

# AT45xx Series

Fast flexible secure

## Most efficient flash memory for data logging

**Incredibly versatile and secure**

### Faster writing

Save significant time when programming. Use one buffer to program the flash array while the other buffer is being used to prepare the next set of data for programming.

### Reduced wear

Data can first be stored and manipulated in a SRAM buffer until ready for programming. This removes unnecessary write operations and reduces flashwear.

### Byte alterability

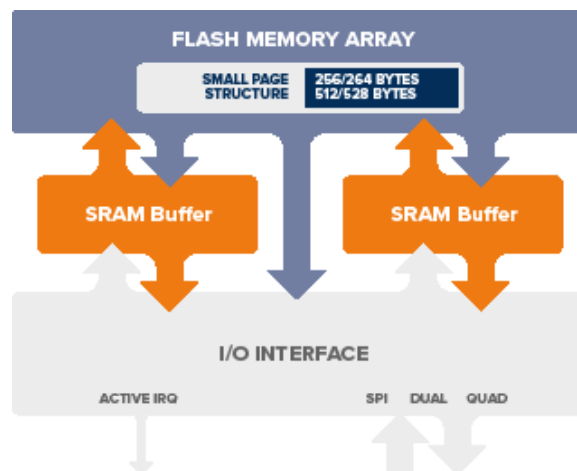
To change a single byte of data in a flash device, it is necessary to read, modify and write an entire page manually. With DataFlash, just write the byte and the rest happens automatically.

### Scratch pad

When system resources are tight, the SRAM buffers can be used as scratch pad memory to extend the amount of memory in the system, while still being able to read from the flash array.

### Dual SRAM buffers

By incorporating dual SRAM buffers, our AT45xx series of DataFlash memories make storing, retrieving, and manipulating data easier than any other flash memory on the market.



### Higher MCU efficiency

Let your microcontroller (MCU) focus on other activities or sleep during programming cycles. Active IRQ notifies the MCU when programming is complete.

### Data integrity

Each page contains additional bytes that can be used to store ECC, CRC, wear level, or other data that aids data integrity.

### Wide VCC

Battery voltage changes based on internal chemistry and temperature. Our AT45xx series offer the ability to operate over a wide range of voltages, making it easy to utilize any battery to its fullest capability, while reducing system cost and simplifying circuit design by removing additional power regulators.



**Adesto**

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# APPLICATIONS

- Data logging
- High integrity systems
- OTA intensive application
- Industrial IoT
- Building automation
- Smart appliances
- Remote controls
- Network systems

## Series Selector Guide

Density	Part Number	Wide VCC	Ultra-deep Power Down	Next gen low-power	Active IRQ
2Mbit	AT45DB021E	1.65 - 3.6V	•		
4Mbit	AT45DB041E	1.65 - 3.6V	•		
8Mbit	AT45DB081E	1.70 - 3.6V	•		
16Mbit	AT45DB161E	2.30 - 3.6V	•		
32Mbit	AT45DB321E	2.30 - 3.6V	•		
32Mbit	AT45DB321F	1.70 - 3.6V	•	•	•
64Mbit	AT45DB641E	1.70 - 3.6V	•		

### Easy to use, incredibly versatile, and secure

Our AT45xx series offer the highest flexibility in serial flash memory and provide ways to increase the power efficiency of your host controller and system. You can also reduce system cost by eliminating discrete components from the board and take advantage of comprehensive data protection features to ensure your data stays safe.

### Save system power

Active IRQ, dual SRAM buffers, and low power write features all help save system power as well make the MCUs ability to complete other tasks, or sleep, easier.

### Peace of mind when power fails

Because the SRAM buffers can be used as scratch pads and it only takes one command to transfer the data stored in the SRAM buffers to the flash array, precious time is saved to ensure data is stored before the residual system power is gone.

### Protect and secure your data

Lock any sector, in any order, at anytime. Utilize each device's unique chip identification as part of your system authentication, provisioning and encryption scheme. Prevent any further locking or unlocking of sectors. These are just some of the features that make AT45xx devices the perfect choice when security or data protection is key.

## Technical Specifications

- Single wide voltage supply
- Dual SRAM buffers
  - Independent read / write operations
  - Concurrent programming to array
  - System memory expansion
  - Read, modify, write in SRAM
  - Single write to flash array command
- Single byte write
- User configurable page size
  - 256 / 512 bytes per page
  - 264 / 528 bytes per page
- Program and erase suspend / resume
- Active IRQ (AT45DBxxxF series)
- Interface:
  - Single SPI: AT45DB and AT45DQ series
  - Dual SPI: AT45DQ series
  - Quad SPI: AT45DQ series
- Ultra-deep power down
- Hardware and software write protection
- 128 Byte OTP security register
- Hardware and software reset
- Data retention >20 years
- Endurance 100,000 program / erase cycles per page
- JEDEC standard manufacturer and device ID
- Temperature range options:
  - 40°C to +85°C (all devices)
  - 40°C to +105°C (all devices)
  - 40°C to +125°C (contact Adesto)
- Pb / Halide-free / RoHS compliant

