

Microchip Technology Serial SRAM

Microchip's Serial SRAM family provides a way to easily and inexpensively add external RAM to almost any application. These serial devices use less power and fewer I/O connections than traditional parallel SRAM, and they allow you to use a smaller microcontroller with additional on-board RAM. Microchip's SPI-compatible Serial SRAM devices are available in 64 Kbits, 256 Kbits, 512 Kbits and 1 Mbit options and up to 20 MHz. The 512 Kbits and 1 Mbit parts support data backup via an external battery/coin cell connected V_{BAT} pin. These 8-pin devices have unlimited endurance and zero write times.

	1.5–1.95V	2.7–3.6V
1 Mbit	23A1024/20 MHz	23LC1024/20 MHz
512 Kbits	23A512/20 MHz	23LC512/20 MHz
256 Kbits	23A256/16 MHz	23K256/20 MHz
64 Kbits	23A640/16 MHz	23K640/20 MHz

Key Features

- SPI Bus, 20 MHz
- Volatile memory
- Operating voltage: 1.5–1.95V and 2.7–3.6V
- Infinite endurance
- Zero write speeds
- Low-power consumption
- Automotive Grade 1 with PPAP support

Key Benefits

- Lower system costs – innovative products, tiny packages, low-power consumption, fewer I/O pins, small form factor
- Save I/O pins on the MCU – more compact designs, add additional features
- Secure data with write-protect options
- Robust designs with broad operating conditions

Typical Applications

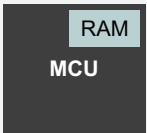
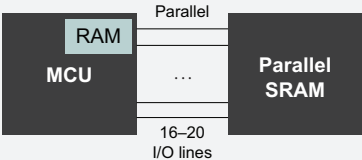
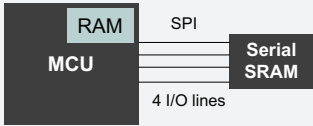
- Metering
- Point-of-Sale (POS) terminals
- Printers
- Internet radio
- Ethernet
- Wi-Fi
- Replace parallel RAM
- Any application needing low-cost RAM

Flexible RAM Expansion

Add features to your current microcontroller and get to market faster.

- Add functionality to your current design
- No need to buy a larger microcontroller just for the RAM
- Familiar 4-pin SPI interface
- Reduce cost in your current design
- Scratchpad, buffering, high-endurance applications

The Serial SRAM Advantage

Feature	Traditional Parallel SRAM	Microchip's Serial SRAM
I/O Connection to MCU	16–20	4
Standby Current	3 mA	1 µA
Active Current	50 mA	1–10 mA
Lowest Operating Voltage	3.0V	1.7V
Footprint	100 mm ²	20 mm ²
Smallest Packages	28-pin TSSOP, 28-pin SOIC	8-pin TSSOP, 8-pin SOIC
		 Stand-alone Serial SRAM offering greater design flexibility and the opportunity for RAM expansion

Serial SRAM Products

Device	Density (Organization)	Max. Clock Frequency	Operating Voltage (A, K)	Temperature (I, E) (°C)	Read Current (mA)	Max. Standby Current	Packages	Battery Back-Up
23X640	8 Kbits (64 KB)	20 MHz	1.8V, 3V	–40 to +125	3 mA	4 µA	PDIP, SOIC, TSSOP	No
23X256	32 Kbits (256 KB)	20 MHz	1.8V, 3V	–40 to +125	3 mA	4 µA	PDIP, SOIC, TSSOP	No
23X512	64 Kbits (512 KB)	20 MHz	1.8V, 3V, 5V	–40 to +125	3 mA	4 µA	PDIP, SOIC, TSSOP	Yes
23X1024	125 Kbits (1 MB)	20 MHz	1.8V, 3V, 5V	–40 to +125	3 mA	4 µA	PDIP, SOIC, TSSOP	Yes

1. Voltage Range: A = 1.5–1.95 V, K = 2.7–3.6 V 2. All devices are RoHS-compliant