

CYPRESS

EXCELON™ SECURE F-RAM MEMORY

Performance, reliability, and instant nonvolatility in low-pin-count memory. Now with security.

F-RAM is ideal for data logging in industrial, medical, automotive, and financially sensitive applications. A breach of data can have severe consequences, ranging from a disruption in plant operations to risking the health and safety of hospital patients.

In automobiles, data logs stored in event data recorders are used in litigation to prove what happened right before an accident. Because these files are so important, they can easily become a target of malicious attacks. Cypress' Excelon™ Secure F-RAM adds security features to protect this data, without compromising performance, reliability, and instant nonvolatility.



FEATURES

FOR SECURE HOST SYSTEM

- Configurable secure region
- Mutual authentication of host at power-up, with SHA-256-based HMAC to enable access to secure region
- Monotonic counter to prevent replay attacks

FOR NON-SECURE HOST SYSTEM

- Non-authenticated lock command to instantaneously block access to secure region on a trigger event, such as an accident
- Unlocked by a remote entity using authenticated unlock command

ADDITIONAL PRODUCT FEATURES

- True RAM performance @ 108 MHz SDR QSPI Interface
- 100 trillion (10^{14}) cycle endurance
- 100+ year data retention
- Instant nonvolatility

EXCELON SECURE F-RAM ADVANTAGES:

Excelon F-RAM memories combine nonvolatile data storage with the fast speed of RAM. F-RAM devices offer four distinct advantages vs. traditional nonvolatile memories:

- Fast write speed with no write delay
- Virtually unlimited endurance
- Unparalleled energy efficiency
- Cryptographic functions ensure integrity and availability of stored data

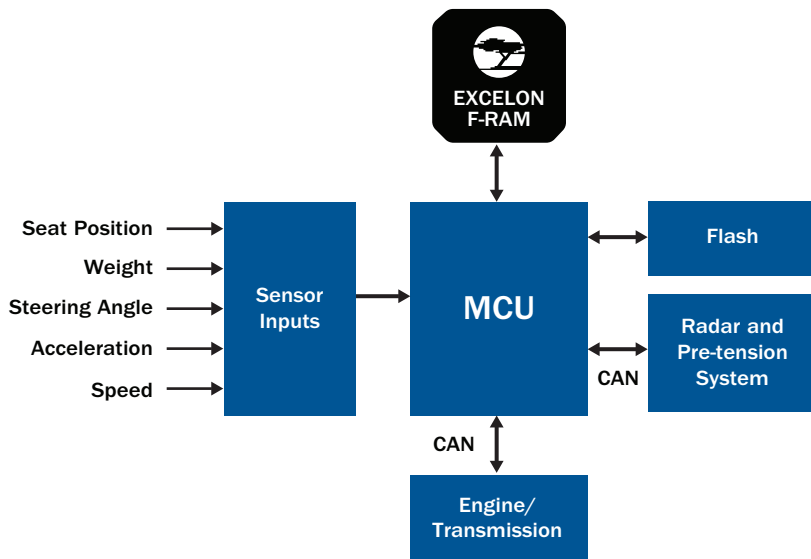
Excelon F-RAM devices operate with the same host processor interfaces and timing as SRAM, EEPROM, and serial FLASH, but also benefit from very fast write speeds that eliminate write delays due to “soak time” or page/sector buffering that are required of other technologies. Instant writes eliminate “data at risk” resulting from unexpected power loss, and then the data is secured using cryptographic functions.

APPLICATIONS

Cypress' Excelon Secure F-RAM is an ideal solution for a variety of applications that store valuable or safety critical data including:

- Industrial automation
- Programmable logic controllers
- Automotive black boxes, engine control, airbags
- Personal medical devices that log patient data
- POS devices, ATMs
- Gambling machines
- Aerospace and defense

VEHICLE BLACK BOX (EVENT DATA RECORDING, EDR)



PROBLEM

Automotive event data recorders (EDRs), also known as “black boxes,” need a memory device that reliably logs all sensor inputs—speed, acceleration, steering angle, braking, etc., with instant write capability. This technology must be able to capture last-minute crash data using the limited power that is available before system shutdown. The logged data is used for accident reconstruction and is even used in litigation. The data becomes valuable immediately after a crash, and any further access must be secured.

SOLUTION

Excelon Secure offers a low-pin-count, low power solution with NoDelay™ writes to instantly, reliably, and securely capture the data on crash, whether or not the interfacing host supports security.



GET STARTED NOW

For more information on our Excelon F-RAM solutions, visit: <https://www.cypress.com/products/excelon-fram>

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