



Safety Systems Leadership

Airbag Evaluation Platform

Complete Airbag System Solution

Overview

Freescale's Airbag Evaluation Platform is a complete turnkey solution for a cost-effective, scalable and ready-to-use automotive airbag application. It benefits from the Freescale system expertise and global leadership position.

This new Airbag Evaluation Platform is based on the airbag ASSP's integrated power supplies, PSI5 interface, safing state machine and flexible external firing loops, with the application environment of Freescale's 32-bit MCUs, local sensors and PSI5 satellite sensors.

The Airbag Evaluation Platform demonstrates verified combinations between parts to deliver cost savings, scalability and reduced time to market.

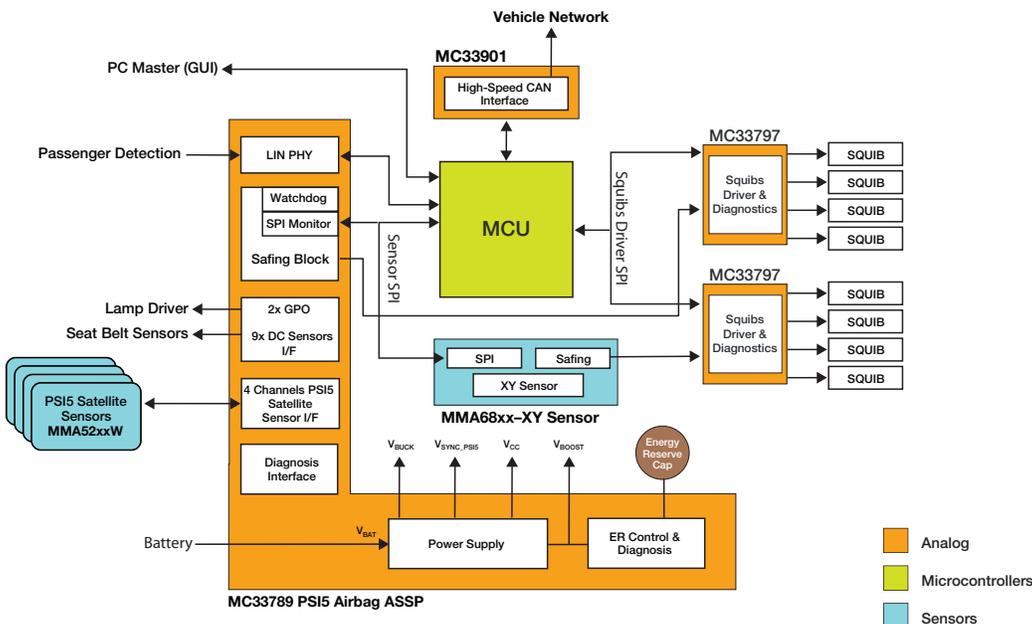
Benefits

- Verified combination between MCU, ASSP and sensors
- Accelerated time to market using airbag system evaluation software
- ECU-level debug and test over serial communication interfaces
- Fully supported application-level debug and test using MCU ecosystem
- Friendly graphical user interface (GUI)
- Dedicated mixed-signal ASSPs provide flexibility and scalability for airbag systems (up to 8 firing squibs).

Target Applications

- PSI5 airbag systems
- Industrial systems requiring power supply fault tolerance
- Pyrotechnic igniters (fireworks, mining, special effects)
- Automatic fire extinguishers
- Military systems

Airbag Reference Platform (PSI5) Block Diagram



Freescale MPC560xP MCUs

- Scalable MCU family for safety applications
- e200z0 Power Architecture® core @ 64 MHz
- Scalable memory, up to 512 KB flash
- LQFP package

Freescale Airbag ASSPs MC33788/MC33789 & MC33SA0104/MC33797

- Scalable airbag system
- Power supply for complete ECU
- Up to four satellite sensor interfaces (PSI5)
- Up to eight firing squibs in cross-coupled configuration
- Up to nine configurable switch input monitors for simple switch, resistive and Hall-effect sensor interface
- Safing block + watchdog

Airbag Evaluation Platform

- Evaluation Platform Board
- Board schematics, layout and BoM
Demo software source code not intended to be used in production
- Airbag system evaluation software (source code)
- User guide
- CodeWarrior development studio
- FreeMASTER demonstrator GUI project
- Evaluation platform resources (reference manual, data sheets and application notes)

Scalable and Flexible Platform Solution

Low-End Configuration

- **Two front airbags**
- No side airbags
- No rear airbags
- **Two seatbelt pre-tensioners**
- **Two satellite sensors**

Freescale MPC5601P
32-bit core
64 MHz
192 KB flash
12 KB RAM

Analog PSI5 Airbag ASSP MC33788
Two PSI5 interfaces
Two analog inputs
MC33SA0104
Four firing loops

Configuration not available with this Airbag Evaluation Platform.

Mid-Range Configuration

- **Two front airbags with progressive deployment**
- **One knee airbag**
- **Two side airbags**
- No rear airbags
- **Two seat pre-tensioners**
- **Four+ satellite sensors**

Freescale MPC5602/3P
32-bit core
64 MHz
256 KB or 384 KB flash
20 KB or 36 KB RAM

Analog PSI5 Airbag ASSP MC33788/MC33789
Two/Four PSI5 interfaces
Four/Nine analog inputs
MC33SA0104/MC33797
Eight firing loops

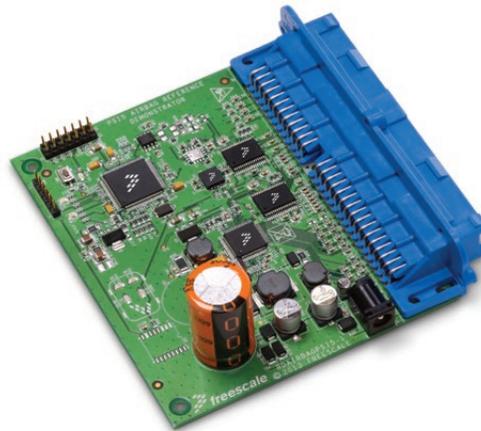
High-End Configuration

- **Two front airbags with progressive deployment**
- **One knee airbag**
- **Two side airbags**
- **Two seat airbags**
- **Two rear airbags**
- **Two seat pre-tensioners**
- **Four+ satellite sensors**

Freescale MPC5604P
32-bit core
64 MHz
512 KB flash
40 KB RAM

Analog PSI5 Airbag ASSP MC33789
Four PSI5 interfaces
Nine analog inputs
MC33797
Twelve firing loops

Configuration not available with this Airbag Evaluation Platform.



For more information visit freescale.com/arp

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