

Product Brief

TLI4970 – Current Sensor Family

Miniature Magnetic Digital Current Sensor $\pm 50\text{A}$ (AC/DC), up to $\pm 1\%$, Digital SPI Interface

The TLI4970 is a highly accurate current sensor based on Infineon's well established Hall technology. The coreless concept allows significant miniaturization compared to existing products. It is a fully digital solution, easy to use, no need for external calibration. Additionally a separate interface pin (OCD) provides a fast output signal in case the current measured by the sensor exceeds a pre-defined threshold. The small QFN-like package allows standard SMD assembly.

Product Highlights

- AC & DC measurement range up to $\pm 50\text{A}$
- Highly accurate over temperature range and lifetime (max. 1.0% (0 h), 1.6% (over lifetime) of indicated value)
- Low offset error (max. 75mA over temperature and lifetime)
- High magnetic stray field suppression
- Fast over current detection with configurable threshold
- Galvanic isolation up to 2.5kV max. rated isolation voltage (UL1577)
- 16-bit digital SPI output (13-bit current value)
- Small 7.0 x 7.0 mm SMD package

The TLI4970 provides superior accuracy compared to existing open or closed loop systems with magnetic cores. It has additional functionality such as over current detection, zero crossing detection and programmable filters, but offers a significantly smaller footprint and power consumption.

Applications

The TLI4970 is suitable for AC and DC current measurement applications like photovoltaic- and general purpose inverters, Power Supplies (SMPS), battery chargers, lighting applications, electrical drives, and many more. With its implemented magnetic interference suppression, it is extremely robust when exposed to external magnetic fields. It is also suitable for fast over current detection with a configurable threshold level. This allows the control unit to switch off and protect the affected system from damage, independently of the main measurement path.

Sensor Features

- Galvanic isolated, measurement principle
- Coreless solution, hysteresis free
- Inherent suppression of stray magnetic field
- 13-bit current resolution
- Update rate: 80kSPS
- Galvanic isolation up to 2.5kV
- Adjustable LP filter ($\leq 18\text{kHz}$)
- Fast over current detection (typ. 1.8 μs) with configurable threshold levels
- Suitable for industrial and consumer applications
- Plug and play solution – no external calibration needed
- Long-term stability of output signal

Digital Interface

- 3 wire SPI
- Digital OCD pin

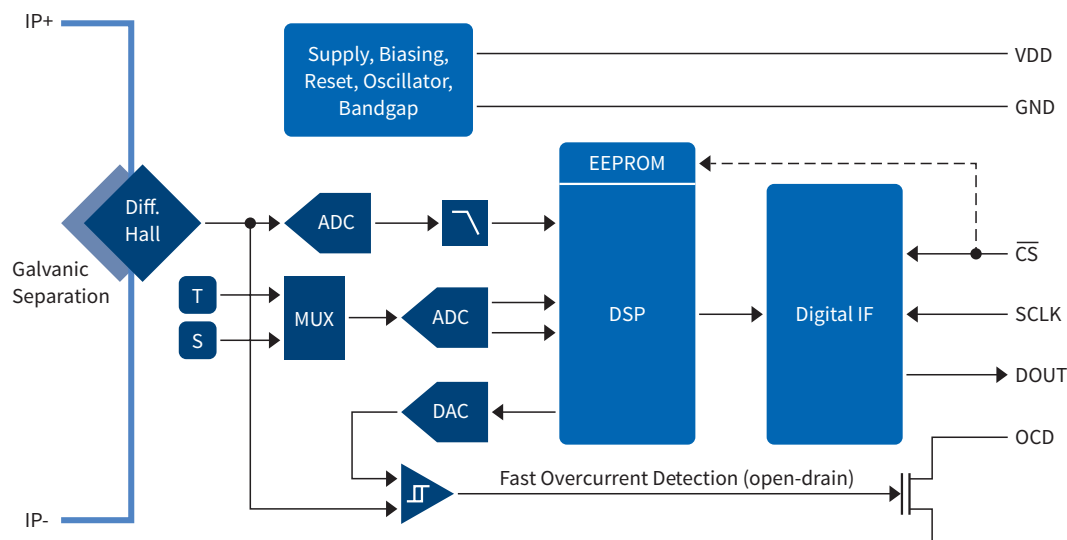
Package

- Leadless package (QFN-like) PG-TISON-8
- Size in mm: 7.0 x 7.0 x 1.0 (L, W, H)
- Weight: 0.2g
- SMD mounting

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Block Diagram TLI4970



Product Summary

Product Name	Description	Primary Current Range	Max. Accuracy Error ¹⁾	Order Code
TLI4970-D050T4	Qualified according to industrial standards: For use in industrial and consumer applications	50A	± 1.6	SP000917088
TLI4970-D050T5		50A	± 3.5	Upcoming
TLI4970-D025T4		25A	± 1.6	Upcoming
TLI4970-D025T5		25A	± 3.5	Upcoming
TLE4970-D050T4	Qualified according AEC for automotive applications	50A	± 1.6	On request
TLE4970-D025T4		25A	± 1.6	Upcoming

1) Accuracy error includes temperature and lifetime drifts

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