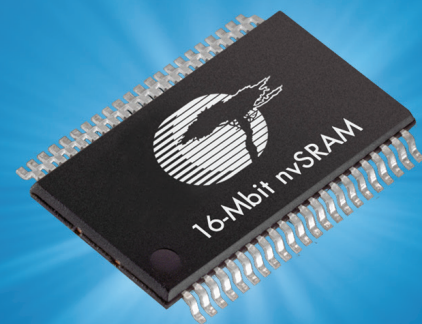


CYPRESS

PARALLEL NONVOLATILE SRAM (nvSRAM)



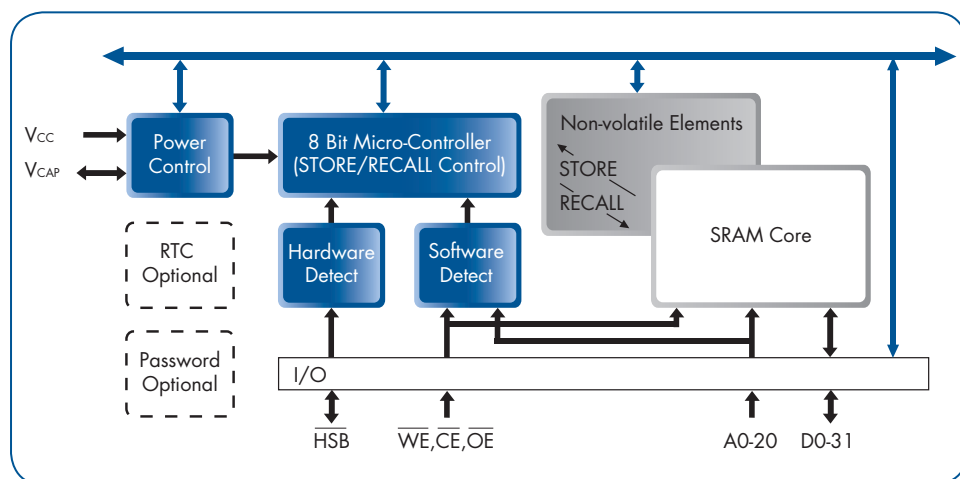
PRODUCT OVERVIEW

A FAST SRAM THAT NEVER LOSES DATA

nvSRAM combines two workhorse CMOS technologies—Cypress's world leading SRAM technology and best-in-class SONOS nonvolatile technology—into one powerful product line. In your system, the nvSRAM behaves just like a conventional SRAM. The SRAM part of the IC performs random access read/write at speeds up to 20 ns using standard Async SRAM signals and timing. But on a power glitch or fail, the intelligence in the chip detects the threat and automatically saves a copy of your SRAM data into nonvolatile memory where it can stay unchanged for over 20 years. On power-up RECALL, the IC returns the data copy back to the SRAM and system operation can continue precisely from where it was left last giving you a fast SRAM that never loses data. The latest high density (16 Mb) nvSRAMs are also available in ONFI 1.0 interface.

The transfer between SRAM and nonvolatile array inside is completely parallel (cell for cell) allowing the STORE operation to complete in 8 ms or less, without user knowledge. The IC family also provides user controlled software STORE and RECALL initiation commands, as well as a user controlled hardware STORE initiation command in most versions.

Cypress's nvSRAMs are offered in industry-standard, RoHS-compliant packaging options such as: TSOP, FBGA, SSOP, and SOIC packages.



nvSRAM block diagram

ADVANTAGES

HIGH PERFORMANCE INDUSTRY STANDARD INTERFACES

- Random access
- Fast async memory timing (20 ns access)
- ONFI 1.0
- Standard SRAM, ONFI 1.0 compatible packages and pinouts

SAVES LIKE A NONVOLATILE MEMORY

- Robust technology with 25 years in production
- 1,000,000 store cycles to nonvolatile elements
- 20-year data retention with reliability better than 10 FIT
- Full array store on power-down using zero system time

NO BATTERIES; COMPLETELY GREEN

VALUE-ADDED OPTIONS

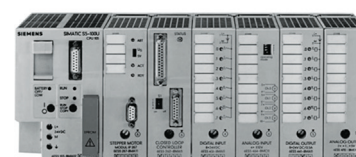
- Tamper protection with password security
- Secure STORE
- 105°C and 125°C grade available on demand

NO WEAR LEVELING ROUTINES

NO FIRMWARE WAIT STATES FOUND IN OTHER NONVOLATILE SOLUTIONS

APPLICATIONS - FOR SHADOW BUFFER, JOURNAL WRITES, ERROR LOGGING, BATTERY/SUPERCAP REPLACEMENT IN THE FOLLOWING APPLICATIONS

- RAID controllers • Industrial automation • Computing/networking equipment • Data communications • Industrial data logger
- Single-board computers • Gaming • Military



SONOS NONVOLATILE TECHNOLOGY

Our nonvolatile technology requires very low erase and programming currents, allowing full array STOREs from SRAM to nonvolatile in just 8 ms following each power stop or brownout. Over 1 million STORE cycles into SONOS nonvolatile cells can occur without damaging the structure. If power is disrupted 5 times each day, this theoretically allows over 500 years of nonvolatile STORE's and RECALL's to your SRAM data.

SONOS Nonvolatile Technology is also used in Cypress's flagship PSoC® (programmable system-on-chip) product, which has shipped over 1 billion devices.

AutoSTORE OPERATING MODE

AutoSTORE performs STORE operations in the background during power-down, using zero system time. A small external capacitor guarantees sufficient energy to complete STORE when the system power supply drops below the minimum specified operating range. When power is returned, data is automatically RECALL'ed from the nonvolatile elements into the SRAM once the supply reaches operating minimums.

PARALLEL nvSRAM PRODUCT PORTFOLIO

Part Number	Density	Interface	Voltage	I/O	Real-Time Clock	Speed	Package
CY14V116	16 Mb	ONFI 1.0, Async	3.0 V / 1.8 V IO	x8 / x16	No	30ns, 45 ns	FBGA
CY14B116	16 Mb	Async	3.0 V	x8 / x16 / x32	Yes	25 ns, 45 ns	FBGA, TSOP
CY14E116	16 Mb	Async	5.0 V	x8 / x16 / x32	No	25 ns, 45 ns	FBGA, TSOP
CY14B108	8 Mb	Async	3.0 V	x8 / x16	Yes	25 ns, 45 ns	FBGA, TSOP
CY14B104	4 Mb	Async	3.0 V	x8 / x16	Yes	20 ns, 45 ns	FBGA, TSOP
CY14B101	1 Mb	Async	3.0 V	x8 / x16	Yes	20 ns, 45 ns	FBGA, TSOP, SOIC, SSOP
CY14V101	1 Mb	Async	3.3 V / 1.8 V IO	x8 / x16	No	25 ns, 45 ns	FBGA
CY14V256	256 kb	Async	3.3 V / 1.8 V IO	x8	No	35 ns	FBGA
CY14B256	256 kb	Async	3.0 V	x8	Yes	25 ns, 45 ns	TSOP, SOIC, SSOP
CY14E256	256 kb	Async	5.0 V	x8	No	25 ns, 45 ns	SOIC
CY14V104	4 Mb	Async	3.3 V / 1.8 V IO	x8	No	25 ns, 45 ns	FBGA
CY14U256	256 kb	Async	3.0 V / 1.8 V IO	x8	No	35 ns	FBGA

WORLDWIDE SALES AND DESIGN SUPPORT

For more information on nvSRAM go to www.cypress.com/nvsram.

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