STEERING BY MELEXIS

Short Description

New Systems like Adaptive Front light Steering (AFS), Vehicle Stability and Electrical Power Steering (EPS) increase safety, make steering hydraulics obsolete, cut fuel consumption by as much as 0.4l/100km, reduce development time and reduce assembly cost, making them winning technologies for manufacturers, drivers, and the environment.

Melexis has a wide range of technologies in high volume production today. Furthermore Melexis invests in promising next generation sensor technologies like SAW torque sensors. This allows our customer-partners to choose between a best of blends (optical, magnetic, SAW sensors), and they are guaranteed to stay at the edge for next generation platforms.

Our motor drivers build on Melexis’ long history in automotive motor driver and actuator IC design. Combined with our market leading position in Hall effect sensor technology Melexis has become an indisputable market reference from three phase brushless DC (BLDC) motor drivers to microstepping LIN slave nodes.

Systems and Technologies

- EPS sensors
  - Linear optical array: Angle & Torque sensing
  - Tria®is™ Hall: Angle sensing
  - Linear programmable Hall: Angle & Torque sensing
  - SAW sensor: Torque sensing
- BLDC motor
  - EPS sinusoidal 3 phase BLDC FET predriver
  - EPHS sinusoidal 3 phase BLDC intelligent actuator
  - Hall switch & Hall position sensor
- Vehicle Stability / Roll-over sensors
  - EPS angle sensors
  - Gyro angular rate sensor
- Adaptive Front light Steering
  - LIN slave microstepping actuators
  - Hall position sensors
Motor Drivers

• The MLX90403 is a three-phase brushless DC (BLDC) motor driver with sinusoidal commutation and on-chip charge pump. It controls the BLDC power steering motor in several high volume EPS systems.

• Melexis is one of the market leaders in automotive intelligent actuator ASIC design. Target applications combine demanding motor current control algorithms with extensive diagnostics in 16bit Flash microcontrollers. Melexis offers both integrated motor driver solutions, for instance for adaptive front light steering, optionally with its integrated LIN driver, up to FET drivers for instance for Electrically Powered Hydraulic Steering.

Hall position sensor

• Triasis™ Hall effect (MLX90316) allows accurate angle sensing, independent from thermal mismatch between the IC and the magnet. Based on the IMC® Hall principle the angle is directly calculated from the magnetic flux density along both X and Y directions using CoRDiC algorithm. Triasis™ can be applied for EPS and for Steer-by-wire angle position sensing.

• The programmable linear Hall sensor (MLX90215, MLX90251) can be applied as Power Steering torque sensor.

• The MLX90242 Fixed programmable linear Hall sensor is the lowest cost and smallest size alternative for rotary and linear position sensing.

Linear Optical Array

• The MLX90255 is applicable:
  - For Power steering sensor to generate redundant Torque and Angle information,
  - For Vehicle Stability and Electronic Park Assist (EPA) to provide steering angle information.

• Next generation devices with higher sensitivity, higher frame rate (fps) and single chip dual-array are under development or in production as ASIC.

SAW Sensor

• Surface Acoustic Wave (SAW) elements can be applied as wireless strain sensors, measuring torsion at high speed and with high resolution without requiring an expensive torsion bar. The compact size and weight of the full system is another key selling feature.

• Melexis has signed an exclusive license agreement with Transense to develop and produce the read out electronics. Learn all about this exciting technology from our licensors website: www.transense.co.uk

Solid Stage Gyroscope

• Solid state gyroscope offers angular rate sensing for vehicle stability applications like Roll-over Detection, Yaw Stability Control and for Dead Reckoning Navigation (GPS).

• Gyroscopes are the latest member of Melexis’ family of silicon MEMS products, next to pressure sensors, acceleration sensors and Infrared thermopiles.