



Automotive Event Data Recorder

F-RAM ideal for rapid data logging demands of new automotive EDRs

The Event Data Recorder (EDR) is similar to the black box recorder on an airplane. Its function is to record information about accidents so that it is possible to find out what actually happened. U.S. Government agencies like the National Transportation Safety Board (NTSB) and the National Highway Traffic Safety Administration (NHTSA) are using EDRs to support their crash investigation programs, which in turn help auto manufacturers and civil engineers design automobiles and highways with improved safety and performance.

The data stored in an EDR include speed, throttle position, brake status, seat belt status, airbag status, number of events, acceleration (longitudinal, lateral and roll), status of ABS, and stability control.

Why use F-RAM?

Since event data must be written during an accident, designers must be aware that the main power supply could fail. F-RAM is ideal for EDR applications for the following reasons:

High endurance: Event data — written to F-RAM prior to and during a crash — is not lost if the main power supply fails. F-RAM's high endurance ensures data integrity.

Fast writes, low power consumption: F-RAM can be written 1000x faster and a billion times more often than EEPROM, at a fraction of the power, so F-RAM-based EDRs can store data at higher intervals over the life of the EDR.

No delays: Some event data need to be taken as often as every 1-millisecond to properly record the events. Event data generated during a lateral side crash or 'curb trip' roll over need to be taken as often as every 1-millisecond. The slow, 10-millisecond write time and page buffer delay of an EEPROM makes it unsuitable for this purpose.



F-RAM's fast write time and high endurance can play an important role in the development of advanced EDRs that need to collect an increasing number of parameters and store them as events occur rapidly.

Where is the EDR?

The EDR may be found in the airbag system. It may also be part of the Engine Management System or Engine Control Unit (ECU), which controls various aspects of a vehicle engine's operation. To properly record acceleration, the EDR must be located at the center of gravity of the vehicle, which is typically between the front seats. To solve these multiple location requirements, the EDR functions may be distributed to multiple EDR units within the vehicle.



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