

Product Brief

TLE4957C

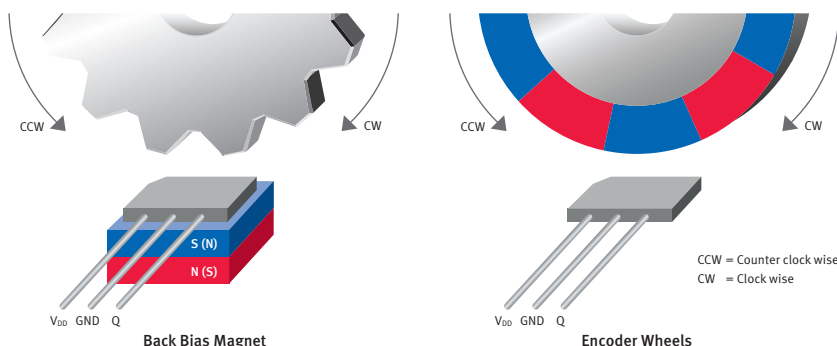
Highly accurate differential Hall sensor with visible adaptive hysteresis and high vibration robustness for automotive powertrain and industrial applications

The TLE4957C family detects the motion and position of ferromagnetic structures by measuring the change of differential flux density which results from a moving magnetic encoder wheel or is generated by the interaction of a magnetic back bias field with the ferromagnetic structure of a gear wheel or similar structure. The high sensitivity and self-calibration mode ensure optimal measurement accuracy. The sensor powers up very fast and reaches full calibration within only a few transitions after start-up. The combination of a frequent recalibration function in run mode with its visible or hidden adaptive hysteresis algorithm enables the TLE4957C to accurately switch over a broad range of different gear wheel structures with a high robustness against disturbances, like air-gap jumps or run-out events. TLE4957 has a voltage interface with a PWM output signal, therefore it comes with a 3-wire output, but a 2-wire configuration is possible by using 2 resistors.

In order to perfectly meet the requirements of harsh environmental conditions prevalent in automotive applications, the sensor is designed to withstand a wide range of temperatures, is robust against vibration, has a high ESD performance and large EMC resistance. With its features TLE4957C family is the ideal differential Hall sensor for applications like today's crankshaft or transmission speed sensing in automotive, speedometers or similar industrial applications.

TLE4957C is perfectly suited for applications like:

Gear Wheel Application with Back Bias Magnet and Magnetic Encoder Wheel Application



Features

- High sensitivity
 - Adaptive thresholds
 - Visible and hidden hysteresis options
 - Large operating air-gap
 - Advanced performance by dynamic self calibration principle
 - Wide frequency range of 1Hz to 8kHz
 - Digital output signal
 - Wide operating temperature ranges of $-40^{\circ}\text{C} \leq T_j \leq +175^{\circ}\text{C}$
 - Reverse voltage protection at V_{S-pin}
 - Short-circuit and overtemperature protection of output
 - Module style package with two integrated capacitors:
 - 4.7nF between Q and GND
 - 47nF between V_S and GND:
- Required for micro cuts in power supply and optimal EMC robustness



