The most efficient SPI Flash memory for system datalogging applications

AT45 DataFlash™

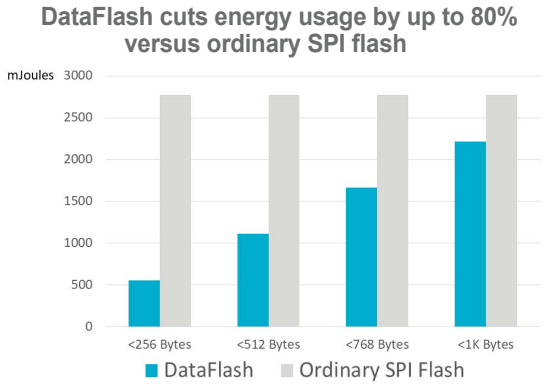
Using ordinary SPI flash for datalogging tasks means unnecessarily erasing and programming large amounts of data every time a small update is needed. This can cost energy, inflate system overhead and even risk the integrity of system files.

DataFlash goes beyond ordinary flash by including a page architecture and R/W buffers that will help the designer achieve faster, easier and the lowest energy datalogging operations.

Small page architecture

Less Energy Required

DataFlash uses a more efficient architecture to perform datalogging for only 1/5th of the energy required by ordinary SPI Flash.



Cut overhead by 80%

DataFlash requires fewer steps than ordinary flash to perform a typical memory update which means faster write and energy savings.
Free up the MCU to perform other system tasks rather than having to manage the memory.

Ordinary Flash	vs	DataFlash
16 programming steps per update		1 programming step per update

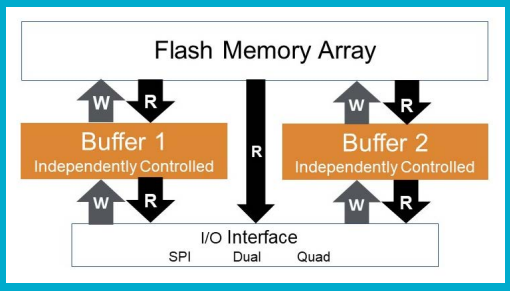
Use the R/W buffers and just one command from the MCU to make datalogging updates rather than issuing 16 separate programming commands with ordinary flash.

Bolster integrity of system files

Ordinary flash forces the minimum erasure of 4KB of existing data for any size update. Use DataFlash to simplify memory updates and avoid unnecessary erasure of critical data.

R/W Buffers

Unlike ordinary SPI Flash, DataFlash includes a dual bank of read/write buffers that can be individually written, read and fully controlled by MCU commands.



R/W buffers save energy

Hold frequently changing data in these buffers without initiating the power-hungry programming or erase cycle of ordinary SPI Flash.

R/W buffers reduce wear

Hold and update data thousands of times before committing only a single write to the main memory array.

Continuous datalogging

Seamless programming performance in high-throughput applications, the MCU can write to one buffer while contents of the other buffer is transferred into the memory array.

Power fail data protection

Use the DataFlash dual R/W buffers to program the flash array while preparing the next set of data for programming.

Read Modify Write

Go even further to fight overhead inflation; use the single command Read Modify Write option and reduce memory updates to just 2 steps.

dialog SEMICONDUCTOR

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.

Technical Specifications

Page erase for low energy datalogging	Single wide voltage supply
Dual SRAM buffers • Independant read / write operations • Concurrent programming to array • Read, modify, write in SRAM • Single write to flash array command • Power fail data protection	User configurable page size • 256 / 264 bytes per page • 512 / 528 bytes per page
Program and erase suspend / resume	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

Applications

- Industrial IoT
- Building automation
- Wearables
- Consumer devices
- Datalogging
- OTA intensive applications
- Remote controls
- Network systems

DataFlash Memory Selector Guide

Order samples here

Density	Part Number	Voltage	R/W Buffers	Page Erase	Read Modify Write	Interface SPI	Interface Dual	Interface Quad
64Mbit	AT45DB641E	1.70 - 3.6V	Dual	•	•	•		
32Mbit	AT45DQ321	2.30 - 3.6V	Dual	•	•	•	•	•
32Mbit	AT45DB321E	2.30 - 3.6V	Dual	•	•	•		
16Mbit	AT45DQ161	2.30 - 3.6V	Dual	•	•	•	•	•
16Mbit	AT45DB161E	2.30 - 3.6V	Dual	•	•	•		
8Mbit	AT45DB081E	1.70 - 3.6V	Dual	•	•	•		
4Mbit	AT45DB041E	1.65 - 3.6V	Dual	•	•	•		
2Mbit	AT45DB021E	1.65 - 3.6V	Single	•	•	•		

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