

Product Brief

TLE4941plusC

Differential Hall IC for wheel speed sensing

TLE4941plusC, a differential Hall sensor for measuring magnetically the car's wheel speed, is the latest offspring of the extremely successful TLE4941 family, based on Infineon's most recent sensor technologies for front-and backend. Designed as drop-in replacement the TLE4941plusC is, as its predecessors, a single chip solution combining Hall sensor elements and both analogue and digital signal processing in one single chip. Its differential principle makes it immune to any kind of undesired magnetic fields and disturbances. The Hall element distance has been downsized to 2 mm to be also fit for extremely small encoders. Several product improvements, both electrical and magnetic, have been put in place, such as an accelerated calibration during start-up phase and higher load dump robustness. The formerly optional first-edge-detection, a feature for quick start-up, providing a reliable output signal even before calibration is fully completed, has now become standard.

TLE4941plusC has a standard 2-wire current interface, high ESD robustness and works in the wide temperature range present in the harsh automotive environment. Magnetic and device offsets are canceled by a sophisticated selfcalibration algorithm immediately after start-up.

The TLE4941plusC is an extremely robust product due to Infineon's high quality standards as experienced automotive semiconductor supplier. After several hundred million units sold, Infineon's active wheel speed sensors have largely proven to be the perfect match for wheel speed sensing in all aspects of functionality, robustness and flexibility.

Applications

- > Reliable wheel speed sensing in automotive applications
- > Anti-lock Braking System (ABS)
- > Electronic Stability Program (ESP)
- > Automatic transmissions

Features

- > Two-wire current interface: minimizes wiring
- > Dynamic self-calibration principle: compensates offsets
- > Single chip solution: ensures outstanding reliability
- > High sensitivity: can be used for large airgap applications
- > South and north pole pre-induction possible: works for both encoders and tonewheels
- > High resistance to piezo effects: suits sensor overmolding wide operating temperature range
- > C type with 1.8 nF overmolded capacitor: enhances EMC & micro-break resistance, without any external components



Halogen-Free



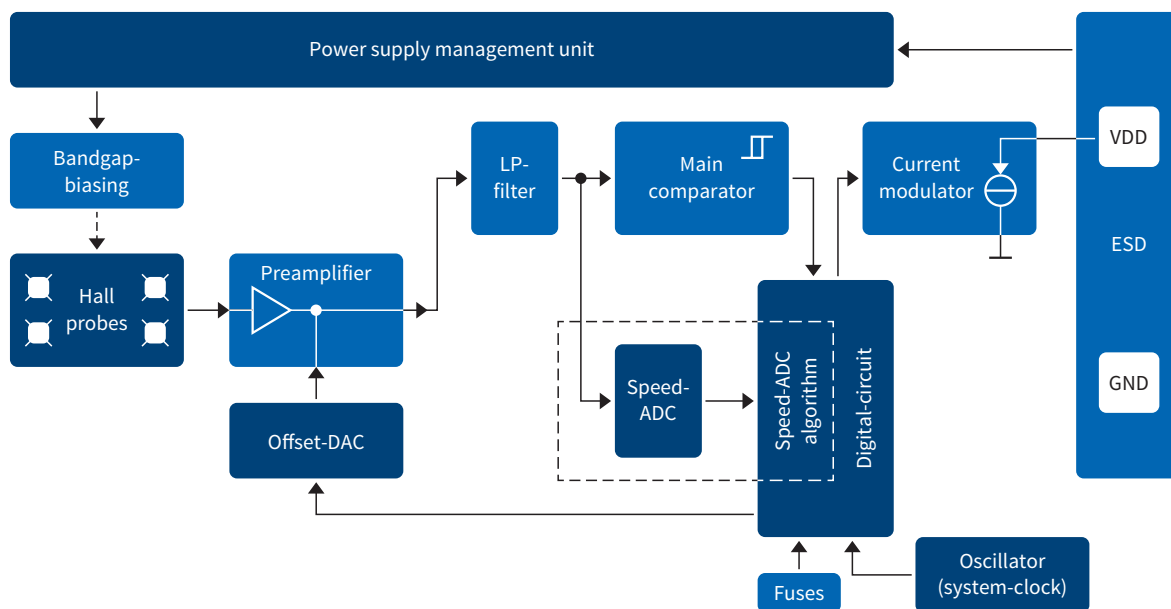
RoHS



TLE4941plusC

Differential Hall IC for wheel speed sensing

TLE4941plusC block diagram



The TLE4941plusC signal path includes a pair of Hall probes (2 mm spacing), a differential amplifier and a comparator feeding a switched current output stage.

Additionally, the circuit has a feedback loop for offset compensation which consists of a signal-speed ADC, a Digital Signal Processor (DSP) and an offset D/A converter.

Parameter	Value	Unit
Operating voltage	4.5 ... 24	V
Supply current (L/H)	7/14	mA
Min magn. flux density	0.7	mT
Frequency range	1 ... 10000	Hz
Temperature range	-40 ... +150	°C
Jitter	2	%
Calibrated mode available	> 4	# of edges

Type	Sales code	Package
TLE4941plusC	SP000478508	SSO-2-53

Published by
Infineon Technologies AG
81726 Munich, Germany

© 2016 Infineon Technologies AG.
All Rights Reserved.

Please note!

THIS DOCUMENT IS FOR INFORMATION PURPOSES ONLY AND ANY INFORMATION GIVEN HEREIN SHALL IN NO EVENT BE REGARDED AS A WARRANTY, GUARANTEE OR DESCRIPTION OF ANY FUNCTIONALITY, CONDITIONS AND/OR QUALITY OF OUR PRODUCTS OR ANY SUITABILITY FOR A PARTICULAR PURPOSE. WITH REGARD TO THE TECHNICAL SPECIFICATIONS OF OUR PRODUCTS, WE KINDLY ASK YOU TO REFER TO THE RELEVANT PRODUCT DATA SHEETS PROVIDED BY US. OUR CUSTOMERS AND THEIR TECHNICAL DEPARTMENTS ARE REQUIRED TO EVALUATE THE SUITABILITY OF OUR PRODUCTS FOR THE INTENDED APPLICATION.

WE RESERVE THE RIGHT TO CHANGE THIS DOCUMENT AND/OR THE INFORMATION GIVEN HEREIN AT ANY TIME.

Additional information

For further information on technologies, our products, the application of our products, delivery terms and conditions and/or prices, please contact your nearest Infineon Technologies office (www.infineon.com).

Warnings

Due to technical requirements, our products may contain dangerous substances. For information on the types in question, please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by us in a written document signed by authorized representatives of Infineon Technologies, our products may not be used in any life-endangering applications, including but not limited to medical, nuclear, military, life-critical or any other applications where a failure of the product or any consequences of the use thereof can result in personal injury.