

## TLE5011

### GMR Based Angular Sensor



THE TLE5011 is a 360° angle sensor, which detects the orientation of a magnetic field. This is achieved by measuring sine and cosine angle components with monolithic integrated Giant Magneto Resistance elements (iGMR). The data communication is accomplished via a bi-directional Synchronous Serial Communication (SSC) Interface that is SPI compatible.

#### Features

- Giant Magneto Resistance (GMR)-based principle
- Full 0° to 360° angle measurement
- Highly accurate single bit SD-ADC
- 16 bit representation of sine/cosine values on the interface
- Bi-directional SSC Interface up to 2Mbit/s
- 3-pin SSC Interface, SPI compatible with Open Drain
- Supports SIL3
- 0.25µm CMOS technology
- Automotive qualified: -40°C to 150°C (Junction Temperature)
- ESD > 2kV (HBM)
- Green package with lead-free (Pb-free) plating

#### Applications

- Steering Angle
- Brushless DC Motor Commutation (e.g. Electric Power Steering (EPS))
- Rotary Switch
- General Angular Sensing

[www.infineon.com/sensors](http://www.infineon.com/sensors)

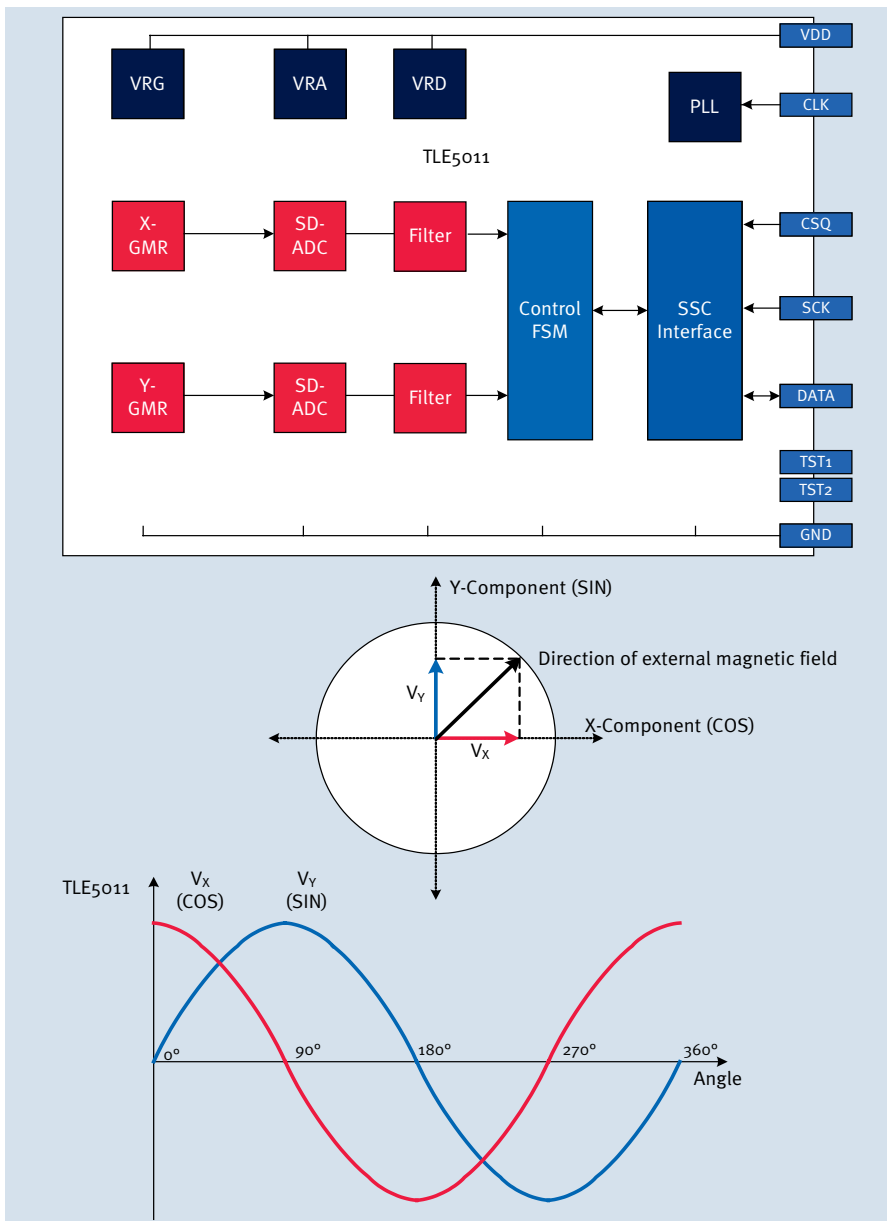
## Sense & Control



Never stop thinking

## TLE5011 Block Diagram

The TLE5011 consists of two paths (X- and Y- path). Each path has its own SD-AD converter followed by some filters. Via the SSC-Interface, the sine and cosine components can be read out.



## Interface Description

TLE5011 provides a digital output signal of sine and cosine components. Using the ARCTAN function, the true 360° angle value can be calculated, which is represented by the relation of the X and Y signals.

Parameter	Value	Unit
Operating Voltage	4.5 ... 5.5	V
Supply Current (typ.)	15	mA
Magnetic Induction	30 ... 70	mT
Overall Angle Error (typ.)	0.7	°
Temperature Range	-40 ... +150	°C

## Product Summary

Type	Sales Code	Package
TLE5011	SPO00393517	PG-DSO-8

How to reach us:  
<http://www.infineon.com>

Published by  
**Infineon Technologies AG**  
 81726 Munich, Germany

© 2008 Infineon Technologies AG  
 All Rights Reserved.

### Legal Disclaimer

The information given in this Product Brief shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

### Information

For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office ([www.infineon.com](http://www.infineon.com)).

### Warnings

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.

Infineon Technologies components may be used in life-support devices or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.