nonvolatile in just 8 ms following each power loss or brownout
- Supports one million STORE cycles into the nonvolatile cells. If power is disrupted five times each day, this would allow over 540 years of nonvolatile STOREs
- Provides 20-year data retention

### FEATURES

#### HIGH PERFORMANCE

- 10.8 MBps random data throughput
- 54 MBps burst data throughput
- 108 MHz clock rate
- Infinite read/write to SRAM

#### NO BATTERIES

- RoHS compliant
- No battery related mechanical issues
- No replacement or recharge cycles
- No end-of-life disposal problems
- No data loss from electrical noise or signal input undershoot
- No power monitoring required

#### RELIABLE NONVOLATILE MEMORY

- 1,000,000 nonvolatile store cycles (on power disruptions only)
- 20-year data retention
- Software and hardware write protects
- Full array STORE on power-down in 8 ms using zero system time with a small external capacitor

#### ADDITIONAL PRODUCT FEATURES

- Extended Industrial temp range -40 to 105°C
- Industrial temp range -40 to 85°C
- 1.8 V I/O voltage
- 3.0 V supply voltage
- Industry-standard 16-SOIC and 24-BGA packages
- Integrated real-time clock option
- Standard SPI compatibility

## TARGET APPLICATIONS

The 1-Mbit Quad SPI nvSRAM is ideal for write journaling in RAID storage applications, data logging in industrial automation applications and storing critical configuration data in computing and networking applications.



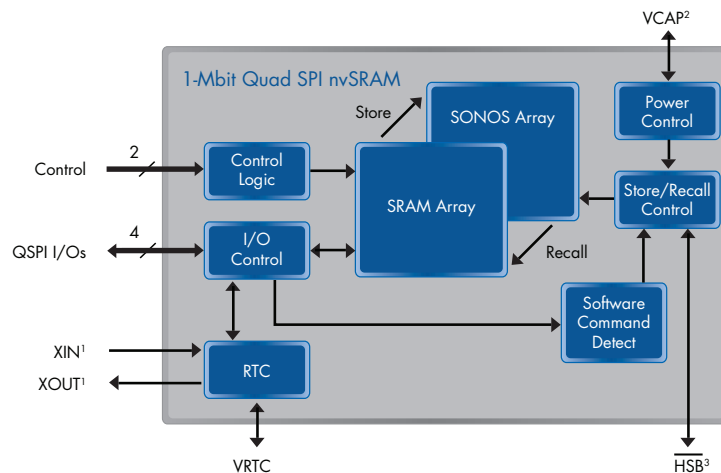
RAID Storage



Industrial Automation



Computing and Networking



Block diagram

- <sup>1</sup> Crystal connections
- <sup>2</sup> External capacitor connection
- <sup>3</sup> Hardware store busy

## 1-MBIT QUAD SPI NVSRAM PRODUCT SELECTOR GUIDE

Part Number	Interface	Clock Frequency	Supply Voltage	I/O Voltage	Grade	Temp	Package	RTC
CY14V101QS-SF108XI	Quad SPI	108-MHz	3.0 V	1.8 V	Industrial	-40 to 85° C	16-SOIC	No
CY14V101QS-SF108XQ	Quad SPI	108-MHz	3.0 V	1.8 V	Ext. Industrial	-40 to 105° C	16-SOIC	No
CY14V101PS-SF108XI	Quad SPI	108-MHz	3.0 V	1.8 V	Industrial	-40 to 85° C	16-SOIC	Yes
CY14V101QS-SE108XI	Quad SPI	108-MHz	3.0 V	1.8 V	Industrial	-40 to 85° C	16-SOIC	No
CY14V101QS-SE108XQ	Quad SPI	108-MHz	3.0 V	1.8 V	Ext. Industrial	-40 to 105° C	16-SOIC	No
CY14V101QS-BK108XI	Quad SPI	108-MHz	3.0 V	1.8 V	Industrial	-40°C to 85°C	24-BGA	No
CY14V101QS-BK108XQ	Quad SPI	108-MHz	3.0 V	1.8 V	Ext. Industrial	-40°C to 105°C	24-BGA	No

## GET STARTED NOW

To learn more about the 1-Mbit Quad SPI nvSRAM, visit [www.cypress.com/QuadSPInvSRAM](http://www.cypress.com/QuadSPInvSRAM)

To purchase the 1-Mbit Quad SPI nvSRAM, visit [www.cypress.com/buyonline](http://www.cypress.com/buyonline)

For more of Cypress's nonvolatile RAM products, visit [www.cypress.com/nonvolatile](http://www.cypress.com/nonvolatile)

Feel free to email us at [nvsram@cypress.com](mailto:nvsram@cypress.com)

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