



TLE4941 / 4941C

Smart Hall Effect ICs for Active Wheel Speed Sensing

Applications

- Modern ABS systems
- Transmission speed sensing

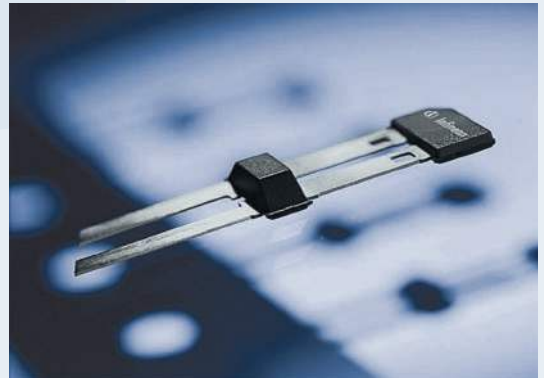
Features

- No external components needed
- Frequency range from 1 to 5000 Hz
- Two wire standard current interface
- Dynamic self-calibration principle
- Excellent sensitivity (min $\Delta B < 1.5$ mT)
- South and North pole pre-induction possible
- Ultra thin PG-SSO package
- 1.8 nF overmoulded capacitor for enhanced EMC (C-versions)
- Single chip solution
- Output switching with 1 st magnetic edge (-1 versions)

Functional Description

THE DIFFERENTIAL Hall sensor IC detects the motion of ferromagnetic and permanent magnet structures by measuring the differential flux density of the magnetic field. To detect the motion of ferromagnetic objects the magnetic field must be provided by a back biasing permanent magnet. Magnetic and device offsets are cancelled by a self-calibration algorithm within a few transitions. The ON and OFF state of the IC are indicated by High and Low current consumption.

PG-SSO-2-2



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Sensors

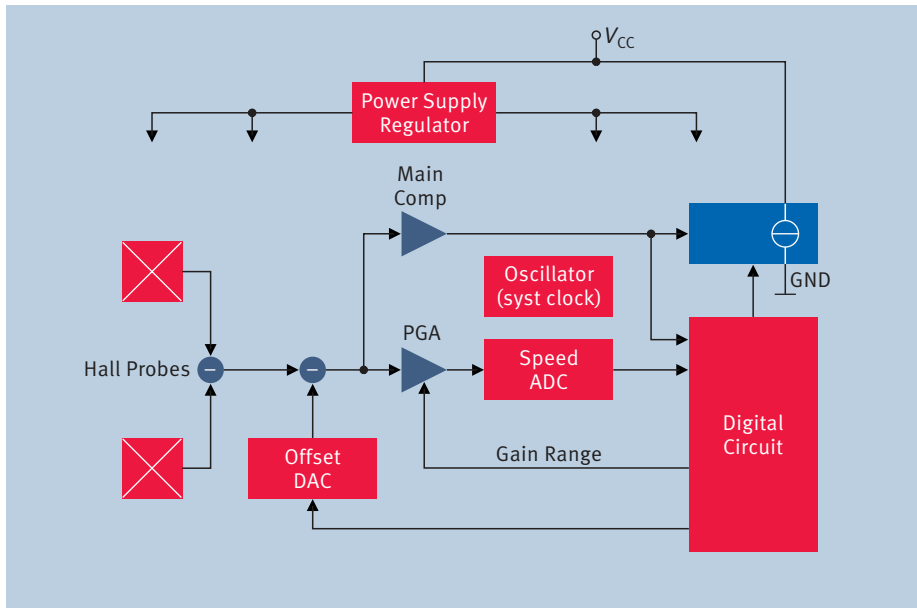


Never stop thinking

Block Diagram

TLE4941 signal path is comprised of a pair of hall probes, spaced at 2.5 mm, a differential amplifier including a noise-limiting low-pass filter, and a comparator feeding a switched current output stage.

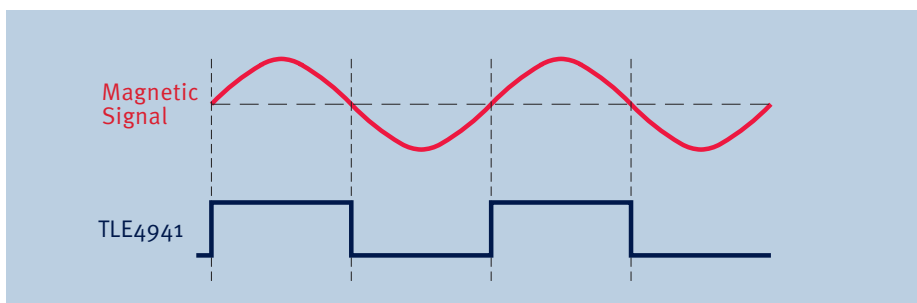
IN ADDITION an offset cancellation feedback loop is provided by a signal-tracking A/D converter, a digital signal processor (DSP) and an offset cancellation D/A converter.



| Parameter | Value | Unit |
|------------------------|--------------|------|
| Operating voltage | 4.5 ... 20 | V |
| Supply current (L/H) | 7 / 14 | mA |
| Min magn. flux density | < 1.5 | mT |
| Power on time | < 1 | msec |
| Frequency range | < 1 ... 5000 | Hz |
| Temperature range | -40 ... +150 | °C |
| Jitter | < 2 | % |

Interface Description

TLE4941 outputs a conventional square wave signal for speed frequency.



| Type | Sales Code | Package |
|------------|-------------|------------|
| TLE4941 | Q62705-K714 | PG-SSO-2-1 |
| TLE4941C | Q62705-K715 | PG-SSO-2-2 |
| TLE4941-1 | Q62705-K719 | PG-SSO-2-1 |
| TLE4941-1C | Q62705-K712 | PG-SSO-2-2 |

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Published by
 Infineon Technologies AG
 81726 München, Germany

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Ordering No. B112-H7820-G1-X-7600
 Printed in Germany
 PS 03061. nb